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The Critical Period Hypothesis on English Pronunciation of Adults

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RESUMEN

Considerando la creencia de que los niños superan las habilidades de los adultos cuando intentan aprender la pronunciación de un idioma, muchos autores alegan la existencia de un período crítico para dominarlo. Los investigadores aseguran que la hipótesis del período crítico (CPH) propone una posición persuasiva hacia la relación entre la edad y el aprendizaje de idiomas. Este estudio explora la influencia de la CPH en el aprendizaje de la pronunciación en inglés e identifica las diferencias entre niños y adultos cuando aprenden dicha habilidad. Los resultados de veintisiete estudios de investigación se examinaron a fondo para sugerir que hay cinco variables principales, aparte de la edad, que deberían analizarse para comprender completamente en qué medida la edad afecta el proceso de aprendizaje de la pronunciación en inglés. Estas variables son: motivación, género, relación entre la primera y segunda lengua, inmersión lingüística en entornos de la segunda lengua y entorno de aprendizaje. Así mismo, estas variables demuestran que los estudiantes jóvenes superan a los adultos debido a las habilidades cognitivas, mientras que los adultos muestran que los aspectos motivacionales pueden contribuir al desarrollo de la pronunciación en un segundo idioma.

Palabras claves: Hipótesis del período crítico. Pronunciación en inglés. Edad para el desarrollo del lenguaje. Motivación. Segundo idioma.



ABSTRACT

Considering the assumption that young learners surpass adults' abilities when attempting to learn the pronunciation of a language, many authors allege the existence of a critical period to master a language. Researchers assure that the Critical Period Hypothesis (CPH) proposes a persuading position towards the relationship between age and language learning. In this context, this study explores the influence of the CPH on the learning of English pronunciation, and identifies the differences between children and adults when learning such skill. The findings of twenty-seven research studies were thoroughly examined to suggest that there are five main variables aside from age that should be analyzed in order to fully understand the extent to which age impacts the learning process of English pronunciation. These variables are: motivation, gender, relationship between L1 and L2, language immersion in L2 environments and learning setting. In addition, these variables demonstrate that young learners outperform adults due to cognitive abilities while adults show that motivational aspects may contribute to the development of pronunciation in a second language.

Key words: Critical Period Hypothesis. English pronunciation. Age for language development. Motivation. Second language.



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DEDICATION

Dedicated to God, who has always been by my side.

To my family who has been the source of my inspiration to overcome any difficult situation.

To my three best friends, who are always there when times get hard.

Without all your support, motivation and love, this research could not have been completed.



INTRODUCTION

Decades of investigation in the realm of language learning have postulated multiple theories and assumptions that attempt to explain how individuals become capable of mastering the four skills of a certain language. Without a doubt, the fact that adults frequently experience failure when trying to learn such skills, and young learners outperform adults' abilities raise the question of whether or not a critical or sensitive period exists for language learning. Researchers' efforts at determining if maturational effects influence language learning have led them to propose the Critical Period Hypothesis which has not only involved the language per se, but also different linguistic aspects, including pronunciation.

The complexity of the CPH and the ambiguous results obtained in the past have triggered a debate of opinions in relation to the authenticity of this theory. While some studies make continual endeavors to confirm the existence of a claimed period for language development, other studies emphasize the weaknesses of the Critical Period Hypothesis. Consequently, in order to contribute to the debate and to achieve the main purpose of this research synthesis, twenty-seven primary sources were analyzed. A general discussion of this literature provides a deeper understanding of two overarching questions: to what degree does age influence the learning of pronunciation? and what are the differences between young learners' and adults' pronunciation?



CHAPTER I

Description of the Research

1.1. Background

Learning a new language may be a difficult task that may require a lot of time of practice for its acquisition. Throughout the years, multiple investigations and hypotheses have been developed in order to understand the process of learning either a first or a second language. As suggested by many authors, including Flege (1987), the results of many of these experiments have supported the popular belief that the earlier individuals begin to learn a foreign language, the better their understanding and pronunciation will be. Therefore, according to Lenneberg (1967), this assumption demonstrates the existence of a specific time in which individuals are predisposed to internalize and learn a new language. This specific length of time is called the Critical Period Hypothesis (CPH). According to this hypothesis, this period does not allow complete proficiency of a language when the learner is first exposed to the language after puberty.

Starting from the observation that emphasizes the differences between the outcome of second language acquisition in adults and the outcome of first language acquisition developed in children, the Critical Period Hypothesis provides a potential explanation of age effects on language learning. It remarks that the ability of learning a language seems to be limited after a certain age (Fathman, 1975). For this reason, adults who attempt to learn English or a specific skill of the language may find this goal laborious and hopeless. Even though vast literature and research has been developed regarding this hypothesis (Birdsong 2006, Doupe & Kuhl 1999, Harley & Wang 1997, Lenneberg 1967, Long 1990, Newport, Bavelier &



Neville 2001, Singleton & Lengyel 1995), there is little analysis towards English pronunciation and the differences between adults and children who aim to develop this skill.

1.2. Problem Statement

The Critical Period Hypothesis has been object of study for many years. It was originally proposed in the neurolinguistic literature by Penfield and Roberts (1959) and vigorously followed up by Lenneberg (1967), who referred to the CPH as a “sensitive” time for language. Similarly, Fathman (1975) demonstrates that there is a specific period of time in which learners are more capable of acquiring features of a certain language. However, other authors (Snow & Hoefnagel-Höhle, 1978) do not share this perspective towards the CPH. This discussion and the continuous questioning about language learning process has encouraged many researchers to focus their attention on the relationship between the development of English skills and the Critical Period Hypothesis. For this reason, analyzing the development of a language, and specifically how pronunciation develops, becomes pivotal to understand to what degree the Critical Period Hypothesis influences this process and to what extent other factors interact. Therefore, the purpose of this study is the meta-analysis of the results of primary investigations which examine the Critical Period Hypothesis and pronunciation either in a foreign or a second language.

Since there is a lack of inquiry into the connection of English pronunciation and the CPH, this research synthesis attempts to identify to which extent age influences the acquisition of pronunciation and determines the differences in learning such skill between young learners and adults.



1.3. Justification

Decades of investigation have concluded that there is a gradual decrease in the learning of language skills, decline that takes place between the period of reaching adulthood and the stabilization of language learning skills at a low but fluctuating level of performance (Johnson & Newport, 1989). According to Pallier (2007), it is highly relevant to determine the meaning and conceptualization of the Critical Period Hypothesis, but it is also important to stress its two different meanings. The first meaning involves an empirical hypothesis in which individuals excel at language learning in their first years of life. In this case, the CPH acts as a predictor of ultimate proficiency. On the other hand, this theory also points out that age-related features decline in neural plasticity, and it is the cause for increasing difficulties in language learning (Penfield & Roberts 1959.) Consequently, the CPH has been linked directly to age and learning, which is the focus of this investigation.

According to Flege (1987), the Critical Period Hypothesis focuses on the development of language skills and states two important stages concerning the pronunciation of foreign languages from early childhood to puberty. First, in order to have an entirely effective outcome and proficiency, speech instruction and acquisition must occur before lateralization, which refers to the period of localization of functions to either the left or right hemisphere of the brain. For instance, language takes place in the left hemisphere while the perception of visual and spatial relationships takes place in the right hemisphere. Second, speech learning that takes place after the Critical Period will proceed more slowly, and ultimately be less successful than learning the skill before the critical period has ended.

