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# **First Language Acquisition**

*Is Children's knowledge of language innate?*

**B. A. Essay**

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## **Abstract**

The aim of this essay is to examine the extent to which children's language acquisition is innate. As such, this thesis highlights Noam Chomsky's Innateness Hypothesis as the main theory underlying first language acquisition. Chomsky believes that children are born with an inherited capacity to learn languages. He points out that there is no way that children could learn language through imitating adult speech because the speech they hear is not sufficient to aid children's acquisition of language. He also claims that the only way to explain how children acquire the complex system of language is if they are born with an innate mechanism which aids the acquisition of language. A language acquisition device called Universal Grammar. Universal Grammar provides children with universal language principles and its grammatical structures.

If Chomsky's hypothesis is correct, then one can expect to find in human biology and development evidence that reflects specialization for language. Thus, this thesis discusses two ways in which humans are specialized for language. First, the thesis discusses the brain structure and how certain structures of children's brains appear to be specialized for language. Secondly, we discuss the critical period for first language acquisition and its implications for children's language acquisition after puberty. Furthermore, the present thesis assesses as well the controversy surrounding Chomsky's hypothesis. Therefore, the criticism and theories of Jean Piaget, Michael Tomasello, Joan Bybee and Hilary Putnam are discussed. First the debate between Piaget, and Chomsky is analyzed. Then, Putnam general intelligence debate with Chomsky is explained and contested. Finally, the criticism and theory of Tomasello and Bybee, are considered.

The conclusion will demonstrate that despite the criticism there are a variety of studies that support Chomsky hypothesis. Therefore, Chomsky's Innateness Hypothesis remains the leading hypothesis underlying first language acquisition.

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## 1 Introduction

Unlike any other communication system, the human language contains a vocabulary of tens of thousands of words consisting of several dozen speech sounds. A speaker of any language has the ability to use words and build an infinite amount of phrases when communicating with others (Jackendoff 2006, 2). What is most remarkable is that children develop the complex system of language in a matter of two to five years (Jackendoff 1994, 103). For instance, three year old children can build and understand complex sentences and master the sound system of their native language without any direct instruction (O'Grady 2008, vi). Herein lies the mystery of language acquisition; how is it that children know so much in so little time? To answer that question, the present thesis argues how children acquire language based on Noam Chomsky's innateness hypothesis. Particularly to question if there is an innate mechanism in children's minds that aids the acquisition of language. Although there are other readings on Chomsky's hypothesis, my focus is on the connection between the development of certain brain structures and children's language acquisition. More importantly, my argument is that children's language development, along with the development of certain brain structures, seem to demonstrate that children have an innate ability for language acquisition.

Research concerning how children acquire language has been cause for debate, particularly among American psychologists. In 1957, Burrhus Frederick Skinner wrote *Verbal Behavior Analysis* and suggested that children learn language through interaction with the environment (Skinner 1957). These interactions occur through principles of conditioning such as stimulus, association response and reinforcement (Skinner 1957 30, 32). In 1959, Noam Chomsky challenged B.F. Skinner's theory (Chomsky 1959). Chomsky argued that children could not learn all they needed to learn about language without having an innate ability to acquire language. Chomsky's studies led him to the Innateness Hypothesis a theory that describes how children's knowledge of language is inborn (as cited by Jackendoff 1994, 35). Since then language acquisition studies have focused on the psychological part of language development and less on social influences.

However, the question of how children acquire language is still a subject of debate and linguists still argue on how much of language is learned and how much is innate. Therefore, in order to determine if children's knowledge of language is innate,

the following chapters start with a discussion of Chomsky's Innateness Hypothesis. Next, criticism of Chomsky's hypothesis is analyzed and scholars such as Jean Piaget (Piaget & Chomsky 2004), Michael Tomasello (2000), Johan Bybee (2010) and Hilary Putnam (as cited by Hakuta 1981) are discussed. Section 3 discusses a wide range of evidence that supports Chomsky's theory. First, this thesis presents studies that demonstrate the connection between children's first language acquisition and brain development. Then, the development stages infants go through and the critical period for language acquisition are discussed. Afterwards, Chomsky's theory is summarized along with a suggestion of which parts of children's language acquisition appear to be innate and which appear to be learned. Section 4 presents the concluding paragraph of the present thesis. Consequently, the purpose is to demonstrate that despite criticism, Chomsky's hypothesis remains the leading hypothesis underlying first language acquisition.

## 2 Chomsky's Innateness Hypothesis

### 2.1 Chomsky's Argument for Innate knowledge of Language

Chomsky (2004, 17) argues that children's ability to learn language is due to a genetically programmed organ that is located in the brain. Once children are born and are involved in linguistic environments, they immediately start to develop a language. However, to do that, children must make use of the only tool they have available to them which is their inborn mental grammar. Chomsky (2004, 17) characterizes this mental grammar as Universal Grammar. Through Universal Grammar, newborn babies have available to them the grammar of any language existent in the world. For instance, the language principles which account for the emergence of English account as well for Vietnamese, Portuguese, or any other language spoken in the world (McGillvray 2005, 45). After children are born and are exposed to a particular language or languages in the environment, they connect the language to Universal Grammar and that language becomes the mother tongue. According to Chomsky (2004, 17), the Universal Grammar is available to newborns before their linguistic experience begins. As such, Universal Grammar is available to children at the *initial state* of their language learning.

