Patterns of Code-mixing in the Speech of Yemeni Arabic-English Speaking Children: A Pilot Study

Afrah Humran and Prof. K. C. Shyamala
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Abstract

This study examined the intra-sentential patterns of code mixing in the speech of Yemeni Arabic-English speaking children in the light of Scotton (1993) and Muysken (2000). Data was drawn from the speech of four typically developing Yemeni Arabic-English bilingual children. Their ages were between six and nine years at the time of recording the data. The participants were divided into two groups: Group 1 (whose age was above 8 years) and Group 2 (whose age was below 8 years) so as to compare and contrast the results. The speech of the participants was recorded for 8 hours; 4 hours in English and 4 hours in Arabic. The participants' proficiency in English and Arabic languages was also assessed. In terms of patterns of code-mixing, this paper dived into the minute details of the grammatical categories such as tense and mood of verbs, and produced fine-grained analysis of code mixed grammatical categories of both Arabic and English. We obtained such fine-grained analysis by means of special computer programs which we developed for this purpose. Results showed varied patterns of code mixing in Arabic and English. It was revealed that Group 1 produced more code mixing in Arabic and English languages, viz. 85.71% Arabic code mixing in English and 84.16% English code mixing in Arabic. On the other hand, Group 2 of participants produced less code mixing in Arabic and English languages, viz., 25.85% English code mixing in Arabic and 14.29% Arabic code mixing in English. Top reasons for such variation include dominance, period of exposure to English, lexical gaps and speaker accommodation. Qualitatively speaking, older children mixed more closed content words rather than the open words. The findings of this paper presented a challenge to the findings of Scotton (2002) and Gamal (2007) who maintained that nouns are the most frequent mixed grammatical categories.

Abbreviations used in this paper are as follows: 1 = 1st Person, 2 = 2nd Person, 3 = 3rd Person, CM = Code-mixing, CS = Code-switching, CA = Classical Arabic, DEF = Definite article, NEUT = neutral gender, PAST = Past tense, PL = Plural, PRES = Present tense, SG = Singular.

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Key words: patterns of code-mixing, bilingual children, language proficiency test, Arabic-English mixing, Yemeni Arabic

1. Introduction

This study attempts to investigate Code-mixing (CM) in the speech of typically developing children whose mother tongue is Arabic and who use English as a second language. It is well known that English and Arabic are genetically unrelated in any aspect. Due to the fact that English language is well-described by researchers in sources which are easily accessed, we restrict ourselves to describe Arabic language.

Arabic is the language spoken nowadays by around 400 million native speakers in the Middle East, i.e. the Arab Peninsula in Asia and the Northern regions of Africa to the south of the Mediterranean Sea. Arabic is a member of the Semitic language family, which itself is part of the wider Afro-asiatic phylum including Ancient Egyptian, Coptic, Cushitic, Berber and Chadic.

Modern Standard Arabic (MSA) _ the descendant of Classical Arabic branches into 22 vernacular dialects in the 22 Arab countries, each country having its own regional vernacular variety. The focus of this paper is Yemeni Arabic _ the vernacular variety of MSA which is spoken in Yemen. Yemeni Arabic branches into several dialects, viz. Sana'ni, Taizi, Adani, Hadrami, Tehami, Yafi'i and Ibbi dialects amongst others. The language varieties spoken by the participants are Sana'ni (one participant), Ibbi (one participant) and Yafi'i (two participants). These dialects vary in terms of phonological inventories and especially in the pronunciation of voiced palatal stop /ɟ/ and the voiced velar stop /g/. Speakers of Ibbi and Sana'ni dialect pronounce /ɟ/ normally, /g/ is pronounced in place of MSA Arabic voiceless uvular stop /q/. Yafi'i dialect speakers pronounce /g/ in place of /ɟ/, and voiced uvular fricative /ʁ/ in place of /q/.

In terms of morphology and syntax, all varieties of Yemeni Arabic maintain the same inflectional and derivational paradigms as well as the same word order. However, there is a great deal of lexical variation from one dialect to another one.

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The rest of the paper is organized as follows: Section 2 briefly reviews related literature. Section 3 gives an account of methodology, data collection methods, settings of data collection and language proficiency tests of the participants. Section 4 presents data analysis from several perspectives such as English CM in Arabic, Arabic CM in English, CM as a function of age of the participants, and CM in a language-wise fashion. Section 5 concludes the paper with discussions and conclusions. All utterances exemplified in this paper are typed according to the guidelines of International Phonetics Alphabet in Charis SIL font.