Subsequently, according to Cochrane and Sachis (1979), there is a belief that adults who learn new languages typically retain foreign accents, whereas children do not. This conception indicates that there are processes and features that differentiate the learning and



use of knowledge between individuals whose ages differ. This was verified in similar studies (Asher and Garcia 1969, Oyama 1973, Fathman, 1975) in which experts rated individuals who had learned English before puberty as less accented than those who had begun their learning as adults. Research suggests that there are differences in the way learners from different ages learn a language and specifically its pronunciation. However, there is no complete agreement regarding the source of these differences.

Therefore, the purpose of this research synthesis is to analyze what the literature discussed in different periods of time suggests about the role of age in language acquisition specifically how pronunciation develops, and to what extent other factors influence such development.

1.4. Research Questions

Given the assumption that there is a connection between age and learning, this research synthesis aims at providing a deeper understanding of the Critical Period Hypothesis and the relationship between age and pronunciation, considering other factors that may influence this relationship. Hence, these two research questions aim to be answered: (1) To what extent does age influence the learning of English pronunciation? (2) What are the differences between young learners' and adults' pronunciation?



CHAPTER II

Theoretical Framework

2.1. Introduction

The following section encompasses the discussion of a series of concepts necessary to analyze the Critical Period Hypothesis and its influence on pronunciation. The section (a) makes a distinction between the concepts of second and foreign language; (b) describes the cognitive foundations of the Critical Period Hypothesis; (c) establishes the differences between language learning and acquisition; and (d) defines speaking and pronunciation.

2.2. Second Language and Foreign Language

Before introducing the Critical Period Hypothesis and the terms that will be crucial for this research synthesis, a distinction between Second and Foreign Language is established. Both terms are commonly used interchangeably without acknowledging the environment where they are developed and the individuals involved.

Second Language (SL), is considered as a non-native language which has been officially accepted and incorporated in a multilingual country with the purpose of public communication such as trade, higher education, and administration. (Collins Dictionary, 2019). English as a Second Language involves the use of the language in a multilingual country with the goal of communication. On the other hand, English as a Foreign Language (EFL) refers to the language that is taught to people who are speakers of a language other than English, and who live in a country where English is not the official language



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(Cambridge, 2019). Considering that the literature available on CPH and its connection to age and learning does not only focus on the learning of English, either as a second or foreign language, for the purpose of this research synthesis, the author of this paper will use the term Language Learning (LL) to refer to any of the following situations: Second language acquisition or Foreign language learning regardless of its purposes or circumstances, since both terms are believed to follow underlying similar learning processes (Marsden, Mitchell & Myles, 2013)

2.3. What is a Critical Period or Sensitive Period?

In order to provide a clear and understandable definition of Critical Period, the author of this research has considered convenient to compile information provided by Maria Montessori, whose relevance in education and philosophy of education keeps influencing current learning processes in some way. Montessori was the pioneer of a method that bears her own name, which yields guidelines that help teachers understand children's development and needs. In like manner, The Montessori Method analyzes human behavior as influenced by universal or innate features and the child willingness to learn. These are the reasons why Montessori has been selected to take part of this research study.

Maria Montessori (1959) discovered different stages that describe children's learning development. These stages or "sensitive periods" are windows of opportunity during which children are especially susceptible to acquiring certain skills. They take place prior to the completion of the process of lateralization, which is the assignation of certain functions to the different hemispheres of the brain (Celce-Murcia, Brinton & Goodwin, 1996). Therefore, children may be highly amenable to determine learning experiences in a specific period of development. In her book "The Absorbent Mind" (1959), Montessori divided these periods of



growth into three main categories: the first period from 0 to 6 years old; the second from 6 to 12 years old; and the third from 12 to 18 years old. The author asserts that the most important period in which a prominent sponge-like capacity occurs relies on the first period. Indeed, she affirms that the only language that an individual would utterly learn is acquired at this period, when nobody can teach him.

Similarly, Sengpiel (2007) provides an unambiguous definition of Critical Period. He considers this term as an early postnatal time characterized by the development and maturation of functional properties of the brain. During this time, experiences or environmental influences remain a fundamental role on brain's plasticity because they act as stimuli that will enhance and develop given operations. Since there are different brain functions, various critical periods take place after an individual's birth such as binocular vision or language acquisition. However, not all these critical periods last the same amount of time since they are directly influenced by structural changes.

2.4. What is the Critical Period Hypothesis?

According to Celce-Murcia, Brinton and Goodwin (1996), the Critical Period Hypothesis is the biologically decisive period of time during which maximal conditions for language learning occur. Consequently, the CPH claims the existence of an optimal period for language learning in which complete native competence may be achieved, period that ends at puberty (Abello-Contesse, 2009). This suggests that scarce stimuli during this period might end up in an incomplete development of language skills and a notable difficulty when attempting to learn a second language. Similarly, any language learning that takes place after the age of puberty will not be as quick or successful as the first language learning (Snow & Hoefnagel-Höhle, 1978).



2.5. Critical Period Hypothesis' Background

Firstly, The Critical Period Hypothesis was introduced from the biological field by Penfield and Roberts in 1959, who asserted that cortical centers, which are divisions from the cerebral cortex, lose their plasticity – brain's capacity for changing and growing after birth at the age of 9 approximately. Therefore, after that period of time, the brain becomes increasingly rigid for purposes of language learning. Likewise, they claim that when a language learning process starts after the second decade of life, proficiency is complicated to obtain since the process is no longer physiological.

Afterwards, the famous linguist and neurologist Lenneberg (1967), pointed out in his publication “Biological Foundations of Language” that the development of language on children starts at the age of two when individuals have reached 60% of their brain maturity, and it extends until the age of twelve or thirteen, the end of puberty. As Penfield and Roberts affirm, Lenneberg restates that the length of this period of time is linked to brain's plasticity. Also, he connects such term to the lateralization of the brain or the tendency of cognitive processes to have more control on one side of the brain. However, for Lenneberg, the Critical Period does not preclude the possibility of learning a foreign language after puberty, although a more conscious but less successful effort is expected (Vanhove, 2013).

2.6. Language Learning and Acquisition

Language is a universal human ability that children learn with the purpose of sharing ideas, negotiating activities and cooperating with others (Houwer, 2017). In spite of the fact that language learning and acquisition might seem to be identified as similar or equal, their



limits remain unknown. The author of this investigation considers highly convenient to differentiate both terms and to determine a general term to ease the reporting of results.

Oxford (1990) emphasizes the acknowledged contrast that involves the meaning of learning and acquisition. First, she considers *learning* as conscious knowledge of language rules that does not commonly lead to conversational fluency. Learning is derived from formal instruction or education that takes place in a classroom setting with a syllabus. On the contrary, *acquisition* takes place unconsciously and spontaneously, and does lead to conversational fluency. Therefore, *acquisition* emerges from naturalistic language use, whose learning setting occurs outside any formal setting. It is noteworthy that these two aspects are essential for communicative competence, and in any language, there are some elements that are at first conscious and then become unconscious or automatic. Due to these reasons, in this research analysis, the term *learning* is used for referring to both aspects: *learning* and *acquisition*.