Eventually, the Universal Grammar leads children directly to that which Chomsky (2004) refers to as generative grammar. With generative grammar, children unconsciously separate the speech threads they hear around them into grammatical and ungrammatical sentences. Furthermore, with generative grammar, children will also develop the ability to understand structure and create infinite new language expressions. When children have reached the full potential of their generative grammar, they have reached full knowledge of language and are able to use language fluently (Chomsky 2004, 19). Therefore, the acquisition of language is not a passive act by which children simply soak up information they hear in the environment. It is an active act by which children construct unconscious principles that permit them to receive information, produce novel utterances, and use language in a variety of forms (Jackendoff 1994, 35).

Consequently, as far as language grammar goes, children have their own grammar and follow it until they have adjusted it into adult grammar. As Chomsky (1965, 58) suggests, children's language mastery involves an inborn knowledge of grammar and grammatical rules. Even though children make grammatical errors when

they are learning their first language, they rapidly master the complex system of language on their own and without the use of parental instruction. A good example of that is provided to us by the psychologist Martin Braine; after spending some time trying to correct his daughter's grammatical errors, the following happened (as cited by Pinker 1994, 281),

Child: *Want other one spoon, Daddy.*

Father: *You mean, you want the other spoon.*

Child: *Yes, I want other one spoon, please, Daddy.*

Father: *Can you say the other spoon?*

Child: *Other....one...spoon*

Father: *Say....other*

Child: *Other*

Father: *Spoon*

Child: *Spoon*

Father: *Other...Spoon*

Child: *Other....Spoon. Now give me other one spoon?*

As presented in the example above, even though parents might attempt to correct their child's grammatical errors, the correction has little to no effect. First reason being that the correction is neither done frequently enough, nor effective enough, to have the necessary impact (O'Grady 2008, 169). Secondly, because children do not hear their own errors and are liable to ignore or resist correction when it takes place (Jackendoff 1994, 105). Therefore, the language errors children make are not really errors, but rather a necessary part of their language acquisition process.

Furthermore, children's use of ungrammatical language reflects their attempt to construct the grammar rules of language on their own. Also, it reflects that children's language acquisition does not derive directly from the information that

comes from the environment (McGilray 2005, 50; Jackendoff 1994, 35). As impressive as it may seem, children alone develop their own strategies for learning language. For instance, when children reach the ages of twelve to eighteen months, a grammar emerges in their language. Once that happens, children rapidly and without assistance acquire most of the syntactic structures and grammatical rules of their language (O'Grady. et al. 1997, 476). Undoubtedly, the input that children receive from the environment plays a role in the acquisition of language, however, children do not learn through parental instruction or imitating what they hear. Depending on each child, the process of imitation only occurs 5 to 40 percent during conversation with adults (O'Grady 2008, 175). Consequently, it appears that language acquisition cannot be interpreted as a recapitulation of adult language, but rather a demonstration of children's creative and resourceful mind.

Even if children could attempt to imitate adult's speech they would end up with inadequate language, because the language children hear around them is insufficient. In other words, there is no way adults could possibly present children with all lexical (verbal) items that exist in their language (on average 50,000-250,000 words) (Lust 2006, 28). Furthermore, the speech provided by adults is not always grammatically correct (Lust 2006, 29). A study conducted by Trott, Dobbinson, Griffiths (2004, 5) suggests that when adults speak to children, they change their speech register and use simplified grammar. This simplified speech is used by caregivers, parents, or older siblings and is called child direct speech (CDS). Although Trott et al. suggest that the use of such speech might help children's language learning that is not always the case. Studies conducted by Stephen Crain and Diane Lillo-Martin (1987, 14) suggest that when adults use CDS they might deprive children from hearing full grammatical language. As a result, adults' use of CDS can make it difficult for children to learn from expressions produced by adults. Children can, however, learn some aspects of linguistic organization from hearing adults speak, for example, though matching words with meanings and thereby acquiring the vocabulary of their language (O'Grady. et al. 1997, 483).

Therefore, for language acquisition to take place, children need have available to them something more than just the input they receive from the environment or adult input. Children might learn language from hearing others speak around them, nonetheless the knowledge of language they end with is far more complicated than what is available to them in the environment. So to understand how children's first



language acquisition happens, we must look inside the child and beyond outside influence. In a scientific sense, language does not develop in the outside world, but rather in the minds of children, therefore there is no learning in the traditional sense (Lenneberg 2002, 6). In fact, children's language acquisition differs a great deal from the kind of formal learning that takes part in schools or psychologist laboratories. When children are about one-year-old, or sometimes before, they will say their first words. By the age of five, every child has already managed to acquire language, and speaks it fluently. All of that happens before children start formal language learning (Sigurjónsdóttir 2013).