2. Review of Literature

In the discussion of code-switching (CS), one controversial issue has been the difference between code-mixing (CM) and CS. On the one hand, Myers-Scotton (1993) provides a new definition of CS. She argues that CS is "a term used to identify alternation of linguistic varieties within the same conversation". On the other hand, Chengappa (1984) maintains that CS is intersentential while CM is intrasential. Further, she maintains that CS is a "deliberate and conscious effort while CM needs not necessary be so". Authors such as Grosjean (1998) consider CS as a complete shift from one language to the other, either for a word, a phrase or a whole sentence. Muysken (2000) uses the term code-mixing to refer to "all cases where lexical items and grammatical features from two languages appear in one sentence".

Recently, there have been some differences in defining CM and CS. According to Torbio and Bullock (2009), "CS is a linguistic manifestation that may extend from the insertion of single words to the alternation of language for larger segments of discourse". It is also produced by bilinguals of differing degrees of proficiency who reside in various types of language contact setting, and as a consequence, their CS patterns may not be uniform. Further, it may be deployed for a number of reasons: filling linguistic gaps, expressing discursive aims, among others. Given these factors, it is not surprising that there exists a debate in the literature concerning the precise characterization of CS and how various kinds of language contact varieties can be classified.

This shows a need to be explicit about exactly what is meant by CM. Many linguists assume that CM can be used to refer to CM, CS and alteration between languages. Muysken (2000) uses the term

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code-mixing to refer to "all cases where lexical items and grammatical features from two languages appear in one sentence". He separates cases of CM from lexical borrowing:

i. Intra-sentential CM such as insertion of material (lexical items or entire constituents from the other language).

ii. Alternation between structures from languages

iii. Congruent lexicalization of material from different lexical inventories into shared grammatical structures.

For some authors, CS and CM is a matter of selection from available systems. Meisel (1989) uses the term code-switching to describe "the bilingual's ability to select the language according to the interlocutor and the situational context". This selection is constrained by the characteristics of the linguistic system in the same way as with adults. On the other hand, he uses the term code-mixing to describe the situation in which a speaker cannot differentiate between the two languages. Jisa (2000) states that CS is a "widespread phenomenon in bilingual speech communities among bilingual individuals". Just as monolinguals may switch registers, styles or voice during conversation, bilinguals may switch languages". For others, however, CS and CM are used more purposefully so as to "mark conversational action boundaries".

Several studies consider CS and CM as indicative measures of the individual competence or command of their native language (L1) and the second language (L2). On her study of Spanish/English typology of code-switching, Poplack (1980) concludes that "code-switching, rather than representing debasement of linguistic skill is actually a sensitive indicator of bilingual ability". Further, Jorgenson (1992) argues that children in schools are very competent in CS such that they manipulate it as an instrument to signify "power and casting rights in conversations". Further, Scotton and Jake (2014) argue that CS is a "verbal skill requiring a large degree of linguistic competence in more than one language, rather than a defect arising from insufficient knowledge of one or the other" and that CS is not a deviant behavior but it is a "suggestive indicator of degree of bilingual competence".

A very interesting question is related to whether CS and CM are unconscious or deliberate. Lipski (2005) differentiates between borrowing and CS. In his views, borrowing is conscious, deliberate and it

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becomes lexicalized as it is used consistently. Further, borrowing is subjected to the phonotactics and morphology of the borrowing language. On the other hand, CS may be conscious and deliberate or (apparently) unconscious. He maintains that CS may be used spontaneously and in such case it is usually unconscious.

Cantone (2007) argues that children's mixing should be treated in some way as adults mixing. Further, he claims that there exists an association between mixing and the development of children's grammar. In Cantone's views, mixing depends to a large extent on the children's individual choice to mix or not.

After studying the language processes and speech patterns of CS of an Egyptian Arabic-English-speaking four-year-old girl named Sara, Gamal (2007) concludes that the environment influenced the English language of Sara. Her results showed that "nouns and adjectives were code-switched more than verbs because of the incongruence in verbs between Arabic and English". Her findings seem to fit with those of Winsler, Diaz and Espinosa (1997) who showed that children who went to bilingual schools performed better than those who remained at home. Children who attended bilingual school gained fluency in Spanish and English languages and their results in the language proficiency test were more significant.