2.7. Pronunciation

According to Brown (1987), there are two perspectives regarding the meaning of pronunciation. The first one is called a narrow view which acknowledges this skill as the production of accurate sounds in the correct order. In other words, through this perspective, pronunciation involves the learning of vowels and consonants, concentrating on the production of individual sounds and the motor skills that are in charge of producing them. The second perspective is called *broad view* which refers to pronunciation as an essential component of communicative competence. Therefore, it includes all vowels, consonants, and suprasegmental features such as stress and intonation.



2.8. Speaking versus Pronunciation

According to Gilakjani and Ahmadi (2011), it is eminently important to establish differences between the terms *pronunciation* and *speaking* since both are commonly and wrongly used interchangeably. Speaking is defined as “the act or skill of giving a speech at a public event” or “using the stated language” (Cambridge Dictionary, 2019), while pronunciation is defined as “how words are pronounced” (Cambridge Dictionary, 2019). In other words, speaking is a broader term that refers to the ability of combining words and conveying the correct messages by using appropriate language for each situation and environment. On the other hand, pronunciation involves the appropriate use of phonemes, stress, intonation and rhythm during oral communication. Pronunciation includes the capacity of distinguishing words that sound similar and selecting the accurate speaking pattern, pitch and tone. Consequently, Gilakjani and Ahmadi (2011) emphasize the fact that pronunciation is a speaking sub-skill, and it is an integral and crucial part of communication that should be emphasized at the moment of teaching a language.



CHAPTER III

Literature Review

The following section aims to provide an overview of key findings that were analyzed in different research studies. This section synthesizes results in order to highlight new patterns to be analyzed, and subsequently contribute to answer the established research questions for this investigation.

3.1.The Critical Period Hypothesis: Arguments and Counterarguments

3.1.1. Age as a precursor of L2 learning

Many authors have contributed to the Critical Period Hypothesis by comparing and contrasting the linguistic abilities of two different groups, being age the main variable of analysis in participants. The research studies analyzed in this section suggest children's superiority over adults when learning a language. Indeed, the majority of retrieved studies suggest the existence of a critical period for learning a new language (Asher & Gracia, 1969; Fathman, 1975; Cochrane & Sachs, 1979; Williams, 1979; Oyama, 1976; Johnson & Newport, 1989). The information discussed in such studies has contributed significantly to the confirmation of the CPH.

Cochrane and Sachs (1979) allege that even when adults and children are subject to the same type of motivation and exposure to the new linguistic material, children's capacity of imitating new words surpasses that of adults. According to these authors, the results of their research match the CPH, emphasizing that young learners maintain some unique aptitude for phonological acquisition or development.

Similarly, Fathman (1975) states that the ability to acquire certain features of a second language may be age-related (e.g. pronunciation) and others remain independent (e.g. order



of acquisition). The study that Fathman conducted involves 200 participants whose ages ranged from 6 to 15. Young children between the ages of 6 to 10 years old demonstrated higher scores in English Pronunciation, which suggests that preteen children are more likely to succeed at learning the phonology of a new language. Furthermore, the author claims that such reasons may be related to maturational and physiological factors that are developed during preteen years and puberty. Fathman assures that such period of time is characterized by the ability to discriminate, interpret or imitate sounds. After puberty, native-like pronunciation is more difficult to develop; however, some processes such as learning rules, making generalizations or memorizing patterns might be easier for adults.

Likewise, Abrahamsson (2012) emphasizes the importance of learning a language during the early years. He affirms that native-like intuitions of both grammatical and phonetic aspects cease to occur at age 13, claiming that the probability of developing the grammar and phonetics that characterize a native speaker is greater when individuals initiate the learning process of a second language before the age of 6 years old. He also identifies the way children learn the language in comparison with adults. First, the author recognizes that young L2 learners show an ability to develop grammatical and phonetic aspects simultaneously whereas adults lack such capacity. Therefore, Abrahamsson suggests that children learn a language unconsciously, incidentally, and implicitly, while late learners' approach to language development occurs through a more conscious, intentional, and explicit process.

Saito (2015) highlights the importance of experience when learning a language. After analyzing eighty-eight young Japanese learners of English, Saito suggests that pupils who are more in touch with oral ability possess a higher level of phonological, temporal, lexical and grammatical qualities. Saito's research can be categorized into studies that support the Critical Period Hypothesis since he states that the age of acquisition is a predictor of late



learners' L2 oral ability (e.g. accentedness). According to the author, age plays a fundamental role and determines the extent to which individuals can attain advance L2 oral abilities.

3.1.2. The Critical Period Hypothesis Counterarguments

One of the most contradictory cases regarding the Critical Period Hypothesis might be the one of Genie Wiley. Genie was found when she was 13 years old. The girl was noticed to be emotionally disturbed, unlearned and without language. Authorities revealed that Genie had spent most of her life confined to a small room, frequently tied to a potty chair suffering social restriction, nutritional neglect, and extreme experiential deprivation. Even though the girl presented metabolic disorders and an acute illness, she did not present any evidence of neurological disease.

According to Fromkin, Krashen, Curtiss, Rigler and Rigler (1974), the case of Genie is outstanding since the inadequate language stimulation that she experienced in the past did not affect her ability to develop language, even when this language was reached in a later period of time. Having in mind the principles of the Critical Period Hypothesis, the left hemisphere of the brain must be linguistically stimulated during the first years of life, so that an individual can develop language within the common boundaries of this process. In the case of Genie, regardless of the fact that she did not have a common language acquisition, she was able to develop other cortical areas to proceed language. However, this language was not developed at an efficient level. These results do not support the Critical Period Hypothesis since they cannot be considered reliable due to the fact that they are based on one single person and no other variables are taken into consideration.

Equivalently, Hartshorne, Tenenbaum and Pinker (2018) claim that in order to provide reliable results about the age of ultimate attainment, which refers to the



outcome or end point of language acquisition, a study should be carried out with at least ten thousand subjects. Therefore, this suggests that the results of previous studies conducted in the past regarding the Critical Period Hypothesis may be dubious. Hartshorne, Tenenbaum and Pinker found no evidence that the top of ultimate attainment reaches at around puberty, but they assure that native-like attainment might be reached if first exposure to the language occurs before the age of 17. One of the reasons for it relies on the amount of time that native and non-native learners require for obtaining a steady performance which is around the age of 30 since many cognitive abilities such as working memory, face recognition and magnitude estimation continue to develop through adolescence and even adulthood.

In a similar way, Muñoz (2011) alleges that the age in which a person starts learning a language is not a predictor of language outcomes. She concludes that the quality of input would be the main predictor of language proficiency rather than age. After comparing the long-term effects of exposure to a second language in 162 participants, Muñoz notices that younger learners no longer had a cognitive advantage over older learners. This implies that age is not a determining factor for learning a second language. Instead, it seems that the quality and quantity of language exposure highly influences language proficiency. This is correlated by the fact that late learners' disadvantage is noticeable because of the lack of massive exposure needed for their implicit learning.

