Children’s first language acquisition

What is needed for children to acquire language?
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Abstract

Language acquisition is one of the most complex ability that human species acquire. It has been a burning issue that has created tension between scholars from various fields of professions. Scholars are still struggling to comprehend the main factors about language acquisition after decades of multiple different theories that were supposed to shed a light on the truth of how human species acquire language acquisition. The aim of this essay is to explore what is needed for children to acquire language based on Noam Chomsky theory of language acquisition. I will cover the language production areas of the brain and how they affect language acquisition. I will also look into organs of speech and their structure. Nativism has been one of the most affective theories since 1950’s. The Language Acquisition device and Universal Grammar are the major concepts that support Noam Chomsky’s theory in general. I will cover the linguistic acquisition device and Universal Grammars and how they support Noam Chomsky theory of language acquisition. This paper focuses mainly on five arguments, which support Noam Chomsky’s biological theory of language acquisition. The following arguments support Noam Chomsky’s theory of language acquisition, the Poverty of the Stimulus, uniformity, The Critical Period Hypothesis, species significance and Phonological Impairment. Findings show that these five arguments are crucial in language acquisition. They also imply that language is clearly limited to human specific ability to communicate throughout the universe. Critics address this fascinating argument from different angles and do not agree on whether language acquisition is innate or learnt. This matter is one of the most appealing issue that every linguistic attempts to address.
1 Introduction
Findings on language acquisition have improved extremely over the last several decades on account of technological breakthrough. Language acquisition could merely be acquired through general learning and understanding abilities and interactions with other people. Behaviorists argue that language acquisition could be learnt through reinforcement, learning through imitation, learning through association or by Universal Grammar. Multiple scholars have examined the language and its function. To name a few, Edward Sapir and Benjamin Lee Whorf who introduced the Sapir-Whorf hypothesis, Ferdinand de Saussure, prophet of structuralism and Noam Chomsky, the father of biological linguistics, and founder of universal grammar. The main focus of this essay is to analyze Noam Chomsky theory of language acquisition. In this essay I will cover, briefly, the anatomical factors that makes language abilities possible. I will discuss nativist approach of language, introduce Noam Chomsky as a scholar and his concepts of language. I will also analyze different arguments that both support the theory and also oppose the theory.

In section 2 the biological function of the brain, focusing on Broca’s area and Wernicke’s area are introduced. I will also introduce the structure of the respiratory system, phonatory system and the articulatory system and their function. In Section 3 my focus will be on Chomsky’s theory of language acquisition, language acquisition device (LAD), and Universal Grammar (UG). In section 4 I will analyze the evidence that supports Chomsky’s theory and discuss the Poverty of the Stimulus, uniformity, the Critical Period Hypothesis, species specific and phonological impairment as substantial examples that corroborate the evidence. Finally, section 5 will consist of different criticism on Chomsky’s theory, and arguments against the theory. Ultimately, the aim of this essay is to demonstrate the importance of biological findings in terms of language acquisition. I will reflect upon what is needed for children to acquire language based on Noam Chomsky’s theory of language acquisition.
2 Anatomy