Although children have the natural ability to learn language and do it without formal instructions, children do not learn language based on general intelligence, either. Studies show that children who have a low IQ or are born with some mental delay learn language just as well as any other child. As Steven Pinker (1995) explains, Hydrocephalic children occasionally end up mentally underdeveloped due to large cavities of the brain affected by malformation; however, they can take part in fully articulated and fully grammatical conversations. Furthermore, children who are born with William Syndrome, an inborn condition involving physical abnormalities and mental delays, grow up to have fully articulated language abilities (Pinker 1995). These cases demonstrate that children do not depend on general intelligence to acquire language and have fluent, articulated language abilities.

In conclusion, the claim Chomsky is making is that even though children make grammar mistakes and are not exposed to enough linguistic input, children manage to acquire the complex system of language very rapidly. Furthermore, children acquire language without parental assistance and without the use of general intelligence. For Chomsky, the only way to explain how children acquire the complex system of language is if they are born with an innate ability to acquire language. Consequently, Chomsky created the Innateness Hypotheses and suggests that children are born with a mental grammar that produces knowledge of language, given that there is present experience. So without having an inborn Universal Grammar, children's language acquisition process would be more complicated and probably take a longer time. Conversely, with Universal Grammar, all children are rapidly able to acquire language, except under extreme conditions (which will be discussed in chapter 3.4). Although Chomsky's hypothesis has revolutionized modern linguistics and brought great

changes to the study of language acquisition, the basis for this human ability is still cause for debate.

## 2.2 Arguments against Chomsky's Innateness Hypothesis

Ever since Chomsky put forward his Innateness Hypothesis, his theory has been the target of significant controversy. Initially, when Chomsky challenged B.F. Skinner's *Verbal Behavior*, he had a great impact on research developments and attitudes towards language acquisition studies. Even Skinner himself found it difficult to answer Chomsky's criticism. Skinner considered Chomsky's review emotional and claimed that it lacked knowledge of behaviorist studies (as cited by Virués 2006). As reported by Virués Ortega (2006), Skinner briefly mentioned Chomsky's review in a lecture in 1972, however, Chomsky never formulated a response to Skinner's criticism. After eight years passed criticism towards Chomsky's theory started to surface (Virués 2006). Eventually, Chomsky encountered his first serious opponent: Jean Piaget; the two engaged in a debate regarding the *nucleus*.

Chomsky and Piaget (Piaget & Chomsky 2004) are both nativists and believe that children's language ability derives from inherited genetics. The main point of disagreement between them are the specific aspects (which in their debate they called the *nucleus*) of children cognition that are responsible for language acquisition. Piaget (Piaget & Chomsky 2004, 69-70), does not agree that children's language ability is constrained by a *fixed nucleus* (Universal Grammar). Piaget's (Piaget & Chomsky 2004, 65-66) comprehension of language development lies in the very process of its transformation. He believes that children knowledge of language happens alongside with logical thinking and reasoning. So when Piaget (Piaget & Chomsky 2004) refers to this genetic *nucleus*, he sees it in constant mutation that is directly connected with children's construction of knowledge due to experience with the outside world. To him, children's language knowledge is subject to changes and growth that increase due to children's understanding or assimilation of the world. Therefore, Piaget (Piaget & Chomsky 2004) believes that children's language development occurs simultaneously with their logical thinking and refuses to accept Chomsky's idea of a *fixed nucleus*.

Chomsky (Piaget & Chomsky 2004), on the other hand, describes cognitive development as the consecutive maturation of Universal Grammar (*fixed nucleus*). In his response to Piaget's criticism, Chomsky argues that there is no relevant experience that leads to the construction of linguistic knowledge. Chomsky (as cited by Hakuta

1981) disagrees with Piaget's views and debates that language knowledge must be present in children's minds when they are born for language acquisition to take place. This language knowledge is triggered by language experience and from input from the environment.

In resume, the debate between Piaget and Chomsky resulted in a tension relating to development hypotheses of children's language knowledge. For Piaget (Piaget & Chomsky 2004) the explanation to how children acquire language lies in experience and assimilation. While for Chomsky (Piaget & Chomsky 2004), the explanation lies on children's innate abilities. After analyzing both Piaget and Chomsky views, it seems that their arguments are not so different because they both give a central role to internal activities that happen in the child's brain.

Aside from Chomsky's and Piaget's central tensions, there are other scholars that oppose Chomsky's Innateness Hypothesis. Hilary Putnam (as cited by Hakuta 1981), engaged in a debate with Chomsky and Jerry Fodor (as cited by Hakuta 1981) regarding the concept of nativism. In their argument, Hilary Putnam (as cited by Hakuta 1981) suggested that innateness was part of general intelligence instead of being part of an innate mechanism. Although Putnam (as cited by Hakuta 1981) posed a plausible remark, research points to a disassociation between intelligence and language acquisition. As already noted, studies of people who have William Syndrome show that even though these individuals have an IQ of 50 and are inept in everyday tasks, they have fluent and articulated language abilities (Pinker 1995). Therefore, language is not a capacity that is based on general intelligence, but rather an internal activity that can be explained in terms of innate abilities that every child possesses.

