

Acquisition of EFL During the Critical Period and Its Impact on L1 Arabic

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Abstract—Language development in children occurs without the explicit teaching of their rules, prompting parents to introduce languages in addition to their native language. This study examines whether extensive exposure to English as a foreign language (EFL) detrimentally impacts children's syntactic proficiency in their primary language (L1). The study involves Saudi Arabian children attending international schools in Riyadh, Saudi Arabia, from grades one to six, who were learning English as a foreign language. An elicited imitation task containing sentences demonstrating syntactic functions was used. The results showed a gradual difference in grade levels. Initially, the lower grades performed well in Arabic, whereas with each advancing grade, there was an improvement in English proficiency, accompanied by a slight decline in Arabic proficiency. This pattern suggests that younger students might have had limited exposure to English, whereas older students had more time to become acquainted with the language, thus influencing their linguistic abilities. This may imply a correlation between the amount of exposure to a foreign language and proficiency in one's native language. While this study provides valuable insights, it lacks detailed individual information on students' language backgrounds and exposure outside educational settings, limiting comprehensive insights.

Index Terms—critical period hypothesis, first language acquisition, EFL, Arabic

I. INTRODUCTION

The acquisition of the native language (L1) has long captured human interest. Despite decades of inquiry, the challenge remains with the critical period hypothesis suggesting limitations in language learning beyond a certain age (Kroll & Groot, 2005). This hypothesis, which has been explored in various disciplines (Oyama, 1979; Colombo, 1982), highlights the time in life when individuals are more sensitive to external stimuli than to any other time in their lifespan (Colombo, 1982). Applied to second language (L2) and foreign language (FL) learning, studies such as Vanhove (2013) assert that adult learners are less receptive than children are, providing the latter with a more efficient L2 acquisition advantage (Tran, 2009).

Various countries incorporate one or two additional languages into compulsory education alongside the first language, with 84% of primary students in select European Union Member States, such as Cyprus, Malta, Spain, and Austria learning English as a mandatory subject (Foreign language learning statistics - Statistics Explained, 2023). Globally, this trend is evident in Saudi Arabia, where English is implemented as a foreign language in all primary schools (Aljohani, 2016). However, international schools often adopt English as their primary language of instruction (Al-Jarf, 2020). Nevertheless, some studies report that bilingual education hinders students' ability to learn the target language (Porter, 1998), while others support its benefits (Al-Amri, 2013). Bilingualism, according to research, may enhance cognitive and sensory processing and improve information processing in the environment (Marian & Shook, 2012).

Early education is often considered crucial for a child's long-term success in academics and beyond (Aljabreen & Lash, 2016). International schools have recognized this and introduced early childhood education at approximately the age of four. The development of a child's language is unique and involves building a foundation for phonology, morphology, syntax, semantics, and vocabulary (Zheng, 2022). Syntactic development, a fundamental literacy skill, begins as early as two years, with toddlers capable of parsing speech into grammatical units (Hawthorne & Gerken, 2014). Children typically start using grammar rules before preschool, forming sentences and adapting word forms (e.g., adding an s in plurals or an ed in the past tense). As children grow, they show dramatic growth in language understanding, notably the meanings and relationships of words as well as grammar (Scarborough, 2001).

A. Problem Statement

The repercussions of extensive exposure to English as a foreign language on the syntactic development of Saudi Arabian international students in their native language, Arabic, remain unexplored. This research gap prompts the need to investigate how bilingualism affects syntactic awareness among these students and subsequently influences their

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primary language. Addressing this issue is imperative in today's increasingly globalized world. This is to ensure that the students can successfully navigate the world with the language skills they need. Developing policies and practices tailored to specific needs in language education enables teachers to provide the best support to students, leading to improved language proficiency and academic performance.

B. *Questions of the Study*

1. How does extensive exposure to EFL affect the grammar of L1 Arabic among Saudi international students?
2. Is there an optimal age or grade for introducing EFL to Saudi Arabian children?

C. *Objectives of the Study*

1. To investigate the effects of extensive exposure to English on the grammar of L1 Arabic among Saudi international students.
2. To determine the optimal age or grade for introducing English to Saudi Arabian children.

II. LITERATURE REVIEW

The literature explores human language acquisition, tracing from behaviorism to generative grammar, and delves into the critical period hypothesis in relation to second-language acquisition and bilingualism. It draws on prior studies to offer insights into the impact of second language acquisition on a child's cognitive and verbal development in their primary language.

A. *Language Development*

Human connection hinges on language, which is a unique cognitive ability. Unlike other species, humans express thoughts, ideas, and emotions through language, which is a key indicator of cognitive capacity (Fromkin et al., 2003). Studying human language, as Chomsky (2006) notes, allows us to delve into "the essence of man," understanding distinctive qualities of the mind essential to personal and social existence (p. 88).