2.1 Language production areas in the brain

The brain is without a doubt the most complex organ of the human body. Language proficiency is one of the greatest abilities that humans acquire because it allows us to communicate and express our thoughts, needs and opinions to each other. Language is our form of communications and without it we would not function, because the human species find the need to be socially active, it is in our nature. It is important to explain the language centers in the brain and how language production functions in the brain, in order to get a better comprehension of how language is acquired. Around the 19th century scholars gained great interest on linguistics and in despair, felt the need to answer questions such as where in the brain language and speech were localized. The first suggestions that Broca’s area might be involved in language production came from the physicians Paul Broca and Carl Wernicke (Boeckx & Grohmann, 2013, 343). In 1861 Paul Broca described a case of a patient that had difficulty producing speech caused by damage in the posterior inferior part of the frontal lobe in the left hemisphere, also known as the Broca’s area. Another scholar and a physician named Carl Wernicke described his patients that had difficulty with comprehending speech in the left posterior temporal lobe. His patients suffered from damages in another area’s in the brain than the Broca’s area. These findings gave linguistic scientist further evidence that there was another speech area in the brain that engaged in speech production (Akmajian, Demers & Harnish, 1984, 494; Clark, 2009, 359). Wernicke’s findings strengthened Broca’s claim that the left hemisphere engaged in speech production and comprehension. For several decades scholars have continued to prove that language production occurs in the Broca’s area and the Wernicke area. As noted before, language production mainly takes place in the temporal lobe, which is in the left hemisphere of the brain. According to Akmajian, Demers and Harnish (1984) the left hemisphere specializes in speech, language, analytic processing, associative thoughts etc. However the right hemisphere is responsible for processing, mental perception, nonverbal environmental sounds, nonverbal ideation, recognition and memory of melodies. It is worth noting that the left hemisphere controls the right part of the body and the right hemisphere controls the left side of the body (151). Although if the left hemisphere becomes damaged early in the individual’s life, the right hemisphere can take over language function,
but will not be as specialized as the left hemisphere. The two major human linguistic capacities in the brain are Broca’s area, which is located in the frontal gyrus (IFG) of the brain, and then there is Wernicke’s area, which is located in the superior temporal gyrus (STG) (Boeckx & Grohmann, 2013). Broca’s area takes part in movements required to produce speech whereas the Wernicke’s area, that controls comprehension, helps us to understand speech and use correct words to express our thoughts. In addition, there seem to be other areas in the brain that engage in language production. Porter and others (2011) did a research on human brain development. Their findings showed that significant correlations between increasing controlled oral word association performances and decreasing cortical thickness were found in left hemisphere language regions, including the Perisylvian regions, (which is the area lying around the Sylvian fissure in the cerebral cortex), surrounding the Wernicke’s and Broca’s areas (p. 1876). To sum up, Broca’s area, Wernicke’s area and cortical thickness all engage in language production. Although the brain is an extremely important mechanism in terms of language acquisition, the speech organs are equally important in speech production and language proficiency.

### 2.2. Organs of speech and speech production

The speech organs are divided into the following systems, the respiratory system, the phonatory system and the articulatory system. The respiratory system consists of lungs, muscles of the chest, and trachea. The larynx and the vocal cords form the phonatory system. The largest system is the articulatory system that includes the pharynx, lips, teeth, the tongue, and roof of the mouth, which consists of teeth ridge, hard palate, soft palate and the uvula (Akmajian, Demers & Harnish, 1984). These systems are all responsible for producing sounds in the human body.
Figure 1 Summary of classification of the organs of speech

Figure 1 explains how the functions of the organs of speech are specified by each system. The lungs press the air through the trachea with help from the muscles of the chest. The trachea has the larynx at the top, and the two vocal cords are in the larynx and the opening between them is called the glottis. The roof of the mouth divides into four parts, the teeth ridge that is the surface behind the upper front teeth, the hard palate, which is the surface behind the teeth ridge, and the soft palate, which is soft portion behind the hard palate (Vihman, 1996, 104).

There is also a great difference between the mouth cavity of an adult and an infant. For example the infant has not cut teeth, which is one of the most important instruments in sound production. Let's imagine that we have dentures and we take them out of our mouth to clean them. As we try to speak with no teeth, the uttered speech becomes incomprehensible.
Figure 2 The difference between fully grown vocal tract and infant's vocal tract

Figure 2 shows the differences between the vocal tracts of an adult and an infant. The vocal tract looks more like non-human species rather than an adult human being. The infant’s vocal tract is much shorter due to high placement of the larynx. Therefore, the velum and the epiglottis nearly touch each other. There is a little room for the tongue because the pharyngeal cavity is rather short (Fletcher & MacWhinney 1996, 307; Vihman, 1996, 105). As the child matures, the hard palate (H) seems to move up, as the child grows older, the tongue (T) stays in play but moves further in to the pharynx. The Jaw (J) becomes much larger and the soft palate (S) move up but maintains its size, approximately. The gap between epiglottis (E) and glottis (G) becomes much larger.