Another linguist that rejects Chomsky's theory is Michael Tomasello (2000, 156), he argues that children *imitatively learn* language. He believes that children hear the language speech that is used around them, then use their social skills to progressively start to categorize, put in schemas, and creatively combine individually learned expressions. Therefore, children use language to acquire knowledge of language. In other words, children's language use helps them create language knowledge.

The key notion of Tomasello's (2000) theory is the term construction; he explains that the grammar of a language is a repertory of construction instead of generative as outlined by Chomsky. During an experimental research study, Tomasello (2000, 157) observed that children's initial stages of linguistic competence are not

categorized as grammar, but rather as items based formula called *Verb Island Hypothesis*. Tomasello therefore suggests that children take novel verbs and each verb forms its own island and construct the grammar of their native language.

Joan Bybee (2010) further developed Tomasello's (2000) theory by suggesting that when children acquire language, they do it in a bottom up manner. The term bottom up is defined as the notion that language acquisition starts first with language performance and later children construct language competence. In other words, from language usage comes language knowledge and the capacity to produce language. According to Bybee (2010, 18), children's system of grammar is not self-contained or stagnant, but is subject to change and motivated by language use. Furthermore, Bybee (2010, 18) suggests that a child's linguistic experience grows with interaction and exposure to language. The repeated routine of listening and speaking facilitates language processing. Therefore, children's competence of language is regularly updated and stored in their brains. In conclusion, while Chomsky claims that language grammar is inside of the child's brain, Tomasello (2000) and Bybee (2010) suggest that grammar is a construct of language usage, therefore it happens due to outside experience.

In summary, the critics against Chomsky's hypothesis dwell on the nature of Universal Grammar and question its existence. Despite being the target of criticism, Chomsky found supporters among biologists and neurobiologists alike. As revealed in the next chapters, there are studies that support Chomsky's Innateness Hypothesis and the existence of an inborn mechanism that aids first language acquisition.

### **3 First Language Acquisition**

Children's language acquisition is considered to start when children say their first words. However, children already show that they have communication abilities when they are born. According to Boysson-Bardies (1999, 29), most babies of four months of age act in response to their name without realizing that the sound forms have referential function. That observation indicates that babies have good perception of sound. It also indicates that the brain of the newborn baby is more developed than is commonly expected at the initial state.

If the newborn baby's brain possesses an innate disposition for language, behavior correlations with this genetic specification must exist. In 1971, Peter Eimas,

E Siqueland, P. Jusczyk, and J. Vigorito (as cited by Boysson-Bardies 1999, 20-21) made use of the only behavior mastered by newborns (sucking) to carry out experimental research on their previous knowledge of language. They measured the sucking rate of four-month old babies to see if they could distinguish between speech sounds categorically. The experiment was conducted as follows (as cited by Boysson-Bardies 1999, 20-21),

First the babies were put in carriers and then they were given electronic rubber nipples that were connected to a computer. The objective was to measure the babies sucking rate and from it test if they could perceive the difference between two consonants [a] and [b]. The babies revealed interest to the sounds they heard by sucking vigorously than their sucking diminished. The resumption of sucking as a result of change of stimulus indicated that the babies had perceived the difference between the two consonants. Later studies conducted in the same form also show that babies as young as three and four days old are capable of differentiating almost all phonetic contrast found across natural languages. Therefore, newborn babies can discriminate between the contrast of voicing, place and manner of articulation. That shows that even before infants start to use language, their brain already shows an innate disposition for language.

According to Broca and Carl Wernicke (as cited by Boysson-Bardies 1999, 29), there are two areas responsible for comprehension and production of language in the brain. The left hemisphere's fundamental function is to process rapid acoustical changes and speech sounds. In contrast, the right hemisphere is responsible for perception of acoustic sounds distributed over a long period of time and controls prosody. Prosody is stress, rhythm and intonation, all elements that are particularly important for speech. In addition, the right hemisphere matures faster than the left hemisphere before and after birth. Consequently, that explains why babies are attentive to sounds and vocalize before they articulate. That also explains that language acquisition and brain lateralization develop at a complementary rate.

Since infants are born with the right hemisphere more developed than the left hemisphere, they cannot talk at birth. They can only recognize intonations and speech sounds. The left lateralization plays a primary role in language (Boysson-Bardies 1999, 31). Therefore, damage to the left hemisphere can provoke aphasia, a dysfunction or loss of language due to neurological damage (Lust 2006, 77). Further observations into brain development and language acquisition show that children who

suffer from brain damage (or are victims of prenatal injury or disease) requiring left hemisphere removal will acquire the ability to speak. Nevertheless, the removal of the left hemisphere has to occur before they are one year old for the recuperation to be total (Boysson-Bardies 1999, 31).

It seems that the development of the left hemisphere and the right hemisphere appear to be in tune with the language developments of children. Additionally, the discrepancy between maturation rhythms of the two hemispheres in the first years, explains certain characteristics of language development, such as the form in which words are first coded (Boysson-Bardies 1999, 29). In resume, children's initial process of language acquisition starts with attention to the intonation patterns of language. That means that their attention to language sounds develops in advance from language production. That also means that at an initial state, the brain of a newborn is far from being empty and presents signs of having Universal Grammar that helps the child distinguish the sounds of language.

