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Acquisition of Main-Clause Wh-Questions in Egyptian Arabic-English and Spanish-English Bilingual Children

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Abstract

This dissertation examines the production and judgment of Egyptian Arabic (henceforth EA) main-clause wh-questions in EA-English bilingual children living in Ontario, Canada, or in the United Kingdom. The three comparison groups are EA monolingual children and EA monolingual adults living in Egypt, and first-generation Egyptian immigrants. The results are compared to previous research on the acquisition of obligatory subject-verb (S-V) inversion in Spanish wh-questions.

The focus of this study is to investigate the potential role of cross-linguistic influence in narrow syntactic structures. Until fairly recently, it was believed that only structures that exhibit syntax-pragmatics interfaces are vulnerable to cross-linguistic influence (Müller and Hulk, 2001). Yet, there is growing empirical evidence that cross-linguistic influence can also occur in narrow syntactic structures with no pragmatic or discourse motivations, providing that there is a surface overlap between the bilinguals' two languages in these structures (Albirini et al.; 2011; Cuza, 2016; Mohamed, 2022).

The domain of wh-questions exhibits surface overlap among the three chosen languages, English, Spanish, and EA, regarding two syntactic properties, (i) wh-movement and (ii) S-V inversion. Regarding wh-movement, a wh-phrase must move to a clause-initial position (wh-fronting) in typical Spanish and English main-clause wh-questions. In contrast, wh-fronting is ungrammatical in EA complement wh-questions and leaving the complement

wh-phrases in their canonical position (wh-in-situ) is the grammatical option. Nonetheless, both wh-fronting and wh-in-situ are grammatically correct in EA adjunct wh-questions (Wahba, 1984). Concerning S-V inversion in main-clause wh-questions, it is ungrammatical in English (Carnie, 2013), obligatory in Spanish with some exceptions (Camacho, 2018), and optional but not the default option in EA (Edwards. 2010).

Results from an Elicited Production Picture Task and a Grammaticality Choice Task showed that the bilingual children have a robust knowledge of obligatory structures in EA wh-questions. The study concluded that there is a tentative cross-linguistic influence from English in narrow syntactic structures of EA wh-questions. However, such influence occurs when the majority language's structures are allowed by the linguistic system of the minority language, namely wh-fronting in wh-adjuncts, but not when they are ungrammatical in the minority language, as in the case of wh-fronting in wh-complements.

Keywords:

Bilingualism, child heritage language, wh-questions, wh-movement, subject and verb word order, subject-verb inversion, Egyptian Arabic, Spanish, cross-linguistic influence.

Summary for Lay Audience

This study examines the production and judgment of Egyptian Arabic (EA) simple wh-questions in four groups of EA native speakers: two monolingual groups living in Egypt (18 children and 16 adults) and two bilingual groups living in Ontario, Canada, or in the United Kingdom (16 EA-English bilingual children and 19 first-generation immigrants). The results are compared to previous research on the production of Spanish wh-questions among Spanish-English bilingual children and first-generation immigrants living in the United States. The focus of this study is to investigate whether there is a possible transfer from English into the bilinguals' native languages, EA or Spanish.

English, EA and Spanish are chosen because they have a surface overlap regarding two properties of wh-questions: (i) the position of question words (e.g., *what, where*), and (ii) subject and verb word order. In English and Spanish, question words must move to the beginning of the phrase (wh-fronting: ***what*** *did you do*?) in the typical questions. In contrast, some EA question words, such as *ʔeh* 'what', cannot move to the beginning of the phrase and they must remain in their original place (wh-in-situ: *you did* ***what****?*). In comparison, other EA question words, such as *feen* 'where' and *ʔimta* 'when', allow both positions, wh-in-situ (y*ou went* ***where****?*) and wh-fronting (***where*** *you went?)* (Wahba, 1984). Concerning subject and verb word order in English questions, subjects must appear to the right of auxiliaries and the left of main verbs but never to the right of main verbs (Carnie, 2013). In Spanish, subjects must appear to the right of main verbs with a few

exceptions (Torrego, 1984). In comparison, it is optional for subjects to appear to the right or the left of main verbs in EA questions (Edwards, 2010).

Results from a Production Picture Task and a Grammaticality Choice Task showed that the bilingual groups have a strong knowledge of the obligatory position of the EA question word *ʔeh* 'what'. When both wh-fronting and wh-in-situ are possible options, the two bilingual groups significantly produced more wh-fronting than the monolingual control groups, which may indicate a possible transfer from English.

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List of abbreviations

Abbreviation	Meaning
[EPP]	Extended Projection Principle
1	First person
2	Second person
3	Third person
A1_Control	Adult Control Group (EA monolingual adults)
A2_Experimental	Adult Experimental Group (first-generation immigrants)
ACC	Accusative
AOA	Age of Onset of Acquisition
CH1_Control	Child Control Group (EA monolingual children)
CH2_Experimental	Child Experimental Group (EA-English bilingual children)
CP	Complementizer Phrase
DAT	Dative
DCH	Derivational Complexity Hypothesis (Jakubowicz, 2011)
DOM	Differential Object Marking
DP	Determiner Phrase
EA	Egyptian Arabic
F	Feminine
FUT	Future
GEN	Genitive
H	High language variety in a diglossic situation

HL	Heritage language
HSs	Heritage speakers
INF	Infinitive
L	Low language variety in a diglossic situation
L1	First language
L2	Second language
LF	Logic form
M	Masculine
ML	Majority language
MSA	Modern Standard Arabic
NOM	Nominative
NP	Noun Phrase
ORs	Object relative clauses
PF	Phonetic from
PL	Plural
PRS	Present
PROG	Progressive
Q	Question feature
S-AUX inversion	Subject-auxiliary inversion
SG	Singular
Spec-CP	Specifier of Complementizer Phrase
Spec-TP	Specifier of Tense Phrase
SRs	Subject relative clauses

S-V inversion	Subject-verb inversion
TP	Tense Phrase
T-to-C	Tense-to-Complementizer movement
VP	Verb Phrase
V-to-T	Verb-to-Tense movement
WH	Wh-feature
Wh-adjuncts	adjunct wh-questions
Wh-argument	argument wh-questions
Wh-complements	complement wh-questions

Arabic Transliteration Chart

The Arabic transliteration chart of Benmamoun and Bassiouney (2018, p. xvii) was used to write the transliteration of Modern Standard Arabic (MSA) and Egyptian Arabic (EA) examples in this dissertation.

Symbol	Arabic Consonant	Articulation
ṣ	(ص)	pharyngealized voiceless alveolar fricative
ṭ	(ط)	pharyngealized voiceless alveolar stop
ḍ	(ض)	pharyngealized voiced alveolar stop
đ	(ظ)	pharyngealized voiced interdental fricative
ẓ	(ز)	voiced alveolar fricative
ɣ	(غ)	voiced velar fricative
x	(خ)	voiceless velar fricative
ʔ	(أ)	voiceless glottal stop
ʕ	(ع)	voiced pharyngeal fricative
θ	(ث)	voiceless interdental fricative
ð	(ذ)	voiced interdental fricative (or voiced alveolar fricative in EA as in example 44)
q	(ق)	voiceless uvular stop (or glottal stop in EA as in example 77)
ž	(ج)	voiced alveopalatal fricative

		(or voiced velar stop in EA as in example 47)
š	(ش)	voiceless alveopalatal fricative
ħ	(ح)	voiceless pharyngeal fricative

Long vowels are indicated by *ā*, *ū*, and *ī* in this dissertation.

List of Appendices

CHAPTER 1

1. INTRODUCTION

1.1. Goals and Description of the Study

This dissertation aims to investigate the potential role of cross-linguistic influence in narrow syntactic structures in heritage language (HL) acquisition. To address this overarching goal, this empirical study examines the production and judgment of Egyptian Arabic (henceforth EA) main-clause wh-questions in EA-English bilingual children and first-generation adult Egyptian immigrants who reside in English-speaking regions. The results are compared to previous research on the effect of cross-linguistic influence in the knowledge of obligatory inversion between subject and main lexical verb (henceforth S-V inversion) in Spanish wh-questions among Spanish-English bilingual children and first-generation immigrants.

Four groups participated in this study, two control groups and two experimental groups. The control groups consisted of EA monolingual adults (A1_Control, n=16) and EA monolingual children (CH1_Control, n=18)[1]. The experimental groups consisted of first-generation adult Egyptian immigrants (A2_Experimental, n=19) and EA-English bilingual

[1] In this study, I use the term *monolinguals* to refer to the participants living in Egypt although I recognize that they had some knowledge in English and other foreign languages. However, they reported that their level of proficiency in English and other languages was low and that they rarely use a language other than EA for communication.

children (CH2_Experimental, n=16). The participants in the control groups lived in Egypt at the time of study and had never lived abroad. In comparison, the participants of the experimental groups have resided in Ontario, Canada or the United Kingdom (the U.K.) for at least three years prior to the time of the study. All the participants in the experimental groups used their first language (L1), that is EA, on a daily basis.

This study was conducted online and consisted of two main tasks, an Elicited Production Picture Task and a Grammaticality Choice Task. They were designed specifically for this study to test the production and judgment of the position of wh-phrases, and subject and verb word order with three EA wh-phrases, the complement wh-phrase *ʔeh* 'what', and the two adjunct wh-phrases, *feen* 'where' and *ʔimta* 'when'. The Elicited Production Picture Task included a total of 24 items, 18 target items, and six distracters. The target items were equally distributed between the three target wh-phrases, six items each. To prompt each item, I narrated a scenario in EA for the participants during a Zoom session while they were following a series of images that represented the narrated scenario on the shared screen. By the end of each scenario, a picture of a kangaroo appeared on the screen, and the participants were requested to ask the kangaroo a question about the scenario. In the Grammaticality Choice Task, I showed the participants pictures of two characters, a cat and a panda, and told them that these animals were learning to speak EA but sometimes they might make mistakes. Then, the participants saw a series of pictures on the shared screen on Zoom. Each character asked a question about each picture. The questions of the two characters differed in one of the following (i) the position of the wh-phrase, or (ii) subject and verb word order. The participants' task was to decide whether one of the

questions sounded more correct and natural than the other or whether both questions sounded correct (kindly refer to Chapter 3 for more details about the study's methodology).

1.2. Preliminaries

1.2.1. Linguistic Phenomena under Investigation

The domain of wh-question exhibits surface overlap among the three chosen languages, English, Spanish, and EA, regarding two syntactic properties, (i) the position of wh-phrases and (ii) subject and verb word order. Regarding the position of wh-phrases, it is obligatory to front wh-phrases to clause-initial position (wh-fronting) in non-echo English and Spanish main-clause wh-questions, as shown in (1) and (2) respectively.

(1) **What** did Adam draw?

(2) *¿**Qué** dibujó Adam?*
what drew.3SG Adam
'What did Adam draw?'

In comparison, the position of the wh-phrase is determined by the type of question in EA. On the one hand, EA complement wh-questions (wh-complements) do not allow wh-fronting, as shown below by the ungrammaticality of (3a). The grammatical option with

complement wh-phrases is to leave them in their canonical position (wh-in-situ), as in (3b). The only exception to front complement wh-phrases is in cleft structures[2], as in (3c).

(3) ا. * **إيه** آدم رسم؟

(3) a. ***ʔeh** *ādam rasam?*

what Adam drew.3SGM

'What did Adam draw?'

(*wh-fronting in EA wh-complements)

ب. آدم رسم **إيه؟**

b. *ādam rasam* ***ʔeh****?*

Adam drew.3SGM what

'What did Adam draw?'

(wh-in-situ in EA wh-complements)

ج. **إيه** اللي آدم رسمه؟

c. ***ʔeh*** *ʔlli ādam rasam-uh?*

what that Adam drew.3SGM-it

'What is that that Adam drew?'

(cleft structures in EA wh-complements)

[2] This type of cleft structures known in the literature as Class II Resumptive Strategy (Aoun et al., 2009), and they are explained in more detail in Chapter 2. However, these structures are excluded from the production of the participants because they are beyond the scope of this study.

EA wh-adjuncts, on the other hand, allow wh-fronting (4a) and wh-in-situ (4b) (Wahba 1984), but the default is leaving the wh-phrase in situ (Aoun et al., 2009). In contrast to EA wh-complements, cleft structures are ungrammatical in EA wh-adjuncts, as can be seen below by the ungrammaticality of (4c).

(4) ا. **إمتى** آدم رسم الخريطة دي؟

(4) a. ***ʔimta*** *ādam rasam ʔl-xarītah di?*

when Adam drew.3SGM the-map this

'When did Adam draw this map?'

(wh-fronting in EA wh-adjuncts)

ب. آدم رسم الخريطة دي **إمتى؟**

b. *ādam rasam ʔl-xarītah di* ***ʔimta****?*

Adam drew.3SGM the-map this when

'When did Adam draw this map?'

(wh-in-situ in EA wh-adjuncts)

ج. ***إمتى** اللي آدم رسم الخريطة دي؟

c. ****ʔimta*** *ʔlli ādam rasam ʔl-xarītah di?*

when that Adam drew.3SGM the-map this

'When is the time that Adam drew this map?'

(*cleft structures in EA wh-adjuncts)

Regarding S-V inversion in wh-questions, it is ungrammatical in English, optional in EA, and obligatory in non-Caribbean Spanish, with some exceptions that will be discussed later in Chapter 2. The formation of English wh-question requires another type of inversion,

which is the inversion of subjects and modal/auxiliary verbs (henceforth, S-AUX inversion). Examples (5a) and (6a) below illustrate subject and verb word order in Spanish and English respectively[3]. As the examples show, the linear order of wh-questions is [WH-V-S] in non-Caribbean Spanish, as illustrated in (5a), and [WH-AUX-S-V] in English, as in (6a). Example (5b) from Spanish and example (6b) from English are ungrammatical because the former does not involve S-V inversion and the latter involves S-V inversion instead of S-AUX inversion.

(5) a. *¿**Qué*** *compró* *Adam?* [WH-V-S]

what bought.3SG Adam

'What did Adam buy?'

b. **¿**Qué** *Adam* *compró?* *[WH-S-V]

what Adam bought.3SG

'What did Adam buy?'

(6) a. **What** did Adam buy? [WH-AUX-S-V]

b. ***What** bought Adam? *[WH-V-S]

[3] Whenever it is relevant to the explanation of the examples, the wh-phrases are bolded, the subjects are underlined with a single line, and the main lexical verbs are double-underlined in the examples of this dissertation.

As for EA wh-questions, both VS and SV orders are accepted with each grammatical position of the wh-phrase[4]. Accordingly, the word order can be [V-S-WH] or [S-V-WH] for wh-complements, as in (7a) and (7b), and [V-S-WH], [S-V-WH], [WH-V-S], or [WH-S-V] for wh-adjuncts, as shown in (8a), (8b), (8c), and (8d) respectively.

(7) ا. اشترى آدم **إيه؟**

(7) a. *ʔištara ādam **ʔeh**?* [V-S-WH]

bought.3SGM Adam what

'What did Adam buy?'

ب. آدم اشترى **إيه؟**

b. *ādam ʔištara **ʔeh**?* [S-V-WH]

Adam bought.3SGM what

'What did Adam buy?'

(8) ا. رسم آدم الخريطة دي **إمتى؟**

(8) a. *rasam ādam ʔl-xarītah di **ʔimta**?* [V-S-WH]

drew.3SGM Adam the-map this when

'When did Adam draw this map?'

ب. آدم رسم الخريطة دي **إمتى؟**

b. *ādam rasam ʔl-xarītah di **ʔimta**?* [S-V-WH]

Adam drew.3SGM the-map this when

'When did Adam draw this map?'

[4] Besides SV and VS order, EA wh-questions accept having a null subject or a null copular verb, resulting in more word orders, as will be discussed in detail in Chapter 2.