Bardies described (1969) a research on 4 to 12 months infants. The first month of the infant’s life speech is not the infant’s language, they communicate by crying and sucking, which is an innate behavior of infants. This innate behavior is performed through the mouth just like language (p. 15). When a child begins to produce sounds there starts a specific progress. Air flows from the lungs to the trachea and larynx, when the air proceeds into the oral cavity it constricts, in addition, forms a noise source in the throat (Akmajian, Demers & Harnish, 1984, 101).
The vocal tract undergoes extreme changes during the first six months of the infant’s life although the transformation is not fully completed by the age of one. Sadly, there is limited data available on speech production (Fletcher & MacWhinney, 1996, 308). Research and findings indicate that maturation of the speech organs undergoes extreme changes in a short period of time. The speech organs are not fully matured when infant enter the world. Perhaps they need to be tested with interaction with people. When an infant is born most of the inner organs are fully developed except the speech organs. This statement cannot be ignored because there must be some reason for our inability to speak when we are born. Our heart, lungs, hearing, vision and etc. are fully developed after full pregnancy. Why are our speech organs not fully matured if other systems are fully matured. On the other hand, now that I have introduced the biological concepts in terms of speech, I shall introduce the biological theory of speech acquisition.
3 Linguistic Nativism

Noam Chomsky, an American linguist and a major figure in analytic philosophy supports the nativist view. In fact, he is an innatist theorist and the creator of the universal grammar theory. He was born in Philadelphia on December 7, 1928. In 1945 he entered the University of Pennsylvania and finished his MA thesis on Morphophonemics of Modern Hebrew in 1951. In the years 1951 to 1955 he completed his PhD dissertation from Harvard University, where he was a Junior Fellow of the Harvard University Society of Fellows (Stafforini, 2003). He received a faculty position at Massachusetts Institute of Technology and has been teaching there ever since he graduated from Harvard University. Through the years he has been appointed many positions concerning linguistics sciences. His interest in linguistics and psychology made him establish a new relationship between psychology and linguistics. His goal was to explain the relationship between the phonological system which can be defined as the set of sound distinctions that native speaker uses to express differences of meaning, and the system of labeling which is the term when describing someone or something in a word or a short phrase. To reach this goal, in Chomsky’s opinion, he had to examine three factors, which were the factor of syntax, the phonological factor and the factor of labeling. Chomsky emphasizes on syntax and published his first book in linguistics, “Syntactic Structures” in 1957, where he investigates syntax and introduces the first ideas of the language acquisition device.

In the past fifty years, scholars have made major improvements in almost every field of science. The main factor of these improvements is the major technology that allows us to explore these fields even more exhaustively. The Oxford dictionary defines nativism as “the theory that concepts, mental capabilities and mental structures are innate rather than acquired by learning” (nativism, n.d). The concepts of the linguistic nativist theory consist in that acquisition is innately determined. According to Margolis and Laurence (2013), nativism is a powerful theory for understanding the human mind, and it offers a very effective general border for future study of the mind. In the recent years, nativists have been efficient in research, in order to demonstrate that the nativist approach represents findings in our capacity for natural language (p. 715). The main argument for linguistic nativism is the language acquisition device, Universal Grammar and the Poverty of Stimulus, which will all be explained in more details later on.
3.1 Language acquisition device (LAD)

Noam Chomsky (1975) claims: I will consider a language to be a set (finite or infinite) of sentences, each finite in length and constructed out of a finite set of elements. All natural languages in their spoken or written form are language in this sense, since each natural language has a finite number of phonemes (or letters in its alphabet) and each sentence is representable as a finite sequence of these phonemes (or letters), though there are infinitely many sentences. Similarly, the set of ‘sentences’ of some formalized system of mathematics can be considered a language (p. 2).