Bongaerts, Mennen and Slik (2000) point out that when it comes to pronunciation, it is plausible for learners whose age has passed the critical period to achieve a native-like accent in a second language. In their study, they conclude that individuals who were more exposed to natural spoken target language input are the most successful learners, and individuals who possess a strong personal and professional interest in achieving a very good



pronunciation are the ones who excel. Hence, they emphasize that the main factor that contributes to language learning is not age but motivation and time of exposure.

Likewise, even though there are studies that partially support the Critical Period Hypothesis, many of them highlight the interference of certain factors that are not related to age, leading research to question the reliability of the hypothesis. Authors like Tahta, Wood and Loewenthal (1981) lay out five variables considered to be relevant: gender, learning setting, language immersion in L2 environments, relationship between L1 and L2 and motivation. The section below compiles meaningful information to support each factor and its relevance towards language learning rather than a CPH point of view.

3.1.2.1 Gender

Among the determining factors for learning a language, Bacon and Finnemann (1992) suggest that learners' gender determines whether language outcomes are successful or unfavorable. The authors emphasize female dominance since (a) women have higher levels of motivation; (b) they use more learning and comprehension strategies; (c) they show willingness to confront; and (d) female learners are more willing to be exposed to authentic input. The authors claim that such characteristics contribute to women's superiority for learning a language, and women themselves engage in situations where the language is used orally. However, the following section also shows other authors' points of view that contribute to the analysis of this variable.

Slik, Hout and Schepens, (2015) analyze the differences between male and female L2 Dutch learners. The results suggest that learners' performance varies according to the language skill and its evaluation technique. For instance, men surpass women on Reading and Listening skills since the tests formats of those skills tend to include multiple choice exercises. On the other hand, Writing and Speaking skills benefit women due to their format



of open questions. Thus, the authors assure that women attitudes towards the new language play a relevant role on language learning, and demonstrate their superiority over male participants. It is assumed that women are more motivated than men in L2 learning and show more positive attitudes toward studying a foreign language and stronger enthusiasm in the target language.

On the other hand, Amiryousefi (2018) deems male EFL learners to be more involved in educational contexts than female EFL learners. Such disadvantage refers to the inequality of opportunities for speaking and interaction in EFL environments due to gender segregation. Amiryousefi alleges that male EFL learners surpass female students' time of communication since male students tend to participate and interact with their English instructors more. Amiryousefi claims that it may be explained by teachers' differential treatment of students by gender. For example, teachers tend to ignore or interrupt female students, have more eye contact with male students, and remember male names.

3.1.2.2. Learning setting

The setting where learning takes place may also be relevant for the development of pronunciation of a Second Language. One of the reasons that supports this assumption is the effects that practice provides on any skill that want to be improved or learned. Even though Krashen and Seliger (1976) found no connection between the use of L2 outside the classroom and L2 performance, Tahta, Wood and Loewenthal's (1981) study suggests that individuals who practice or use the target language outside the classroom are more likely to learn the language successfully.

Ramírez, García and Kuhl (2014) point out the relationship between social characteristics of language input and speech development in children. First, the results emphasize the importance of input quality rather than input quantity, which means that in



order to achieve a proficient pronunciation, children must be surrounded by individuals whose knowledge enhances theirs. Second, Ramírez, García and Kuhl claim that speech development and social environments are directly linked. The authors observed in their investigation that infants, whose interaction is based on practicing sounds exaggeratedly with a single individual, are more likely to learn the target language eventually. Therefore, the results of this research demonstrate that social interaction and environment may influence the development of pronunciation.

3.1.2.3. Language Immersion in L2 environments

Research suggests that there is a connection between the learning of an L2 and the period of time that a learner has spent in an L2 environment (Asher & Garcia, 1969; Oyama, 1976; Tahta, Wood & Loewenthal, 1981). Tahta, Wood and Loewenthal's study (1981) underscores the influence that language immersion has on L2 outcomes. In their study, it was observed that the amount of time that an individual spends in an environment where a second language is spoken has an important influence on the learner's proficiency in that language. In this case, they claim that most people with less than two years of residence have a noticeable foreign accent which with continued practice and exposure to appropriate models may diminish.

In the same way, Flege and Liu (2001) establish a comparison among groups of Chinese adults whose lengths of residence in the United States differ. After analyzing their English pronunciation of stop consonants, knowledge about English morphosyntax and comprehension of the language, they conclude that living in a country where the target L2 is spoken for 5 years is not enough when it comes to the proficiency of these elements. However, their findings suggest that adult learners may perform better in spite of the ending



of their critical period if they are surrounded by the environment that characterizes children who immigrate to North America.

3.1.2.4. Relationship between L1 and L2

The language spoken at home may have an effect on the proficiency of the language to be learned. It is said that a person who speaks in his L2 is more likely to identify himself with his L2 culture; therefore, this will act as a motivator to enhance language skills and proficiency (Tahta, Wood & Loewenthal, 1981).

For instance, Amirousefi (2018) claims that students who pursue an L2 and identify with its culture tend to maintain a positive attitude towards the culture per se, and show ambition to improve their linguistic and communicative skills in order to use the language properly and effectively in the community. Amirousefi suggests that language learning materials and tasks should include cultural aspects of English (e.g. routines, literature, etc.) with the purpose of teaching students how to use the language in different contexts. Amirousefi concludes that the combination of these factors could increase the willingness to communicate and result in improvement of students' L2 speaking.

According to Polyanskaya and Ordin (2019), the differences and similarities between the first language and the target language also influence the learning of a second language. They estimate that if the target and native languages are rhythmically similar, the effect of rhythm on foreign accent will be limited. On the other hand, if the L1 and target languages are rhythmically disparate, then rhythm makes a greater contribution to perceived foreign accent. Also, they point out that there are certain languages that are more challenging than others. Therefore, learning a more stress-timed language, in which stressed syllables are said at regular intervals of time and unstressed syllables in short intervals in order to fit rhythm, presents more difficulty in comparison with a language that is not stress-timed.



3.1.2.5. Motivation

Motivation stimulates and boosts actions, and plays a fundamental role regarding developmental outcomes (e.g. school achievement, performance in other activity areas, and overall mental health) (Weiner, 1992). Consequently, it is not a secret that motivation influences every learning process. The following section details research investigations which aim to demonstrate and highlight the relationship between language learning and motivation.

According to Aslan (2017), motivation may be influential in achieving high levels of attainment in a second language. In his research, he analyses how past learning experiences influence an individual's attitude, perception and motivation towards his L2 phonological attainment. Similarly, Aslan claims that idealized goals and achievement levels of learners play a crucial role when learning a language, and they are influenced by the pedagogical or instructional context in which such process takes place. The author interviewed and analyzed an individual called Alex, who wanted to become an English teacher and accomplished his goal. The results of Aslan's investigation show that Alex's motivation encouraged him to learn the language more enthusiastically than other pupils, making him excel at mastering not only the language grammar but its pronunciation. Consequently, Aslan assures that awareness of phonological diversity and motivation are enhanced by the instructional context and the different attempts and risks learners take throughout their learning process such as reading magazines, watching TV and interacting in the target language.

Amiryousefi (2018) points out that motivation influences language learning enormously, and the main motivational factor that prompts the process is communicative self-confidence or the ability to self-evaluate one's perception towards communicating. Amiryousefi states that students who possess such quality are more willing to include and practice new grammatical structures, and as a result, they remain less worried about making



errors, and they try to involve themselves orally in situations where the language is used.