3. Methodology

The participants of this work are four typically developing Yemeni Arabic-English bilingual children who live in India with their parents. The participants go to school and they study English medium curriculum. By the time the data was recorded, each participant must have spent at least 250 hours of exposure to English language, either at school or in the playgroups. Table (1) displays the age and period of exposure to English of each participant at the time of recording.

Table 1: Details of participants at the time of recording

Groups	Participant	Age (years)	Age of exposure to English
Group 1	Riyadh	8; 0	4; 0
	Haytham	9; 0	4; 0
Group 2	Marwan	6; 5	5; 0
	Aqeel	6; 5	5; 0

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Throughout this paper, Haytham and Riyadh will be referred to as **Group 1**. Aqeel and Marwan will be referred to as **Group 2**.

3.1 Settings

Data was recorded using a High Definition Video camera with an inbuilt high definition audio. The speech samples of participants were recorded for 8 hours: 4 hours in English and 4 hours in Arabic. The recording was conducted in several sequential sessions with a fixed time interval between them. During recording English sessions, the participants were instructed not to speak Arabic. During recording Arabic data, they were instructed not to speak English.

The recording sessions took place in home settings. Participants' activities included free games such as hide and seek, control games, counting numbers, role-playing (students vs. teachers), storytelling, describing and naming pictures in the language of the respective recording session. In all recording sessions, school textbooks were used as stimuli for the participant to trigger mixing. It has to be noted that the recording took place in a spontaneous atmosphere. The camera was set to auto mode.

3.2 Language Proficiency Tests

Scotton (1993) claims that even less proficient speakers use more CS. Abutalebi, Cappa and Perani (2001) argue that in order to draw solid conclusions, several factors have to be taken into consideration viz. age of acquiring L2, degree of language proficiency and professional exposure to language. Hulstijn (2015) emphasizes that "the role of language proficiency should be made explicit if we wish to increase our understanding of a number of major puzzles in the study of L1 and L2 acquisition and bilingualism". This indicates the importance of language proficiency in the study of CM and CS. We paid attention to this aspect and tested the language proficiency of our participants in both English and Arabic. We noticed that the age of the participants and the period of exposure to English correlated positively with the language proficiency. This finding stands in support of the conclusion of Carhill, Suarez-Orozco and Paez (2008) that "the age and amount of time that student spent speaking in informal social situation is predictive of English language proficiency".

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3.2.1 English Proficiency Test

To assess the participants' language proficiency in English, we used Cambridge English Test with Starters and Movers scale. It is a series of standardized graded tests, which are suitable for children. It can be administered online through the Cambridge website or it can be administered offline as paper test. Cambridge Starters and Movers test is designed for learners of English as a Second Language (ESL) whose ages span between 7 and 12 years. The *Starters test* is designed for learners with basic English skills. The *Movers test* is designed for learners with considerably more fluent skills. The Cambridge Starters and Movers tests are divided into four parts and each part examines one of the main language skills: listening, speaking, reading and writing.

The results of the language proficiency test of the participants in **English language** are shown in Table (2) below:

Table 2: English proficiency test results

Groups	Level	Participants	Listening	Speaking	Reading & Writing	Overall percentage
Group 1	Movers	Riyadh	100%	95%	87.5%	94%
	Movers	Haytham	96%	75%	80%	83.6%
Group 2	Starters	Marwan	64%	80%	28%	57.3%
	Starters	Aqeel	60%	72%	32%	54.6%

3.2.2 Arabic Language Proficiency Test

This test measures the proficiency of Arabic language skills: listening, speaking, reading and writing. Unfortunately, there is no standard Arabic fluency test for children. As such, we had to adapt our own test from several Arabic online tests and school textbooks. Some parts were designed by the researcher. The questions were modified and simplified to suite the age and the levels of the participants.

Our adapted Arabic fluency test was composed of several drills: reading passages or sentences, answering questions, arranging the words to make sentences, matching one part of a sentence to anther to

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make a meaningful sentence, gap filling and finding the opposite of given words. For listening, the participants listened to short clips and selected the correct answer. In speaking, more than 20 questions were presented to the participants regarding daily activities.