The aim of analyzing language is to separate the grammatical contexts from ungrammatical contexts in order to examine the structure of syntax. The innatist perspective emphasizes on the child’s syntax and the process of acquisition, which includes hypothesis testing and creative construction of syntactic rules by using language acquisition device (LAD). According to Chomsky, “suppose that we have a machine that can be in any one of a finite number of different internal states, and suppose that this machine switches from one state to another by producing a certain symbol” (Chomsky, 1975, 19). LAD is the specific, genetic program of humans, which allows them to learn and use the language, regardless of the degree of difficulty of the language (Lara & Perez, 2014). The strongest claim that supports the relationship between the language acquisition device and ordinary grammar is that the device must extend mechanical and practical methods for the input of the utterance, which constructs the grammar in other words. Chomsky represents a theory that he compares to a machine that has input and the grammar is the output, which he calls a discovery procedure (Chomsky, 1975, 51). Further, he hypothesizes that every child is born with a hard-wired LAD, so they are born with an understanding of the rules of a language; they simply need to acquire the vocabulary. The role of the child is to be equipped with biological LAD, so the child plays a major role in acquisition. However, the language used by the society merely triggers LAD (Boyle & Peregoy, 51). Children need to have access to samples of a natural language to activate the device. Once the language acquisition device is activated, children discover the structure of the language to be learned. They discover it by matching the innate
knowledge of universal grammar to the structures of the particular language in the environment. Chomsky describes the child’s mind as a black box and what happens in this black box will not be examined. In all, the language acquisition device must exist to help children to acquire language.

3.2 Universal Grammar (UG)

Chomsky later expanded his idea of the language acquisition device into universal grammar (UG). Chomsky (1979) claims “we may think of universal grammar as the system of principles which characterizes the class of possible grammars by specifying how particular grammars are organized, how they different rules of these components are constructed, how they interact and so on” (p. 180). The gap between the positive evidence that a child is exposed to (input) and the linguistic system that the child finally constructs is far too extensive for children to comprehend without innate knowledge (Goodluck, 1991, 3). Chomsky (1980) claims that Universal grammar is “properties of human biological endowment” (p. 28). According to Chomsky (1980) universal grammar “conceived as a study of the biologically necessary properties of human language (if such exist) is strictly a part of science” (p. 29). This biological property is referred to as the Universal grammar. The universal grammar theory suggests that some rules of grammar are hard-wired into the brain, and manifest without being taught (Lara & Perez, 2014). According to Chomsky the goal of the Universal grammar is to establish accurately the nature of the segments of the grammar including their interaction. He stresses that universal grammar is not a grammar; it is a theory of how humans acquire grammar to structuralize a particular language (Chomsky, 1979).

According to Chomsky (1988) “The theory of UG must meet two obvious conditions. On the one hand, it must be compatible with the diversity of existing (indeed, possible) grammars. At the same time, UG must be sufficiently constrained and restrictive in the options it permits so as to account for the fact that each of these grammars develops in the mind on basis of quite limited evidence” (p. 3).
Universal grammar (UG) has a principle to constrain the space between various languages. Specific rules and representation authorize for limited parametric variation. The principles of the parameters in terms of universal grammar can be ascribed to the initial stage. These parameters help the child to locate the specific grammars of the language that the child is exposed to. Chomsky (1979) explains, “The task of the child learning a language is to choose from among the grammars provided by the principles of universal grammar that grammar which is compatible with the limited and imperfect data presented to him” (p. 180). Moreover, Hamann (n.d.) claims that we have “to think of UG as a set of principles, common to all languages, and a set of parameters which are set differently in different languages and will be set by exposure to the relevant input” (p. 9). This means that the child will have to select the parameters that they will conduct towards the input that they acquire, whether it is English, Icelandic or Japanese. There are several arguments that support Chomsky’s theory of language acquisition.
4 Arguments that support Chomsky’s theory