According to Amiryousefi, communicative self-confidence may increase students' ability to achieve communicative goals, including their desire for communicating appropriately and fluently.

Similarly, Sardegna, Lee and Kusey, (2018) suggest that anxiety is another aspect that may enhance or diminish language learning motivation. They posit that worried or anxious learners tend to perform better English pronunciation skills. According to Sardegna, Lee and Kusey, anxious learners study and practice more than those who lack this characteristic, so they attain better results. Thus, anxiety may be linked to positive emotions such as amusement and calmness, and negative emotions like embarrassment and melancholy; so that, actions and strategies taken under these emotions may be successful or detrimental. The authors also foreground that students' motivation is reflected on the learning strategies they choose. Their research investigation shows that the most motivated students are, the largest the amount of learning strategies used (e.g. following pronunciation rules).

MacIntyre and Vincze (2017) assure that cognitive abilities such as working memory, capacity to acquire and apply knowledge, and emotions contribute to language learning and motivation increasement. Indeed, they claim that in the second language context, cognitive abilities and emotions may contribute to learning and communication processes. The authors do not consider negative emotions as "bad" (e.g. anger, contempt, disgust, embarrassment) or positive emotions as "good" (e.g. joy, gratitude, serenity, interest), but they affirm that all emotions are fundamentally adaptive since after a period of time they can be used in students' favor.



3.2. Critical Period Hypothesis and English Pronunciation Learning differences

It comes as no surprise the fact that adults do not learn the same way as children do, and it is also noticeable that adults' learning of language pronunciation and children's differ. For instance, infants are born with the ability to tune their perceptual processes to the sounds of their L1, but the perceptual processes of adults are much less plastic during second language learning (Iverson, Hazan & Bannister, 2005). In addition, according to Iverson, Hazan and Bannister (2005), adults generally present specific and fixed objectives, willing to learn voluntarily and showing a great cognitive maturity that has been developed by experience itself and the cognitive abilities previously acquired. For these reasons, in order to understand the differences among learners and age effects when acquiring a new language, the Critical Period Hypothesis provides a potential explanation.

Baker and Trofimovich (2005) carried out a study that examines the influence of three variables on language learning: a) age; b) degree of cross-languages similarity; and c) amount of L2 experience on bilingual phonetic systems. The researchers compared and analyzed the production of English and Korean vowels by early and late Korean-English bilinguals. The results suggest substantial differences on how the relationship between an L1 and L2 takes place. The early bilinguals manifest a bidirectional influence while late bilinguals manifest a unidirectional L1 influence on the L2. Therefore, when it comes to late learners, the L2 (English) does not influence the production of the L1 (Korean). However, the L1 (Korean) greatly influences the way the L2 (English) is produced.

Furthermore, Baker and Trofimovich (2005) also point out that cross-language similarities (e.g. acoustic similarity between L1 and L2 vowels) and the amount of L2 experience are important variables that determine how early and late learners organize their two languages. The authors assure that late learners are more likely to be influenced by the



characteristics of their L1, while early learners do not experience such influence. Also, Baker and Trofimovich assert that the relationship between experience and age depends on the time of L2 exposure. They claim that L2 learners at initial stages are more likely to produce L1 and L2 vowels with distinct acoustic properties than late bilinguals with a similar amount of L2 experience.

According to Baker, Trofimovich, Flege, Mack and Halter (2008), the results reported in their study claim that children and adults' differences rely partly on how the phonetic system develops at different ages. In the case of young children, the still-developing phonetic system in their L1 allows them to distinguish among a great variety of sounds. In fact, Baker et al. report that children have not yet developed their phonological system when they are exposed to the L2. Therefore, they possess the ability of distinguishing L2 sounds from similar L1 sounds, and produce L2 sounds more precisely than late learners. The authors assure that skills such as disassociating L2 sounds from L1 sound categories and producing L2 sounds are associated with the age in which learners have been first exposed to an L2.

Kuhn and Pease (2006), widely analyzed how adults and children learn. First, they contradict previous research which states that there is no reason to believe that the learning process operates differently in children and adults (Carey, 1985). According to Kuhn and Pease, learning itself depends on individuals and their personal experiences regarding the target ability. In their study, the authors compare 12-year-olds and young adults, and determine that older learners had 10 or more years of experience learning different things, making causal inferences and acquiring knowledge that adolescents notably lack. However, they also notice that this experience is not a sufficient condition for adults' success since teenagers surpass adults in other tasks. Therefore, learning differences in pronunciation rely on interpersonal motives, experience, and learners' engagement.



CHAPTER IV

Methodology

In order to establish the categories for this research study, the following inclusion and exclusion criteria were considered. In the first place, the compilation of the academic papers for analysis was conducted using the popular web search engines Google Scholar, Taylor & Francis and Oxford Academic. These web search engines eased the process and assisted the compilation of research studies published between 1969 and 2019. The rationale for such broad period of time is that the CPH itself was highly analyzed between 1960 and 1980. These papers include the discussion of unique cases that shed light into the debate on a critical period for language learning and pronunciation. Qualitative and quantitative methodological approaches were also included for analyzing to what extent age influences the learning of English pronunciation and recognizing the differences between young learners' and adults' pronunciation. In addition, the papers included the discussion of either cognitive or motivational aspects.

Among the exclusion criteria are language of publication and secondary sources. This research synthesis excluded studies whose languages differed from English. The reason for doing this has to do with terminology. The author of this research aimed to avoid any misinterpretation of the concepts analyzed throughout this work. Furthermore, in order to guarantee first-hand evidence, all secondary sources were excluded from analysis.

Search terms included the following combinations: (a) critical period (b) critical period hypothesis (c) adults' vs children's learning (d) language learning (e) pronunciation (f) English pronunciation (g) pronunciation acquisition. Subsequently, the exhaustive investigation process resulted in the identification of 27 significant studies.



CHAPTER V

Results

5.1. Phase I:

The following section attempts to synthesize and contrast the results of all primary studies used for this investigation in order to answer the following research questions:

1. *To which extent does age influence the acquisition of English Pronunciation?*
2. *What are the differences in learning pronunciation between young learners and adults?*

Figure 1 and tables 1 to 7 provide essential information that contributes to answer the first research question *to which extent does age influence the acquisition of English Pronunciation?*