### **3.1 From birth to eighteen months**

Children's language development follows predictable milestones and the foundations of the development are inborn and genetically coded. As mentioned previously, before birth, infants develop brain lateralization that aids in the recognition of intonation of language. After birth, babies start babbling with no particular linguistic intention. After a couple of months, the babbling strings of babies begin to be uttered with intonation patterns. Eventually, the baby language gradually starts to tune in to the language in the environment. According to Jackendoff (1994, 62), when learning a language, the child selects certain speech sounds from the ones available in the universal grammar to match those in the environment. The child selects the sounds correspondent to his/her native language and unconsciously knows how to sort them out. Subsequently, important milestones are reached in a fixed sequence and in a relative constant chronological age.

When children reach twelve to eighteen months of age, they start to produce one-word utterances. This stage is called holophrastic stage (O'Grady. et al. 1997, 476). The first words children utter are identical universally across cultures and they are in most cases *mommy* and/or *daddy*. Other words in their vocabulary include names like, *dada*, *mommy*, and *Cindy* (or any other name); object words like *spoon* and *car*; pointing words like *that*; action words like *eat* and *push*; properties like *hot*; directions

such as *up*, *down* and *no*; greetings like *bye* (Jackendoff 1994, 103). Thus, the majority of children's one-word vocabulary consist of noun-like words, whereas verb-like words are not so common. Their one-word vocabulary may also contain animal sounds, references such as *meow*, or sound references to objects such as *Choo-Choo* for train (Gleason, & Ratne 1993, 314 - 315). Furthermore, children may use the word *mommy* to say *I see mommy* and *up* to mean *I want up*. Such utterances are called holophrases. In creating holophrastic utterances, children appear to choose the informative word that applies to a situation they are dealing with at a given time. Hence, children create semantic relations to express themselves (O'Grady. et al. 1997, 476 - 477).

Naturally, not all words used by children at this stage are pronounced in the same way adults pronounce words. Children at this stage are still learning the consonants in their language (Gleason, & Ratne 1993, 315). For instance, the liquids *r* and *l* are consonants that children acquire at a later stage and until then they replace them with other consonants i.e. *bwead* instead of *bread*. Furthermore, for children to find the right meaning of words, it might be difficult at this stage. As an example, children might use the word *horse* when pointing to a cow. That is called an overextension, children know that the horse is an animal and will address other animals as *horse* until they realize that animals have different names (Gleason, & Ratne 1993, 315). Once children reach eighteen months of age, the child's vocabulary may grow from fifty to one hundred words (Jackendoff 1994, 103). Consequently, children start the two-word stage.

### **3.2 From eighteen months to twenty four months**

At the two-word stage, children start to put together two-word mini sentences such as *mommy throw* and *throw ball* (Jackendoff 1994, 103). These two-word utterances are employed in an appropriate word order suggesting that children have an early sensitivity to sentence structure. Although these are examples in the English language, similar mini sentence patterns are also found in the early development of all languages. However, this does not happen because all mothers initiate language instruction at the same time all around the world. Even though society and parents change their behavior towards their eighteen month old children, the changes are in response to the child's developed abilities and behavior (Lenneberg 2004, 103). At this stage, just like in other

stages, the two-word utterances originate from the growing child and not from adult stimuli.

Therefore, children's language development is primarily due to the maturation process within the child. At this stage, or sometimes before, children's language comprehension seems to be far ahead of their language production. It is interesting to notice that before children start to put words together, they already understand language (Pinker 1995). For instance, in one experiment, babies who spoke only in single words were tested on their language comprehension. The babies were placed in front of two screens. On one screen was an adult dressed as a Cookie Monster and on the other screen was another adult dressed as Big Bird from Sesame Street. A voice-over was played that said, "*Big Bird is tickling Cookie Monster! Find Big Bird tickling Cookie monster!*" When the babies listened to the voice-over, they would always look at the corresponding screen (the screen with the Cookie Monster). The babies' actions indicated that they must have understood what was said and therefore looked at the correct screen. More importantly, this experiment demonstrates that children at this stage understand the meaning of the ordering, subject - verb - object (SOV) (Pinker 1995). Therefore, even though the speech of children at this stage only consists of two-word mini sentences, their comprehension is way ahead of their production.

Furthermore, around this stage, children's vocabulary increases a great deal, as children add about ten new words to their vocabulary a day or close to one every hour (Jackendoff 1994, 103). Some children begin to name everything in their environment and spontaneously increase their communicative behavior. Hence, children begin to show steady growth of vocabulary and grammatical complexity. All words appear to be the child's own creation which shows that children individually start to figure out the function of words (Lenneberg, 2004, 103). It is unclear, however, if children at this stage have acquired syntactic categories such as nouns, verbs, and adjectives. Mainly because the inflectional affixes that distinguish among categories in adult language such as plural and past tense are lacking during this period (O'Grady. et al. 1997, 477). Nevertheless, at this point the child seems to grasp much of the sound system of adult language and with time the child becomes more fluent in its native language.