4.1 Poverty of stimulus

Chomsky demonstrates that the structure of grammar and knowledge of language acquisition is not a step-by-step process (Chomsky, 1966, 57; Chomsky, 1979, 180). A child acquires its native speech by listening and speaking to parents, siblings and the people around them, this term is referred to as input. However, the output is basically the speech production of the individual. There are various factors that Chomsky uses to support his theory of language acquisition. To begin with, the main reason that supports Chomsky’s theory is the Poverty of Stimulus. Since children can acquire any language and all languages are equally acquirable, children must have the universal linguistic knowledge to begin with. Carruthers, Laurence and Stich (2007) explain the argument in quite a simple way. Children acquire syntactic knowledge, either with general purpose learning device or with the aid of innate knowledge. The problem is that children lack stimuli to provide them the data with which they could learn the syntactic knowledge by general learning methods. Therefore, syntactic knowledge is not learnt by general learning methods, instead children are believed to acquire syntactic knowledge by innate knowledge (2007, 94). The goal of Poverty of Stimulus is “…to identify phenomena that reveal innate contributions to linguistic knowledge, in a way that helps characterize those contributions” (Berwick et al., 2011, 1210). The Poverty of the Stimulus is not thought of to be a replacement for Universal Grammar, in fact it is an argument to strengthen the existence of the Universal Grammar. For the poverty of the stimulus to compute there are three factors that Chomsky focuses on. First, there are patterns in all languages that cannot be learned solely by positive evidence. Children acquire language from the input from the environment; these inputs can provide positive or negative data. The positive data tells the child that the syntax is acceptable and the negative data tells that the syntax of the child is unacceptable (Marcus, 1993). Poverty of the stimulus argument focuses much more on the negative evidence rather than the positive ones. According to Chomsky the input is finite and the output is potentially infinite. Second, children never hear the negative evidence because they always hear humans speak in the correct way. Third, children do learn the correct grammar of their native language. These points are the presumption for the poverty of the stimulus argument. Children know which structures are ungrammatical and do not acquire them over general
grammar in spite of the fact that they are not exposed to negative evidence. In the book “Introduction to psychology” there is given a good example of a child being corrected

CHILD: Nobody don’t like me.
MOTHER: No, say, ‘nobody likes me’.
CHILD: Nobody don’t like me.
Mother: No, now listen carefully; say ‘nobody likes me’.
Child: Oh! Nobody don’t likes me.

(Hoeksema et al, 2009).

By this example it seems that it is not the negative evidence that guides children to change the grammar, rather it’s the child’s innate ability to construct sentences (Marcus, 1993). Parents and other individuals that associate with the child might correct their children but they often ignore these corrections.

4.2 Uniformity

Children’s language development follows a similar pattern across cultures, races and general intelligence. However, they generally acquire language skills quickly and effortlessly. Hamann (n.d.) claims “Children acquire language without explicit teaching, on the basis of positive evidence, in a limited amount of time and under varying circumstances and in identical ways across different languages” (p. 2). Children come into the world able to discriminate between different sounds that correspond to different phonemes in any language (Hoeksema, Frederickson & Wagenaar, 2009, 326). Even though different societies speak different languages, we have similar levels of complexity and details; in fact, all languages have the general abstract properties in common. All languages have certain systems of units, which contain rules for combining these units in different ways (Akmajia, Demers & Harnish, 1984). In addition, all children go through the same stages when acquiring first language, whether they are deaf, blind or perfectly healthy. The stages of language development occur at about the same ages in most children, even though children’s experiences vary because of different environments. Language acquisition is considered to develop through five different stages. From birth the child comprehends different sounds and can distinguish between them. They can even distinguish between sounds in foreign languages (O’Grady, 2011, 361; Fletcher &
One-month-old infant can discriminate between open from closed vowels and separation between front and back vowels. When infants reach the age of two months they discriminate between pitch changes, in other words, the rise and the fall on vowels and voice changes of speakers. These categorical discriminations of vocalizations are considered to strengthen Chomsky’s ideas of infant’s innate ability of speech acquisition (Clark, 2003, 56). From the age 0-2 months the child performs differentiating cries. The infant uses a different cry in different situations, when it’s hungry, needs to pee or poop and when it is ill. This is often called the reflexive vocalization. After this stage the child begins to show expressions of comfort, like cooing and laughter. In fact, after approximately 3 months of age the frequency of crying wears off and vowels become more diverse. In fact, infant around six months old can distinguish between vowels that have difference in syllables (Clark, 2003, 56). When the child is 4-7 months old the vocalization is from gurgling to babbling. At this stage the sounds that the child produces are quite free but later on when children begin to master their native language they learn a set of rules that fit their native language. They produce a string of consonant-vowel syllables such as mama or dada (Vihman, 1996, 103). In the third stage, which is referred to as the one word stage, when the child is 10-18 months, the first actual words seem to develop. Children begin to produce sequences of single words such as “spoon” when child picks up a spoon when eating (Clark, 153). After few months the child produces two word utterances. The two-word stage Children continue to acquire complex grammar in the following months of the language development as they reach the telegraphic stage. There are multiple common errors in pronunciation, which affect children in the second and third year. At the age of 2 ½ year old children tend to ask a lot about objects around them. They begin to use “me” about themselves. They also begin to use prepositions, plurals and Wh-questions and interpretation of sentence structure emerge. Around the age of two children can indicate their needs and wishes, they seem to imitate a lot input which they here from the environment (Sigurðardóttir, n.d.). Around the age of three children begin to develop figures and colors, they can also acknowledge their age, sex and name. At this stage the child can engage in simple conversations and frequency of wh-questions increases. Children at this stage enjoy sets of stanzas and recitations to be read out loud for them and signing with them. Around the age of four the vocabulary and wh-questions increase extremely. Around the age of five the
vocabulary seems to defecate, the sentences begin to be more complex and control over complex sentences emerges. Pronunciation is rather normal, communication seems to be effortless and the speech has become their tool to comprehend, sense and express their environment (Sigurðardóttir, n.d.).