ج. **إمتى** رسم آدم الخريطة دي؟

c. ***ʔimta*** *rasam* *ādam* *ʔl-xarītah di?* [WH-V-S]

when drew.3SGM Adam the-map this

'When did Adam draw this map?'

ج. **إمتى** آدم رسم الخريطة دي؟

d. ***ʔimta*** *ādam* *rasam* *ʔl-xarītah di?* [WH-S-V]

when Adam drew.3SGM the-map this

'When did Adam draw this map?'

This section has presented the linguistic phenomena under investigation. As the bilingual children in this study are also considered part of a specific type of early bilingual speakers known as child *heritage speakers* (HSs), it is important to explain what is meant by *HL bilingualism* and HSs. The following section provides the definitions that are adopted in this dissertation for these terms.

1.2.3. Heritage Language Bilingualism

HL bilingualism refers to a particular type of early bilingualism where one of a bilingual's languages is a minority language[5] and the other is a majority societal language (ML). A

[5] It is important to point out that the term *minority language* has to be applied locally. This is because a language can have dual status as a majority language in its homeland and a minority language outside of it, as Montrul (2016) asserts "Global languages such as Spanish, English, Dutch, Portuguese, Hindi, Chinese, and so on are majority languages in their own territories but minority languages in diaspora contexts." (p. 14).

language can be a minority language due to several factors such as immigration of its habitants outside of its territory, e.g., Spanish in Canada, or due to colonization of territories where this language is spoken, as in the case of Quechua in Peru (Montrul, 2016). The focus of this dissertation is on minority and heritage languages of immigrant communities, more specifically Egyptian Arabic in Canada and the U.K. and Spanish in the United States (the U.S.). In this study, I adopt Rothman's (2009) definition for the term *heritage language*, "A language qualifies as a heritage language if it is a language spoken at home or otherwise readily available to young children, and crucially this language is not a dominant language of the larger (national) society." (p. 156).

With respect to defining HSs, it is challenging to characterize all of them linguistically in one definition. This terminological controversy can be seen from the abundance of terms offered by linguists to describe HSs: *early bilinguals* (Kim et al., 2006); *incomplete acquirers* (Montrul, 2002; Polinsky, 2006); *semi-speakers* (Dorian, 1981); and *forgetters* (Polinsky, 2000) among other proposed terms.

In this dissertation, I adopt Kupisch and Rothman's (2018) definition of HSs

> An HS is a native-speaker bilingual of a minority language spoken at home and either also a native speaker (in the case of 2L1) or a child L2 learner of the majority language of the society in which she/he lives and is educated. Under either scenario,

> it is virtually inevitable that the HS will wind up being dominant in the societal majority language. (Kupisch & Rothman, 2018, p. 567)

I have adopted Kupisch and Rothman's (2018) definition because it is descriptively accurate for three reasons. First, it explicitly describes HSs as native speakers of their heritage languages. Second, this definition clarifies that HSs almost always become dominant in the majority language of their society. Third, it avoids defining HSs as receptive bilinguals or incomplete acquirers of their HL, admitting in this way that the proficiency of HSs in their HL spans a broad spectrum, from merely receptive ability to full productive ability, and even to monolingual-like command of the language in some cases (e.g., Alarcón, 2011; Polinsky, 2008 among others).

Having defined heritage language and heritage speakers, it is now essential to explain how and why HSs differ from monolinguals. Undeniably, both HSs and monolinguals are native speakers. Yet the linguistic competence of HSs may differ from monolinguals due to several factors derived from residing outside the country where the HL is a majority language, such as the degree of public use of HL and the quality and quantity of HL input.

Several theoretical approaches have emerged to explain how and why the linguistic competence of HSs may differ from their monolingual counterparts in their homeland. The results of this dissertation are discussed in light of five main approaches in the field of HL bilingualism. The first approach is *L1 Attrition*, which is the loss of fully acquired aspects of grammar (Montrul, 2002, 2008; Polinsky, 2006, 2011). The second approach is

Incomplete Acquisition, which was proposed by Montrul (2002, 2008) to describe aspects of HS grammars that have not reached full development in childhood and remain incompletely acquired in adulthood (or in childhood) (Montrul, 2008). The third approach is *Differential Acquisition*, which argues that HSs grammars are not incomplete but are different from monolingual grammars and can be considered linguistic innovations (Kupisch & Rothman, 2018; Pascual y Cabo & Rothman, 2012). The fourth approach is *Missing Input Competence Divergence*, proposed by Pires and Rothman (2009), which describes cases in which HS linguistic innovations can be traced back to changes in parental input. The fifth approach is the *Cross-Linguistic Influence Hypothesis*, proposed by Müller and Hulk (2001). This hypothesis argues that structures that exhibit syntax-pragmatics interfaces are more likely to be vulnerable to cross-linguistic influence than structures in narrow syntax, providing that there is a surface overlap between the two languages of the bilinguals in these structures[6] (Müller and Hulk, 2001).

HS bilinguals are also different from adult second language (L2) learners. It is true that both HS bilinguals and adult L2 learners share having "another grammar represented in their mind from which various degrees of influence at the level of underlying representation can be attested." (Pascual y Cabo & Rothman, 2012, p. 454). Nonetheless, HSs are native speakers and early naturalistic acquirers of a given HL from childhood, whereas L2 learners did not naturally acquire that language from childhood.

[6] The distinction between early bilinguals, as in Müller and Hulk's (2001) study, and heritage speakers, as in Montrul's (2008) study, is based on sociopolitical factors (Montrul, 2016).

This section has provided the definitions that are adopted in this dissertation for HL bilingualism and HSs. In the section that follows, I describe a special sociolinguistic situation that exists in Egypt known as *Diglossia,*

1.2.3. Diglossia in Egypt

Diglossia is a condition where two varieties of the same language coexist in the same speech community. In this dissertation, I adopt Ferguson's (1959) widely used definition of diglossia.

> DIGLOSSIA *is a relatively stable language situation in which, in addition to the primary dialects of the language (which may include a standard or regional standards), there is a very divergent, highly codified (often grammatically more complex) superposed variety, the vehicle of a large and respected body of written literature, either of an earlier period or in another speech community, which is learned largely by formal education and is used for most written and formal spoken purposes. (*Ferguson, 1959, p. 336)

Ferguson (1959) examined four speech communities, Arabic, Swiss German, Modern Greek, and Haitian Creole (henceforth defining languages). He observed the coexistence of two varieties of the defining languages in each community, Classical and Colloquial Arabic for Arabic; Standard Swiss-German and Swiss German for Swiss German; katharevusa and dhimotiki Greek for Modern Greek; and French and Creole for Haitian Creole. Ferguson referred to one of the varieties in the diglossic condition as the superposed

variety, the high variety (H), and to the other regional standard varieties as the low varieties (L). Moreover, he identified nine features that distinguish between H and L: function, prestige, literary heritage, acquisition, standardization, stability, grammar, lexicon, and phonology. Table 1 summarizes these features as outlined by Ferguson.

Feature	Description
1. Function	The contexts for H and L are highly specialized for certain situations. However, at times, they may slightly overlap.
2. Prestige	This feature depends on how members of the community view their H and L varieties. In most cases, individuals perceive the H to be superior compared to the L. Moreover, some individuals, in the speech communities that Ferguson examined, considered that their H is the 'real' language and reported that their L does not exist.
3. Literary heritage	The vast majority of heritage literature is written in H.
4. Acquisition	L is acquired naturalistically since birth without explicit instruction of the grammatical rules, while H is usually learned in formal education with explicit and systematic teaching of the grammatical rules.
5. Standardization	H has a settled orthography system and grammatical and pronunciation norms. This means that H follows a specific set of rules, which results in fewer variations. On the other hand, L does not usually enjoy a well-established grammatical system. That is to say that L can have more variations since it is not very strict.
6. Stability	Diglossia refers to a firm linguistic situation that may remain in the communities for multiple centuries.
7. Grammar	Compared to the complex grammatical structures and inflectional system used in H, L tends to simplify the grammatical structures and inflectional systems of H.
8. Lexicon	Most of the vocabulary is shared between H and L. However, there are some words that are specific to H, such as technical terminologies. L usually involves popular

	expressions, that are not found in H, and uses words that are found in the everyday surroundings of native speakers of L, such as house objects.
9. Phonology	Both H and L originate from a single phonological structure. However, the L phonology is considered to have a basic system, while the H phonology can be "a subsystem or a parasystem." (Ferguson, 1959, p.335)

Table 1. *Features of diglossia (adapted from Ferguson, 1959, pp. 328–336)*

Speaking about the current linguistic condition in Egypt, it displays all the nine features described by Ferguson (1959), with Modern Standard Arabic (henceforth MSA) as the H variety, and EA as the L variety. Generally speaking, there is a clear distinction between the contexts in which each variety is used because EA is the main spoken register and MSA is the main written register. Nonetheless, the contexts of the two varieties sometimes overlap as Ferguson outlined. For example, EA can be used in written texts on social media, and MSA can be used in formal spoken situations, such as conferences and public events. EA is acquired naturalistically from birth because it is the spoken variety used for communication at home and in the wide speech community. MSA, on the other hand, is introduced to children through children's stories, children's shows, and formal education during the school-age period. It is true that MSA is widely perceived as the prestigious language of the community, to the extent that some scholars in the Arab countries described the colloquial varieties of Arabic as "nothing but a corruption of the Arabic language." (Versteegh, 1996, as cited in Khamis-Dakwar, 2007, p. 65).

1.3. Rationale of the Study

The attitudes toward the L varieties of Arabic can explain why Arab scholars living in Arab countries rarely conduct studies on the L varieties of their language. With respect to wh-questions in EA, there is almost no published research except my previous study (Mohamed, 2022), which examined the production of EA adjunct wh-questions in EA-English bilingual children. To my knowledge, this is the only experimental study that investigated EA wh-questions in a bilingual context. Therefore, this study aims to fill the gap by investigating knowledge of main-clause wh-questions in EA monolinguals and bilinguals.

EA, Spanish, and English are the languages specifically chosen for this study because they have an interesting surface overlap regarding two syntactic properties, (i) the position of wh-phrases, and (ii) subject and verb word order. These overlapping areas make the domain of wh-questions a worthwhile topic of investigation since such areas are where cross-linguistic influence may occur between the two languages of bilingual children (Döpke, 1998; Müller 1998; Müller and Hulk, 2001; Silva-Corvalán, 2014).

1.4. Research Questions

This study is guided by the following two main research questions:

RQ1: Production and judgment of the position of wh-phrases in EA wh-questions

RQ 1.1: Will child HSs, CH2_Experimental, pattern with or differ from the two control groups, A1_Control and CH1_Control, in their production and judgment of the position of wh-phrases in EA wh-questions?

RQ 1.2. Will the adults who live in a bilingual environment, A2_Experimental, pattern with or differ from the adults living in a monolingual environment, A1_Control, regarding the production and judgment of the position of wh-phrases in EA wh-questions?

RQ 1.3. Will the child HSs, CH2_Experimental, pattern with or differ from the first-generation immigrants, A2_Experimental, regarding the production and judgment of the position of wh-phrases in EA wh-questions?

RQ2: Production and judgment of subject and verb word order in EA wh-questions

RQ 2.1: Will the child HSs, CH2_Experimental, pattern with or differ from the two control groups, A1_Control and CH1_Control, regarding the production and judgment of subject and verb word order in EA wh-questions?

RQ 2.2. Will the adults who live in a bilingual environment, A2_Experimental, pattern with or differ from the adults living in a monolingual environment, A1_Control, regarding the production and judgment of subject and verb word order in EA wh-questions?

RQ 2.3. Will the child HSs, CH2_Experimental, pattern with or differ from the first-generation immigrants, A2_Experimental, regarding the production and judgment of subject and verb word order in EA wh-questions?

These research questions will be revisited in Chapter 2 in order to formulate and present their corresponding hypotheses after reviewing the literature.

1.5. Organization of the Dissertation

The dissertation is organized in the following manner. Chapter 2 provides a theoretical and syntactic background for the study by discussing the main theoretical approaches in the field of HL Bilingualism, describing wh-question formation in the languages under investigation, and reviewing previous research on the knowledge of wh-question. Chapter 3 examines the methodology of the study, including a description of the participants and the tasks. Chapter 4 presents the results. Chapter 5 discusses the results and concludes the dissertation with the conclusion and potential future directions.

CHAPTER 2

2. THEORETICAL AND SYNTACTIC BACKGROUND

The aim of this chapter is to offer a theoretical and syntactic background for this investigation. The chapter is organized as follows. Section 2.1. discusses the five main theoretical approaches in the field of HL Bilingualism: *L1 Attrition*, *Incomplete Acquisition* (both in Section 2.1.1), *Differential Acquisition* (Section 2.1.2), *Missing Input Competence Divergence* (Section 2.1.3), and *Cross-Linguistic Influence Hypothesis* (Section 2.1.4). Section 2.2. provides a syntactic background for this study. It starts by presenting an overview of the Minimalist Program, which is the theoretical framework for this study (Section 2.2.1), followed by a description of the syntax of main-clause wh-questions in English (Section 2.2.2), Spanish (section 2.2.3), MSA and its Egyptian dialect (both in Section 2.2.4). Section 2.2.5 presents a comparative description of wh-question formation in the four languages of interest in order to identify the overlapping areas between these languages. Section 2.3 reviews previous research on the acquisition of wh-question in monolingual contexts (2.3.1) and bilingual contexts (2.3.2). Section 2.4 concludes this chapter by articulating the research questions that guide this study and their corresponding hypotheses.

2.1. Theoretical Background

2.1.1. L1 Attrition and Incomplete Acquisition

L1 attrition has been defined as "the loss of aspects of a previously fully acquired primary language resulting from the acquisition of another language." (Seliger,1996, as cited in Perpiñán, 2011, p. 312). Gürel and Yılmaz (2011) draw a distinction between two types of L1 attrition, intra-generational and inter-generational L1 attrition. Intra-generational L1 attrition refers to subtle changes or simplifications in the L1 grammar of first-generation adult immigrants who were monolingually raised in their country of origin and moved to another country after puberty. In this case, the linguistic experience of the first-generation immigrants is different from that of the monolinguals in their homeland because the immigrants' L1 becomes a minority language and their L2 is now the majority and dominant language in their new society. Inter-generational L1 attrition, on the other hand, refers to changes or simplifications in the L1 grammar of second and subsequent generations of immigrants, that is to say, child and adult HSs. There are abundant examples in the literature of L1 attrition at an intra-generational level (Perpiñán, 2011; Tsimpli et al., 2004; Gürel and Yılmaz, 2011; Yılmaz, 2011), as well as at an inter-generational level in adult HSs (Kim et al., 2009; Polinsky, 2011; O'Grady et al., 2011) and in child HSs (Silva-Corvalán, 1994; Montrul, 2011).