Starters group of children was not tested in Arabic reading and writing because they had not been exposed yet to written Arabic neither at home nor at school. The results of **Arabic language** proficiency test of the participants are presented in Table (3):

Table 3: Arabic proficiency test results

Groups	Level	Participants	Listening	Speaking	Reading & Writing	Overall percentage
Group 1	Movers	Haytham	96%	93%	89.5%	92,6%
	Starters	Riyadh	100%	100%	51.5%	83,6%
Group 2	Starters	Marwan	95%	91%	---	62.00%
	Starters	Aqeel	92%	90%	---	60.67%

3.3 Data Processing

After a recording session ended, the data was converted into semi-International Phonetic Alphabet form. Then, all words were marked according to the grammatical category and the language, e.g. goes/PRESENTVERB_E (i.e. Present Verb and English language) and huwa/PERSONALPRONOUN_A (i.e. Personal Pronoun and Arabic language). Counting the grammatical categories, CM examples, percentages and ratios were conducted automatically by special computer programs which we scripted for this purpose. Microsoft Excel spreadsheets were used to plot the graphs.

4. Data Analysis

This section presents analysis of CM in English and Arabic by the two groups: Group 1 and Group 2. Section 4.1 presents English CM in Arabic utterances. Section 4.2 describes Arabic CM in English utterances. Section 4.3 compares the CM of the two groups as a function of the language: Arabic and English. Section 4.4 compares the CM of the two groups as a function of age.

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Data analysis revealed several different patterns: phonological, morphological, lexical, syntactic and semantic patterns. Moreover, patterns were attested intra-sententially and inter-sententially. However, we restrict ourselves to the lexical patterns which are attested in the intra-sentential position.

4.1. English CM in Arabic Utterances

Data analysis revealed 16 English grammatical categories which were code mixed by the two groups of participants. These grammatical categories are shown in Graph (1) (sorted in descending order according to frequency ranking). The attested English grammatical categories are as follows: nouns, numbers or numerical words, adjectives, noun neologisms (*English nouns prefixed with Arabic definite article*), adverbs, present verbs, adjective neologisms (*English adjectives prefixed with Arabic definite article*), prepositions, imperative verbs, pronouns, conjunctions, determiners, abbreviations, past verbs, interjections and demonstrative pronouns. It has to be noted that the most common grammatical category is nouns, which partially supports the findings of Scotton (2002) and Gamal (2007) who maintained that nouns are the most frequently mixed grammatical category.

Graph (1): Percentage of English CM in Arabic by all participants

Category	Percentage
Nouns	32.2
Numericals	15.34
Adjectives	13.46
Noun Neologisms	9.66
Adverbs	5.68
Adjective neologisms	3.41
Present verbs	3.41
Pronouns	2.84
Imperative verbs	2.84
Prepositions	2.84
Conjunctions	2.27
Determiners	1.7
Interjections	1.14
Past verbs	1.14
Abbreviations	1.14
Demonstrative pronouns	0.57
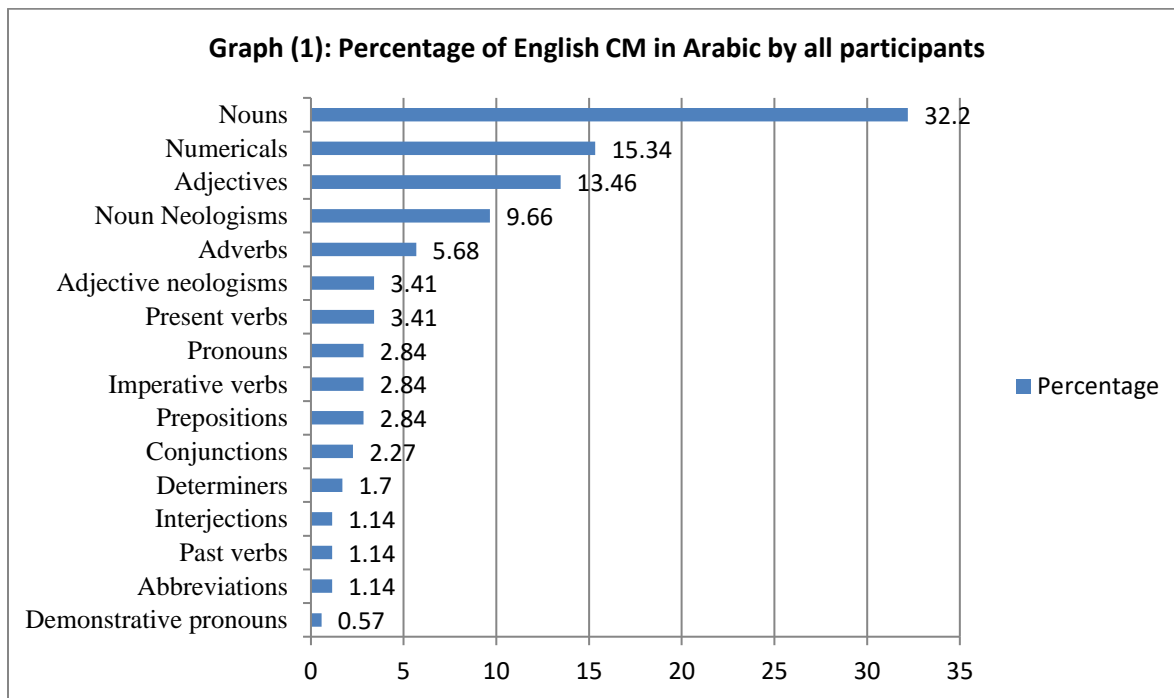
In Graph (1), English nouns are seen the highest grammatical category which was mixed by the participants in Arabic recording sessions. Interesting patterns are the noun neologisms (*English nouns*