Figure 1. Publication of primary studies

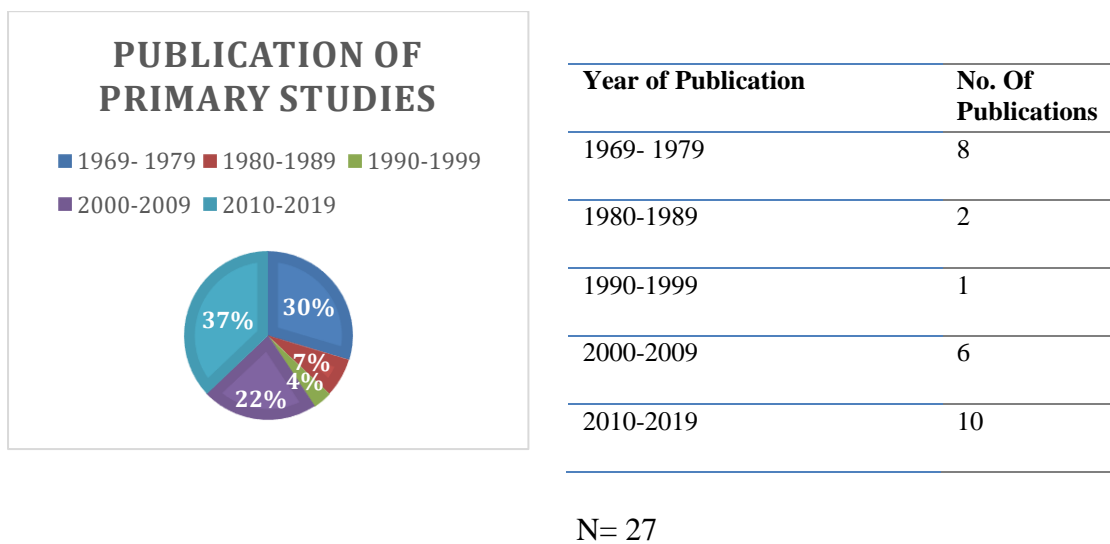


Figure 1 addresses the years of publication of all the studies considered for the analysis of the Critical Period Hypothesis and English pronunciation. It is important to mention that the



analysis of studies includes publications since 1969 because the Critical Period Hypothesis was highly analyzed at that time. The selected papers were classified and organized by year: (a) Thirty seven percent (37%) of research studies were published between the years 2010 and 2019; (b) Twenty-nine-point six percent (29.6%) of research studies were published between the years 1969 and 1979; (c) Twenty-two-point two percent (22.2%) of studies belong to research investigations published between 2000 and 2009; (d) Seven-point four percent (7.4%) of research studies were published between 1980 and 1989; and (e) Three-point seven percent (3.7%) of research studies were published between 1990 and 1999.

As illustrated in figure 1, the publications analyzed within the last four decades between the years 1969 and 2009 include a total of seventeen studies. On the other hand, there are ten publications conducted in the last decade from 2010 to 2019. It should be noted that the amount of research studies conducted after the year 2000 surpasses the number of primary studies conducted before that period of time.

Table 1. Arguments and Counterarguments for the Critical Period Hypothesis in relation to the development of English Pronunciation

Arguments and Counterarguments			
Position	Year of Publication	Total of studies	%
Argument	Before 2000	6	61.5%
	After 2000	2	
Counterargument	Before 2000	2	38.5%
	After 2000	3	
N=13			



As illustrated in table 1, thirteen papers have been included in this section since they exclusively analyze the Critical Period Hypothesis. The papers displayed in this table were classified into two groups considering the following criteria: a) arguments for the Critical Period Hypothesis; and b) arguments against the Critical Period Hypothesis.

Table 1 suggests a dichotomy between age as the primary element of language development and other factors influencing language learning. As illustrated above, eight studies support the idea that age is a key factor for language development while five studies emphasize disagreement.

Table 2. Variables that influence language learning and pronunciation

	No. of Publications
Motivation	3
Gender	2
Relationship between L1 and L2	3
Language Immersion in L2 environments	1
Learning Setting	2

N= 11

Note: The total number of studies analyzed for this section is 11. However, research investigations conducted by Amiryousefi, 2018; and Tahta, Wood and Loewenthal, 1981, include the analysis of more than one variable.

Table 2 analyzes eleven studies that focus on variables other than age. These variables are: motivation, gender, relationship between L1 and L2, language immersion in L2 environments and learning setting. The findings in Table 2 confirm that a wide range of additional variables have been investigated in the development of language pronunciation,



and contrary to prior research, an important amount of studies assure that age is not the only determining factor for language learning. The following tables from table 3 to table 7 display each of the variables mentioned in table 2.

Table 3. Predisposition for Learning a Language based on Gender

Author	Year	Female dominance	Male dominance	None of them
Bacon and Finnemann	1992	X		
Slik, Hout and Schepens, J. J.	2015	X	x	
Amiryousefi *	2018		x	

N=3

*Indicates that the study has included the discussion of more than one variable

Table 3 shows the position of three research investigations towards gender and its influence on learning the pronunciation of a language. It is worth mentioning that the studies do not demonstrate specific results since each research investigation provides a different point of view. Bacon and Finnemann (1992) assert female dominance over men when learning the different skills of a language, while Amiryousefi (2018) claims that men surpass women. On the other hand, Slik, Hout and Schepens (2015) maintain that both genders have certain features that benefit them, and gender superiority depends on the language skills and the evaluation method as previously discussed in *3.1.2.1 Gender*. Consequently, research on



gender and language pronunciation is inconclusive due to the incongruous information that was retrieved and analyzed for this study.

Table 4. Influence of Learning Setting on Language Proficiency in different decades

Author	Year	Perspectives
Krashen and Seliger	1976	No connection between the use of L2 outside the classroom and L2 proficiency
*Tahta, Wood and Loewenthal	1981	Setting as an essential factor for developing pronunciation.
Ramírez, García and Kuhl	2014	Setting as a determining factor for language experience and practice

N=3

*Indicates that the study has included the discussion of more than one variable

Table 4 depicts the unfolding results of three research studies which highlight the influence of learning setting on language proficiency. It should be emphasized that the perspective towards this influence changed over time. It is notable how the first research study conducted in 1976 differs from those published in 1981 and 2014. Krashen and Seliger (1976) assure that there is no connection between the use of L2 outside the classroom and L2 proficiency. Therefore, they conclude that the extra practice that an individual gets outside a classroom may not enhance or influence the new language proficiency.

On the other hand, Tahta, Wood and Loewenthal (1981) suggest a completely different point of view, since they affirm that the different settings where students learn do not only influence pupils but also benefit them. The quality of input received by pupils in a



suitable learning setting may enhance their language proficiency. Finally, in the same way, Ramírez, García and Kuhl (2014), claim that language setting is quite relevant because they provide experience to learners and time to practice, characteristics that may notably enhance language skills.

Table 5. Importance of Language Immersion in L2 environments

Author	Year	Highly Important	Important	Not important
Asher & Garcia	1969	X		
Oyama	1976	X		
*Tahta, Wood and Loewenthal	1981	X		
Flege and Liu	2001		X	

N= 4

*Indicates that the study has included the discussion of more than one variable

Table 5 displays information regarding Language Immersion in L2 environments and includes four studies. Three studies point out the relevance of time spent in an L2 environment and its results on pronunciation (Asher & Garcia, 1969; Oyama, 1976; Tahta, Wood and Loewenthal, 1981). The authors assure that this factor may determine the extent to which some sounds are recognized as foreign or mispronounced. On the other hand, Flege and Liu (2001) disclaim this position affirming that living in an L2 country for 5 years might not be enough if the individual does not follow the appropriate methods to learn the pronunciation of a target language. Besides, the authors claim that adult learners may perform



better if they are surrounded by the new language environment and apply suitable learning techniques.