According to the Language-Hearing Association (1982; as cited in Turnbull & Justice, 2013), language is defined as "a system of conventional symbols that are dynamic, complex, and used as a means of thought and communication." In just a few years, newborns transform into young children capable of expressing themselves in their community's language. This development unfolds gradually, starting with crying, progressing to cooing, babbling, and eventually comprehending their names. Toddlers begin uttering simple phrases like "bye-bye" and label objects in their environment. As vocabulary expands, children combine words, initially forming short sentences like "all gone juice" and "read me." With maturation, these immature sentences evolve into longer and more complex ones. As children learn to talk, their brains form new pathways that enable them to comprehend increasingly sophisticated languages (Keller-Cohen, 1978; as cited in Kennison, 2013). The development of language and the acquisition of our First Language (L1) have intrigued researchers for decades, leading to various theories proposing different approaches to language learning, some emphasizing environmental influence, and others focusing on the biological nature of humans.

B. *The Behaviourist Approach*

The behaviorist approach outlined by Skinner (1957) posits that language acquisition occurs through reinforcement. The environment reinforces verbal behaviors, such as word repetition or sentence formation, facilitating language acquisition. Skinner viewed language acquisition as similar to any other behavior, emphasizing the fundamental role of the environment. Conversely, Chomsky (1959) challenged the behaviorist perspective by asserting that L1 acquisition is more intricate and involves an innate mechanism in the human mind. This perspective introduces Generative Grammar.

C. *Generative Grammar*

The concept of Universal Grammar (UG) encompasses an innate mechanism called the Language Acquisition Device (LAD) that allows for the rapid development of language skills with minimal input. Chomsky contends that language is not merely a learned behavior but a complex process rooted in innate ability. Universal Grammar (UG) posits that all languages share common properties and that infants are inherently predisposed to language acquisition regardless of their environment (Kennison, 2013). Additionally, the generative approach aligns with the hypothesis of critical developmental periods in language, which is the central focus of this study (Kennison, 2013).

D. *Critical Period Hypothesis*

(a). *Definitions*

During a critical period, external influences can profoundly impact an organism more than at other times in its life (Colombo, 1982). This heightened environmental input can be specific, as observed in the development of orientation specificity in the visual cortex (Daw & Wyatt, 1976; Berman & Daw, 1977), or less specific, such as substances affecting embryonic development during certain prenatal periods (e.g., Stockard, 1921). In behavioral development research, external stimuli during critical periods can lead to either a smooth continuation of development or the creation of an irreversible effect that persists into subsequent developmental stages (Scott, 1962).

(b). The Development of the Critical Period Hypothesis

The critical period hypothesis proposed by Penfield and Roberts (1959) posits that language development is most rapid in early childhood, becoming increasingly challenging and rarely successful after this period (Penfield & Roberts, 1959). Lenneberg (1967) asserted that language acquisition is confined to a critical period extending from early infancy to puberty, beyond which it becomes nearly impossible. This period considered the window for first language acquisition, lasts from infancy to puberty (Schouten, 2009). Lenneberg's theory suggests a mechanism involving decreased brain flexibility and reorganizing ability after puberty owing to reaching maturity (Ying, 2017).

Behavioral studies since Lenneberg, such as the case of Genie, a 13-year-old abuse victim, have approached a direct test of the critical period hypothesis for acquiring a first language (Curtiss, 1977). Genie, who was deprived of language and social interaction until age 13, was offered an opportunity to examine whether a nurturing environment can compensate after age 12 for language deprivation (Ying, 2017). Despite seven years of rehabilitation, she remained linguistically incompetent, particularly in syntax, supporting the critical period theory (Johnson & Newport, 1989). Curtiss's evaluation of Genie's case aligns with Lenneberg's interpretation of cerebral dominance, reinforcing the strong correlation between laterality and the critical period (Lenneberg, 1967; Curtiss, 1977).

(c). Second Language Acquisition

Initially applied to first language acquisition, critical period theory was expanded to encompass second language learning. The proposition is that the brain reaches adult capacity around puberty, losing plasticity and reorganization ability (Gürsoy, 2011). Second language learning with its distinctive characteristics is said to become more challenging after this critical developmental phase (Johnson & Newport, 1989). Controversy surrounds the critical period hypothesis when applied to second language acquisition. Johnson and Newport evaluated the English grammar proficiency of 46 Korean and Chinese speakers arriving in the USA between the ages of 3 and 39 years and indicated a proficiency decline with age and varied achievement after puberty (Johnson & Newport, 1989). Other researchers highlighted confounding factors influencing these results, such as the correlation between age at arrival and variables impacting second language acquisition, such as the quantity and quality of input etc. (VanPatten et al., 2019).