In this study, I adopt Gürel and Yılmaz's (2011) view of L1 attrition as subtle changes in L1 grammars. According to Gürel and Yılmaz (2011), "L1 attrition must be perceived as an unconscious rearrangement or restructuring of the L1 grammar due to L2 contact, but not as a drastic loss/decay as in the case of pathological conditions." (p. 222). Perpiñán

(2011) and Tsimpli et al. (2004) found L1 attrition effects in first-generation immigrants. Perpiñán (2011) studied the production and perception of S-V inversion in two Spanish wh-constructions, matrix questions and relative clauses, in two groups of Spanish native speakers, (i) first-generation immigrants in the U.S., who reported using their L1 on a regular basis, and (ii) Spanish monolingual adults living in Spain. The difference between Spanish matrix questions and relative clauses is that inversion in matrix questions is purely syntactic in nature, while inversion in relative clauses is determined by pragmatics and/or phonology. Results indicated that the structure that exhibits interfaces between syntax and pragmatics and/or phonology, that is inversion in relative clauses, was vulnerable to L1 attrition, while purely syntactic structure, that is inversion in matrix questions, was not. Tsimpli et al. (2004) found similar results in Italian and Greek first-generation immigrants residing in Britain. As in Perpiñán's (2011) study, all the bilinguals in this study were near-native speakers of English and reported using their L1 on a daily basis. The phenomenon investigated in this study was the production and interpretation of subject realization (null and overt subjects) and subject position (preverbal and postverbal subjects). Results from a Headlines Task and a Picture Verification Task showed that the structures that involve semantic features, namely the production of preverbal subjects in Greek and the interpretation of overt pronominal subjects in Italian, are affected by L1 attrition among the Greek and Italian first-generation immigrants respectively. In comparison, no attrition effects were found in purely syntactic structures, such as the interpretation of null subjects in subordinate clauses in Italian.

I turn now to consider the second approach, which is incomplete acquisition. This term was

proposed by Montrul (2002, 2008) to describe grammatical features that have never reached full development in childhood. As Montrul (2008) puts it "Incomplete L1 acquisition occurs in childhood when, for different reasons, some specific properties of the language do not have a chance to reach age-appropriate levels of proficiency after intense exposure to the L2 begins." (p. 21). Many linguists attribute the linguistic differences between heritage speakers and their monolingual counterparts to incomplete acquisition (Polinsky 2006, 2008; Montrul, 2002, 2008, among others).

The ideal way to untangle L1 attrition from incomplete acquisition is to conduct longitudinal studies (e.g., Silva-Corvalán, 2014). Nonetheless, given the scarcity of longitudinal studies, it is challenging to determine whether an aspect of grammar is fully acquired in childhood and then eroded in adulthood, or whether this aspect of grammar experiences different levels of attainment compared to monolingual children and adults (Montrul, 2008, 2016). Polinsky (2011) proposes an innovative methodological approach to tease apart L1 attrition from incomplete acquisition in cross-sectional studies. Polinsky's methodology involves comparing the linguistic competence of child HSs with the linguistic competence of adult HSs. In this view, the linguistic abilities of child HSs resemble the linguistic abilities of adult HSs in their childhood. According to Polinsky (2011), the comparison of child HSs and adult HSs with monolingual controls, children and adults, raises two possible scenarios. The first scenario is that both child HSs and adult HSs perform differently than the monolingual control groups for a given grammatical feature. This scenario can be interpreted as incomplete acquisition of this feature. The second scenario is that child HSs pattern with the control groups for a given grammatical feature,

but adult HSs do not. This scenario may be due to L1 attrition or reanalysis of the adult HSs' grammars for this specific feature.

Polinsky (2011) used this methodology to study the comprehension of Russian relativization structures in Russian child HSs and adult HSs in the U.S. These speakers were compared to child and adult monolinguals who lived in Moscow. The focus of this study was on two types of relative clauses, subject and object relative clauses (henceforth SRs and ORs respectively), and two orders of the noun and the verb, either noun-verb or verb-noun. In Russian, inflectional morphology plays an important role in distinguishing between SRs and ORs. To clarify, forming relative clauses in Russian requires inserting a relative clause *kotor-* 'that/who/which', that agrees with the extracted constituent in number, gender, and case, in the constituent's extraction site. The participants were tested in their comprehension of four combinations of relative clauses, SRs with a preverbal object (SR-OV); SRs with a postverbal object (SR-VO); ORs with a preverbal subject (OR-SV); and ORs with a postverbal subject (OR-VS). Results from a Picture Matching Task showed that the two monolingual control groups and the child HS group correctly interpreted SRs and ORs in all word orders. As for the adult HSs, they comprehended SRs with both word orders, a preverbal and a postverbal object, but they misinterpreted ORs, regardless of their subject and verb order. These results were interpreted as L1 attrition in the adult HSs because child HSs showed mastery of this grammatical feature. However, Polinsky argues that the attrition found in adult HSs cannot be due to transfer from English since these bilinguals correctly interpreted SRs with a preverbal object (SR-OV) although these clauses do not follow the English word order. As an alternative explanation, Polinsky

attributed these results to difficulties in processing the case inflectional morphology of the relative clause *kotor-*, which determines whether the extracted constituent is a subject or an object.

O'Grady et al. (2011) found similar results in adult HSs of Korean in their knowledge of the scope of the Korean disjunction *ina* 'or' with negated verbs. Four groups took part in this study, (i) two experimental groups living in the U.S. (Korean child and adult HSs) and (ii) two control groups (Korean monolingual children and adults). The phenomenon under investigation was the disjunction under negation, which exhibits surface overlap between English, the majority language in the bilinguals' society, and Korean, their heritage language. In English, if a direct object of a negated verb has 'or', then the sentence has a conjunctive interpretation, equal to 'neither nor'. In Korean, on the other hand, *ina*, the counterpart of 'or', has two interpretations, (i) conjunctive interpretation as in 'neither nor', which rules out the occurrence of the two possibilities, and (ii) disjunctive interpretation as in 'one or the other', which implies that the two possibilities are mutually exclusive. Although both interpretations are possible in Korean, the 'neither nor' interpretation is the default interpretation. Results from a Truth Value Judgment Task showed that the two monolingual groups and the child HSs group permitted both interpretations, 'neither nor' and 'one or the other', for *ina* 'or'. However, these three groups predominantly preferred the 'neither nor' interpretation and accepted 'one or the other' reading approximately 33% of the time. In contrast, the adult HSs interpreted *ina* 'or' as 'neither nor' 100% of the time and completely rejected the 'one or the other' reading. The study concluded that the results of adult HSs may indicate possible transfer from English and L1 attrition because the child

HSs patterned with the two monolingual groups, but the adult HSs did not.

2.1.2. Differential Acquisition

Until fairly recently, the term incomplete acquisition was widely used to describe any different levels of attainment observed in HS grammars compared to those of monolingual children and adults. Nonetheless, describing HSs grammars as incomplete caused a strong disagreement among linguists. According to Kupisch and Rothman (2018), the term *incomplete* is inaccurate because "naturalistically acquired native grammars that are sufficiently developed for communication cannot be incomplete, only different—potentially drastically—from one another by comparison." (p. 573). Therefore, I agree with the calls to replace the term incomplete acquisition with a more accurate term, differential acquisition (e.g., Pires & Rothman, 2009; Kupisch & Rothman, 2018; Yager et al., 2015 among others). As Pascual y Cabo and Rothman (2012) assert, "It is suggested and defended that HS competence, while often different from monolingual peers, is in fact not incomplete (given any reasonable definition by the word incomplete), but simply distinct for reasons related to the realities of their environment." (p.450).

In this view, Yager et al. (2015) consider what can be seen as attrition of dative marking in heritage German varieties as an "innovative reanalysis" in HS grammars (p. 2). Yager et al. (2015) examined previous data of five heritage German varieties of immigrant communities that are geographically separated from each other, one variety of German spoken in Texas, one variety in Northeastern Argentina, and three varieties in Eastern Wisconsin. The findings revealed a trend in the heritage varieties of German to mark

pronouns and definite determiners for case more than marking Determiner Phrases (DPs) and indefinite determiners. This trend may be viewed as developing a new dative marking system based on semantic principles, which resembles the Differential Object Marking (DOM) that overtly marks animate direct objects in several languages such as Spanish. The researchers concluded that the dative marking in heritage German varieties should be considered a novel structural system. In words of Yager et al. (2015), "Our general conclusion is that heritage bilingual grammars are complete grammatical systems that show structural innovations of the sort we expect in any living language." (p. 2).

2.1.3. Missing Input Competence Divergence

Pires and Rothman (2009) proposed the term *Missing Input Competence Divergence* to describe one of the potential sources of HS linguistic differences related to quality of input, that is the role of cross-generational attrition in the development of HS grammars. According to Pires and Rothman (2009), HL input that HSs are exposed to may be qualitatively different from monolingual input in their homeland because the parental generations of immigrants may be undergoing gradual change in some linguistic structures. These changes in parental input may eventually lead to the differential acquisition of heritage languages in the subsequent generations of HSs. As Pascual y Cabo and Rothman (2012) put it, "what can appear as incomplete acquisition if compared with monolinguals can be complete acquisition of the type of input HSs receive." (p.452).

To investigate the role of cross-generational attrition in developing HS grammars, Montrul and Sánchez-Walker (2013) contributed to the methodology of Polinsky (2011), mentioned

above, by incorporating an additional experimental group of adult first-generation immigrants. Montrul and Sánchez-Walker (2013) investigated the production of Spanish DOM in five groups of Spanish native speakers: two experimental groups of HSs living in the U.S. (39 child HSs and 64 adult HSs), one experimental group of adult first-generation immigrants living in the U.S. (n=23), and two monolingual control groups from Mexico (20 children and 40 adults). Results from a Story Telling Task and a Picture Description Task showed a trend of omitting DOM in obligatory contexts among the three experimental groups (with an omission rate between 40% and 60% for child HSs and around 20% for both adult immigrants and adult HSs). These findings suggest that HSs may be receiving qualitatively different input from the input that the monolingual children receive due to the potential attrition of DOM in first-generation immigrants. The researchers attributed the linguistic differences seen in the experimental groups to a combination of possible factors: reduced input, cross-linguistic influence from English on Spanish, attrition of DOM in adult immigrants, and differential acquisition in both groups of HSs.

2.1.4. Cross-Linguistic Influence Hypothesis

The cross-linguistic hypothesis was proposed by Müller and Hulk (2001) to describe the key language-internal factors that are believed to govern transfer from one of a bilingual's two languages to the other. According to this hypothesis, two conditions must be met for cross-linguistic influence to take place. The first condition is that there is a surface structural overlap between the two languages of bilinguals, "Crosslinguistic influence occurs once a syntactic construction in language A allows for more than one grammatical analysis from the perspective of child grammar and language B contains positive evidence

for one of these possible analyses." (Müller and Hulk, 2001, p. 1). The second condition is that these structures exhibit an interface between syntax and pragmatics. If both conditions are met, the direction of the influence is expected to be from the language with one grammatical analysis, language B, into the language with several possible analyses, language A.

Nonetheless, several empirical studies (Albirini et al., 2011; Cuza, 2013, 2016; Mohamed, 2022) challenge the second condition of Müller and Hulk's (2001) hypothesis, but they are broadly consistent with the first condition. These studies show that structures in narrow syntax, that do not involve syntax-pragmatics interfaces, can also be vulnerable to cross-linguistic influence as long as they display structural overlap between bilinguals' two languages.

Albirini et al., (2011) found cross-linguistic influence in the production of subject and verb word order among Egyptian and Palestinian adult HSs residing in the U.S. EA and Palestinian Arabic allow VS and SV word orders while English allows only a rigid SV word order. This latter word order is where precisely the two languages of these bilinguals overlap. Results of a number of elicited production tasks revealed a tendency among adult HSs of EA to produce sentences with SV word order, although both SV and VS word orders are grammatically correct in their dialect. The researchers attributed this tendency to two possible factors, cross-linguistic influence from English on EA and the complexity of the VS word order.

The findings of Albirini et al.'s (2011) study are in line with those of my previous study (Mohamed, 2022). I investigated the position of EA adjunct wh-phrases in EA-English bilingual children (age 6;0) and reported that they largely preferred wh-fronting (97.3%), which is the only grammatical position for English wh-phrases in non-echo wh-questions, over wh-in-situ (2.7%). Applying the terms of Müller and Hulk (2001), EA, language A, allows for two options, wh-fronting and wh-in-situ, while English, language B, contains positive evidence for one of these possible options, wh-fronting, from the perspective of EA-English bilingual children. Therefore, the tendency of preferring wh-fronting in these bilinguals is interpreted as a possible cross-linguistic influence from English on this aspect of EA syntax.

2.2. Syntax of Main-Clause Wh-Questions in English, Spanish, Egyptian Arabic, and Modern Standard Arabic

This section has two main goals. The first is to describe the syntax of main-clause wh-questions[7] in English, Spanish, EA, and MSA. This description includes an analysis of the position of wh-phrases, and subject and verb word order in main-clause wh-questions in these languages. The second goal is to shed light on the overlap areas in question formation between English and EA as well as between English and Spanish. The reason for choosing the second goal is that previous research on bilingualism suggests that such overlapping

7 As this study deals with the early stages of wh-question acquisition, complex types of wh-questions such as wh-questions with more than one wh-phrase and embedded questions are not included in this analysis. Therefore, every mention of wh-questions in this dissertation refers to main-clause wh-questions unless mentioned otherwise.

areas between the two languages of bilingual children are where cross-linguistic influence may occur ((Döpke, 1998; Müller 1998; Müller and Hulk, 2001; Silva-Corvalán, 2014).

The name *wh-questions* is used in this study to refer to interrogative clauses that seek specific information from an interlocutor, and not a simple response of either *yes*, *no*, or *maybe*, as in the case of yes/no questions (Carnie, 2013). The wh-questions were given this name because in English they typically contain an interrogative phrase that starts with the grapheme <wh> such as *what*, *where*, and *why* (apart from *how* which does not start with <wh> but it is treated as one of the *wh*-phrases because it has the same function). Moreover, the term *wh-questions* is also used to refer to this type of questions in other languages because they have the same function, of seeking specific information, as their English counterparts, although the interrogative words in these languages may not start with <wh> (Carnie, 2013; van Heukelum, 2016).

There are two types of wh-questions, argument wh-questions (wh-arguments) and adjunct wh-questions (wh-adjuncts). On one hand, wh-arguments are used to ask about arguments, which are "the entities that are participating in the predicate relation." (Carnie, 2013, p. 62). They can refer to either a subject[8] or a complement, such as the English subject wh-phrase *who* and the complement wh-phrase *what*. Wh-adjuncts, on the other hand, ask about entities that do not participate in the predicate relation. More specifically, they are used to elicit specific information from an interlocutor about place, time, manner, reason,

[8] The subject wh-arguments are not discussed any further because they are beyond the scope of this study.

etc., such as the English wh-phrases *when*, *where*, and *why*. Table 2 presents the EA target wh-phrases in this study and their counterparts in English, Spanish, and MSA.

	Complement wh-argument	**Wh-adjuncts to ask about a place**	**Wh-adjuncts to ask about time**
EA	*ʔeh*	*feen*	*ʔimta*
English	*what*	*where*	*when*
Spanish	*qué*	*dónde*	*cuándo*
MSA	*mā, māðā*	*ʔayna*	*matā*

Table 2. *EA target wh-phrases in this study and their counterparts in English, Spanish, and MSA*

This section consists of five sections organized as follows. Section 2.2.1 presents a brief overview of the Minimalist Program, which is the theoretical framework for this study. The following three sections provide a description of wh-question formation in English (2.2.2), Spanish (2.2.3), EA, and MSA (2.2.4). Section 2.2.5 concludes Section 2.2. with a comparative description of wh-question formation in the four languages of interest.

2.2.1. Theoretical Framework

This study is conducted within the framework of Chomsky's Minimalism Program, a program that was developed under the Generative Framework (Chomsky, 1993, 1995).

Within the minimalist framework, a clause can be derived by two key operations, External Merge, and Internal Merge (for simplification purposes, I will hereafter refer to these two operations as Merge and Movement respectively). As Ginsburg (2009) puts it, Merge is the basic operation to construct a clause, and it consists of selecting an element from the lexicon and merging it with another element in the process of derivation. In comparison, Movement is the operation of moving an element that has been already merged in the derivation to another position within the structure.