### **3.3 From 24 months to 30 months plus**

After the one-word and two-word stages, children begin to produce even more grammatically complex constructions, such as *daddy like book, what her name? Me*



*ride bus today*. Children also use adult word order patterns, even though the words might not have the appropriate ending (O'Grady. et al. 1997, 478). This stage is called the telegraphic stage because at this stage, children's utterances resemble the style language found in telegrams (*That a green one* or *Mommy drop dish*) (O'Grady 2008, 3). A significant feature of the telegraphic stage is that at this stage, children make nearly no word order mistakes. In languages with variable word order such as Korean and Russian, the variable word patterns in child's speech appear in the same relative frequency as in adult's speech (O'Grady. et al. 1997, 478).

At this stage, just like in the prior stage, children continued to demonstrate comprehension before production. Nancy Katz, Erika Baker and John Macnamara (1974, 470-473) tested two year old children to see if they had acquired the proper noun/common noun distinction. The children were given dolls with different hair colors (one blond and the other one brunette) and blocks that were painted in red and yellow. The dolls were dressed identically and the blocks were made out of plastic and were the same in shape and size (470). Then the groups of dolls and blocks were divided into two groups. One group of dolls and blocks was given a proper name: *this is Zav*; and the other group was given a common name: *this is a zav*. Next, the dolls and blocks were given to children to play with and children were asked to give *a zav to eat* or give *Zav food*. According to Katz. et al. (1974, 173), children selected the right doll/block depending on which noun had been used. So it seems that when it comes to learning names, children already comprehend the distinction between proper noun/common nouns.

Furthermore, at this stage, children's language development moves gradually from primitive two-word and three-word combinations to a broad range of syntactically intricate sentence types. As Steven Pinker (1994, 44-45) explains, by the age of three- and-a-half or earlier, 90 % of the time children use the *-s* agreement in sentences that require it, and almost never use it in sentences that forbid it. For example, a child can be seen obeying the English agreement rule in a complex sentence like the following: "Donna *teases* all the time" or "I know what a big chicken *looks* like." Incidentally, the child could not possibly be imitating her/his parents and memorizing verbs with *-s* pre-attached because children are also seen using sentences such as, "When *he's* in the kindergarten" or "she *do's* what her mother tells her." Sentences like these show that children cannot be imitating their parents, but rather

they create those forms themselves, using an unconscious pattern of the English agreement rule.

In the following years of later development, children continue to acquire the sophisticated grammar that underlines adult linguistic competence. Children acquire word order (SOV and VSO), rich cases of case and agreement, suffixes, grammatical gender, and whatever more language challenges them with, before the age of four (Pinker 1995). Due to the variety and complexity of the utterances produced during this phase, there is an agreement that this period is characterized by the emergence of innate devices (O'Grady. et al. 1997, 479). However, to properly conclude the analysis of child language acquisition process, one must mention that no grammar organ, nor a grammar gene, has yet been located in children's brains (Pinker 1994, 45-54). There are, however several studies suggesting that children are genetically endowed to acquire language. Such as, the sucking of the thumb shows how children's language knowledge prior to their language use. Also, studies done on brain damage in the left hemisphere suggest that after a certain age, it is not sure that children will recover their ability to communicate properly again.

Lastly, it is interesting to note that children who add an extra language to their native language tend to become fluent in the extra language in a year or so (Jackendoff 1994, 104). The ease by which children acquire a second language suggests that the stages of language learning should be attributed to the maturation of the brain. So the real problem of language acquisition is not just the challenge of describing the child's behavior, but rather to induce from the behavior the nature of the unconscious mechanism that guides it.

### **3.4 Critical Period for Language Acquisition**

As suggested in the second chapter, the unconscious mechanism that guides children's language acquisition is characterized as Universal grammar. We have also seen in chapter three that the Universal grammar is part of the biological development of the brain that is subject to stages of maturation. Now we will see that after the period of maturation is complete the Universal Grammar is no longer available to children subsequently the first language acquisition phase is finalized. As suggested by the neurologist Eric Lenneberg in 1967, (as cited by Jackendoff, 1994, 118) there is a critical period for the mechanism that guides language acquisition. After that period, children lose the ability to learn languages without effort. In other words, the

unconscious ability children possess to construct a generative mental grammar degrades when lateralization of brain function is complete. Therefore, children's ability to learn languages without effort diminishes when children reach puberty.

To support his theory, Lenneberg (as cited by Jackendoff 1994, 118) drew on cases of language recovery after brain damage. He noticed that under these conditions, the younger the children, the more likely it is that the child will recover full use of language. He also drew on the idea that children learn foreign languages with more ease than adults, suggesting that the reason why children are better than adults when learning a foreign language is because adults have lost the unconscious ability to construct a mental grammar. However, the crucial tests for the critical period hypothesis were unfortunately performed by society. They come from cases of children that for some extreme reason only learned language after the critical period had expired.

Although studies concerning the critical period for language acquisition are rare, some have been reported (Boysson-Bardies 1999, 93). Such studies were conducted with feral children. Feral children are children that were discovered in isolated places where they allegedly had no contact with humans, therefore, never developing proper language knowledge. For instance, there is the case of Victor, a wild-child found in France at the age of ten to twelve years. Despite the efforts of his teacher, Victor did not acquire language. Besides Victor's case, there are other cases of feral children that never learned how to speak properly due to life conditions; the most extreme known example is the case of Genie.