Critical period hypothesis research has progressed since the early 1990s; however, fundamental challenges persist. Researchers have established criteria for inclusion, necessitating that participants be perceived as native speakers, along with measures such as length of residence (as opposed to age of arrival) and aptitude scores (VanPatten et al., 2019).

(d). Bilingualism

Bilingualism is the ability to communicate in more than one language (Liddicoat, 1991). This can be achieved through simultaneous bilingualism, in which multiple languages are acquired simultaneously, or sequential bilingualism, in which one language is learned first, followed by another (Liddicoat, 1991). Learning a second language can have both positive and negative consequences. Encouraging the use of both languages results in additive bilingualism and enhanced proficiency. Conversely, emphasizing only one language may lead to subtractive bilingualism, where proficiency in non-emphasized languages diminishes (Collazo, 2021). Cummins (2001; as cited in Cummins, 2017) defines additive bilingualism as the addition of a second language, allowing progress in both languages, while subtractive bilingualism, as per Baker and Jones (1998; as cited in Cummins, 2017), involves acquiring a second language at the expense of the first language, potentially impacting language ability and cultural identity (Nguyen & Hamid, 2017).

E. Previous Studies

The literature presents conflicting findings regarding how a second language influences a child's cognitive and verbal development in their first language. Studies, such as those conducted by Bialystok et al. (2003), and Bialystok et al. (2005), proposed that bilingualism can have varied effects on cognitive and verbal development. They suggested that bilingual individuals, particularly those with similar writing systems in both languages, exhibited better performance in certain cognitive and verbal tasks.

Oberhofer (2008) compared bilingual and monolingual children at English immersion kindergartens and demonstrated the benefits of early multilingualism. Bilingual children attended an English-based kindergarten and underwent testing at five years and six months of age. Participants followed an immersion program for several months to two years. Ricciardelli (1993), Bialystok (1986), and Ianco-Worrall (1972) influenced metalinguistic tasks including word order repetitions, word renaming, and syntactic error detection. The results showed bilingual excellence in all tasks except for word-order repetitions. Early bilingual exposure positively affects metalinguistic skills, suggesting benefits for both bilingual and limited second-language-exposed children, even starting later.

In a similar study by Hussien (2014), students learning English as a second language demonstrated enhanced accuracy in reading and spelling Arabic, their first language. Bilingual students outperformed their monolingual counterparts in literacy measures, supporting the concept of multi-competence and the impact of second language learning on cognitive development (Cook, 2002, 2003; Kecskes, 2010) leading to improved language skills (Kecskes, 2008). Alternatively, Cross-linguistic literacy transfer may contribute to bilingual students' superior performance (e.g., Cho et al., 2011).

In contrast, earlier research contended that bilingualism may have negative cognitive impacts, claiming that monolinguals outperform bilinguals (Sear, 1923; Holm & Dodd, 1999). In the 1920s, Sear (1923) asserted that speaking both languages hinders children's cognitive skills. Using the Stanford-Binet intelligence scale, Sear compared Welsh English bilingual and monolingual children and found that monolingual Welsh English children scored notably higher. Additionally, Holm and Dodd (1999) found that English phonology impacted Cantonese-speaking children (2.5–3.5 years old), with the initial Cantonese sound patterns changing after English exposure. Both languages displayed atypical patterns, including initial consonant deletions and voicing, suggesting interactions between the phonological systems. Jia and Aaronson (2003) found that Chinese immigrants under nine shifted to English proficiency within a year, excelling in a richer L2 environment. The older participants maintained their L1 proficiency while being exposed to enriched L1 environments, highlighting the roles of cognitive, social, and cultural factors in language acquisition and proficiency. Furthermore, Gildersleeve-Neumann et al. (2008) found phonological influences of Spanish on bilingual Spanish/English children who exhibited more spirantizations and final consonant deletions than their English monolingual peers. Gildersleeve-Neumann et al. (2009) observed changes in Spanish phonological development owing to English exposure. However, not all aspects of phonology are equally affected by cross-linguistic transfer. As language becomes more intricate, challenges such as negative transfers may arise. For instance, transitioning from Spanish's system of five vowels to English's system of eleven vowels requires reorganizing existing systems. Researchers argue that children develop distinct and complete phonological systems because of interactions between different phonological systems (Holm & Dodd, 1999; Goldstein, 2004).