Two types of movement were identified under the minimalist formwork, head-to-head movement (which includes Verb-to-Tense (V-to-T) and Tense-to-Complementizer (T-to-C) and phrase movement (DP movement and wh-movement). Each movement must have a motivation (Radford, 2004). For instance, DPs move to check Case features, either [NOM] or [ACC] features. Likewise, wh-phrases move to the specifier of Complementizer Phrase (spec-CP) to check a [+WH] feature in C. It is believed that each moved head or phrase leaves behind an unpronounced copy in its base position[9].

[9] It is a widely held view that movement cannot result in loss of the original occurrence of moved elements in their extraction site because this would violate both the Headedness Principle and the Binarity Principle (Radford, 2004, p. 154). In this view, I follow Chomsky's Copy Theory of Movement (Chomsky, 1993) which states that each movement operation leaves behind a null copy of the moved constituent in its extraction site which is given a null spellout and therefore remains unpronounced. The deletion of the phonological component of the null copy at the phonological form (PF) is represented by crossing the copy out in the syntactic representation.

Within the minimalism program, each clause must be syntactically typed (Cheng, 1997, p. 25), that is it must have specific features that identify it as declarative, interrogative, etc. It is assumed that the presence or absence of specific features in C, namely a Question-feature (Q-feature) and a WH-feature, is what distinguishes between different types of clauses such as declarative and interrogative clauses (Cheng 1997). In this view, the presence of a Q-feature is what types a clause as an interrogative. Therefore, it is assumed that all interrogative clauses have a [+Q] feature. Within the interrogative clauses, what distinguishes wh-questions from yes/no questions is the WH-feature, which is present in wh-questions but absent in yes/no questions. Therefore, it is considered that wh-questions have [+Q, +WH] features in C, while yes/no questions have [+Q, -WH] features. If both the Q- and WH-features are absent, that is [-Q, -WH], then the clause is regarded as a declarative clause (van Heukelum, 2016). If a clause has WH-features but it does not have an interrogative reading, that is [-Qu, +WH], then it is considered an exclamation, as can be seen in '*How smart she is!*'.

However, not all languages have the same set of movement operations to check the features in C and consequently to type a clause as an interrogative. For example, in English main-clause wh-questions, the [+WH] feature is satisfied by moving the wh-phrases to spec-CP while in Chinese wh-phrases do not move in the syntax. The following examples illustrate word order in an English declarative clause (9a) and an English wh-question (9b) and their Chinese declarative (10b) and wh-question (10b) counterparts.

(9) a. Aya eats apples.

b. **What** does Aya eat?

(10) a. 阿雅吃苹果

Ā yǎ chī píngguǒ

Aya eat apples

'Aya eats apples.'

b. 阿雅吃什么？

Ā yǎ chī ***shénme****?*

Aya eat what

'What does Aya eat?'

In both (9b) and (10b), the wh-phrases *what* and *shénme* 'what' are used to ask about a complement, which is *apple* and *píngguǒ* 'apples' as shown in the declarative counterparts of these questions, in (9a) and (10a) respectively. What distinguishes the English question (9b) from the Chinese question (10b) is the position of the wh-phrase. In English, the wh-phrase is fronted to clause-initial position while in Chinese it remains in-situ, that is to say in place.

To explain these cross-linguistic differences regarding the syntax of wh-questions, Rizzi (1996) proposed a principle known as *Wh*-Criterion as stated in (11)

(11) a. A *wh*-operator must be in a Spec-head configuration with $X^0_{[+WH].}$

b. An $X^0_{[+WH]}$ must be in a Spec-head configuration with a *wh*-operator.

(Rizzi, 1996, as cited in Rizzi, 2000, p. 214)

For this principle to hold universally, its satisfaction needs to be governed by the parameters in (12):

(12) P1: Overt movement vs. in-situ placement of the *wh*-element

P2: Application or nonapplication of I-to-C movement

(Rizzi, 1996, as cited in Guasti, 2016, p. 245)

The *Wh*-Criterion is considered a universal constraint on question formation that can be satisfied overtly or covertly. In this view, languages that move wh-phrases to spec-CP, such as English, Spanish, Catalan and MSA, satisfy the *Wh*-Criterion overtly. In comparison, languages that appear to have no wh-movement, such as Chinese, Japanese, and Korean, satisfy the *Wh*-Criterion by a covert movement at the logical form (LF) of the wh-phrase to spec-CP.

Nevertheless, several languages allow both options: overtly moving wh-phrases to spec-CP (wh-fronting) and covertly moving wh-phrases by leaving them in-situ (wh-in-situ). Some of these languages are French (Hamann, 2006; Prévost et al., 2010) and at least three dialects of Arabic, Iraqi Arabic (Wahba, 1985), Palestinian Arabic (Abu-Jarad, 2008) and EA (Wahba, 1984; Lassadi, 2003). The next examples (13a, 13b) from EA show these two options:

(13) ا. **إمتى** مريم هتيجي؟

(13) a. ***ʔimta*** *mariam ha-tīgy?*

when Mariam FUT-come.3SGF

'When will Marriam come?'

ب. مريم هتيجي **إمتى؟**

b. *mariam ha- tīgy* ***ʔimta****?*

Mariam FUT-come.3SGF when

'When will Marriam come?'

As the above examples illustrate, the wh-adjunct *ʔimta 'when'* can be moved overtly, as in (13a), or covertly, as in (13b), to satisfy the *Wh*-Criterion. Nonetheless, this is not the case with all the EA wh-phrases. For instance, fronting the wh-phrase is ungrammatical with the EA complement wh-phrase *ʔeh* 'what' as it remains in wh-in-situ (Wahba, 1984; Lassadi, 2003). The optionality of wh-movement in EA wh-questions will be discussed in detail in section 2.2.2.3.

In this section, I addressed some fundamental minimalist assumptions. In the next section, I describe wh-question formation in English (2.2.2.1), Spanish (2.2.2.2), and EA and MSA (2.2.2.3).

2.2.2. Main-Clause Wh-Questions in English

In English, main-clause wh-questions are formed by two kinds of movement, head movement and wh-movement. Head movement involves moving a tensed auxiliary from the T head position in Tense Phrase (TP) into the C head position in CP. Wh-movement

involves moving a wh-phrase from its canonical position into spec-CP (Radford, 2004). The word order in English main-clause wh-questions is wh-phrase, tensed auxiliary verb, subject and main verb [WH-AUX-S-V].

Following Radford (2004), main-clause wh-questions in English have two syntactic properties; "(i) Interrogative clauses are CPs headed by a C with [WH, EPP] features. (ii) C in root/main interrogative clauses also has an affixal [TNS] feature." (p. 207). The first syntactic property mentioned by Radford (2004) explains what triggers wh-movement and the second one explains what triggers head movement. Following Radford (2004), it is proposed that both head and wh-movement in main interrogative clauses are triggered by specific features found in C. It is assumed that the reason of wh-movement in English is that English interrogative clauses have [EPP] features[10] in C which require it to be extended into a CP projection containing some features of C in its specifier. As C has [WH, EPP] features in English interrogative clauses, as mentioned above in Radford's (2004) first syntactic property, it is assumed that these features search for a wh-phrase and attract it from its canonical position to spec-CP. Regarding the reason of head movement, I assume, following Baker (1970), that C in English questions contains a null question particle Q (Q-particle) with a strong [TNS] feature, and that the Q-particle is affixal in nature (Chomsky, 1995). Therefore, the affixal null Q-particle in C cannot stand alone and needs to be

[10] The Extended Projection Principle [EPP] is a principle within Universal Grammar that states "A finite tense constituent T must be extended into a TP projection containing a subject." (Radford, 2004, p. 73).

attached to an overt head. In this view, it is assumed that the Q-particle triggers a tensed auxiliary in T to serve as its host and to fill the strong [TNS] feature in C.

In what follows, I describe the method of satisfying the features in C and the merge and movement operations in English declarative clauses, yes/no questions, and wh-questions. Starting with the declarative clause in (14).

(14) Bisan will buy a house.

The first stage of constructing the clause in (14) is to merge the determiner *a* with the noun *house* to form DP *a house*. Then, the verb *buy* merges with this DP to form the Verb Phrase (VP) *buy a house*. The resulting VP merges in turn with the DP *Bisan* to form the VP *Bisan buy a house*. This VP then merges with the modal auxiliary verb *will* to form the T-bar *will Bisan buy a house*. It is important to point out that the verb *buy* has two theta roles, an external agent *Bisan* and internal theme, *a house*. The internal theme gets its Case in this base position, but the external agent does not (Radford, 2004). That is why the next stage of derivation involves moving the agent DP *Bisan* from the position where it is initially generated to specifier of TP (henceforth spec-TP) to check the [EPP] features in T[11]. The next stage of derivation consists of merging the agent *Bisan* with the T-bar (*will Bisan buy a house*) to form the TP *Bisan will Bisan buy a house*, then crossing out the original occurrence of the subject to indicate that it receives a null spellout in the phonological form

[11] The idea of the movement of subjects to spec-TP in the above-described way is referred to as the VP-Internal Subject Hypothesis, and it was first proposed by Koopman and Sportiche (1991).

(PF), *Bisan will ~~Bisan~~ buy a house*. The resulted TP to this point has the simplified form shown in (15) below.

(15) [TP Bisan [T' [T will] [VP ~~Bisan~~ [V buy] [DP a house]]]]

Recalling that every clause must be given a specific syntactic type (Cheng, 1997), the clause in (14) needs to be typed as a declarative clause. In order to do so, it is assumed within the minimalist program that TP projects a CP headed by a force-marking complementizer with a declarative force feature, which is null in English[12]. Consequently, an additional stage is needed to identify the clause in (14), *Bisan will buy a house*, as declarative clause. To do so, the resulting TP in (15) projects a CP headed by a null force-marking complementizer ***ϕ*** (Radford, 2004, p. 127). The declarative clause in (14) has the simplified form shown in (16) and the simplified syntactic representation illustrated in Figure 1.

(16) [CP [C ***ϕ***] [TP Bisan [T will] [VP ~~Bisan~~ [V buy] [DP a house]]]]

[12] Depending on the language, this complementizer can be null, as in English, or overt, as in Irish (Carnie, 2013, p. 362).

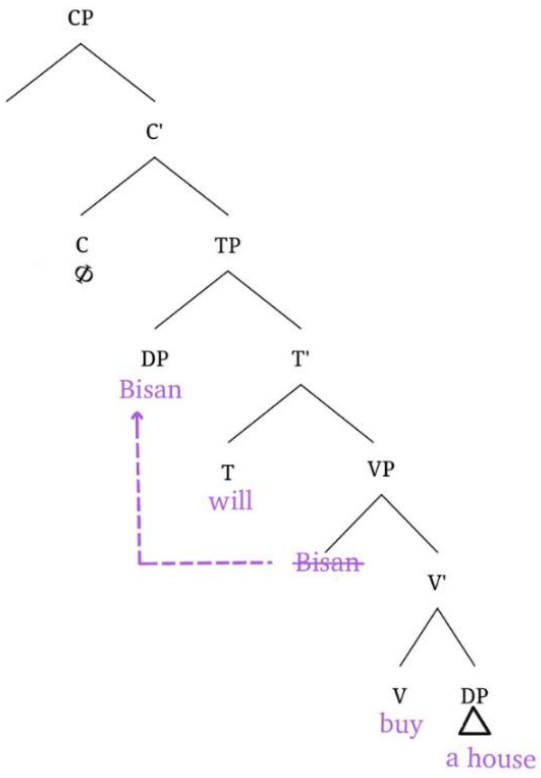


Figure 1. *Simplified syntactic representation of a declarative clause in English*

I move on now to describe the method of satisfying the features in C in English yes/no questions, taking (17) as an example.

(17) Will Bisan buy a house?

The clause in (17) needs to have [+Q] feature in C to have interrogative reading. To satisfy the [TNS] feature in C, the auxiliary *will* moves from the T head position in TP into the C head position in CP. This movement operation is referred to as S-AUX inversion, and it is used in present-day English to form yes/no questions and typical main-clause wh-questions, both wh-arguments and wh-adjuncts. The clause in (17) has the simplified form shown in (18) and the simplified syntactic representation in Figure 2.

(18) [CP [C Will] [TP Bisan [T ~~will~~] [VP ~~Bisan~~ [V buy] [DP a house]]]]

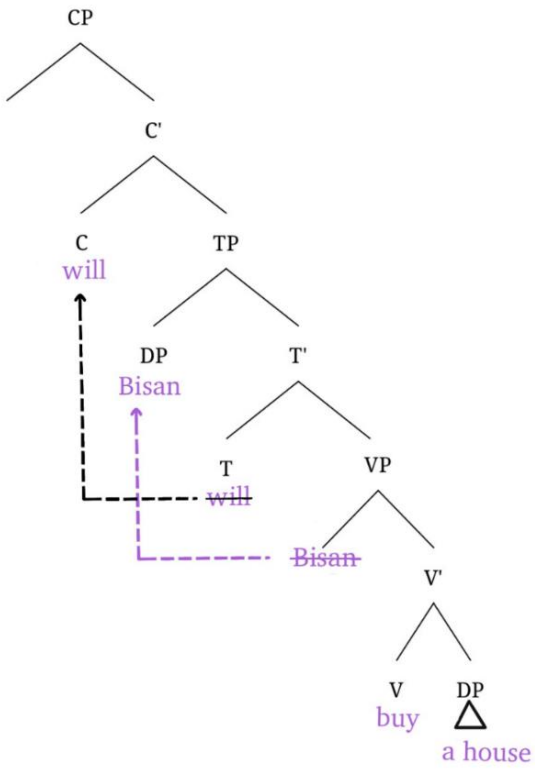


Figure 2. *Simplified syntactic representation of a yes/no question in English*

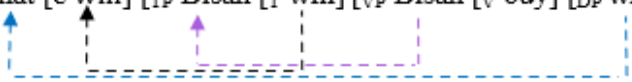
Having described the merge and movement operations in the derivation of English declarative clauses and yes/no questions, let us now consider the derivation of wh-questions. Example (19) illustrates a complement wh-question (19a) and the clause that it is originated from (19b).

(19) a. What will Bisan buy?

b. Bisan will buy what.

For the clause in (19a) to be regarded as a wh-question, it needs to go through two kinds of movements, head movement, and wh-movement. Head movement, as found in yes/no questions, involves moving the auxiliary *will* from the T head position in TP into the C head position in CP (*Will Bisan buy what*). Wh-movement involves moving the wh-phrase from its canonical position associated with its grammatical function, as the complement of the verb *buy*, into spec-CP to check [WH, EPP] features in C[13]. The clause in (19a) has the simplified form shown in (20) and the simplified syntactic representation in Figure 3 (again, the copy in situ is not pronounced, and is therefore crossed out).

(20) [$_{CP}$ What [c will] [$_{TP}$ Bisan [$_{T}$ ~~will~~] [$_{VP}$ ~~Bisan~~ [$_{V}$ buy] [$_{DP}$ ~~what~~]]]]



[13] Wh-movement is obligatory in English non-echo main-clause wh-questions. Leaving wh-phrases in situ, as shown in (1a) below, is ungrammatical in English. This case is different from echo questions, where it is grammatical to have wh-in-situ, but without *do*-support or S-AUX inversion, as in (1b). Wh-in-situ also occurs in questions with more than one wh-element. In this case, one wh-phrase is fronted, and the others are left in situ as in (2).

(1) a. *Did you put my glasses where?

b. You put my glasses where?