Table 6. Relationship between L1 and L2

Author	Year	L2 Linguistic & Cultural relation	Similarities	Differences
*Tahta, Wood & Loewenthal	1981	X		
*Amiryousefi	2018	X		
Polyanskaya and Ordin	2019		x	x

N= 3

*Indicates that the study has included the discussion of more than one variable

Table 6 depicts the results of three research studies whose authors and years were organized according to three elements: relation between L2 cultural and linguistic aspects; similarities between L1 and L2; and differences between L1 and L2. Tahta, Wood and Loewenthal (1981) and Amiryousefi (2018) vastly agree that after living in a certain place, an intrinsic bond is formed between the L2 language and the L2 culture. It is assumed that after this relationship is formed, the learner might feel more confident when using the target language, and consequently he may try to use the new language as much as possible. Thus, pupils may become keen on enhancing their skills and particularity their pronunciation.

Table 6 also shows the results provided by Polyanskaya and Ordin, (2019) which indicate that elements that contribute to the recognition of differences and similarities



between the first and second language should be stressed. The reason behind this statement is that those discrepancies might influence the learning of pronunciation and play a meaningful role when trying to master such linguistic ability.

Table 7. Motivational aspects that influence Language Learning

Author	Motivational aspects to consider				
	Year	learners' needs	self-confidence	anxiety	emotions
Aslan	2017	x			
*Amiryousefi	2018		x		
Sardegna, Lee and Kusey,	2018			x	
MacIntyre and Vincze	2017				x

N= 4

*Indicates that the study has included the discussion of more than one variable

Table 7 enumerates four motivational aspects that influence learners' pronunciation: (a) learners' needs; (b) self-confidence; (c) anxiety and (d) emotions. Learners' needs refer to all the goals and motives students present in order to achieve a certain level of proficiency when learning the pronunciation of a particular language. Self- confidence attributes to the conceptions a person maintains about himself and his own abilities. Likewise, in this research investigation, anxiety is presented as the feeling of worry students cultivate towards coming learning situations related to pronunciation. Lastly, the final aspects to consider are emotions and cognitive abilities such as intelligence and working memory which are said to influence pronunciation outcomes.



Furthermore, table 7 assesses four research studies which emphasize motivational factors. In the first place, Aslan (2017) claims that learners’ needs are the first important aspect to influence pronunciation outcomes. Amiryousefi (2018) alleges that self-confidence is a highly motivational factor, while Sardegna, Lee and Kusey (2018) agree that anxiety may play a positive role in the development of pronunciation since anxious learners tend to carry out higher pronunciation tasks. Finally, MacIntyre and Vincze (2017) point out that emotions seem to act as pivotal stimuli that may contribute to pronunciation proficiency.

Table 8. Adults and children cognitive and environmental differences

	Characteristics	Adults	Children
	Fixed goals	X	
Iverson, Hazan and Bannister (2005)	Less plastic perceptual processes	X	
	Language learning experience	X	
Baker, Trofimovich, Flege, Mack and Halter (2008)	Developed phonetic system	X	
	Differentiation between L1 and L2 sounds		X
Baker and Trofimovich (2005)	Developed phonetic system	X	
Kuhn and Pease (2006)	Language learning experience	X	
		6	1

N=4



Table 8 shows information that aims to answer the second research question of this study which is *what are the differences in learning pronunciation between young learners and adults?* This table shows the features that differentiate the learning of pronunciation between children and late learners. The four primary studies state that there are five features that contribute to the learning of pronunciation: (a) less plastic perceptual processes; (b) developed phonetic system; (c) differentiation between L1 and L2 sounds; (d) fixed goals; and (e) language learning experience.

As illustrated in Table 8, there are four characteristics attributed to adults: fixed goals, language learning experience, less plastic perceptual processes and developed phonetic system. First, Iverson, Hazan and Bannister (2005) assert that, in the case of adults, the amount of goals related to language learning tends to be greater in comparison with the number of goals set by young learners. This statement appears to suggest that adults demonstrate interest in achieving their language learning goals and hints at the possibility of individuals reaching them sooner. Another characteristic presented in table 8 is *language learning experience*. Iverson, Hazan and Bannister (2005) ascribe a preeminent language learning experience to adults due to the knowledge previously gained through the learning of their L1. In the same way, Kuhn and Pease (2006) allege that learning is mainly influenced by individuals' experiences. Then, the older the learner is, the larger the amount of experiences he will obtain, easing his language learning.

On the other hand, an examination of Table 8 suggests that features such as “developed phonetic system” or “less plastic perceptual processes” affect language development since they interfere with the learning process. Baker, Trofimovich, Flege, Mack and Halter (2008) broach as a negative feature *a developed phonetic system*, since they affirm that by the time adults are interested in learning a language, they have already acquired their



first language phonetic system, i.e., they know the pronunciation of consonants and vowels; and as a result, students might transfer some features and errors from their L1 to their L2. Therefore, since children could be still learning their L1 phonetic system, and they are skilled at differentiating L1 sounds from L2 sounds, they may surpass adults' ability to learn the pronunciation of a language. This statement is also supported by Baker and Trofimovich (2005), who claim that the pronunciation of the target language is frequently influenced by the phonetic system of the L1. The results of their study strongly support the theory provided by Flege, Mack and Halter (2008) who confirm that adults are negatively influenced by the phonetic system of their L1.

In the same way, table 8 depicts that adults maintain less plastic perceptual processes which refer to the ability of sensory systems such as those for vision, hearing, touch, smell or balance to respond to stimuli, which in adults, are less developed (Encyclopaedia Britannica, 2018). These perceptual processes develop through sensory interaction with the environment and practice. Therefore, research underscores the fact that adults possess less plastic perceptual processes, suggesting that late learners do not have the same perceptual abilities for responding to the linguistic environment stimuli as children do.

5.2. Phase II: General discussion

This section provides a deeper discussion of the results illustrated in the previous segment. As it has already been mentioned, thirteen articles focus on the continuing debate on the extent to which the principles of the CPH explain the influence of age on how language, and specifically pronunciation, develops in children and adults.

In order to answer the first research question *to which extent does age influence the acquisition of English Pronunciation?* a total of eight articles provide arguments in favor of



age as a critical factor in the development of pronunciation. Research suggests that the variable age is a crucial element for any language skill. Among the reasons for such position are that early learners possess an innate ability for phonological acquisition due to unique maturational and physiological features that develop from early childhood up to puberty (Cochrane and Sachs, 1978; Fathman, 1975). Research conducted during the last decade points out that before the age of 13, children have an intuitive ability to recognize and develop the grammatical and phonetic aspects of the language (Abrahamsson, 2012). An example of such ability was found in Japanese learners of English who showed that age is strictly related to lexical, grammatical and phonological development due to language exposure (Saito, 2015).

Notwithstanding, some research studies foreground a series of counterarguments to age as a single factor for language development. One of the first research studies concerning the Critical Period Hypothesis is Genie's case, a girl who lived in isolation until the age of thirteen years old. This study suggests that even though little or no stimuli is received during the first years of life, the capacity to develop language later is still possible. However, this language is not as effective as that of an individual who was early exposed to the target language. The rationale for this is that the linguistic stimuli in the left hemisphere must befall at early childhood (Fromkin, Krashen, Curtiss, Rigler & Rigler, 1974). However, it must be acknowledged that some cognitive processes (e.g. working memory) keep developing until adulthood (Hartshorne, 2018). Therefore, the age of ultimate attainment may not be puberty as many researchers claim.