In a more complex manner, early foreign language learning is associated with the loss of children's first language, as indicated by previous research. Merino (1983) conducted a study of 41 bilingual Spanish-English children, revealing a significant decrease in Spanish usage as they progressed from kindergarten to the fourth grade. A follow-up two years later showed improved English skills, but a decline in Spanish proficiency, particularly for children using both languages with the same speaker. Similarly, Orellana (1994) tracked three children who had initially spoke Spanish. Despite having native English-speaking parents, their use of English initially revolved around superheroes. By the age of three, Spanish diminished, making it challenging for them to express themselves. Within three years, all three children shifted to favor English. This study highlights how exposure to languages impacts language dominance and emphasizes that children's language adoption is intrinsically linked to their individual identities. In a different context, Hansen-Strain (1990) studied eight American children in Japan learning Japanese for two and a half years. Younger children lost their native language more rapidly without an educational environment in their native language (English), emphasizing the vital role of nurturing settings for young children to maintain and enhance their native languages.

In the Arabic context, Al-Jarf (2004; as cited in Al-Jarf, 2020) studied 40 students in Saudi Arabia's international schools, where English is the primary language. This study found that English proficiency surpassed Arabic proficiency in reading and writing. Among respondents, 35% used English exclusively, 25% mixed Arabic and English, and 40% used a colloquial blend of English terms. Challenges in expressing themselves in Arabic were noted, with 35% being unable to write Arabic and 65% facing difficulties in reading and writing. Some King Saud University students found studying Arabic challenging, particularly in courses on Islamic culture. At home, 10% communicated in English with their fathers, whereas the mothers predominantly spoke Arabic. Respondents preferred to respond in English and avoid Arabic even though they understood the questions in Arabic.

Finally, some studies challenged the idea that learning other languages affects a student's first language, including (e.g., Eassa & Al Mutawa, 1998; Abu-Rabia & Siegel, 2002; Anderson, 2004; Aljohani, 2016; Aldosari & Alsultan, 2017). Anderson's (2004) case study of bilingual preschoolers found limited transfer of consonant properties between languages, suggesting distinct phonological systems for each language. Aljohani (2016) observed no noticeable impact on students' Arabic language performance when English was introduced, attributing it to traditional teaching methods, predominantly centered on traditional language teaching approaches, such as grammar translation and audio-lingual methods. These methods offer limited opportunities for learners to actively practice the language, contributing to what Krashen (1985) termed "a poor acquisition environment." Focusing on literacy skills, Aldosari and Alsultan's (2017) study of early bilingual education in Saudi Arabia showed no negative effects on Arabic reading or writing skills when English was introduced at the beginning of formal schooling. These findings challenge the notion that learning other languages hinders proficiency in one's first language.

While there is a considerable body of research on various facets of language development in bilingual children, exploration of how the syntax of a second language influences a child's first language remains relatively limited. This study investigates how students' exposure to intensive English within an educational setting influences their proficiency in Arabic, their primary language. It utilizes an elicited imitation task to test the study's hypothesis by comparing how native Arabic speakers construct sentences in response to English and Arabic stimuli.

III. METHODOLOGY

A. Participants

The study included 107 Arabic native Saudi children of both genders aged 6–12 years from two international elementary schools in Riyadh, Saudi Arabia. Purposive sampling ensured that criteria, such as age, language proficiency, and cultural background, were met. By deliberately selecting these participants, this study aimed to obtain a

representative sample with similar characteristics, including having at least one native Saudi parent and having acquired English as a foreign language in an academic setting.

B. Instrument

An elicited imitation task (EIT) was employed to assess the accuracy and fluency of language repetition in both English and Arabic ("Saudi Arabic"), providing valuable insights into the bilingual language development of the participants. Similar to Smith's approach (1973; as cited by Hamayan et al., 1977), this study utilized Smith's method for both English and Arabic sentences, with adaptations made by Hamayan et al. (1977) for English sentences. These adaptations were incorporated into the study of Arabic sentences. According to Hamayan et al., Smith's sentences are notably short and easily repeatable. To enhance the memory challenge, a brief explanation was added to each target sentence. The correct repetition assessment focused solely on the first sentence, whereas explicit sentences were kept approximately at the same length for fairness. The sentence structure includes three A structures (conjunctions, complements, and numbers) and three B structures (relative clauses, verb auxiliaries, and adjectives). Within each structural type in both languages, half of the stimulus sentences contained grammatical errors while the other half were grammatically correct.