(2) Who gave what to whom? (Kuno & Robinson, 1972, p.464)

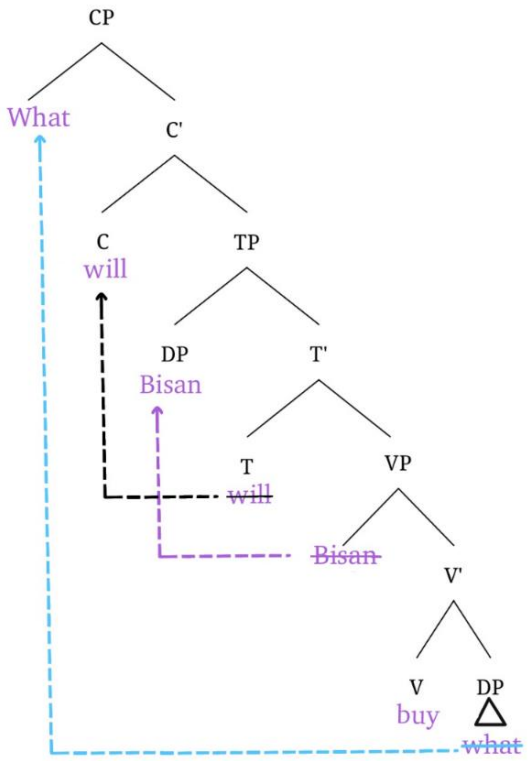


Figure 3. *Simplified syntactic representation of a complement wh-question in English*

As illustrated in Figure 3, the complement *what* participates in the predicate relation, and therefore it is shown in the syntactic representation as an XP (DP in this example) in a position as a daughter of a single bar level X' (V') and a sister of the head X (V)[14].

[14] A similar analysis applies to the adjunct clauses, but they differ from the argument clauses in that the adjuncts do not participate in the predicate relation. This is indicated in the syntactic representation as an XP that is a daughter of a single bar level X' and a sister of a single bar level X'.

Nevertheless, if there are no auxiliaries in T, a *do*-support, that is a dummy *do* or one of its variants, *does* and *did,* is inserted in the T head to support the inflectional affixes of the main verbs because main verbs never raise to T in English[15] (Carnie, 2013, p.311). Like questions with auxiliaries, raising the auxiliary *do* from T to C leads to S-AUX inversion for both wh-arguments (21) and wh-adjuncts (22).

(21) What did Ragab ~~did~~ write ~~what~~?

(22) Why did Ragab ~~did~~ write this letter ~~why~~?

There are two operations that apply to form the questions in (21) and (22). The first operation has two steps. The first step is inserting the past variant of the *do*-support in T to support the inflectional affix of the past tense of the verb *write*. The second step is moving the tense features from T-to-C. The second operation is the movement of the wh-phrase, *what* in (21) and *why* in (22), from its base position to spec-CP to check the [+WH] feature in C. The simplified syntactic representations of (21) and (22) are shown in (23) and (24) respectively.

(23) [CP What [C did] [TP Ragab [T ~~did~~] [VP ~~Ragab~~ [V write] [DP ~~what~~]]]]

(24) [CP why [C did] [TP Ragab [T ~~did~~] [VP ~~Ragab~~ [V write] [DP this letter][~~why~~]]]]

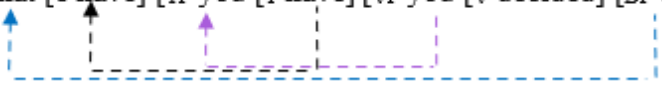
[15] I assume, following Carnie (2013), that in English, modals and auxiliaries are generated in T. Main verbs, in contrast, are generated in V and do not move out of VP in present-day English.

It is important to point out that, in American English[16], movement of T to C is straightforwardly seen in the inversion of the subject and the verb to *have* only if it is used as a perfect auxiliary, but not as a main verb (Carnie, 2013, p.311). Example (25) illustrates the operation of S-AUX inversion with the verb to have.

(25) What have you ~~have~~ decided ~~what~~?

The clause in (25) is a wh-question. Consequently, it has [WH, EPP] features in C that need to be satisfied. Therefore, the tensed auxiliary *have* moves from T-to-C to satisfy the [TNS] feature and the wh-phrase *what* moves into spec-CP to satisfy the [WH, EPP] features in C. The simplified syntactic representation for (25) is shown in (26).

(26) [CP What [C have] [TP you [T ~~have~~] [VP ~~you~~ [V decided] [DP ~~what~~]]]]



In sum, both wh-movement and S-AUX inversion are required in order to type a CP as a main-clause wh-question in English. The [WH, EPP] features in C trigger a wh-phrase to

[16] Unlike American English, verb to *have* may raise to T in British English, even if it used as a main verb (Carnie, 2013, p.311). For example, (3a) is grammatical in both American English and British English, while (3b) is allowed in British English, but not in American English.

(3) a. Does Aya have enough time to finish her project?

b. *Has Aya enough time to finish the project? (Ungrammatical in American English)

move from its canonical position to spec-CP, and the [TNS] feature in C triggers a tensed auxiliary to move from T to C.

This section has described wh-question formation in English. In the next section, I will address movement operations involved in wh-question formation in Spanish.

2.2.3. Main-Clause Wh-Questions in Spanish

In this section, two syntactic properties of Spanish main-clause wh-questions will be discussed, (i) the position of wh-phrases, and (ii) subject and verb word order. Recall that every mention of wh-questions in this dissertation refers to the main-clause wh-questions and every mention of Spanish refers to non-Caribbean Spanish. I limit the discussion to these varieties of Spanish because the results of this study are compared to studies conducted on non-Caribbean Spanish only (Perpiñán, 2011; Austin et al., 2013; Cuza, 2016).

Spanish non-echo wh-questions, both wh-arguments and wh-adjuncts, are formed by fronting the wh-phrase to a cause-initial position, as shown in (27a) and (28a) respectively. Leaving wh-phrases in situ, as in (27b) and (28b), is ungrammatical in non-echo wh-questions (Torrego, 1984; Zagona 2002; Camacho, 2018).

(27) a. *¿**Qué*** *compró* *Ziad?* (wh-fronting in wh-argument)

what bought.3SG Ziad

'What did Ziad buy?'

b. *¿*Compró* *Ziad* ***qué****?* (*wh-in-situ in wh-argument)

bought.3SG Ziad what

'What did Ziad buy?'

(28) a. ¿***Por qué*** *compró* *Salma esta casa?* (wh-fronting in wh-adjunct)

why bought.3SG Salma this house

'Why did Salma buy a house?'

b. *¿*Compró* *Salma esta casa* ***por qué****?* (*wh-in-situ in wh-adjunct)

bought.3SG Salma this house why

'Why did Salma buy a house?'

Spanish wh-arguments and wh-adjuncts, with the exception of wh-adjuncts with *cómo* 'how' and *por qué* 'why', involve S-V inversion, where main verbs, and most auxiliaries[17], move from the T head of TP to the C head of CP (Pesetsky & Torrego, 2001; Torrego,1984)[18]. In non-Caribbean varieties of Spanish, the S-V inversion is obligatory in argument wh-questions (Torrego, 1984, Camacho, 2018, Ordóñez & Olarrea, 2001), as shown in (29a). The question in (29b) is ungrammatical because the subject appears in a preverbal position.

[17] The auxiliary *haber* is problematic because it is inseparable from the main verb participle.

[18] Other linguists (Goodall, 2011; Suñer 1994; Zubizarreta 1998) argue that main verbs remain in T and do not raise to C. Since the linear word order at the surface level is the same, [WH-V-S], this debate will not be discussed any further here.

(29) a. *¿**Qué*** *compró* *Carmen?* (wh-argument with S-V inversion)

what bought.3SG Carmen

'What did Carmen buy?'

b. *¿**Qué*** *Carmen* *compró?* (*wh-argument without S-V inversion)

what Carmen bought.3SG

'What did Carmen buy?'

The two wh-related movements that underlie the formation of the question in (29a) are represented in the simplified form below (30). The first movement is a wh-movement where the wh-phrase *qué* 'what' raises from its canonical position in VP to spec-CP. The second movement is a head movement where the verb *compró* 'buy' raises from the T to C (T-to-C movement).

(30) [$_{CP}$ Qué [$_{C}$ compró] [$_{TP}$ Carmen [$_{T}$ ~~compró~~] [$_{VP}$ ~~Carmen~~ [$_{V}$ ~~compró~~] ~~qué~~]]]

Regarding adjunct wh-questions, there is a debate in the literature regarding whether all Spanish wh-adjuncts require S-V inversion. Torrego (1984) lists that the wh-phrases that do not require inversion as follows: "*en qué medida* 'in what way', *por qué* 'why', *cuándo* 'when', *cómo* 'how'." (p.106). However, Torrego did not mention whether other wh-adjuncts require inversion or not. Camacho (2018), on the other hand, stated that the S-V inversion is optional in Spanish wh-adjuncts, especially when the wh-phrase is large and complex, such as *en qué medida* 'in what way' (Camacho, 2018, p.362). Unlike Torrego (1984) and Camacho (2018), most native speakers of Spanish who participated in Rutten's

(1995, as cited in Baauw, 1998) research consider that S-V inversion is obligatory with most wh-adjuncts, and the only exceptions are *por qué* 'why' and *cómo* 'how'. In this dissertation, I follow the view of Rutten (1995, as cited in Baauw, 1998) that the two adjunct wh-phrases *cómo* 'how' and *por qué* 'why' are the only Spanish wh-phrases that do not require S-V inversion. The following examples for the adjunct wh-phrase *por qué* 'why' with S-V inversion (31a) and without S-V inversion (31b) are grammatically correct.

(31) a. *¿**Por qué** compró Carmen esta casa?*

why bought.3SG Carmen this house

'Why did Carmen buy this house?'

(wh-adjunct with S-V inversion)

b. *¿**Por qué** Carmen compró esta casa?*

why Carmen bought.3SG this house

'Why did Carmen buy this house?'

(wh-adjunct without S-V inversion)

The simplified forms of (31a) and (31b) are illustrated in (32a) and (32b) respectively.

(32) a. [$_{CP}$ Por qué [$_{C}$ compró] [$_{TP}$ Carmen [$_{T}$ ~~compró~~] [$_{VP}$ Carmen [$_{V}$ ~~compró~~] [esta casa][~~por qué~~]]]]

b. [$_{CP}$ Por qué [$_{C}$] [$_{TP}$ Carmen [$_{T}$ compró] [$_{VP}$ Carmen [$_{V}$ ~~compró~~] [esta casa] [~~por qué~~]]]]

To summarize, Spanish main-clause wh-questions are formed by two kinds of movement, wh-movement and head movement. Wh-movement consists of moving a wh-phrase from its canonical position into spec-CP to check the strong interrogative features, [WH, EPP], in C. Head movement involves raising the main lexical verb from the T head position in TP into the C head position in CP, resulting in S-V inversion. Both movements are obligatory in Spanish wh-arguments and wh-adjuncts, with the exception of wh-adjuncts with *cómo* 'how' and *por qué* 'why'. As for wh-adjuncts with *cómo* 'how' and *por qué* 'why', wh-movement is obligatory, but S-V inversion is optional. Consequently, word order [WH-V-S] is obligatory in all Spanish main-clause wh-questions, except for wh-adjuncts with *cómo* 'how' and *por qué* 'why', where both [WH-V-S] and [WH-S-V] orders are grammatically correct. This section has provided a brief description of wh-question formation in Spanish. In the next section, I address movement operations involved in wh-question formation in EA and MSA.

2.2.4. Main-Clause Wh-Questions in Egyptian Arabic and Modern Standard Arabic

This section aims to describe the syntax of main-clause wh-questions in EA and MSA. As mentioned in the previous chapter, Egypt exhibits a diglossic situation where at least two varieties of Arabic coexist: (i) MSA, the high language variety (H), and (ii) EA, the low language variety (L) (Ferguson, 1959; Zughoul, 1980). In this linguistic situation, people who live in Egypt acquire L since birth. Later on in their life, they are typically exposed to H through children's stories and formal education during the school-age period. Generally speaking, EA is the main spoken register and MSA is the main written register. However,

the two varieties slightly overlap. For example, EA can be used in written texts on social media, and MSA can be used in formal spoken situations, such as at conferences and public events. Although this study focuses only on L, which is EA, it is important to examine wh-question formation in H as well to explore whether there is cross-linguistic influence from H on L in the way that EA native speakers who took part in this study produce and interpret wh-questions in L, that is EA.

As background to the description of the syntax of wh-questions in MSA and EA, it is fundamental to address the word order in the declarative sentences in both varieties. Both MSA and EA allow VS(XP) and SV(XP) word order in declarative sentences, but they differ in the default word order, which is VS(XP) for MSA (Farghal, 1986; Mahfoudhi, 2002; Edwards. 2010) and SV(XP) for EA (Lassadi, 2003; Edwards. 2010). Examples (33) and (34) illustrate the word order in MSA and EA respectively[19].

(33) ا. قرأَ زيدٌ الكتابَ.

(33) a. *qaraʔ-a* *zayd-un* *ʔl-kitāb-a.*

past.read-3SGM Zayd-NOM the book-ACC

'Zayd read the book.'

ب. زيدٌ قرأَ الكتابَ.

b. *zayd-un* *qaraʔ-a* *ʔl-kitāb-a.*

[19] Example (33) is from Btoosh (2010, pp. 5–6) but its Arabic transliteration is adapted to the Arabic transliteration chart used in this study. Moreover, the interlinear gloss of this example is added by the author.

Zayd-NOM past.read-3SGM the book-ACC

‘Zayd read the book.’

(Btoosh, 2010, pp. 5–6)

(34) ا. قرأ زيد الكتاب.

(34) a. *qaraʔa* *zayd* *ʔl-kitāb*. (EA: VSO)

past.read.3SGM Zayd the-book

‘Zayd read the book.’

ب. زيد قرأ الكتاب.

b. *zayd* *qaraʔa* *ʔl-kitāb*. (EA: SVO)

Zayd past.read.3SGM the-book

‘Zayd read the book.’

Generally speaking, EA tends to avoid movement in syntax if this is one of the possible options in the language (Lassadi, 2003). An illustration of this tendency is that SV(XP) word order, as shown in (34b), is the default word order in EA (Lassadi, 2003; Edwards. 2010). Another feature of the EA morphosyntactic system is simplification, such as the simplification of the case marking system found in the previous examples. In MSA examples, (33a) and (33b), the nominal domains, the subject زيدٌ *zayd-un* ‘Zayd-NOM’, and the object الكتابَ *ʔl-kitāb-a* ‘the-book-ACC’, are marked for case by means of short vowels. In contrast, the subject and the object are not marked for case in the EA examples, (34a) and (34b) (زيد *zayd* ‘Zayd’ and الكتاب *ʔl-kitāb* ‘the-book’).

There have been several proposals to account for the derivation of VS(XP) word order, as shown in (33a) and (34a). Pollock (1989) and Chomsky (1995) attribute some of the differences between the SV(XP) languages and VS(XP) languages to differences in the agreement features in AgrS. They argue that in SV(XP) languages, the agreement features in AgrS are weak; therefore, according to the Economy Principles, the main verbs must remain in situ. In VS(XP) languages, on the other hand, the agreement features in AgrS are strong and the main verbs move to satisfy these strong features.

Ouhalla (1994) builds on the work of Pollock (1989) and Chomsky (1995), proposing that the order of AgrS and T inflectional morphemes are responsible for differences between SV(XP) languages and VS(XP) languages. Ouhalla (1994) argues that AgrS is lower than T in VS(XP) languages, such as Arabic. Figure 4 from Ouhalla (1994, p. 46) illustrates this order.

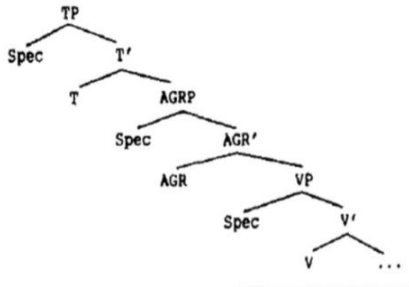


Figure 4. *Simplified syntactic representation of the order of AgrS and T in VS(XP) languages, proposed by Ouhalla (1994, p. 46)*

In SV(XP) languages, such as French, Ouhalla (1994) suggests that AgrS is higher than T. The following syntactic representations in Figure 5 from Ouhalla (1994, p. 46) illustrate the proposed order of AgrS and T.