Recent studies point out at the methodological validity and reliability of the samples used for research. Hartshorne et al. (2018) claim that reliable results supporting age as a crucial factor for language development implies the study of at least ten thousand human



subjects. Consequently, the authors do not regard the CPH as a valid theory to explain language learning. In the specific case of pronunciation, for the focus of discussion of this synthesis, it must be bore in mind that age is not the only variable that plays a part in language learning. Indeed, a significant number of research studies propose that in combination with age, gender, learning setting, language immersion, relationship between the L1 and L2 and motivation must be considered when determining to what degree age influences the learning of English pronunciation.

The obtained results regarding gender were interpreted cautiously due to the discrepancy of opinions among authors. The findings suggest that there is not enough information to assure to what extent the variable gender influences the learning of pronunciation. In fact, certain teachers' attitudes towards female or male students might interfere negatively when developing pronunciation. The rationale for this assumption is that depending on the social or cultural context, women could have higher or lower opportunities for language practice due to gender discrimination (Amiryousefi, 2018). On the other hand, other research studies emphasize women's superiority for language learning, specifically the development of pronunciation. Among the aspects for such superiority are: higher levels of motivation, learning strategies and willingness to deal with authentic input. (Bacon & Finnemann, 1992)

When considering the learning environment, research confirms that the perspective about the influence of the place where learning occurs has evolved throughout the years. The analysis of primary studies which focus on the relationship between the linguistic environment and language proficiency reveals that the learning setting might be a determining variable which provides experience and practice, elements that are essential for developing accurate pronunciation.



Also, this research yields that language immersion in L2 environments ascertains to which extent sounds are identified as foreign or mispronounced since the amount of time spent in an L2 setting determines language proficiency. It should be noted that being surrounded by the target language environment plays an important role in pronunciation outcomes. Thus, it is necessary to combine suitable learning techniques or methods with an appropriate learning environment, so that the final pronunciation proficiency is favorable (Flege & Liu, 2001).

Another variable that must be analyzed is the relationship between the L1 and L2. When a learner feels comfortable and confident about the similarities and differences between the first and the second language, he is more likely to use the target language more frequently and create personal bonds with the L2 culture that may encourage him to master the language; and consequently, he may become keen on enhancing his English Pronunciation (Amiryousefi, 2018; Polyanskaya & Ordin, 2019).

Similarly, motivation seems to have a high influence on language learning. The analysis of different studies throughout this research synthesis foreground motivation as an essential factor for pronunciation. Results point out that this variable is an essential factor for pronunciation learning apart from age since it is a broad term that includes learners' needs, self-confidence, anxiety, cognitive abilities and emotions. However, even though there is agreement on the influence of motivation on the learning process, it is also claimed that the level of motivation varies since some elements such as anxiety and emotions may influence negatively. These results are consistent with the findings of Taylan (2017) who reports motivation as a complex term influenced by 7 factors that affect language learning. Among these factors he lists: "instrumental orientation for future anticipations", "integrative



orientation”, “enjoyment and desire”, “foreign residence”, “positive attitudes toward target culture”, and “anxiety”. Taylan concludes that instrumental orientation for future expectations, which refers to the tendency of learners to focus on specific tasks to be rewarded academically, is the most relevant factor for developing language skills while anxiety is the least important. In this case, the direct relationship between instrumental orientation and goals can be considered essential in the development of the pronunciation of the target language since they both consider learners’ needs.

On the other hand, the second research question established for this investigation is *what are the differences in learning pronunciation between young learners and adults?*

After conducting an exhaustive analysis of the literature discussed in this research, it was possible to determine five overarching categories: a) plastic perceptual processes; b) developed phonetic system; c) differentiation between L1 and L2 sounds; d) fixed goals; and e) language learning experience. These categories contribute to the debate on why children outperform adults on pronunciation proficiency, and they also explain why some late learners are the exception to this assumption.

Regarding plastic perceptual processes, research suggests that children are more likely to develop L2 pronunciation since their sensory systems are highly developed during their first years of life. This means that young learners have the ability to better respond to a series of linguistic stimuli in comparison to adult learners whose ability may begin to decrease. In this context, young learners surpass late learners. Since adults have already developed the phonetic system of their native language, it might interfere with the development of an appropriate pronunciation of the sounds of their L2. Children, on the other hand, have the capacity to differentiate and thus develop the phonetic system of any language. This idea is intrinsically connected to the fact that children are favored when learning English



pronunciation since they are able to discriminate between L1 and L2 sounds, and consequently avoid cross-linguistic transferences that might evidence fossilization of L1 sounds. Therefore, as the young learners' phonetic system is still developing, it is easier for them to include English phonemes to their new extended phonetic system and become skilled at using them appropriately.

Conversely, there are two determining categories in which adults surpass children when learning a second language: fixed goals and language learning experience. Regarding fixed goals, research suggests that adults have a tendency for establishing language objectives. This means that the motivational aspect is the one that enables adults to achieve better results in pronunciation outcomes. Finally, language experience refers to the positive influence that the learner's knowledge in his L1 has on the development of his L2. This is related to the fact that adults have a deeper knowledge about learning strategies. For example, an adult learner knows how to make grammatical inferences or memorize phonological rules that may allow him to develop an appropriate pronunciation of the sounds of the target language.

In sum, research evidences that there is a critical period for developing a native-like pronunciation since, as it has been discussed in this work, children's cognitive abilities such as perceptual processes and the development of the phonetic system are still developing, which causes children to expand their brain plasticity towards the learning of any language. Nevertheless, age is not the only factor that determines pronunciation proficiency since research also points out that motivational aspects play a significant role on language learning, which may contribute to adults' development of English pronunciation in a satisfactory manner.



CHAPTER VI

Conclusions, Recommendations and Limitations of the Study

6.1. Conclusions

The idea that age influences the learning of pronunciation or any other skill is highly controversial. Even when age will be always a crucial variable for language proficiency, there are more factors which must be taken into account such as gender, learning setting, language immersion in L2 environments, relationship between L1 and L2 and motivation. The combination of all these variables may enhance mastering English pronunciation. Thus, the differences between young and late learners are synthesized in five categories: plastic perceptual processes, phonetic system development, differentiation between L1 and L2 sounds, fixed goals, and language learning experience. Recognizing these discrepancies may exceptionally contribute to the reconceptualization of the Critical Period Hypothesis and the debate on why children's abilities surpass those of adults.

6.2. Recommendations

In order to provide more accurate results in the future concerning the influence of age over language learning skills, it is suggested to carry out more empirical studies regarding the CPH, especially on the realm of English pronunciation.

Another aspect that needs to be taken into account is that none of the studies used for this analysis were carried out in South America. Conducting research in this geographical area could display different variables aside from age, and the conclusions could be different from the ones provided in this study. Therefore, future studies should be conducted in countries whose backgrounds are similar to ours for the purpose of getting perceptions and opinions which may be applicable to our context.



Limitations of the study

When selecting studies for this research, it was eminently challenging to find updated papers which focused on the Critical Period Hypothesis. Therefore, it was pivotal to analyze research studies conducted in the past. This limitation adjourned and extended the process of this investigation.



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Appendices



Appendix 1

List of Primary Studies for Analysis

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