Genie was a girl that was discovered in 1970 at the age of thirteen (Jackendoff 1994, 122). She had been deprived of linguistic communication, and was kept in isolation in a small room, since the age of twenty months. Prior to being found, Genie lived tied into a potty chair by day, and was kept in a covered infant crib by night. She was given little to eat and was never spoken to; whenever she made any sounds, she was severely punished by her father. By the time she was discovered, she was apathetic and she did not speak (Jackendoff 1994, 121-122). She also, seemed to have little to no control over her speech organs. When Genie was admitted to a children's hospital it was determined that her cognitive development was of a fifteen-month old child. With the help of psycholinguistics, psychiatrists, neurologists and linguists, within a month, Genie became alert, curious, and engaged; she also spoke a few words. Over

the next 18 months, Genie improved her cognitive abilities and reached a level comparable to a six to eight year old child (Curtiss. et al. 2004, 127).

Initially, Genie's language ability went through similar stages as of the early stages of normal language acquisition. After a series of tests, she demonstrated that her comprehension of language was slightly ahead of her production (Curtiss. et al. 2004, 128). Also, her speech started with one-word utterances. After about five months after her submission, Genie's vocabulary included mostly color words, numbers from 1 to 5, the noun *mamma*, and the verb forms *stop it* and *spit*. At this stage, it is possible to see that there is a difference between Genie's inventory and the inventory of the first words used by a normal child (Curtiss. et al. 2004, 132). Genie's two-word stage started within seven months and her vocabulary was about 200 words, which included, numbers, color terms, and questions such as *how* or *why*. These words are words that enter the normal child's vocabulary significantly later (Jackendoff 1994, 121).

A little more than a year after her discovery, Genie was sometimes observed producing sentences of three or four words (Curtiss. et al. 2004, 132-134). These larger sentences included negation, some prepositions, and some plural and possessives. In addition, just like normal children, Genie did not seem to learn language by imitation alone. Whenever Genie failed to communicate her message with one-word or two-word utterances, she extended her sentences, revealing more extensive syntactic system. So her language development was similar to the normal stages of early language development, however, it happened quite rapidly.

Nevertheless, Genie's language progress stagnated. She continued to form negative sentences by putting the word *no* at the beginning. A behavior that according to Jackendoff (1994, 121) is parallel to the first stage of children's language development. Also, her use of definitive articles remained minimal; she made use of phrases such as *bathroom have big mirror*. Although she constructed sentences in subject - verb - object order, her comprehension of the significance of this word order was inconsistent. In general, her language abilities remained at the level of two-and-a-half years old. Genie's case provides converging evidence for a critical period for language acquisition, however, the damage she suffered prior to being found makes it difficult to view her case conclusively (Jackendoff 1994, 121).

In recent times, a less publicized and less equivocal case has emerged. A woman named Chelsea was born profoundly hearing impaired to hearing parents (Jackendoff 1994, 122). Initially she was misdiagnosed as retarded, nevertheless she

was brought up in a normal home. She had a normal family that engaged in normal social interactions. Eventually, when she was thirty-one she was diagnosed, again, and it was discovered that she was hearing impaired and was given a hearing aid. Afterwards, she underwent nine years of hearing training and she was reported to have a vocabulary of 2000 words. She could read at the second and third school grade level and speak clearly. Yet, after twelve years, her phrase structure production was still at the level of a two-and-a-half-year-old. For instance, she tended to leave out subjects of sentences using sentences such as *hit ball* and *cardboard put food* (Jackendoff 1994, 122). Just like Genie, she did not acquire English syntax after years of experience. In both cases, it is visible that vocabulary was acquired, and the individuals were able to communicate despite not having a mental grammar. Therefore, the word order details and inflection did not develop.

In conclusion, the innate ability to construct a mental grammar diminishes after puberty, thus, children's ability to learn languages diminishes after that period. The critical period evidence, therefore, supports Chomsky's view that all humans are born with an innate ability to acquire a communication system. That, however, means that if children are deprived of linguistic environment before reaching puberty, they will not be able to communicate properly.

### **3.5 Is knowledge of language innate or learned?**

As already suggested throughout this thesis, the logical way to understand how children acquire language is to understand that language is part of an intricate mental grammar. To understand that mental grammar, one must acknowledge that language defines the boundaries within which language novelty can take place (Cowie 2010). According to Jackendoff (1994, 11), the number of utterances people are capable of saying are far too large to store individually. Hence, the only reasonable way children are capable of reaching expressive variety is to acknowledge that children are equipped with a generative mental grammar: a system that stipulates possible sentence patterns that exist in language and also, accounts for children's ability to speak, understand and create new utterances (O'Grady. et al. 1997, 14), an innate knowledge of language or an innate Universal Grammar.