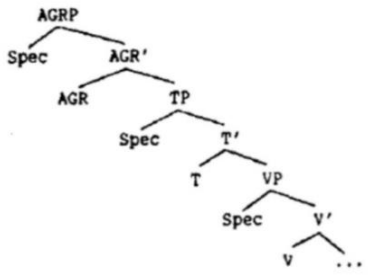


Figure 5. *Simplified syntactic representation of the order of AgrS and T in SV(XP) languages, proposed by Ouhalla (1994, p. 46)*

Nonetheless, Ouhalla's (1994) analysis is no longer used because both the functional node (AgrS) and Tense node (T) are suggested to be located in T in the new modifications to transformational syntax introduced by Chomsky (1999, as cited in Mahfoudhi, 2002, p.1). Therefore, new analyses have been proposed to account for the differences between SV(XP) and VS(XP) word order. Mahfoudhi (2002) suggests that there is a strong [EPP] feature that must be satisfied. However, he argues that, in pro-drop languages, a strong [EPP] feature can be equally satisfied by raising an argument or a verb because verbs in pro-drop languages have rich inflectional morphology. Mahfoudhi (2002) points out that the main limitation for this proposal is that verbs cannot have spec-TP as a landing site (because they occupy a head position, and they must move to another head position). Therefore, he proposes that, to derive VS(XP) order, the verb moves to T and checks [EPP]

features from there. In this view, raising the Noun Phrase (NP) to spec-TP derives the SV(XP) word order, and raising the verb to T derives the VS(XP) word order.

In opposition to the previously mentioned explanations of differences between VS(XP) and SV(XP) orders, Btoosh (2010) argues that differences in word order are related to subject movement rather than verb movement. According to Btoosh (2010), main verbs always raise from V to T in both VS(XP) and SV(XP) orders in pro-drop languages, such as MSA, because of the rich inflectional morphology of verbs in these languages. Then, it is optional for the subject (i) to either remain in its base-generated position, which is the spec-VP, or (ii) to raise spec-TP. Leaving the subject in situ results in VS(XP) order and raising it to spec-TP derives SV(XP) order. The following syntactic representations in Figure 6 and Figure 7 from Btoosh (2010, p. 6) illustrate the derivation of VSO and SVO orders respectively. In this study, I adopt Btoosh's (2010) analysis to describe word order in both MSA and EA.

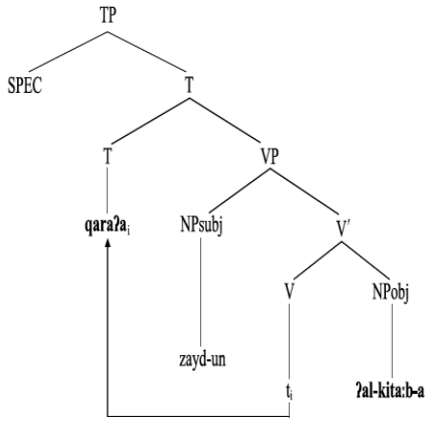


Figure 6. *Simplified syntactic representation of the derivation of VSO word order in MSA, proposed by Btoosh (2010, p. 6)*

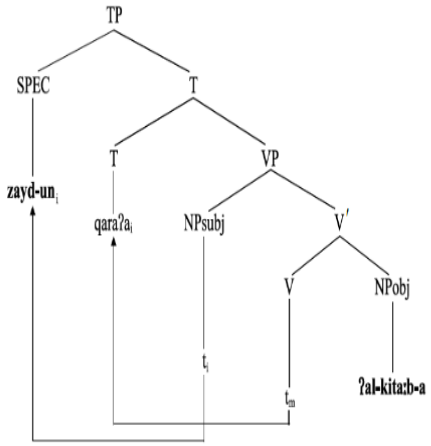


Figure 7. *Simplified syntactic representation of the derivation of SVO word order in MSA, proposed by Btoosh (2010, p. 6)*

Another property related to word order in Arabic and its varieties is the agreement system. Ouhalla (1994) examined word order in Arabic and concluded that subject and verb word order determines the agreement system. According to Ouhalla (1994), "The subject agrees with the verb in the SV(XP) order but not in the VS(XP) order." (p. 43). The following example from MSA illustrates the difference between the agreement system in SV (35a) and VS (35b) word orders.

(35) ا. الأولادُ ناموا.

(35) a. *ʔl-awlād-u* *nām-ū*

the-boys.3PLM-NOM slept-3PLM

'The boys slept.'

ب. نامَ الأولادُ.

b. *nām-a* *ʔl-awlād-u*

splet-3SGM the-boys.3PLM-NOM

‘The boys slept.’

As shown in (35a), the subject, *ʔlawlādu* ‘the boys’, achieves full agreement with the verb (person, gender, and number) in SV word order as both the subject and the verb indicate third-person, masculine, and plural. In contrast, in VS order the subject does not agree with the verb in number (the subject indicates plural, and the verb is singular). Ouhalla (1994) argues that the verb in (35b) has the default third-person singular features. However, I follow Btoosh (2010) in that the subject agrees in gender and person with the verb in both SV(XP) and VS(XP) orders. However, subject-verb agreement in number is only achieved in SV(XP). Example (36) illustrates the agreement system when the masculine subject in (35), *ʔlawlādu* ‘the boys’, is replaced by the feminine subject, *ʔlfatayatu* ‘the girls’.

(36) ا. الفتياتُ نِمْنَ.

(36) a. *ʔl-fatayat-u* *nimm-na.*

the-girls.3PLF-NOM slept-3PLF

‘The girls slept.’

ب. نامتْ الفتياتُ.

b. *nām-at* *ʔl-fatayat-u.*

splet-3SGF the-girls.3PLF-NOM

‘The girls slept.’

As can be seen in (36a), the subject, *ʔlfatayatu* ‘the girls’, achieves full agreement with the verb (person, gender, and number) in SV word order as both the subject and the verb indicate third-person, feminine, and plural. In VS word order, as in (36b), the verb agrees with the subject in person and gender but not in number since the subject indicates plural and the verb is singular.

Another property of MSA and EA is that they are null-subject languages like Spanish. These languages allow omitting the subject and have a null category (pro) in its position because the agreement morphology between the subject and the verb is rich enough to recover the person and number of the subject[20] (Radford, 2004; Btoosh, 2010). Examples (37) and (38) illustrate the use of overt and null subjects in MSA and EA declarative sentences respectively.

(37) ا. هو/Ø زرعَ ورداً.

(37) a. *huwwa/Ø* *ʒaraʕ-a* *wurūd-an.* (MSA. 3SGM)

he/Ø planted-3SGM flowers-ACC

‘He planted flowers.’

ب. هي/Ø زرعَتْ ورداً.

b. *hiyya/Ø* *ʒaraʕ-at* *wurūd-an.* (MSA. 3SGF)

she/Ø planted-3SGF flowers-ACC

[20] Several discourse-pragmatic factors, such as switch reference, determine the distribution of overt and null subjects, but they are not discussed here because they are beyond the scope of this study.

‘She planted flowers.’

(38) ا. هو/Ø زرع ورد.

(38) a. *huwwa/Ø* *ʒaraʕ* *ward.* (EA. 3SGM)

he/Ø planted-3SGM flowers

‘He planted flowers.’

ب. هي/Ø زرعت ورد.

b. *hiyya/Ø* *ʒaraʕ-it* *ward.* (EA. 3SGF)

she/Ø planted-3SGF flowers

‘She planted flowers.’

Unlike English and Spanish, MSA and EA disfavor mentioning the copular verb *yakuun* ‘be’ in the present tense, as seen (39) for both MSA and EA. Sentences with a null copular verb are referred to as “equational sentences” (Btoosh, 2010, p.4).

(39) أنا في المكتب

(39) *ʔna fī ʔl-maktab.*

I in the-office

‘I am in the office.’

So far this section has addressed the word order in declarative sentences in MSA and EA. The next part of this section describes wh-question formation in MSA and EA regarding two syntactic properties, (i) the position of wh-phrases, and (ii) subject and verb word

order. Let us consider the MSA wh-questions first. The following examples illustrate MSA wh-arguments (40) and wh-adjuncts (41), where the wh-phrases are bolded, the subjects are underlined with a single line, and the verbs are double-underlined.

(40) ا. **ماذا** يذاكرُ محمدٌ؟

(40) a. ***māðā*** *u-ðākir-u* *moħammad-un?*

what PRS-study-3SGM Mohammed-NOM

'What does Mohammed study?'

(wh-argument with wh-fronting and S-V inversion)

ب. * يذاكرُ محمدٌ **ماذا؟**

b. * *u-ðākir-u* *moħammad-un* ***māðā?***

PRS-study-3SGM Mohammad -NOM what

'What does Mohammad study?'

(*wh-argument with wh-in-situ and S-V inversion)

ج. ***ماذا** محمدٌ يذاكرُ؟

c. * ***māðā*** *moħammad-un* *u-ðākir-u?*

what Mohammad-NOM PRS-study-3SGM

'What does Mohammad study?'

(*wh-argument with wh-fronting and without S-V inversion)

(41) ا. **متى** بدأ الاجتماع؟

(41) a. ***matā*** *badaʔa* *ʔl-iżtimāʕ-u?*

when started.3SGM the-meeting-NOM

‘When did the meeting start?’

(wh-adjunct with wh-fronting and S-V inversion)

ب. * بدأ الاجتماع **متى؟**

b. * *badaʔa* *ʔl-ižtimāʕ-u* ***matā****?*

started.3SGM the-meeting-NOM when

‘When did the meeting start?’

(*wh-adjunct with wh-in-situ and S-V inversion)

ج. ***متى** الاجتماع بدأ؟

c. * ***matā*** *ʔl-ižtimāʕ-u* *badaʔa?*

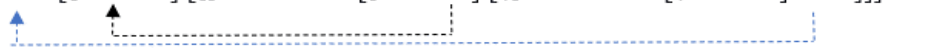
when the-meeting-NOM started.3SGM

‘When did the meeting start?’

(*wh-adjunct with wh-fronting and without S-V inversion)

As can be seen in the grammatical questions in (40a) and (41a), wh-question formation in MSA is straightforward. Two kinds of movement are obligatory to form both MSA wh-arguments and wh-adjuncts, wh-movement, and head movement. Wh-movement involves moving the wh-phrase from its canonical position into spec-CP to check the strong interrogative features of C (Aoun et al., 1994). MSA does not allow the wh-phrase to remain in situ (Aoun et al., 2009), as shown from the ungrammaticality of (40b) and (41b). Head movement consists of moving main lexical verbs from the T head in TP to the C head in CP. This movement results in S-V inversion. Examples (40c) and (41c) are ungrammatical because there is no S-V inversion. The word order in MSA main-clause wh-questions is: a wh-phrase, a main verb, and a subject [WH-V-S]. The simplified forms of the grammatical questions in (40a) and (41a) are illustrated in (42) and (43) respectively.

(42) [CP māðā [C uðākiru][TP moħammadun [T ~~uðākiru~~] [VP ~~moħammadun~~ [V ~~uðakiru~~] ~~māðā~~]]]



(43) [CP matā [C bada?a] [TP ?ližtimāʕu [T ~~bada?a~~] [VP ~~?ližtimāʕu~~ [V ~~bada?a~~] ~~matā~~]]]

EA significantly differs from MSA in the domain of wh-question in two ways. First, S-V inversion is obligatory in MSA wh-questions, while it is optional in EA wh-questions (Lassadi 2003). Consequently, both SV and VS orders are grammatically correct in EA wh-questions, although SV is the default order (Lassadi 2003; Edwards. 2010). Second, leaving the wh-phrase in situ is not allowed in MSA wh-questions, while it is the default position of wh-phrases in EA (Aoun et al., 2009). Moreover, wh-movement can be grammatical in EA wh-questions, but it is licensed by the type of wh-phrase. In EA wh-complements, wh-movement is not allowed, except in cleft structures, as will be discussed later in this section. In wh-adjuncts, wh-movement is grammatically correct and optional. Consider the example below with the EA complement wh-phrase *ʔeh* 'what'.

(44) ا. ***إيه*** بيذاكر رائد؟

(44) a. ****ʔeh*** *bi-ẓākir* *rāʔed?*

what PROG-study-3SGM Raed

'What does Raed study?'

(*wh-argument with wh-fronting and S-V inversion)

ب. بيذاكر رائد ***إيه؟***

b. *bi-ẓākir* *rāʔed* ***ʔeh****?*

PROG-study-3SGM Raed what

'What does Raed study?'

(wh-argument with wh-in-situ and S-V inversion)

ج. ***إيه** رائد بيذاكر**؟**

c. ****ʔeh*** *rāʔed* *bi-ẓākir?*

what Raed PROG-study-3SGM

'What does Raed study?'

(*wh-argument with wh-fronting and without S-V inversion)

د. رائد بيذاكر **إيه؟**

d. *raʔed* *bi-ẓākir* ***ʔeh?***

Raed PROG-study-3SGM what

'What does Raed study?'

(wh-argument with wh-in-situ and without S-V inversion)

As shown in the examples above, it is obligatory to leave the complement wh-phrase *ʔeh* 'what' in situ as in (44b) and (44d). In contrast, fronting it, as in (44a) and (44c), is ungrammatical. Moreover, S-V inversion is optional with wh-complements. That is to say that both VS and SV orders are grammatically correct, providing that the complement wh-phrase *ʔeh* 'what' is in situ. The simplified forms of the grammatical questions of wh-in-situ with S-V inversion (44b) and without inversion (44d) are shown below in (45) and (46) respectively.

(45) [CP [C Ø] [TP [T biẓākir] [VP ra?ed [V ~~biẓākir~~] ?eh]]]

(46) [CP [C Ø] [TP ra?ed [T biẓākir] [VP ~~ra?ed~~ [V ~~biẓākir~~] ?eh]]]

As shown in (45) and (46), the complement wh-phrase remains in its base-generated position within VP. I propose, following Btoosh's (2010) analysis, that the word order in (45) and (46) is the same as the word order in their declarative counterparts. As explained earlier, Btoosh (2010) attributes the differences in word order to subject movement rather than verb movement. In his view, main verbs always raise from V to T in both VS and SV orders and the position of the subject is what determines the word order. Leaving the subject in VP-internal position derives VS order and moving it to spec-TP derives SV order. Therefore, I assume that no additional movement is involved in the derivation of this type of question in EA.

Regarding EA wh-adjunct, it is optional for the wh-phrase to be left in situ or to be fronted, but the in-situ position is the default (Aoun et al., 2009; Soltan, 2011). Recalling that both SV and VS orders are allowed in EA wh-questions, the four following examples, (47a), (47b), (47c), and (47d), with the adjunct wh-phrase *ʔimta* 'when' are grammatically correct.

(47) ا. **امتى** ابتدا الاجتماع؟

(47) a. ***ʔimta*** *ʔbtadā* *ʔl-igtimāʕ?*

when started.3SGM the-meeting

‘When did the meeting start?’

(wh-adjunct with wh-fronting and S-V inversion)

ب. ابتدا الاجتماع **امتى؟**

b. *ʔbtadā* *ʔl-igtimāʕ* ***ʔimta****?*

started.3SGM the-meeting when

‘When did the meeting start?’

(wh-adjunct with wh-in-situ and S-V inversion)

ج. **امتى** الاجتماع ابتدا؟

c. ***ʔimta*** *ʔl-igtimāʕ* *ʔbtadā?*

when the-meeting started.3SGM

‘When did the meeting start?’

