

# A Study on the Effect of Age on the Representation and Processing of Second Language Grammar Achievement

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## Abstract

*Learners considering their age (children & adults) differ fundamentally, and these differences can affect the second language acquisition. This study aimed at investigating the effect of age on EFL learners' grammar achievement. Oxford placement test was used to homogenize the participants. Based on the Oxford placement test, the students were homogenized as the beginner ones and then they were distributed into two groups of children and adults each containing 50 students. In order to see the effect of age on EFL learners' grammar achievement, Oxford grammar test was used as a pre-test and post-test (simple present, present continuous & to be verbs) in both groups. The results revealed that there is not a critical period, but a sensitive period for second language grammar learning, and adults can show to be better learners in case of grammar achievement.*

## Keywords

*performance, competence, grammar, EFL (English as a Foreign Language), age*

## 1. Introduction

There are many differences among second language learners. In the process of second language acquisition, individual differences have more of an impact on the second language learning process, and their role has received considerable attention in recent years. Among these factors, the role of age in second language acquisition is undeniable.

Owing to global trend of international relations and communications, knowing English means enjoying life in the modern world (Smith, 1993; Nunan, 2005). Celce-Murcia (1985) maintained that noticing and persuasive evidences show that no-grammar learning will lead to the product of clumsy and inappropriate foreign languages, which means that grammar is essential for language learning. According to Woods (1995), nobody can doubt that a good knowledge of the grammatical system is essential to master a foreign language and it is also one of the most important parts of communicative competence. Researchers have found a relationship between age of acquisition and ultimate attainment in at least some aspects of the second language, with age showing itself to be the strongest predictor of success. A learner's age is one of the important factors affecting the process of second language acquisition (Nejadansari & Nasrollahzadeh, 2011). Collier (1988) expressed that successful language acquisition

depends on the learner's age.

Several books (Birdsong, 1999; Harley, 1986; Singleton & Lengyel, 1995) and numerous studies have been carried out on adults and children's ability to learn a foreign language and on the differences they have in learning and using it (Krashen et al., 1979; Rivers, 1987; Bley-Vroman, 1990; Schmidt, 1990; DeKeyser, 2000; DeKeyser & Larson-Hall, 2005; Bley-Vroman, 2009). Research findings show opposing results regarding the effect of age on second/foreign language learning. One view stated that acquiring a language (native or foreign) is a natural achievement for children and becomes more difficult as one becomes older (Guasti, 2002). This statement is supported by the belief that there exists a critical period during which the ability to acquire the competence reaches its peak, and after which this ability declines. Bickerton (1981) made strong statements in favor of critical period before and after which certain abilities do not develop. Repeated claims have been made for a "critical period" for speech, usually located around puberty, after which the capacity to acquire native like speech is hypothetically impaired (Patkowski, 1990; Scovel, 1988).

One common explanation for child-adult differences in L2 learning is the existence of a critical period for the acquisition of an L2. One of the central questions in the field of Second Language Acquisition (SLA) is why child language acquisition is uniformly successful, whereas adult second language acquisition is variable and generally unsuccessful (Bley-Vroman, 2009).

Concerning second/foreign language learning, researchers have assumed the possibility of extrapolating the critical period hypothesis to second/foreign language context (Scovel, 1988; Long, 1990b; Jonson, 1992; Flege, 1987; Morris et al., 1986; Patkowski, 1990). The argument is that a critical point for second/foreign language learning occurs around puberty, beyond which people seem to be relatively incapable of acquiring a native like accent of the Second Language (SL). Flege, Yeni-Komshian and Liu (1999) showed that a foreign accent can be detected in individuals' first exposure to a foreign language at age 3 and that accents get stronger as age of first exposure increases.

As an international language, it is an urgent need for EFL learners to learn English language grammar. Grammar is a framework without which language cannot be structured and a message cannot be conveyed smoothly and fluently. Grammar plays an important role in language learning and acquisition. Grammar is a vehicle that enables students to communicate effectively and not an end in itself. Language is a complex system and it seems that grammar helps us to manage it. Learning grammar is necessary to achieve progression after a certain language level has been reached (Celce-Murcia, 1985).