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prefixed with Arabic definite article) and the adjective neologisms (*English adjectives prefixed with Arabic definite article).* These neologisms show that the participants have gained remarkable mastery on Yemeni Arabic – their mother's tongue. Dataset (1) lists some examples of the participants' codemixing of the above grammatical categories. Code-mixed words have been typed in boldface font.

Dataset (1): Examples of English CM in Arabic utterances

Utterance	Uttered by
a. Nouns	Riyadh
nigu:l **exam**	
say.1.PL.NEUT.PRES exam	
we say exam	
b. Numbers or numerical words	Aqeel
ʔana: tˤallaʕt li: **forty**	
I score-1.SG.NEUT.PAST for-me forty	
I scored forty.	
c. Adjectives	Haytham
wa la: **brown**	
and not brown	
d. Noun neologisms *(English nouns prefixed with Arabic definite article)*	Marwan
nidog ʔal-**bɔ:l** wa l-**bæ:t**	
hit.1.PLU.NEUT.PRES DEF-ball and DEF-bat	
We hit the ball and the bat.	

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e. Adjective neologisms *(English adjectives prefixed with Arabic definite   Aqeel article)*

ʔanaa	ʔixtart	ʔal-**blue**
I	chose	DEF-blue
I	chose	the blue

f. Conjunction   Riyadh

ʔax-uuk	maʕ-uh	saykal	yes or no
brother-your	with-him	bicycle	
Your brother	has	bicycle	yes or no

g. Past verb   Marwan

ʔanaa	**finished**
I	finished
I finished.	