(wh-adjunct with wh-fronting and without S-V inversion)

د. الاجتماع ابتدا **امتى؟**

d. *ʔl-igtimāʕ* *ʔbtadā* ***ʔimta****?*

the-meeting started.3SGM when

‘When did the meeting start?’

(wh-adjunct with wh-in-situ and without S-V inversion)

As can be seen in the previous examples, both wh-movement and head movement are optional in EA wh-adjuncts. I follow the same analysis of MSA to describe the movements involved in the derivation of (47a), (47b), and (47c). The formation of (47a) and (47c) involve wh-movement because the adjunct wh-phrase *ʔimta* ‘when’ moves from its canonical position to spec-CP to check the strong interrogative features in C. In both

(47a) and (47b), the main verb ابتدا *ʔbtadā* ‘started’ raises from the T head in TP to the C head in CP. In comparison, no wh-related movement is required to form the question in (47d) as both the wh-phrase and the main verb remain in situ. The simplified forms of (47a-47d) are illustrated in (48a-48d) respectively.

(48) a. [$_{CP}$ ʔimta [$_{C}$ ʔbtadā] [$_{TP}$ ʔligtimāʕ [$_{T}$ ~~ʔbatada~~] [$_{VP}$ ~~ʔligtimāʕ~~ [$_{V}$ ~~ʔbtadā~~] ~~ʔimta~~]]

b. [$_{CP}$ [$_{C}$ ʔbtadā] [$_{TP}$ ʔligtimāʕ [$_{T}$ ~~ʔbatada~~] [$_{VP}$ ~~ʔligtimāʕ~~ [$_{V}$ ~~ʔbtadā~~] ʔimta]]]

c. [$_{CP}$ ʔimta [$_{C}$] [$_{TP}$ ʔligtimāʕ [$_{T}$ ʔbtadā] [$_{VP}$ ~~ʔligtimāʕ~~ [$_{V}$ ~~ʔbtadā~~] ~~ʔimta~~]]]

d. [$_{CP}$ [$_{C}$] [$_{TP}$ ʔligtimāʕ [$_{T}$ ʔbtadā] [$_{VP}$ ~~ʔligtimāʕ~~ [$_{V}$ ~~ʔbtadā~~] ʔimta]]]

It is necessary to point out that a pronoun that occurs at the beginning of EA wh-questions can be the subject of the verb or an optional interrogative operator (Soltan, 2011). Therefore, in this dissertation, the pronouns that occur clause-initially in the production of the participants are coded as subjects unless the participants produce both a pronoun and a NP in the same question. In this specific case, the pronoun is considered an optional interrogative operator. The pronouns may agree with the subjects in number and gender, *huwwa* ‘he’ (49a), *hiyya* ‘she’ (49b) and *humma* ‘they’ (49c), but all of them can be replaced by *huwwa* ‘he’.

(49) ا. (هو) الاجتماع هيبتدي **إمتى؟**

(49) a. *(huwwa)* *ʔl-igtimāʕ* *hai-btedī* ***ʔimta****?*

(he) the-meeting FUT-start.3SGM when

'When will the meeting start?'

ب. (هي) ساندي بتضحك **ليه؟**

b. *(hiyya/ huwwa)* *sāndī* *bi-tedħak* ***leeh****?*

(she/he) Sandy PROG-laugh.3SGF why

'Why is Sandy laughing?'

ج. (همَّا) الولاد بيذاكروا **إيه؟**

c. (humma/ huwwa) *ʔl-wilād* *bi-yẓākrū* ***ʔeh****?*

(they/he) the-boys PROG-study.3PLM what

'What are the boys studying?'

MSA and EA behave similarly in accepting the use of null subjects in wh-questions, as can be seen in the following examples from MSA, (50a) and (51a), and EA, (50b) and (51b).

(50) ا. **ماذا** تزرع (أنتَ)/Ø ؟

(50) a. ***māðā*** *ta-zraʕ* *(ʔnta)/Ø?*

what plant.2SGM you.2SGM/Ø

'What are you planting?'

(MSA. Use of a null subject in wh-complements)

ب. (أنتَ)/Ø بتزرع **إيه؟**

b. *(ʔnta)/Ø* *bi-te-zraʕ* ***ʔeh****?*

you.2SGM/ Ø PROG-plant.2SGM what

‘What are you planting?’

(EA. Use of a null subject in wh-complements)

(51) ا. **متى** سنذهب (نحن)/ Ø إلى المكتبة؟

(51) a. ***matā*** *sa-naðhab-u* *(naħnu)/Ø* *ʔilā* *ʔl-maktaba-ti?*

when FUT-go.1PL we/Ø to the-library-GEN

‘When will we go to the library?’

(MSA. Use of a null subject in wh-adjuncts)

ب. (احنا)/Ø هنروح المكتبة **إمتى؟**

b. *ʔħna/Ø* *ha-nrūh* *ʔl-maktaba* *ʔimta?*

we/Ø FUT-go.1PL the-library when

‘When will we go to the library?’

(EA. Use of a null subject in wh-adjuncts)

Another feature that MSA and EA wh-questions share is the grammaticality of null copular verbs, that is to say dropping the copular verb if it is in present tense, which is يكون *yakuun* ‘be’ and its inflections in MSA, and بيكون *biyakuun* ‘be’ and its inflections in EA. The following examples from MSA, (52a) and (53a), and from EA, (52b) and (53b), illustrate the use of null copular verbs in wh-questions in these two varieties of Arabic.

(52) ا. **ما** إسمُك؟

(52) a. ***mā*** *ʔsmu-ka?*

what name-your.2SGM

'What is your name?'

(MSA. Use of a null copular verb in wh-complements)

ب. إسمَك **إيه؟**

b. *ʔsma-k* ***ʔeh?***

name-your.2SGM what

'What is your name?'

(EA. Use of a null copular verb in wh-complements)

(53) ا. **أين** حقيبتي؟

(53) a. ***ʔyna*** *ħqibat-ī?*

where purse-my

'Where is my purse?'

(MSA. Use of a null copular verb in wh-adjuncts)

ب. شنطتي **فين؟**

b. *šantet-ī* ***feen****?*

purse-my where

'Where is my purse?'

(EA. Use of a null copular verb in wh-adjuncts)

It is important to point out that MSA and EA wh-complements, but not wh-adjuncts, can be formed using a type of cleft structures known in the literature as Class II Resumptive Strategy (Aoun et al., 2009). The formation of these cleft structures involves three steps;

(i) fronting a wh-phrase to clause-initial position, (ii) following the wh-phrase by a complementizer, which is *ʔllaðī* ‘that’ in MSA and *ʔlli* ‘that’ in EA, and (iii) inserting a resumptive pronoun, that agrees with the complement wh-phrase in number and gender, in the wh-phase’s extraction site. It can be seen in the following examples that these cleft structures are grammatical in wh-complements, (54a) and (54b), but not in wh-adjuncts, (55a) and (55b), in both MSA and EA.

(54) ا. **ما** الذي تأكله ندى؟

(54) a. ***ma*** *ʔllaðī* *ta-ʔkulu-hu* *nadā?*

what that PRS-eat.3SGF-it Nada

‘What is it that Nada is eating?’

(MSA: Class II Resumptive Strategy with wh-complements)

ب. **إيه** اللي بتاكله ندى؟

b. ***ʔeh*** *ʔlli* *bi-tākl-h* *nadā?*

what that PROG-eat.3SGF-it Nada

‘What is it that Nada is eating?’

(EA: Class II Resumptive Strategy with wh-complements with S-V inversion)

ج. **إيه** اللي ندى بتاكله؟

c. ***ʔeh*** *ʔlli* *nada* *bi-tākl-h?*

what that Nada PROG-eat.3SGF-it

‘What is it that Nada is eating?’

(EA: Class II Resumptive Strategy with wh-complements without S-V inversion)

(55) ا. * **متى** الذي سيبدأه الاجتماع؟

(55) a. **matā ʔllaðī sa-yabadaʔu-hu ʔl-āžtimāʕ-u?*

when that FUT-start.3SGM-him the-meeting-nom.

'When is the time that the meeting starts?'

(*MSA: Class II Resumptive Strategy with wh-adjuncts)

ب. ***امتى** اللي الاجتماع هيبتديه؟

b.* ***ʔimta** ʔilli ʔl-igtimāʕ ha-ibtedi-h?*

when that the-meeting FUT-start.3SGM-him

'When is the time that the meeting starts?'

(*EA: Class II Resumptive Strategy with wh-adjuncts)

In sum, wh-movement and head movement are obligatory in MSA, while neither movement is required in EA. Regarding the position of wh-phrases, a wh-phrase must occur clause-initially in typical MSA main-clause wh-questions, in both complement and adjunct wh-questions. In contrast, fronting a wh-phrase is ungrammatical with EA wh-complements and wh-in-situ is the grammatical option. Nonetheless, both wh-fronting and wh-in-situ are grammatically correct in EA adjunct wh-questions, although wh-in-situ is the default option. Concerning subject and verb order, MSA main-clause wh-questions involve obligatory S-V inversion. In comparison, S-V inversion is optional in EA for both wh-complements and wh-adjuncts.

2.2.5. Comparative Description of the Syntax of Main-Clause Wh-Questions in English, Spanish, Egyptian Arabic, and Modern Standard Arabic

This section compares the syntax of main-clause wh-questions in English, Spanish, MSA, and EA regarding two syntactic properties: (i) the position of wh-phrases, and (ii) subject and verb word order. Before proceeding to examine wh-question formation, subject and verb order in declarative sentences in these four languages needs to be addressed. Table 3 summarizes the grammaticality of SV order, VS order, the use of null copular verbs, and the use of null subjects in declarative sentences in each one of the chosen languages.

Word order / **Language**	**Subject and verb word order**			
	SV	VS	Null copula	Null subject
Present-day English	√	×	×	×
Spanish	√	√	×	√
MSA	√	√	√	√
EA	√	√	√	√

Table 3. *Comparison between English, Spanish, MSA, and EA in terms of subject and verb order in declarative sentences*

What stands out in this table is that English only allows SV order, while the other three languages allow SV and VS orders as well as the use of null subjects. The differences in

subject and verb order between English and these languages can be explained by considering the differences between the agreement morphology in English and these languages. To clarify, in Spanish and in the two varieties of Arabic, MSA and EA, finite auxiliaries and main lexical verbs have rich subject-agreement inflections. This rich inflection system enables finite verbs to raise from V to T and to have null subjects. In contrast, the main verbs in present-day English never raise to T because the tense affix, carried by a finite T, is weak[21]. Another property of the two varieties of Arabic, MSA and EA, is that they allow dropping the copular verbs in the present tense in declarative sentences (and wh-questions). In contrast, it is ungrammatical in English and Spanish to drop copular verbs, the verb '*to be'* in English and *ser*, and *estar* in Spanish.

Having reviewed the subject and verb order in declarative sentences in English, Spanish, MSA, and EA, let us now consider the possibility of wh-movement and S-V inversion in typical main-clause wh-questions in these languages, summarized in Table 4.

[21] For an explanation of the differences in word order between Elizabethan English and present-day English, see Radford (2004, p.165).

Features / Language / Question type	Wh-movement	S-V inversion
English		
Wh-complements	obligatory	Ungrammatical (obligatory AUX-S inversion)
Wh-adjuncts	obligatory	Ungrammatical (obligatory AUX-S inversion)
Non-Caribbean Spanish		
Wh-complements	obligatory	obligatory
Wh-adjuncts	obligatory	obligatory[22]
MSA		
Wh-complements	obligatory	obligatory
Wh-adjuncts	obligatory	obligatory
EA		
Wh-complements	ungrammatical[23]	Optional (default: no S-V inversion)
Wh-adjuncts	optional (default: wh-in-situ)	Optional (default: no S-V inversion)

Table 4. *Comparison between English, Spanish, MSA, and EA in terms of wh-movement and S-V inversion in typical main-clause wh-questions*

As shown in Table 4, wh-question formation in English, Spanish, and MSA involves obligatory wh-movement, where the wh-phrase moves from its canonical position to spec-CP and leaves a gap in its extraction site. Another similarity between English, Spanish, and

[22] Except for the adjunct wh-phrases *cómo* 'how' and *por qué* 'why' which allow SV order.
[23] With the exception of Class II Resumptive Strategy interrogatives (Aoun et al., 2009) as mentioned in the previous section.

MSA is that they have obligatory head movement (T-to-C movement) in wh-questions, although they differ in the type of verbs that can raise from the T head to the C head. In English wh-questions, head movement consists of AUX-S inversion where finite auxiliary verbs move from T to C. Nevertheless, if there are no auxiliaries in T, *do*-support is directly merged in the T head to support the inflectional affixes of main verbs, and then it moves from T to C. Main verbs never raise to T in present-day English (Carnie, 2013). This is why S-V inversion is ungrammatical in English wh-questions. Unlike English, S-V inversion is obligatory in MSA and non-Caribbean Spanish wh-questions. The only exception is Spanish wh-adjuncts with *cómo* 'how' and *por qué* 'why', where the S-V inversion is optional. Apart from these exceptions, MSA and Spanish wh-questions involve obligatory head movement where the verb in the T head position in TP needs to raise to the C head position in CP.

Interestingly, EA contrasts with English, Spanish, and MSA in some properties of the domain of wh-questions but overlaps with them in others. To clarify, wh-movement is obligatory in English, Spanish, and MSA wh-questions, while it is optional in EA wh-adjuncts and ungrammatical in EA wh-complements. Although EA wh-adjuncts allow both wh-fronting and wh-in-situ, it is assumed that the default option is wh-in-situ (Aoun et al., 2009). In EA wh-complements, the wh-phrases must remain in situ, except in cleft structures called Class II Resumptive Strategy[24]. Regarding S-V inversion in wh-questions, it is ungrammatical in English, obligatory in MSA and Spanish (with the exception of the Spanish wh-adjuncts with *cómo* 'how' and *por qué* 'why'), and optional, but not common,

[24] This type of question is beyond the scope of this study and is not considered in my data analysis.

in EA. Table 5 summarizes the subject and verb order(s) that each language of the four chosen languages allows.

Features / **Language** / **Question type**	**Subject and verb order with wh-in-situ**				**Subject and verb order with wh-fronting**			
	SV	VS	Null copula	Null subject	SV	VS	Null copula	Null subject
English								
Wh-complements	×	×	×	×	√	×	×	×
Wh-adjuncts	×	×	×	×	√	×	×	×
Non-Caribbean Spanish								
Wh-complements	×	×	×	×	×	√	×	√
Wh-adjuncts	×	×	×	×	×[25]	√	×	√
MSA								
Wh-complements	×	×	×	×	×	√	√	√
Wh-adjuncts	×	×	×	×	×	√	√	√
EA								
Wh-complements	√	√	√	√	×	×	×	×
Wh-adjuncts	√	√	√	√	√	√	√	√

Table 5. *Comparison between English, Spanish, MSA, and EA in terms of subject and verb order in main-clause wh-questions*

As Table 5 shows, the word order in English wh-questions is [WH-AUX-S-V] as fronting the wh-phrase and the AUX-S inversion are obligatory, and the subject must be in a

[25] Apart from *cómo* 'how' and *por qué* 'why' which allow SV order.

preverbal position. In comparison, the word order in MSA and Spanish wh-questions, excluding wh-adjuncts with *cómo* 'how' and *por qué* 'why', is obligatory [WH-V-S] because the wh-phrase must be fronted to clause-initial position, and the subject must occur in a postverbal position. In the case of the Spanish wh-adjunct with *cómo* 'how' and *por qué* 'why', the subject can optionally occur preverbally or post-verbally, yielding two possible word orders, [WH-V-S] and [WH-S-V].