Concerning grammar; however, some researchers believed that adults can learn English better under controlled conditions (Schmidt, 1990; DeKeyser, 2000; Krashen et al., 1979). Since adults know their own language completely, they can successfully understand how the second language works and what its grammatical rules are. On the other hand, children have still not accomplished their mother tongue and need more time to develop the skills found in their native language. According to Schmidt (1990), adults take linguistic structure into huge account while learning the second language. DeKeyser (2000) stated that children do not pay attention to language structure. Krashen et al. (1979) showed that

although children achieve native-like fluency, adults actually learn languages more quickly than children in the early stages. Therefore, if adults pay more attention to grammatical structures than children, a significant difference can be supported between adults and children (Bley-Vroman, 1990, 2009; DeKeyser & Larson-Hall, 2005).

Competence is a term used in linguistic theory, especially in generative grammar, to refer to person's knowledge of his language, the system of rules which a language user has mastered so that it would be possible for that user to be able to produce and understand an indefinite number of sentences and recognize grammatical mistakes and ambiguities. Competence, according to McNeil (1966), is the knowledge of linguistic rules, categories, and etc. that accounts for native speaker's intuitions about his language. Robins (1980) stated that Chomsky defined competence as what a speaker intuitively knows about his language. Performance, on the other hand, refers to a set of specific utterances produced by native speakers. Brown (2007) stated that performance is the observable manifestation of competence. There are different factors affecting learning the second or foreign language including age, aptitude, motivation, attitude, personality, cognitive style, memory, learning strategies, etc. (Steinberg, 2006). Following Lenneberg's (1967) Critical Period Hypothesis on language learning, most researchers have become interested in the role of age, as one of the factors affecting second language learning (Bongaerts, 2005; Singleton, 2005; Birdsong, 1999). Lenneberg's (1967) Critical Period Hypothesis holds that human beings are predisposed to acquire language in the early years of life, and that this predisposition is lost at the onset of puberty around the age of twelve.

It has been shown that although language learning can take place at any age, childhood is a better time to start a new language (Penfield, 1967; Taylor, L. & Taylor, M. M., 1990; Snow, 1993). However, this belief is more obvious in pronunciation rather than grammar; some researchers have pointed out that adults are better at learning English grammar under controlled conditions (Schmidt, 1990; DeKeyser, 2000; Krashen et al., 1979). That's because adults know their own language grammar much better than children do. According to Schmidt (1990), adults pay more attention to second language grammar, while children do not take into huge account. In a study conducted by Krashen et al. (1979), it was shown that children were more fluent than adults and adults learned languages more quickly than children. According to Krashen et al. (1979), in order for EFL learners to have a good ability in spoken and written language, they must master grammar of the target language.

Ignoring age differences can cause undeniable problems in the process of English language teaching and learning. Therefore, this study is investigating the effect of age on EFL learners' grammar achievement.

## 2. Theoretical Framework of the Study

The basic theoretical assumption behind the impact of age on second language learning comes from the idea of Critical Period Hypothesis, Lateralization Theory and UG Full Access Theory.

Critical Period Hypothesis proposed by Lenneberg (1967) talks about the fact that children are much better than adults and that learning ability and capacity declines after the age of puberty. It stated that the first few years of life constitute the time during which language develops readily and after which (sometime between age 5 and puberty) language acquisition is much more difficult and ultimately less successful. In his book entitled “biological foundations of language” Lenneberg hypothesized that human language acquisition is an example of biologically constrained learning and that is normally acquired during puberty. He also mentioned that language acquisition ends with the establishment of brain lateralization. Lenneberg (1967) hypothesized that language could be acquired only within a critical period, extending from early infancy until puberty. In its basic form, the critical period hypothesis needs only have consequences for first language acquisition. Nevertheless, it is essential to understand the nature of the hypothesized critical period to determine whether or not it extends as well to second language acquisition. If so, it should be the case that young children are better second language learners than adults and should consequently reach higher levels of final proficiency in the second language. The critical period hypothesis, as advanced by Lenneberg (1967), held that language acquisition must occur before the onset of puberty in order for language to develop fully.