TABLE 1
EXAMPLES OF THE ENGLISH AND ARABIC GRAMMATICAL AND UNGRAMMATICAL SENTENCES OF THE SIX STRUCTURES

Area of Structural Complexity	A structures (English)	A structures (Saudi Arabic)
Conjunction:	"The man and the cat are in the house." **"The book and the pencil is on the table."	الرجال والقطة في البيت. *الكتاب و قلم الرصاص الى الطاولة*
Complement:	"The girl likes to eat chocolate." **"The student began read the book."	البنيت تحب إنها تاكل الشوكولاتة *الطالب بدأ قرأ الكتاب*
Number:	"One of the apples fell off the table." **"Two of the ball rolled away."	وحدة من التفاحات طاحت من الطاولة *ثنتين من الكوره تدرجوا بعيد*
	B structures (English)	B structures (Saudi Arabic)
Relative Clause:	"The man who is driving is a policeman." **"The girl is smiling is happy."	الرجال اللي يسوق شرطي *البنيت تضحك هي فرحانة*
Verb Auxiliary:	"The mouse may have eaten the cheese." **"The kid should have take the toy."	يمكن الفار هو اللي أكل الجبن *الطفل لازم هو لازم ياخذ اللعبة*
Adjective:	"The small grey cat drank the milk." **"The woman tired old helped the man."	القطة الرمادية الصغيرة شربت الحليب *التعبانة الكبيرة الحزمة ساعدت الرجال*

C. Procedure

The researcher conducted the test individually with each participant and recorded it on tape. To familiarize the child with the recording process, they were informed beforehand and showed how to operate the recorder. The child was encouraged to initiate the recording by stating their name, after which the researcher provided the following instructions, "I would like you to watch me say something now and try to say exactly what I am saying." The participants were given the first test sentence only if they had completed the sequence, which included a practice sentence.

This approach aimed to create a comfortable environment for children, allowing them to concentrate on the task without being distracted by unfamiliar test-taking procedures. Additionally, it ensured the consistent and standardized administration of the test across all participants.

D. Data Analysis

The scoring procedure closely mirrored Smith's study (1973; as cited by Hamayan et al., 1977), albeit with a few adjustments. Utterances that were incomprehensible or contained false starts were disregarded, with an emphasis placed on scoring the corrected versions whenever they appeared. Errors in syntax and function words were noted within each sentence type, synonyms were deemed correct, and lexical errors were overlooked. "Peripheral errors," such as repetition or misuse of pronouns, were grouped together with "accurate repetitions," following the approach adopted by Smith. The response categories included three common aspects for both grammatical and ungrammatical sentences: (a) Accurate repetitions, (b) Syntax deviations (without altering the sentence's meaning, yet containing a syntactic error), and (c) Inadequate responses (altering the sentence's meaning). In addition, the study introduced a fourth category, (x) Correct substitution, specifically for categorizing grammatical sentences. Ungrammatical sentences can also fall under the fourth category, (d) Normalization, in which participants rectified ungrammatical sentences.

As part of the study's main objective, a descriptive analysis was conducted to assess the syntactical proficiency of Saudi International School students in Arabic and English. Under each syntactic function scoring label, the students' answers were coded with numbers (1). Data from each area of structural complexity were entered into Excel sheets with

isolated columns for six syntactic categories (conjunctions, complements, numbers, relative clauses, verb auxiliaries, and adjectives). These categories were grouped horizontally using four scoring labels. The total responses for each function were calculated in a separate column. A calculation was then made for the average of all items addressing the same function. Finally, for each grade in both languages, the percentage of each target function was calculated based on the six functions.

IV. FINDINGS

The findings of this study are presented and compared to answer the research questions. The results are presented in Tables 2-5 and Figures 1-3. Tables 2,3, showed the scores of accurate repetition and correct substitution of English and Arabic grammatical sentences, while Tables 4,5 showed the scores of accurate repetition and normalization of English and Arabic ungrammatical sentences. Figure 3. Presents and compares the proportion of accurate repetition and normalization of structures A and B by Saudi students in the first to sixth grades.

A. Findings of the Grammatical Sentences

Tables 2 and 3 present the overall accurate repetition and correct substitution scores of the syntactic functions of the English and Arabic languages.

According to Tables 2 and 3, the English scores ranged from 50% to 93%, whereas the Arabic scores ranged from 61% to 85%. In both ranges, grade six had the highest level of accurate repetition, followed by English G4 and G5 with scores of 86% and 84%, respectively, while Arabic G4 had 73% and Arabic G5 had 67%. The English G3 had a score of 80%, whereas the Arabic G3 had a score of 67%. For English G2, the score was 68%, and for Arabic G2, the score was 66%. Finally, the lowest level of repetition accuracy was exhibited by English G1, scoring 50%, lower than Arabic G1, which scored 61%. The students achieved an overall accuracy rate of 77% in English and 70% in Arabic.