While there seem to be stages of language development there is also another factor for language acquisition that seems to be innate. This is the idea that there is a particular sensitive period, which allows us to develop the language in the way that we do.

4.3 The Critical Period Hypothesis

The third evidence that supports Chomsky’s theory of language acquisition is called the critical period. O’Grady (2011) claims that “One of the most intriguing issues in the study of language acquisition has to do with the possibility that normal linguistic development is possible only if children are exposed to language during a particular time frame” (p. 389). This period refers to the ability to acquire language in a particular age and in a particular time period. Lenneberg suggested that this period is between ages 3 to 10 and that after puberty children have more difficulty learning a language. Lenneberg supports his idea of critical period with two examples first, brain injuries and aphasias in children and second, from feral or isolated children (Clark, 2009, 363).

Lenneberg (1967) gathered data from recovery of aphasic symptoms in children aged 1 to 18 year old adolescent. According to these data children between age of three and four recovered from the aphasia in a several weeks. Children between four and ten had no challenges acquiring new and complex vocabulary. However, children with aphasias developed during puberty had more difficulties searching for words, engage in a conversation or finding the appropriate utterance to express themselves (Lenneberg, 1967, 150). To summarize, very young children are able to learn language after aphasias produced by massive left-hemisphere trauma, whereas aphasia in older children are in most cases not fully recoverable.

Another major fact that rationalizes the critical period hypothesis are these so called wild-children, or children who grow up with no or little exposure to human language. In most cases, these children have been isolated from the society from birth and have extreme difficulties learning to speak. There are various examples of children that have been isolated for many years, which have impaired their language development. The most famous one is Genie, which was kept locked up for 11 years
and grew up under extremely poor conditions. She was found when she was 13 years old and by that age she had a very poor vocabulary, about 20 words. One year after her escape, her language knowledge was comparable to a one and a half year old child. She could produce two or three word sentences and distinguish between positive and negative sentences. Four years later Genie was still trapped at the same stage and her language abilities were limited, especially regarding syntax (Nolen-Hoeksema, 329).

The third example supporting the existence of the critical period are studies on deaf children who master the American Sign Language (ASL) (Newport & Singleton, 2004; Nolen-Hoeksema, 2009, 329). Research shows that deaf people can use American Sign Language more effectively if they learn it at an early age. Newport and Singleton (1994) performed a study on a seven-year-old deaf boy called Simon, who had deaf parents so they were his only source of input to the American Sign Language. His parents did not learn the American Sign Language until after puberty. The main point for their research showed that Simon performed better to American Sign Language than his parents. His early exposure to American Sign Language was more effective than the late exposure of his parents (Newport and Singleton, 1994). These three evidences that have been divulged indicate that there must be a critical period in early childhood.