Lenneberg’s argument contained two parts. First, he reviewed available behavioral evidence suggesting that normal language learning occurred primarily or exclusively within childhood. Second, he proposed a mechanism which might be responsible for a maturational change in learning abilities. The proposed mechanism was fundamentally neurological in nature. He suggested that the brain, having reached its adult values by puberty, has lost the plasticity and reorganizational capacities necessary for acquiring language (Lenneberg, 1967).

In addition to the above hypothesis, there are two more theories concerning language learning: Lateralization Theory and UG Full Access Theory.

Brain lateralization is the idea that the left and right sides of the brain carry out and regulate a variety of different functions and behaviors. The lateralization theory, first developed by Nobel-prize-winners “Sperry and Ornstein”, helps to understand behavior, personality, creativity, and ability to use the proper mode of thinking when performing particular tasks. Each of the two hemispheres is responsible for a distinct set of duties in brain lateralization; the left side handles analytical, logical, and verbal thought processes while the right oversees more sensitive processes, like feelings, intuition, and sensory matters (Purves et al., 2008). The duties of the two hemispheres are reversed in left-handed individuals. The thought that the two hemispheres manage these brain functions and behaviors for the overall operation of the individual and can be utilized as a situation demands is the theory behind brain lateralization (Purves et al., 2008). The left hemisphere is involved in language production and comprehension, which is why it is often referred to as the dominant (Ojemann, 1991; Purves et al., 2008). According to this theory, first

language acquisition must occur before cerebral lateralization is complete, at about the age of puberty (Snow & Hohle, 1978).

There are a number of striking aspects of First Language acquisition; the learners involved are very young and cognitively undeveloped, and yet they learn a very rich and highly complex hierarchically structured communication system. They can learn any languages they are exposed to, with equal ease. In the light of these facts, the nativist position that language acquisition is guided by an innate domain-specific mental faculty (UG) seems highly plausible and has been the prevailing position in the last fifty years or so. UG, according to White (1998), is part of an innate biologically endowed language faculty.

In the field of Language acquisition in recent years one of the most debated and investigated issues has been whether second language learners (adults) have access to UG, the same way as first language learners (children) do (Cook, 1993; Cook & Newson, 1996; Epstein et al., 1996; White, 1996). The access question is, of course, understood and answered differently considering the a) Full Access to UG, b) Partial Access to UG, and c) No Access to UG. a) Full Access necessarily implies that learners have access to all principles and parameterized options, at every point of acquisition. b) Partial Access can focus on both the parameterized/non-parameterized distinction and the one between previously activated or not activated principles. This allows for a number of logical possibilities, though not all are of equal plausibility. And, c) No Access obviously means that L2 learners do not have direct access to the wealth of implicit knowledge provided by UG (Meisel, 1998).

According to White (1988), both L1 learners and L2 learners have direct access to UG. During SLA, L2 learners start out with parameters set to their L1 values. This entails that full transfer takes place from the L1 to the L2. However, these transferred L1 parameter values merely constitute the initial state of SLA, and are by no means the sum of the aspects of UG to which the L2 learners have access. On White's view, L2 learners have full access to UG.

Considering the role of age in second language grammar learning, this study follows the critical period hypothesis, lateralization theory and UG full access approach as the theoretical framework of the study.

### 3. Review of Literature

#### 3.1 Age and Language Acquisition

Age is a biological variable based on which language learners can, at different steps, obtain the target language at a certain time (Oxford, 1999). Eckert (1997) highlighted the distinction between *chronological age*, or the number of years since birth, *biological age*, or physical maturity (which does not necessarily, of course, correlate exactly with chronological age), and *social age*, which is tied to life events such as family status (including marriage or birth of first child) or legal status (Eckert gave as examples naturalization or date of first arrest). Coupland and his colleagues use contextual *age* in much the same way as *social age* (Coupland, 1997). In western societies chronological age is usually the starting point for research on age and generation-specific use of language, but for societies elsewhere in