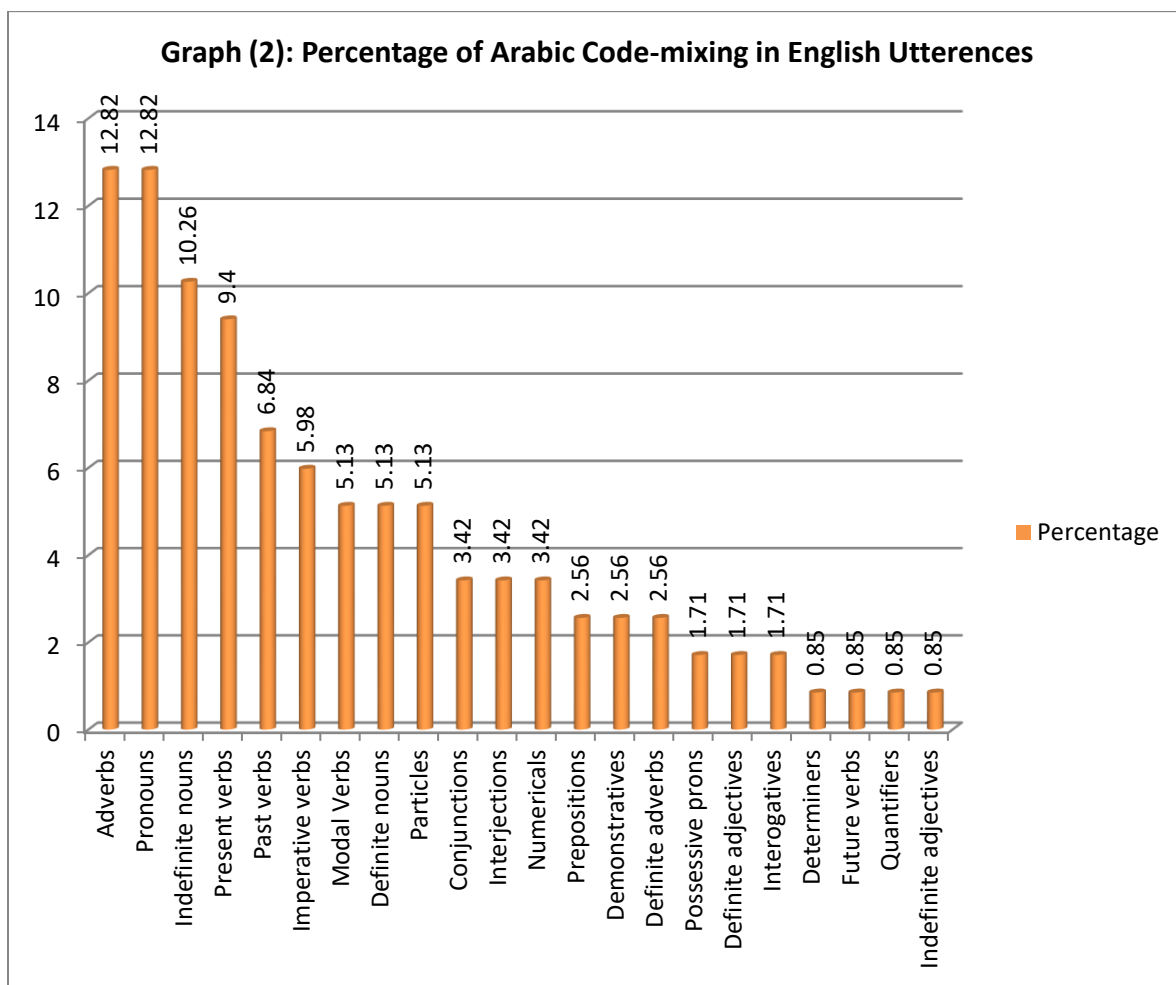**h. Abbreviation**   Haytham

wa ʔilyawm huu ʔaysh umh **ii.vii. es.** wa math

and today   it is what?   Um. E.V.S.   and math

And what is the exam today? Um. E.V.S and math

4.2. Arabic CM in English Utterances

Data analysis revealed (22) Arabic grammatical categories which have been   code-mixed by the participants in the English sessions. These grammatical categories are as follows (sorted in descending order according to their frequency of occurrence): *indefinite adverbs*, *personal pronouns*, *indefinite nouns*, *present verbs*, *past verbs*, *imperative verbs*, *modal verbs*, *definite nouns*, *particles*, *conjunctions*, *interjections*, *numerical words*, *prepositions*, *demonstrative pronouns*, *definite adverbs*, *possessive*

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pronouns, *definite adjectives*, *interrogative words*, *determiners*, *future verbs*, *quantifiers* and *indefinite adjectives*. The frequency distribution of these grammatical categories as attested in the speech of the participants is plotted in Graph (2) below. The most frequently mixed grammatical categories of Arabic in English sessions are *adverbs* and *personal pronouns*. This challenges the findings of Scotton (2002) and Gamal (2007) who found that nouns are the most frequent mixed grammatical categories. It is clear that Scotton (2002) and Gamal (2007) conclusions hold only for English data in our study.

Graph (2): Percentage of Arabic Code-mixing in English Utterences

Category	Percentage
Adverbs	12.82
Pronouns	12.82
Indefinite nouns	10.26
Present verbs	9.4
Past verbs	6.84
Imperative verbs	5.98
Modal Verbs	5.13
Definite nouns	5.13
Particles	5.13
Conjunctions	3.42
Interjections	3.42
Numericals	3.42
Prepositions	2.56
Demonstratives	2.56
Definite adverbs	2.56
Possessive prons	1.71
Definite adjectives	1.71
Interrogatives	1.71
Determiners	0.85
Future verbs	0.85
Quantifiers	0.85
Indefinite adjectives	0.85

Examples of the Arabic CM in English utterances are listed in Dataset (2) below. The code-mixed words are typed in boldface font.