TABLE 2
ENGLISH GRAMMATICAL SENTENCES

Description	Conjunction		Complement		Number		Relative Clause		Verb Auxiliary		Adjective		Total grade value	
	a	x	a	x	a	x	a	x	a	x	a	x	a	x
G1	47%	5%	84%	5%	53%	11%	47%	0%	5%	11%	63%	11%	50%	7%
G2	71%	0%	88%	6%	65%	12%	53%	0%	29%	24%	100%	0%	68%	7%
G3	82%	12%	100%	0%	76%	6%	82%	0%	53%	6%	88%	0%	80%	4%
G4	94%	0%	94%	6%	82%	0%	94%	0%	59%	6%	94%	0%	86%	2%
G5	96%	4%	100%	0%	57%	39%	87%	0%	74%	9%	91%	4%	84%	9%
G6	100%	0%	100%	0%	79%	21%	93%	0%	86%	14%	100%	0%	93%	6%
Total						41%							77%	6%

In terms of correct sentence substitution in both languages, students tended to substitute sentences less frequently than merely repeating them. In English, the average substitution rate was 6%, whereas in Arabic, it was notably higher at 19%, resulting in a total difference of 13% between the two languages. When comparing the scores between English and Arabic, it became evident that G5 had the highest substitution accuracy in English, achieving 9% in English and 23% in Arabic, similar to G1, with a difference of 18%. G1 and G2 exhibited the next highest values at 7% and 21% for Arabic for G2. G3 achieved a 4% accuracy in English and 17% accuracy in Arabic. Notably, G4 had the lowest rate in English (2 %), whereas it scored 17% in Arabic. Conversely, G6 scored the lowest in Arabic at 12% but performed slightly better with 6% in English.

TABLE 3
ARABIC GRAMMATICAL SENTENCES

Description	Conjunction		Complement		Number		Relative Clause		Verb Auxiliary		Adjective		Total grade value	
	a	x	a	x	a	x	a	x	a	x	a	x	a	x
G1	68%	26%	32%	37%	74%	0%	79%	5%	63%	21%	47%	47%	61%	23%
G2	59%	35%	53%	24%	82%	0%	88%	0%	71%	18%	41%	47%	66%	21%
G3	65%	12%	71%	18%	76%	0%	88%	6%	53%	29%	47%	35%	67%	17%
G4	82%	18%	65%	29%	71%	0%	94%	6%	53%	29%	71%	18%	73%	17%
G5	74%	26%	57%	39%	78%	4%	78%	0%	65%	26%	52%	43%	67%	23%
G6	79%	21%	93%	7%	93%	7%	93%	7%	86%	7%	64%	21%	85%	12%
Total						44%							70%	19%

B. Findings of the Ungrammatical Sentences

Tables 4 and 5 show the students' overall accuracy in the repetition and normalization of ungrammatical sentences in English and Arabic, respectively. In the context of students' performance in repeating ungrammatical sentences in both English and Arabic, G1 attained a higher score in English at 45% than in Arabic at 41%. G2 had the most pronounced difference between the two languages, with 70% accuracy in English and notably exceeding 47% accuracy in Arabic. G3 also demonstrated better accuracy in English (59%) than in Arabic (51%). G4 achieved accuracies of 66% in Arabic and 61% in English. G5 showed substantial variation with 65% accuracy in English and 50% accuracy in Arabic. Finally, G6 achieved a 69% accuracy in Arabic and a slightly lower accuracy of 67% in English. When comparing the students' overall scores for normalizing ungrammatical sentences in English and Arabic across various grades, several notable trends emerged. G1 achieved the highest score for Arabic (37%); however, their English performance was notably lower (21%). Similarly, G2 showed a higher score in Arabic than in English, scoring 33% versus 13%, respectively. G3 performed slightly better in Arabic, with a score of 27%, and outperformed their English score by 24%. In contrast, G4 exhibited a significant difference with a score of 33% in English and 22% in Arabic. G5 demonstrated consistent performance, with 31% in both languages. G6 achieved a higher score in English (32%) than in Arabic (23%).

TABLE 4
ENGLISH UNGRAMMATICAL SENTENCES

Description	Conjunction		Complement		Number		Relative Clause		Verb Auxiliary		Adjective		Total grade value	
	a	d	a	d	a	d	a	d	a	d	a	d	a	d
G1	42%	33%	33%	42%	75%	8%	67%	8%	17%	17%	25%	17%	43%	21%
G2	50%	30%	70%	20%	90%	10%	90%	0%	40%	30%	60%	0%	67%	15%
G3	50%	38%	50%	50%	100%	0%	75%	0%	25%	25%	13%	13%	52%	21%
G4	56%	33%	44%	56%	89%	11%	89%	11%	44%	44%	56%	22%	63%	30%
G5	42%	58%	42%	58%	67%	33%	67%	25%	75%	17%	75%	0%	61%	32%
G6	63%	25%	63%	38%	75%	25%	75%	25%	63%	38%	63%	0%	67%	25%
Total							41%						59%	24%