the world this may be impossible. In the African context, for example, people may not know their absolute chronological age: if they are asked for their age, the clerk of the tribal authority may assign one based on physical appearance (Van Eeden, 1991). In some communities social rituals may be more important benchmarks than the year of birth. Thus for some rural Xhosa men their own initiation sequences relative to other men's are the basis for social categories relevant to the concept of age. Women and men cannot be categorized in the same way in this society, however, since for women the relevant age-related social categories involve marital status, with widows who do not remarry assuming an important role that is otherwise restricted to men (Van Eeden, 1991). This point is valid generally, because in all societies gender and other relevant social variables interact with the age variable, however it is defined, making comparisons between different age groups far from straightforward.

Considering the critical period hypothesis, children seem to learn languages faster and more easily than adults. This seems to suggest that the minds of children are somehow more adept at language learning (Clark, 2003). Lenneberg argued that the reason language couldn't be recovered after puberty was that lateralization. As Birdsong (2006) argued, from the cognitive literature, one learn that the associative memory and incremental learning elements of language learning are steadily compromised by age, as are the working memory and processing speed components of language processing and production. Therefore, according to many researchers accepting this hypothesis (Bickerton, 1981; Patkowski, 1990; Scovel, 1988; Long, 1990; Jonson, 1992; Flege, 1987; Morris et al., 1986; Patkowski, 1990), learning a language seems more difficult in adult than in children.

Krashen is an expert in the field of linguistics, specialized in theories of language acquisition and development. Much of his recent research has involved the study of non-English and bilingual language acquisition (Crystal, 1997).

One of the theories which is related to the age of language acquisition is Newport's Less is More Hypothesis (Chin & Kersten, 2000). In this hypothesis, Newport stated that children are more able to learn languages than adults because they have fewer cognitive resources available to them. It is helpful in learning a complex combinatorial system such as a human language because children start learning with small parts and will learn more complex constructions only as they grow. In contrast, adults start with analyzing more complex structures and will have difficulty finding the best analyses. In her studies, she has shown that learners who begin language acquisition in childhood show much greater proficiency in both first and second languages than those who begin in adulthood (Johnson & Newport, 1989; Newport, 1990). She has also shown that children and adults differ in language learning, with young children acquiring regular patterns and rules even when their input is inconsistent (Hudson & Newport, 2005, 2009; Culbertson & Newport, 2015).

Newport's Less is More theory explained that limited input helps children learn language in the beginning stages of language learning (Newport, 1990). Young children's limited processing capacity and working memory only allow them to take in a small amount of the language heard around them, and as a result, they attend to the limited language input such as individual words or morphemes. When

learning a language, children must learn to map morphemes to specific meanings, and then combine those morphemes in original ways to create new sentences. Initial limited input may create the opportunity for children to analyze simple morphemes and create a small number of linguistic form to meaning mappings. When children's cognitive process develop (working memory and processing capacity increase), they are then able to process more complex input, allowing them to learn the rules for combining morphemes in grammatical production. These cognitive processes fully develop around puberty (Newport, 1990).

The Less is More theory also explains why older children and adults do not learn language as well as young children. When older children and adults begin to learn language, they use their fully developed working memories and processing capacity to attend to complex sentences that contain multiple morphemes. From processing the complex input, adults (a) tend not to analyze individual morphemes but learn frozen combinations of multiple morphemes, and (b) create many form-to-meaning mappings that are susceptible to noise. Out of the many possible morpheme mappings, only a few are correct, resulting in inconsistent and often incorrect language production. Therefore, adults do not learn the same morphological structure of a language as children do (Hudson & Newport, 2005, 2009; Culbertson & Newport, 2015).

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

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

With regard to the evidence of acquisition capacity decline in morphological domain, Harley (1986) investigated the levels of attainment of two age group students in acquisition of the French verb system in Canada. She obtained data from interviews, a story repetition task, and a translation task. After two groups had both received 1,000 hours of instruction, Harley found neither group had acquired full control of the verb system; however, at the end of their schooling, there were lower levels of attainment in the mastery of verb system in the older group. The result supported that L2 acquisition capacity declines with

age in morphological domain.