While equipped with this innate language knowledge, children act like little linguists and test their language until they achieve the right results. For instance, children create plurals for nouns they never heard before such as *wugs*. They create regular past tense for irregular past tense verbs such as *holded*. Also, they create nonstandard constructions for negative sentences such as *daddy not come home* (Jackendoff 1994, 126). These errors are important because they demonstrate that the child is not imitating the input she/he gets from the environment, but rather she/he is constructing rules of mental grammar (Jackendoff 1994, 126). These rules can be regarded as good second guesses the child is making which are later revised in light of added experience. Consequently, these guesses help demonstrate how much of children's language learning is an act of construction. Also, as stated before, it demonstrates that the learning of language is not just a passive act in which children just soak up the information from the environment, but rather one in which they unconsciously create language (Jackendoff 1994, 35).

Universal Grammar, however, does not account for every aspect of language. The vocabulary of all languages vary, therefore, children must learn language from hearing people speak. Children need linguistic evidence in order to construct language. From that linguistic evidence, children learn the vocabulary they need to produce language. To do that, children must convert the continuous speech stream they hear coming from the environment into units of sound which provide a digital representation of language (Lust 2006, 143-145). That means that children learn the vocabulary of their language from scratch. They first start with learning the stress and tone which shape words, then word combinations are comprised (Lust 2006, 143 - 145). However, they do this with help of Universal Grammar.

Although input from the environment is important for children to learn words, the system to organize them is innate. According to Sigríður Sigurjónsdóttir (2013), Children as young as three-years-old know where the verb is located in different places within a sentence depending on whether it is a finite or infinite verb. Children know this even though they could not explain the difference between the two. Additionally, when creating sentences children naturally know the word order and how to structure a sentence. Hence, the way children learn to speak goes beyond learning words. For instance, a child will see a horse and will know that it is a horse because someone (a parent) will say that it is a horse, however, the child alone will figure out that the word refers to an animal. Meaningful words like the word horse will work as a building

block for the child to create meaningful sentences such as *Horse runs* or *horse eats* (O'Grady 2008, 3).

Furthermore, children create their own strategies to learn language and create new words. For instance, the way children create new words can be divided into three categories. These categories are conversion, derivation, and compounding (O'Grady 2008, 26-39). Conversion happens when children apply a new meaning to an already existing word. Derivation, happens when children change the ending of a word and compounding happens when children put two words together. Consequently, children do not hesitate to play with tools of word making, but a word would be just an empty word if it did not have a meaning.

Consequently, what is innate in children's knowledge of language is their subconscious knowledge of their language grammar. Children take the speech information they get from the outside world and create the grammar rules of the native tongue. Children do that unconsciously, therefore even when their parents try to correct their speech they seem puzzled and confused. An example of that is the subsequent dialogue between mother and child (Jackendoff 1994, 22):

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.*

As mentioned in the second chapter, this example shows that children learn language, unaware of what they are learning and of the mistakes they make. Therefore, the way children acquire language is far from the formal process that happens in school. Through which children are taught better vocabulary and grammatical rules of

language such as not ending a sentence with a preposition or not splitting infinitives (Pinker 1994, 374).

To sum up, while the knowledge of language seems to be innate, children must learn the words of their language. Despite the complexity of the process of learning words from scratch, children seem to unconsciously know exactly what they need do in order to become fluent speakers of their mother tongue. Even though there are many theories that account for how that happens, the Innateness Hypothesis seems to be the one that meets the challenge.



## 4 Conclusion

The aim of the present thesis was to demonstrate that Chomsky's Innateness Hypothesis provides the most viable account of first language acquisition. Yet, Chomsky's hypothesis, just like all theories and hypotheses, is surrounded with uncertainty. Scholars are still debating over the existence of an innate mechanism that aids children's language acquisition and Chomsky's theory has yet to be proven to the full extent.

However, Chomsky has several studies that support his hypothesis. For instance, studies conducted by Broca and Wernicke suggest that children begin first language acquisition on the basis of biological programming of brain function and structure. These studies show that although the left hemisphere is privileged for language, both hemispheres work together for language knowledge and development. Additionally, the universality by which children acquire language suggests that children are genetically endowed to acquire language through an intermediate of the brain. Consequently, brain damage to the left hemisphere can result in aphasia and the language faculty stops functioning properly. That suggests as well that language is an innate faculty of the human brain and the essence of this innate faculty appears to be the Universal Grammar suggested by Chomsky.

Similarly, Lenneberg's Critical Period Hypothesis also rests on the idea that brain lateralization and language acquisition arise at a complementary fashion and conclude with the onset of puberty. He suggests that, except under extreme conditions, children cannot help but to acquire language. Furthermore, he believes that language acquisition follows a general course, one that is not directed by formal instruction or changes in the environment. Assuming that children are exposed to natural speech during infancy, all children should be able to acquire language. The lack of good linguistic input should not prevent children from acquiring language. Neither deafness nor severe cognitive delays or both combined should prevent it from happening. Hence, in a variety of ways, there appears to be a developmental program for language acquisition in children's brains. Furthermore, the way children acquire language shows indices that their knowledge of language is innate. Lastly, the studies relating to how children acquire language demonstrate that even though Chomsky's hypothesis has not been proven to the full extent, it provides the strongest account for how children acquire their first language.

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