TABLE 5
ARABIC UNGRAMMATICAL SENTENCES

Description	Conjunction		Complement		Number		Relative Clause		Verb Auxiliary		Adjective		Total grade value	
	a	d	a	d	a	d	a	d	a	d	a	d	a	d
G1	21%	68%	37%	47%	68%	0%	53%	37%	11%	63%	58%	5%	41%	37%
G2	18%	53%	53%	35%	82%	0%	47%	35%	18%	76%	65%	0%	47%	33%
G3	41%	41%	82%	6%	65%	0%	41%	47%	18%	47%	59%	18%	51%	27%
G4	59%	29%	71%	24%	94%	0%	53%	41%	35%	35%	82%	0%	66%	22%
G5	39%	52%	52%	39%	74%	0%	43%	43%	22%	48%	70%	4%	50%	31%
G6	57%	36%	79%	29%	86%	0%	79%	21%	29%	36%	86%	14%	69%	23%
Total d						29%							54%	29%

C. Proportion of Accurate Repetition and Normalization of A, and B Structures

As illustrated in Figure 3, younger grades demonstrated a greater difference in the B structure, with Arabic performing 16% better. In terms of A structure, the difference between the two languages is not as significant as that between the B structures; however, there is a noticeable 6% difference in favor of English. Conversely, A structure differed significantly between high grades, performing better in English by 14%, whereas B structure showed only a 5% difference. Interestingly, low-grade Arabic performed equally well in the B structure, as higher grade Arabic. In English, high grades performed better in Structures A and B by a difference of 13% and 21%, respectively.

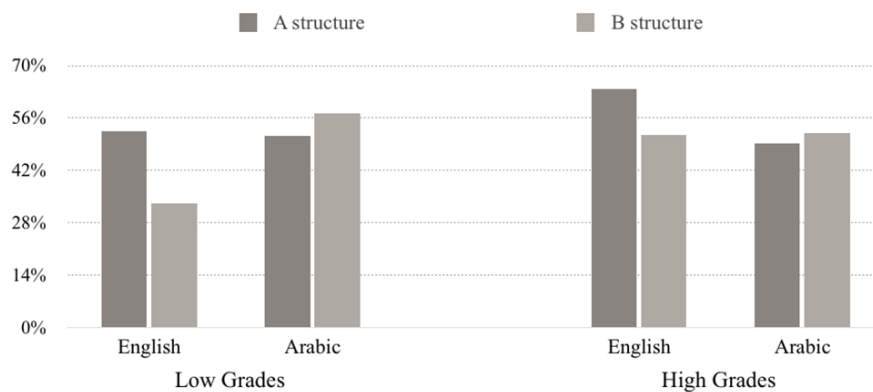


Figure 1. Proportion of Accurate Repetition and Normalization of A, and B Structures

V. DISCUSSION

The study objectives were reviewed to determine whether prolonged use of English affects L1 Arabic grammar. In addition, it determined the optimal age or grade for introducing English to Saudi Arabian children.

According to the general findings across Arabic and English, students had little difficulty imitating sentences in either language, except first graders. However, there was a difference in performance between the first and sixth grades, favoring the sixth grade, suggesting that as students progressed through the grades, their language skills likely improved. This improvement might be owing to various non-linguistic factors, such as memory span, attentiveness, and motivation, as noted by Hamayan et al. (1977). Interestingly, although English proficiency increased, Arabic imitation slightly declined as students learned more English. This suggests a growing influence of English in educational settings, possibly leading to a shift in preference from Arabic to English after extensive exposure to English in school. This aligns with Merino's (1983) research in which students' use of their first language, Spanish, decreased significantly by the fourth grade, while their English improved two years later. It is significant to note that the students in this study were still required to take Arabic classes and live in an Arabic-dominated society. Furthermore, this study does not necessarily indicate that students prefer English over Arabic. Instead, their Arabic proficiency may have decreased because of their increased English exposure at school. Despite this exposure, students' performance in creating original Arabic sentences indicates a strong command of the language, likely owing to exposure outside school. Orellana (1994) argues that language patterns at home, school, and in society greatly influence language dominance.

Based on the analysis and normalization of ungrammatical sentences, patterns similar to those observed in imitating correct sentences emerged. In Arabic, the performance of 4th and 6th graders showed a slight decrease compared to English, marking a 10% drop in grade 4 and 9% in grade 6, while grade 5 remained steady. In contrast, lower grades displayed better performance in Arabic, including a 16% improvement in grade 1, 21% in grade 2, and 3% in grade 3. Accordingly, there is a nonrandom pattern in the consistency of performance across grades, suggesting that higher grades may have a better grasp of English language structures, whereas lower grades may have a better understanding of Arabic language structures. Oberhofer (2008) argued that bilingual individuals demonstrate an improved ability to detect and rectify syntactic errors. This suggests that early immersion in a bilingual environment benefits metalinguistic skills but appears contradictory to the study findings, while immersion in a bilingual environment helps children learn a second language at a critical age, excessive emphasis on the second language may negatively affect the first, this conclusion resonates with Al-Jarf's research (2004; as cited in Al-Jarf, 2020).