Johnson and Newport (1989) administered a grammaticality judgment test with orally presented sentences, covering a wide variety of basic morpho syntactic structures of English, to a group of 46 native speakers of Chinese and Korean who had immigrated to the United States at age range (3-39). They found a gradual decline of the level of proficiency from age range 6-7 to 16-17. Adults showed a wide variety in proficiency but no clear age effect within their group. Individual elements of grammar varied widely in their correlation with age, even though this correlation was significant for all 12 rule types being examined.

Concerning acquisition capacity decline in syntactic domain, Johnson and Newport (1991) investigated learners' syntactic proficiency based on the age of arrival in the country of L2. The learners ranged in arrival age from 3 to 39. These subjects were asked to judge the grammaticality of 276 spoken sentences. Johnson and Newport found that there was a steady decrease in syntactic performance according to age of arrival, extending past puberty with the steepest decline at age range 14-16. The study suggested learners' capacity for acquiring the syntax of a L2 decline with age.

Flege, Murray and MacKay (1995) tested 240 Italian immigrants of various ages in their use of L2 English. The age of arrival in Canada ranged from 2 to 23. A list of English sentences was given to each person to read. The recordings of these sentences were then given to native speakers and rated for authentic pronunciation. Although most of the older L2 learners were judged as having foreign accents, 6% of the late learners (arriving after age 12) were judged to possess authentic pronunciation. The study clearly demonstrated that native-like pronunciation was accessible even after the supposed critical period.

Bialystok and Hakuta (1999) utilized census data from the state of New York for over 24,000 Chinese- and 38,000 Spanish-speaking immigrants. Only people who had lived a minimum of ten years in the U.S. were chosen for this study to ensure that these immigrants had ample time and opportunity to learn English. Within those ten or more years, the researchers were specifically interested in seeing whether language proficiency differed across immigrants based on the age of arrival in the U.S. In the census, the immigrants had been specifically asked to rate their proficiency in L2 English. Bialystok and Hakuta plotted these responses based on age and concluded that the decline in proficiency remained constant across the age and was similar for both Spanish and Chinese people. A sudden drop in proficiency which was characteristic of the end of a critical period was not found in this research.

Marinova-Todd (2003) tested 30 adult L2 learners from 25 countries in their proficiency of English. The 30 adults were tested in a variety of linguistic tasks such as pronunciation and grammar knowledge. Although most performed below the proficiency of native speakers, a few of them did very well. Her study revealed that three of the L2 learners achieved native-like proficiency across all domains under examination. Marinova-Todd concluded that while age should not be completely ignored, its effects should be considered together with other cognitive and affective factors.

Hakuta, Bialystok and Wiley (2003) analyzed data related to 2.3 million Spanish and Chinese speaking



immigrants. The researchers utilized the data from a number of states. They analyzed this data against the age at which these immigrants first arrived in the U.S. If a critical period existed, the data would have shown a sudden gap or sudden change in proficiency close to the age of puberty. In reality, Hakuta et al. (2003) concluded that the pattern of decline in second-language acquisition failed to produce the discontinuity that was an essential hallmark of a critical period.

Urponen (2004) tested the grammatical knowledge of L2 English in 100 Finnish women. The age of arrival of these women in the U.S. or Canada ranged from 12 to 50 years old. Each woman was tested on their knowledge of whether certain sentence constructs were grammatical or ungrammatical. Urponen's research concluded that the grammaticality judgment test responses of 38% of Finnish-born subjects were indistinguishable from the responses of the native English-speaking control group.

Chiswick and Miller (2008) utilized the 2000 U.S. Census data to perform another analysis. He examined immigrants from Mexico as well as immigrants from other countries. The researchers (Chiswick and Miller) analyzed thousands of data (these immigrants and their self-assessed proficiency of L2 English). Chiswick and Miller concluded that if a critical period was defined as an age at which there was a sharp decline in the ability of immigrants to obtain proficiency in speaking English, no such critical period existed.