Dataset (2): Examples of Arabic CM in English

Utterance	Uttered by

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a. Arabic indefinite nouns	Aqeel

shall I go to **sˤala:h**

Shall I go to prayer?

b. Arabic adjective	Haytham

Oh! My first time, level four **ʔakbar min** level five

Oh! My first time, level four **is greater than** level five.

c. Arabic demonstrative pronouns	Riyadh

wow, **ha:ða:** real

Wow! **This is** real.

d. Arabic particles	Marwan

any time. **la:**, binnight.

Any time. **No**, at night.

e. Arabic present verb	Haytham

yaʕnii three multiply three

mean.3.PRES three multiple three

It means three multiple three.

f. Arabic imperative verb

	Riyadh

gul five

say five

You should say five.

g. Negative particle	Riyadh

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ʔirrivision **muʃ** a division

DEF-revision not a division

it is revision not a division

h. Arabic preposition

Riyadh

ʕalaa l-competition

on   DEF-competition

about the competition

4.3. Language-wise Comparison of Code-mixing Across Age-groups

Data analysis revealed that Group 1 produced more CM in both Arabic and English languages, viz. 85.71% Arabic CM in English and 84.16% English CM in Arabic. On the other hand, Group 2 produced less CM in both Arabic and English languages viz., 25.85% English CM in Arabic and 14.29% Arabic CM in English. More English CM of Group 2 was attested in Arabic utterances. The percentage of language-wise CM across groups is presented in Table (4):

Table 4: Language-wise comparison of CM of the participants

Group	% of Arabic CM in English	% of English CM in Arabic
Group 1	85.71	74.16
Group 2	14.29	25.84
Total	100.00%	100.00%

4.4. Age-wise Comparison of Code-mixing Across Groups

As far as age is concerned, Group 1 produced more CM in both languages, viz., Arabic CM in English and English CM in Arabic. The total percentage of Group 1 CM is 79.94%. On the other hand, Group 2 produced less CM in both languages, viz., Arabic CM in English and English CM in Arabic. The total percentage of Group 2 CM is 20.06%. These figures are displayed in Table (5) below:

Table 5: Comparison of CM according to the age of participants

Age-Group	Total Percentage of CM in both English and Arabic

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Group 1 (above 8 years old)	79.94%
Group 2 (below 8 years old)	20.06%
Total	100.00%

5. Discussion and Conclusions

This section describes the grammatical categories which were been mixed by the participants during recording sessions. A brief description of mixing into Arabic is given in Section 5.1. Then a brief account of mixing into English is presented in Section 5.2.

5.1 Mixing into Arabic

During English sessions, the participants produced varied amounts of Arabic CM. Table (6) presents detailed quantitative analysis of Arabic CM in English sessions by each participant.

Table 6: Mixing Arabic in English utterances

Participant	Total Utterances	Total words	Mixed words
Haytham	128	968	512
Riyadh	120	616	256
Marwan	24	144	72
Aqeel	24	80	56
Total	**296**	**1,808**	**896**

As seen in Table (6) above, Group 1 (Haytham and Riyadh) produced the highest number of utterances, 128 and 120 respectively. In terms of mixed words, participant Haytham is seen in the top of the list as he mixed 512 Arabic words in English sessions. One reason of producing such high Arabic mixing in English sessions by Group 1 (older group) is to accommodate Group 2 (Marwan and Aqeel) in the course of conversation. Group 1 had to explain a lot of things in Arabic to Group 2.

It can be noticed that there is little mixing of Arabic into English produced by participants Aqeel and Marwan (Group 2, younger group). This little mixing by both Aqeel and Marwan can be attributed to the dominance of the older group (i.e. Group 1, Haytham and Riyadh). Whereas both Aqeel and Marwan

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produced the same number of utterances, participant Marwan mixed 72 words and participant Aqeel mixed only 56 words.