4.4 Species significance

Even though apes, birds, dolphins and honeybees have some rudimentary communication system, the human species is the only species that has actual language abilities (Clark, A.S., 2001; Akmajian, Demers & Harnish, 1984). Chomsky also believes that our innate capacity to learn a language is unique to our species. He admits that other species have communicational skills but he argues that this skill differs from our communicational system (Nolen-Hoeksema, 330). The attempt to teach other species to speak or use sign language does not change this prediction. Other species do not acquire the ability to speak in their natural environment or being in contact with the human being. To claim otherwise is claiming that the difference between jumping and flying is a matter of a difference in degree. If that would be the case it should be possible to teach humans to fly (Cook, 1988). There has been some research on primates learning of language and they can comprehend signals of other species (Akmajian, Demers & Harnish, 1984, 39). They lack the capacity for a more
productive system. They do not have the several levels of language development like humans do (Nolen-Hoeksema, 330). However, the main difference is that animals especially monkeys are taught to speak but the children learn to speak by themselves. Animals can learn a single utterance to a certain extent, but they will never be fluent because their lack of language ability.

4.5 Phonological impairment

The last evidence that supports Chomsky’s theory is the fact that language acquisition is independent of children with phonological impairment. Research show that 7% of all five years old children suffer from some kind of specific speech impairment. If we count in children that are diagnosed at a later age, the percentage rises to 10%. Children can range from mental retardation to children with hearing difficulties. It is quite common that large group of children with phonological impairments also have difficulties with morphology, syntax and lexicons (Fletcher & Mac). About 60% of children with phonological impairment suffer from pronunciation deficits at an early age (Þórðardóttir, 2016). Children with phonological impairment are more likely to make more frequent errors and choose the wrong words rather than normal children, especially young children (Þórðardóttir, 2016). This is the main difference between children with phonological impairment and normal children. Deaf children vocalize as a hearing infant until five or six months old, after this age their vocalization begins to compromise. Although the physical gesture of deaf children differs from hearing children, their language development maintains the same (Bardies)

Children that suffer from phonological impairment tend to produce errors that are usually phonemes, which are (576). Around the age of three many children begin to show signs of stutter, but that is considered normal in most cases because the child does not have complete control over their speech. Meier (1991) did a research on language acquisition by deaf children that grew up with deaf parents. Their study showed that deaf children that used the American sign language showed first signs of vocabulary when child was around one year, same as hearing children. The word order was reliable at the two-word stage by both deaf and hearing children. The morphology begins to emerge at age of 2½ by both groups. Deaf children and hearing children acquire similar proficiency regardless whether children attain spoken language or sign language.
Lenneberg, Nichols and Rosenberger (1964) did a study on 54 children with Down syndrome over a three-year period. The study conclusion showed that 75% of children with Down syndrome had reached the one word stage. Children with Down syndrome go through all the same developmental stages that normal children go through. Of course they have more difficulty with comprehension of grammar and syntax but they can acquire language as every human being (Lenneberg, Nichols and Rosenberger, 1964). To sum up, children does not have to be highly intelligent to acquire language, which implies that the ability has to be innate.

These five arguments show that there are significant reasons to establish that factors of our language development are partly biologically innate. The poverty of the stimulus, the critical period and uniformity are the most solid arguments that support Chomsky’s theory of language acquisition. It is extremely difficult to deny the hypothesis that language acquisition is partly innate ability. Of course scientists cannot hypothesize such a major matter without receiving criticism. Multiple scholars have criticized Noam Chomsky theory, Christina Behme, Hélène Deacon (2008), Tomasello (2009), Christiansen and Chater (2008) and Evans and Levinson (2010) have criticized Chomsky’s theory of language acquisition.
5 Arguments against Chomsky’s theory