Gawi (2011) investigated the effect of age on learning English in Saudi Arabia. His research aimed at encouraging the learning of English as a foreign language at an early age. The statistical population of his study was English language teachers and Saudi students in elementary schools compared with intermediate school students in Dawadmi town. He found out that age affected EFL learning because early exposure to language instructions constantly resulted in better performance. Results of his research showed that learning English at an earlier age was an important factor in enhancing the skills of English language learners.

Valipour and Davatgari (2014) evaluated the effects of age on grammatical rule learning due to a difference between adults and children as English language learners. They showed that adults got higher scores on tests consisting of grammatical questions than children.

Tohidian, I. and Tohidian, E. (2009) examined the effects of age on second language acquisition and found that adult learners had an initial advantage where rate of learning was concerned, particularly in grammar. They also showed that adults would eventually be overtaken by young learners who received enough exposure to the L2. Their results revealed that children might be more likely to acquire a native grammatical competence.

In their study of the effects of age on second language acquisition, Nejadansari and Nasrollahzadeh (2011) showed that adults were better than children where grammar was concerned.

Shakouri and Saligheh (2012) revisited age and gender influence in second language acquisition and showed that age was considered a border beyond which learning declined in particular aspects of language, especially pronunciation, while other aspects of language-syntax and lexis-showed no decline.

## 4. Methodology

### 4.1 Participants

The population of this study was beginner EFL students (adults & children) both male and female ones at English Language institutes located in Kerman, Iran. All beginner EFL students in an institute located in Kerman, district 2 were selected as the sample of this study. They were 100 beginner EFL students (50 children and 50 adults).

### 4.2 Instruments

In order to see the effect of age on EFL learners' grammar, the researcher utilized the quantitative research method. The instruments applied in this study were two tests of grammar (Oxford placement Test & Oxford Grammar Test). To consider the internal consistency reliability (to evaluate the degree to which different test items that probe the same construct produce similar results), split-half reliability as a subtype of internal consistency reliability was used. The process of obtaining split-half reliability begun by splitting in half all items of the test that were intended to probe the same area of knowledge in order to form two sets of items. The entire test was administered, the total score for each set was computed, and finally the split-half reliability was obtained by determining the correlation between the two total set scores. The reliability of the test was (0.81).

To check the validity, the Oxford Grammar Test, as a valid test was used in a way to test the topics being covered at class to follow the content relevance and content coverage validity (simple present, present continuous & to be verbs), and also ten university professors as experts of English language teaching filed were asked to check the questions considering the content validity of the test, and the answers were analyzed based on the Content Validity Ratio Formula (CVR). In accordance with Lawsche (1975), questions whose CVR was more than 0.99 were chosen as the main items.

### 4.3 Data Collection and Analysis

The data for this study was collected by asking the participants to answer the questions (grammar pre-test & post-test). All the answers to the grammar test questions (pre-test & post-test) were used as the data in this study. In analysing the data in this study, a quantitative method was used. The data was analysed using Descriptive Statistics, Inferential Statistics and the Statistical Package for the Social Science (SPSS 16) and Excel 2010. In descriptive statistics, Frequency tables, Bars and Histogram charts were used to describe the variables. In inferential statistics, independent-sample T-test and paired-sample T-test were used to examine the research questions.

## 5. Results and Discussion

**Table 1. Descriptive Statistics of Research Variables in Participants (Children and Adults) in Pre-Test and Post-Test**

Time	Group	Children (n1 = 50)		Adults (n2 = 50)	
		Mean	Std. Deviation	Mean	Std. Deviation
Pre-test	Statistics Variable				
	Performance Score	0.64	1.23	1.38	2.26
	Competence Score	7.08	4.21	6.94	5.06
	Total Score	7.72	5.18	8.32	6.83
Post-test	Performance Score	24.0	4.44	28.16	3.87
	Competence Score	13.56	5.04	19.02	5.17
	Total Score	37.78	6.50	47.18	6.60

In this study, second language grammar achievement (performance and competence) was the dependent variable, and age was the independent variable.