5.2 Mixing into English

During Arabic sessions, the participants produced varied amount of English CM. Table (7) presents detailed quantitative analysis of English CM in Arabic sessions by each participant.

Table 7: Mixing English in Arabic utterances

Participant	Total Utterances	Total words	Mixed words
Riyadh	264	1880	664
Haytham	160	1288	392
Aqeel	104	448	200
Marwan	104	344	168
Total	**632**	**3,960**	**1,424**

As seen in Table (7) above, the highest number of utterances, words and mixed English words were produced by participant Riyadh. Meanwhile, participants Riyadh and Haytham produced higher English CM in Arabic than participants Aqeel and Marwan. The high number of mixing English in Arabic session by Riyadh and Haytham can be attributed to two reasons. First, Haytham and Riyadh went to English-medium schools since they were 4 years old. Second, personal preference of Haytham and Riyadh played a crucial role in producing such high mixing of English in Arabic, especially in storytelling and games. It has been noticed that Haytham and Riyadh faced some difficulties in finding the words in Arabic during storytelling. As such, they resorted to using English words to express to bridge the lexical gaps.

Similarly, Aqeel and Marwan (Group 2, the younger group) faced certain difficulties in expressing themselves in Arabic. As such, they resorted to using English words to bridge the lexical gaps.

Finally, it can be seen that the total mixing of English in Arabic utterances produced by the two groups is higher than the number of Arabic mixing in English sentences. This suggests that the participants are somehow more fluent in English than Arabic. This is consolidated by the scores of language proficiency tests in Table 2 and Table 3 above.

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6. Conclusion

The participants of this study were four typically developing Yemeni Arabic-English bilingual children, aged between six and nine years, who use English as a second language. The participants aged more than 8 years were two and they were assigned into Group 1. The participants aged less than 8 years were two and they were assigned into Group 2. The results showed that the Group 1 produced more CM in both Arabic and English languages, viz. 85.71% Arabic CM in English and 84.16% English CM in Arabic, mainly because of accommodating their interlocutors and overcoming lexical gaps. On the other hand, the Group 2 produced less CM in both Arabic and English languages viz. 25.85% English CM in Arabic and 14.29% Arabic CM in English mainly because of they were dominated by the older participants (Group 1 – Haytham and Riyadh). Group 2 produced English CM in Arabic more than Arabic CM in English, mainly because of overcoming lexical gaps.

Data analysis revealed 16 English grammatical categories which were mixed by the two groups of participants. Group 1 produced more English CM in *nouns*, *numbers*, *noun neologisms* (English nouns prefixed with Arabic definite article /ʔal/), *adverbs*, *adjectival neologisms* (English adjectives prefixed with Arabic definite article /ʔal/), *present verbs*, and *prepositions*. However, Group 2 produced more English CM in *adjectives*. Both Group 1 and Group 2 produced the same amount of English CM in *past verbs*, *imperative verbs*, *conjunctions*, *interjections*, *determiners*, *abbreviations* and *demonstrative pronouns*. Data analysis also revealed (22) Arabic grammatical categories which were code-mixed by the participants in the English utterance. Group 1 produced more Arabic CM in *personal pronouns*, *indefinite nouns*, *adverbs*, *present verbs*, *past verbs*, *modal verbs*, *particles* and *definite adverbs*.

In terms of language proficiency, the evidence from this study consolidates the fact that language proficiency plays a significant role in the CM phenomenon as a whole. The highest utterances, words and mixed words were produced by Group 1 (Haytham and Riyadh – the older group). Group 2 (Aqeel and Marwan – the younger group), with comparatively low language proficiency, produced less CM and participation during the recording sessions. Therefore, CM is seen to be directly proportional to language proficiency in the two groups. Moreover, the level of dominance can be directly related to the number of

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utterances produced by each group: Group 1 (Haytham and Riyadh, the dominating group) produced more utterances than Group 2 (Aqeel and Marwan, the dominated group).

English CM in Arabic sessions revealed that *nouns* scored the highest percentage of all other grammatical categories, viz. 32.39%. This supports the findings of Scotton (2002) and Jamal (2007) who maintain that nouns are the most frequently code-mixed category. In Arabic CM in English sessions, however, *adverbs* and *pronouns* are attested to be the most frequently code-mixed categories. This finding challenges those of Scotton (2002) and Jamal (2007) in the sense that their findings cannot hold for Arabic.

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