Smith (1973; as cited in Hamayan et al., 1977) attributes the difference between the two classes of stimuli A and B structures to several theories. Smith introduced a variable called "compression." It refers to "the way semantic information is presented in a sentence." The NPs and VPs with balanced information distributions are said to have low compression, whereas NPs and VPs with concentrated information are said to have high compression. According to Smith, increased amounts of compression of information units in sentences account for the increased difficulty with sentence imitation (p. 517). However, Hamayan et al. (1977) argue that the compression hypothesis may have several limitations, including difficulty in determining the meaning of the term "semantic information," according to conventional information theory (Cherry, 1966; as cited by Hamayan et al., 1977), a semantic unit's information value varies inversely with its probability of occurrence. Nevertheless, Hamayan et al. argue that the imitation difficulty is, at best, the result of several factors, including compression. Thus, the differences between the types of sentences that are easy and difficult to repeat cannot be explained by a single factor.

This study highlights the consistent differences in difficulty between the two stimuli. When focusing solely on the A structure, these differences could be linked to age-related developmental variances observed in younger versus older students, aligning with Brown's (1973) longitudinal study, indicating an invariant development of grammatical structures over time. However, the results for the B structure suggest an alternative explanation. The lack of improvement in Arabic may be a result of varying exposure intensities between Arabic and English. This may account for the limited improvement observed among students in higher grades in Arabic.

In response to the second research question, it appears that it may be possible to answer this question by introducing English to children as early as possible. In addition, they ensured that their mother tongue was taught with the same intensity and enthusiasm. Introducing English early gives them a headstart in learning a foreign language, while teaching them their mother tongue ensures that they have a solid foundation in both languages. This allows them to become proficient in both languages, and gives them the skills to communicate effectively in any language.

VI. CONCLUSION

It is an undeniable fact that the English language is a global language used in numerous different fields, such as business, science, technology, and education. It is also the language of communication for the majority of the world's population. Knowing English opens up several opportunities and provides access to a wealth of information and resources that would otherwise be inaccessible. However, learning a foreign language should not be viewed as a replacement for our mother tongue, but rather as a complement to it. Knowing both languages can open up numerous opportunities in life. Therefore, it is critical to maintain a balance and strive for excellence in both languages. In the present study, international students with little exposure to Arabic studied in an educational environment with a strong focus on English. Throughout grades one and six, the study employed an imitation task to measure students' English and Arabic syntactic proficiency during the critical period. The results indicate that students' proficiency in English had improved over time. The study also revealed a slight decline in students' Arabic proficiency at higher grades. This may suggest that while exposure to English over an extended period of time had a positive effect on students' English proficiency, it had a slightly negative effect on their Arabic proficiency. However, students still had somewhat of a solid base in Arabic, which indicates that the overall effect of exposure to English was not overly detrimental. Owing to the focus on mostly one language in the educational environment of those students, we may attribute this decline to differences in exposure intensity between the two languages. Nevertheless, we are uncertain whether intensive exposure to one language rather than the other will have long-term effects.

A. *Limitations*

The lack of detailed information about each student's individual language background and their exposure outside the educational environment can make it difficult to accurately assess their language proficiency. Understanding students' language use beyond the school setting can offer a more comprehensive picture of its influence on their language proficiency.

B. *Practical Implications and Ethical Consideration*

The practical implications of our research suggest that bilingual students should strive to maintain a balance between both languages to maximize the benefits of bilingualism. Our research also emphasizes the importance of providing students with adequate exposure to both languages in an educational environment. For this purpose, schools should strive to provide a learning environment in which both languages are given equal importance and utilized to their fullest potential. Additionally, our study emphasized the importance of providing ample support and resources for students to maintain their proficiency in both languages.

As language expresses culture and holds values and morals, parents and communities should encourage and reinforce the use of the native language. This helps keep the language alive and strengthens the sense of identity. It also helps create a deeper connection between generations and can be a source of pride for the community.

Ethical considerations were considered after obtaining approval from The Institutional Review Board before conducting the research. Informed consent was obtained from all participants and their guardians. The researcher also ensured that the participants were not exposed to harm or discomfort. Additionally, the study provided the participants with the option of withdrawing their data at any time.

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