In the pre-test, mean and standard deviation of grammar performance of participants (children and adults) were ( $M = 0.64$ ,  $SD = 1.23$ ) and ( $M = 1.38$ ,  $SD = 2.26$ ), respectively; mean and standard deviation of grammar competence of participants (children and adults) were ( $M = 7.08$ ,  $SD = 4.21$ ) and ( $M = 6.94$ ,  $SD = 5.06$ ), respectively; and mean and standard deviation of total grammar of participants (children and adults) were ( $M = 7.72$ ,  $SD = 5.18$ ) and ( $M = 8.32$ ,  $SD = 6.83$ ).

In the post-test, mean and standard deviation of grammar performance of participants (children and adults) were ( $M = 24.0$ ,  $SD = 4.44$ ) and ( $M = 28.16$ ,  $SD = 3.87$ ), respectively; mean and standard deviation of grammar competence of participants (children and adults) were ( $M = 13.56$ ,  $SD = 5.04$ ) and ( $M = 19.02$ ,  $SD = 5.17$ ), respectively; and mean and standard deviation of total grammar of participants (children and adults) were ( $M = 37.78$ ,  $SD = 6.50$ ) and ( $M = 47.18$ ,  $SD = 6.60$ ).

This study is consistent with studies presented by Marinova-Todd (2003) (age should not be completely ignored, its effects should be considered together with other cognitive and affective factors), Hakuta, Bialystok and Wiley (2003) (the pattern of decline in second-language acquisition failed to produce the discontinuity that was an essential hallmark of a critical period), Chiswick and Miller (2008) (if a critical period was defined as an age at which there was a sharp decline in the ability of immigrants to

obtain proficiency in speaking English, no such critical period existed), Valipour and Davatgari (2014) (adults got higher scores on tests consisting of grammatical questions than children), Nejadansari and Nasrollahzadeh (2011) (adults were better than children where grammar was concerned), Shakouri and Saligheh (2012) (age was considered a border beyond which learning declined in particular aspects of language, especially pronunciation, while other aspects of language -syntax and lexis-showed no decline), and Valipour and Davatgari (2014) (children received higher scores than adults in pronunciation part of the test, and adults got higher scores than children in the grammar part).

But this study contradicts those of Johnson and Newport (1989) (a gradual decline of the level of language proficiency from age range 6-7 to 16-17), Johnson and Newport (1991) (learners' capacity for acquiring the syntax of a L2 decline with age), Tohidian, I. and Tohidian, E. (2009) (children might be more likely to acquire a native grammatical competence), Gawi (2011) (learning English at an earlier age was an important factor in enhancing the skills of English language learners).

## 6. Conclusion

The study was set out to explore the effect of age on EFL learners' grammar learning. The main findings were summarized within section 5, and this section synthesizes the findings to answer the study's research question: what is the effect of age on EFL learners' grammar achievement?

Evidence from this thesis rejects the idea that children are better language acquirers than adults, and it points that adults can even be better second language learners in case of grammar. Critical Period Hypothesis (CPH) holds that the ability to learn a language is limited to the years before puberty. After this time, most probably as a result of maturational processes in the brain, this ability disappears. Richards and Schmidt (2002) defined the critical period as the period during which children can acquire language easily, rapidly, perfectly, and without instruction. This period was identified as ranging from age two to puberty. Considering the critical period hypothesis, children seem to learn languages faster and more easily than adults (Clark, 2003). This study has used empirical findings to show that there is not a critical period, but may be a sensitive period for second language grammar learning, and adults can show to be better learners in grammar achievement. The idea that children are better learners since there is no full access to UG after puberty is not accepted in case of grammar learning, too. The issue of CP is closely related to the issue of access to Universal Grammar (UG) in SL learning: a CP hypothesis would entail that after a certain age (e.g., early teens) UG is no longer available. But this study supports Epstein et al. (1996), Dube (2000) and White's (2000) view that adult L2 learners have full and direct access to all properties of UG. It is suggested that sensitive periods for L2 acquisition are involved both in grammar competence and performance, and that the exact nature of the effects of the sensitive periods may be different, depending upon the linguistic component and the task under examination.

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