The Critics of Chomsky’s theory claim that although it is clear that children do not learn language by imitation alone, this does not prove they must have an innate ability to acquire language. The primary reason why linguistics criticizes Chomsky’s theory of language acquisition is because the theory ignores both sociological and psychological approaches. Chomsky’s theory has been criticized by a number of scientific directions such as cognitive neuroscience and experimental psychology (Behme & Deacon, 2008). Findings in neurosciences have been noticeable throughout the decades and there have been major improvements in that field. The technology gives us access to explore the human brain further. Christina Behme and Hélène Deacon (2008) claim that there is empirical evidence that complex language learning begins early in infancy. This casts doubt on the Poverty of the Stimulus Argument. Infants receive input when they are in uterus and they do take advantage of this input quickly. Research show that fetuses begin to respond to sounds at 22 to 24 week of pregnancy (Behme & Deacon, 2008). So, the research shows that fetuses begin to acquire sounds and syllables before they come into the world. As a result they will get 16-18 weeks to distinguish between sounds and recognize their native language (or their mother language) long before they are born.

According to Michael Tomasello (2009) linguists must abandon the idea of innate universal grammar. He proposes three different reasons that support his statement. First of all he claims that English grammar was forced into the structure of Latin grammar. Second, the so called wh-movement in English language, which always comes first no matter what subject is being questioned. The question “What did John eat” is the typical wh-movement in English and many other European languages, which moves the thing that is being eaten to the beginning of the sentence. This structure is in fact not always in all language of the world. Many languages are formed by substituting the wh-word but have no movement, as in “John ate what”? Third, some languages do not seem to have any recursion structures and these structures cannot be seen on the surface. Tomasello (2009) emphasis on that linguistics abandons the theory of universal grammar. Instead he wants linguistics to build new theories that emphasizes on diversity of linguistic universals and how they emerge.
Christiansen and Chater (2008) claim that the Universal grammar “is subject to a logical problem of language evolution” (p. 508). They believe that Universal grammar is in conflict with biology and that the brain shapes the language (Hinzen, 2012, 636).

Evans and Levinson (2010) claim that “… UG is an unfortunate misnomer, because there is nothing essentially grammatical about the capacities an infant uses to acquire language” (p. 2742). They believe that there is no existence of linguistic universals. “UG is refuted by abundant variation at all levels of linguistic organization, which lies at the heart of human faculty of language” (Hinzen, 2012, 636).

Tomasello (2009), Christiansen and Chater (2008) and Evans and Levinson (2010) agree that there is no biological specific to language. These scholars clearly disagree with Chomsky and his proponents on the existence of the Chomsky’s biological theory of language acquisition. However, scholars cannot reject the fact that language acquisition and speech development is acquired by innate biological gestures. There are too many studies that support Chomsky’s theory of language acquisition such as Lenneberg (1967) and Meier (1991). It is not debatable that he is the most influential linguist of all time. The innate capability of the human species must be examined further in the nearest future. I believe that modern linguists are focusing more on cognitive approaches and neurocognitive sciences to getting a step further to the function of language acquisition.
6 Conclusion

There is no doubt that language acquisition is biological in nature. The five arguments imply that the human species ability to acquire language is innate. The main language productions areas in the brain are Broca’s area and Wernicke’s area. Thickness of cortex also seems play a specific role in language production. Research shows that biological findings shed a light on further knowledge on Broca’s area, Wernicke’s area and cortical thickness of the brain. The basis of language production is the organs of speech, which plays a key role in language production. There is an enormous difference on the structure of speech organs of infants and adults. These organs are not fully matured when an infant enters the world and undergoes major changes in an extremely short time. The fact that children acquire language in such a short time conduces that there must be an innate knowledge involved. The nativist theory claims that the language knowledge is innate. Language acquisition device (LAD) and Universal Grammar (UG) support the theory including empirical arguments. The main argument, which supports these two concepts, is the Poverty of the Stimulus. The second argument that supports the theory is that children go through the same stages of language development regardless to race, culture or intelligence. Studies showed that the Critical Period Hypothesis is also an important factor in the progress of language acquisition. Another factor that is also crucial in the progress is that we, human species are the only ones that have the ability to acquire language although other species can communicate among each other. Children diagnosed with phonological impairments go through the same language developmental stages as normal children; only they go through them in a slower pace. Critics want to abandon Chomsky’s theory because Findings clearly show that scholars approach the mystery of language acquisition further with every decade.
References


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