What is striking in Table 5 is the wider range of subject and verb word orders in EA, compared to the other three languages. In EA, the grammaticality of each word order is determined by the wh-phrase type. Therefore, only the word orders that occur with wh-in-situ are grammatical in EA wh-complements. That is to say, as long as the complement wh-phrase remains in situ, it is optional for the copular verb or the subject to be null. Moreover, it is optional for the subject to appear preverbally or post verbally resulting in two possible word orders, [WH-S-V] and [WH-V-S]. As for EA wh-adjuncts, the wh-phrase can be fronted or left in situ with all the eight possible subject and verb orders mentioned in Table 5: (1) wh-in-situ with SV word order; (2) wh-in-situ with VS word order; (3) wh-in-situ with a null copular verb; (4) wh-in-situ with a null subject; (5) wh-fronting with SV word order; (6) wh-fronting with VS word order; (7) wh-fronting with a null copular verb; and (8) wh-fronting with a null subject. Following the previous theoretical descriptions of EA (Lassadi, 2003; Edwards. 2010; Aoun et al., 2009), I assume that, among all these options, wh-in-situ with SV order is the default option in EA.

It is ungrammatical in English interrogatives (and declarative) to have null subjects because the lexical main verbs have weak inflectional features. In contrast, Spanish, MSA, and EA are null-subject languages where the subject can be omitted because the agreement features on the verb are rich enough to recover the person and number information of the subject. Another feature that distinguishes the two varieties of Arabic from English and Spanish is that having null copular verbs is grammatical in MSA and EA, but not in English and Spanish.

2.3. Previous Research on the Acquisition of Wh-Questions

2.3.1. Acquisition of Wh-Questions in Monolingual Contexts

Before proceeding to discuss the knowledge of wh-questions in bilinguals, it is necessary to discuss the developmental stages of acquiring wh-questions in typically developed monolingual child speakers of English, Spanish, and EA.

The data from early acquisition of English and EA show that children start by saying a single word or a few words with rising intonation to ask questions, as shown in the following examples from English (56) and EA (57).

(56) a. Cookie?

b. Mommy book? (Lightbown & Spada, 2021, p. 10)

(57) *di?* (Omar, 1973, p. 133)

this.3SGF

'This (one)?'

Children may also produce correct questions in this initial stage, as shown in (58)[26]. However, producing these questions does not mean that children have acquired the syntactic properties of interrogatives in their native language. The ability to produce these questions, also referred to as formulaic units, correctly is due to the fact that they are simply learned as chunks because they are frequent in the input that children are exposed to.

(58) a. What's that? (English. Lightbown & Spada, 2021, p. 11)

b. *¿Qué es esto?* (Spanish. Serrat & Capdevila, 2001, p. 10)

what is this

'What's that?'

c. *ʔeh da (di)?* (EA. Omar, 1973, p. 134)

what this.3SGM (this.3SGF)

'What (is) this (m., f.)?'

Along with using formulaic units, children start, around the age of 2, to gradually construct their own questions. Children typically start by identifying objects in their environment. It is therefore not surprising that, the first wh-phrase that they produce is *what* and its counterpart in Spanish, *qué*, and EA, *ʔeh* (Bloom et al., 1982; Serrat & Capdevila, 2001, Omar, 1973).

[26] The interlinear gloss for example (58c) is added by the author.

The sequence of acquiring wh-phrases is found to be the same in Spanish and English wh-phrases that are used to identify objects, locations, and people (*qué* 'what', *dónde* 'where', *quién* 'who' respectively) emerge before asking about more abstract concepts, such as manner, reason and time (*cómo* 'how', *por qué* 'why', *cuándo* 'when') (Serrat & Capdevila, 2001; Bloom et al., 1982). The sequence of acquiring wh-phrases in EA was not documented in Omar (1973) and, to my knowledge, there is no published research in this regard.

Studies on the acquisition of wh-questions in English as an L1 show evidence that the parameters governing wh-movement are typically set between the age of 2 and 3 (Guasti, 2016). Guasti (2000, as cited in Guasti, 2016) examined the syntactic structure of a total of 2,809 wh-questions produced by four English-speaking children (ages between 1;6-5;1) and she found that they correctly fronted the wh-phrases in all the questions except 41 wh-questions (around 1.5% of the total number of questions produced). Nonetheless, almost all these 41 wh-questions were target-like because they were echo questions.

Although English-speaking children show mastery of the placement of wh-phrases from the time they start to produce wh-questions, they may still have difficulties with wh-question formation (Guasti, 2016). The following examples from Lightbown and Spada (2021, p. 11) and Rowland et al. (2005, p. 390) exemplify the main type of errors at this stage.

(59) Where he going? (Rowland et al., 2005, p. 390)

(60) Where does he does go? (Rowland et al., 2005, p. 390)

(61) Where does he goes? (Rowland et al., 2005, p. 390)

(62) Why you catched it? (Lightbown & Spada, 2021, p. 11)

(63) Where he does go? (Rowland et al., 2005, p. 390)

The errors illustrated in the previous examples are in order: omitting the auxiliary (59); doubling the auxiliary (60); marking the tense in both the auxiliary and lexical verb (61); not inserting *do*-support (62) or inserting *do*-support but without the obligatory S-AUX inversion (63).

By the age of 5, English-speaking children are able to form adult-like questions yes/no questions and wh-questions (Guasti, 2016), as in the following examples from Lightbown and Spada (2021, p. 12).

(64) Why did you do that?

(65) Does Daddy have a box? (Lightbown & Spada, 2021, p. 12)

Different from English-speaking children who may continue making errors with S-AUX inversion by the age of 3, previous research shows that Spanish-speaking children have acquired wh-movement and S-V inversion by this age. Empirical evidence for this comes from Serrat and Capdevila (2001) who examined the spontaneous speech of child speakers of Spanish and/or Catalan (between the age of 17 months and 36 months). Serrat and

Capdevila (2001) observed that, from the time the children start to produce wh-questions, they do not commit any errors related to wh-movement or S-V inversion. Examples (66a–66c)[27] below, from Serrat and Capdevila (2001, p.11–12), illustrate how these children are able to produce adult-like wh-questions by the age of 3.

(66) a. *¿Por qué sacas esto?* (Cat, 30 months)
why take-out.2SG this
'Why do you take this out?'

b. *¿Por qué te has cortado el pelo?* (Alv, 32 months)
why you.DAT have.2SG cut the hair
'Why did you cut your hair?'

c. *¿Por qué no lo puedo tocar?* (Emi, 35 months)
why no it.ACC can.1SG touch
'Why can't I touch it?'

(Serrat & Capdevila, 2001, pp.11–12)

Concerning the early acquisition of wh-questions in EA, the data is very scarce. The only study, to my knowledge, that explored this area of research is Omar (1973). Based on spontaneous data from 8 younger children (age range 0;6-3;0) and experimental data from 28 children (3;6-15;0), Omar (1973) identified three stages for acquiring interrogatives in

[27] The interlinear gloss and the English translation of these examples (66a–66c) are not part of the original examples, but I added them for clarification purposes. In addition, I removed the Catalan questions from the examples because Catalan is beyond the scope of this dissertation.

EA. In the first stage, children acquire yes/no questions without difficulties. This type of EA is relatively easy as it is constructed using the same order of declarative sentences with rising intonation. It is possible that this type of question is acquired around the age of 2 as the spontaneous speech of the younger children showed that they were able to comprehend and respond to yes/no questions, but they did not produce them in the collected data. The earliest yes/no question documented in the spontaneous speech of the younger children was for a child aged 2;8, as seen in (67)[28].

(67) *Tiddi-ni* *di?* (Child 1, 32 months)

give.2SG-me this.3SGF

'(Will you) give me this?' (Omar, 1973, p. 133)

In the second stage, around the age of 3;6, EA-speaking children seem to be able to produce a variety of wh-questions as in (68), (69) and (70)[29]. In this stage, very few errors were reported, and most of them were related to producing wh-phrases with prepositions. The following three examples are from Omar (1973, pp. 133–134)

(68) *šuft-i* *ʔeh?*

saw.2SGF what

[28] The interlinear gloss of example (67) is added by the author.

[29] The examples in (68), (69), and (70) are from Omar (1973, pp. 133–134) but their Arabic transliteration is adapted the Arabic transliteration chart used in this study. Moreover, the interlinear gloss of these examples is added by the author.

‘What did (you) see?’

(69) *feen* *il-kura?*

where the-ball

‘Where (is) the ball?’

(70) *rūħū* *feen?*

go.2PL where

‘Where will (you) go?’

(Omar, 1973, pp. 133–134)

In the third stage, children master the EA interrogatives, including wh-phrases with prepositions, by the age of 5, or perhaps earlier because there were no participants between the age of 3;6, and 5 in this study, which may explain the apparent lateness of the acquisition of questions documented in Omar’s (1973) study. Although this study is pioneering in investigating the acquisition of EA wh-questions, it did not explore the acquisition of the placement of wh-phrases or subject and verb word order.

Of particular interest to the object of this study is discussing the Derivational Complexity Hypothesis (henceforth DCH), proposed by Jakubowicz (2011). This hypothesis states that “during language development in typically developing children and children with SLI, less complex derivations are input convergent (i.e., correctly spelled out and ‘‘pronounced’’ at the interfaces) before more complex ones.” (Jakubowicz, 2011, p. 340). This hypothesis claims that derivational complexity plays a role in the sequence in which children acquire

a language. According to this hypothesis, children start by acquiring the simpler structures before the more complex ones.

In order to measure the complexity of the structure, Jakubowicz (2011) and Jakubowicz and Strik (2008) put forward the following metric, which they called Derivational Complexity Metric.

> a. Merging α_i n times gives rise to a less complex derivation than merging α_i (n + 1) times.
>
> b. Internal Merge of α gives rise to a less complex derivation than Internal Merge of $\alpha + \beta$.
>
> (Jakubowicz, 2005, as cited in Jakubowicz, 2011, p. 340)

Several studies in the field of L1 acquisition lend empirical evidence to support the DCH. For example, Hamann (2006) investigated the acquisition of French wh-questions in two groups of French-speaking children, typically developed children (age range 1;8-2;10) and children with specific language impairments (age range 3;10-9;1). Children were free to produce any of the wh-constructions available in their language, such as wh-in-situ without S-V inversion, wh-fronting without S-V inversion, and wh-fronting with S-V inversion. Results of spontaneous speech and an Elicited Production Task showed that children from both groups preferred wh-in-situ and avoided moving the wh-phrase or the verb, as predicted by the DCH.

Applying the DCM to the domain of wh-questions in EA, children, according to the first clause of the DCM, are expected to acquire wh-in-situ before wh-fronting because the latter involve more overt movement than the former. According to the second clause, children are expected to acquire structures that involve moving one constituent, either the wh-phrase (e.g., wh-fronting without S-V inversion in EA wh-adjuncts) or the verb (e.g., wh-in-situ with S-V inversion in EA wh-adjuncts), before structures that involve moving two constituents (e.g., wh-fronting with S-V inversion in EA wh-adjuncts).

2.3.2. Acquisition of Wh-Questions in Bilingual Contexts

Although there is a rich and growing body of literature on acquiring different syntactic domains in Spanish as a heritage language (Bruhn de Garavito, 2006; Montrul, 2010; Alarcón, 2011; Pascual y Cabo, 2020, among others), little research has addressed acquisition of Spanish wh-questions in child and adult HSs. This section starts by reviewing the literature on acquisition of Spanish wh-questions in Spanish-English bilingual children (Austin et al., 2013; Cuza, 2016), adult HSs (Bruhn de Garavito, 2002; Montrul et al., 2008; Cuza, 2013), and first-generation Spanish-speaking immigrants (Perpiñán, 2011).

Regarding the acquisition of obligatory inversion in Spanish wh-questions, Austin et al. (2013) and Cuza (2016) found low levels of target S-V inversion in the production of Spanish wh-questions among Spanish-English bilingual children. In a longitudinal study, that lasted around three years, Austin et al. (2013) tested thirteen Spanish-English bilingual children, whose ages ranged between 5-6 in the first session, to observe their development in Spanish and English regarding three structures: (i) interrogatives, (ii) sentential negation,

(iii) negative polarity items (NPIs), such as *ningún* 'none'. The results of an Elicited Production Task revealed that the weakest development area of the bilingual children was Spanish NPIs, followed by Spanish interrogatives, while the development of sentential negation was strong and parallel in the bilinguals' two languages. Austin et al. (2013) observed that the longitudinal development of wh-questions in Spanish and English was not parallel. In the first session, the bilingual children tended to be more accurate in Spanish questions than in English questions (accuracy rates of 40% in Spanish and 30% in English). However, as the children grew older and were exposed more to English, this tendency of accuracy was reversed in the second and third sessions. The accuracy rate in English markedly increased to 80% in both the second and third sessions, whereas the accuracy rate in Spanish increased in the second session (60%) and then slightly decreased in the third (50%). The errors of bilingual children consisted mainly of a lack of S-V inversion in Spanish interrogatives. The researchers concluded that Spanish interrogatives are more vulnerable to transfer effects from English than sentential negation among Spanish-English bilingual children.

Cuza (2016) investigated acquisition of S-V inversion in matrix and embedded Spanish wh-questions among 27 simultaneous Spanish-English bilingual children (age range 5;0-13;3) living in the U.S. The control group consisted of 17 Spanish monolingual children (age range 6;6-12;4). This study focused on examining the possible effect of transfer form English, developmental age, and complexity of the structure on the development of bilingual children. The results of an Elicited Production Task showed that, although the monolingual children did not perform at ceiling level, they outperformed the bilingual

children in their ability to correctly produce S-V inversion questions in both matrix and embedded questions. The bilingual children produced a significantly higher rate of ungrammatical questions with no inversion (44% in matrix and 63% in embedded) than the monolingual group (2% in matrix questions and 3% in embedded). Within the bilingual group, the younger children (age range 5;0-8;5) performed better than the older children (age range 8;8-13;3) as they correctly produced S-V inversion 86% in all the target questions combined, in contrast to older children who achieved target inversion in only 22% in total. It was also among the older group where instances of code-switching were found. The results also revealed that structure complexity plays a role in the development of both monolingual and bilingual children. This is evident in the differences between the accuracy rates of inversion in embedded questions (83% for monolingual children and 33% for child HSs) and the accuracy rates in matrix questions (90% for monolinguals and 51% for child HSs). Therefore, the researcher attributed the results of the bilingual children to a combination of factors: cross-linguistic influence from English on Spanish, dominance of English, and structure complexity.

Regarding adult HSs, Bruhn de Garavito (2002) and Montrul et al. (2008) compared adult early bilinguals and late bilinguals of Spanish in their knowledge of wh-movement. The focus of Bruhn de Garavito's (2002) study was knowledge of verb raising in wh-questions and the placement of adverbs in relation to verbs. The two experimental groups were adult early and late bilingual speakers of Spanish, and the control group consisted of monolingual Spanish speakers. The results of a Preference Task showed that all the groups accurately differentiated between grammatical and ungrammatical structures. Both early and late

bilinguals in this study showed solid knowledge of verb raising in wh-questions and the placement of adverbs in relation to verbs. Therefore, the researcher concluded that the age of acquisition does not seem to play a role in setting the verb movement parameter among adult bilinguals.

Along the same line, Montrul et al. (2008) compared knowledge of wh-movement in early bilinguals and late bilinguals of Spanish from different proficiency levels to investigate whether age of acquisition and level of proficiency affect the degree of cross-linguistic influence. The early bilinguals were adult HSs of Spanish born in the U.S. and the late bilinguals were English-speaking L2 learners of Spanish. The study tested the participants' acceptability judgements of S-V inversion in questions with object extraction, among other several sentence types. The results from a Grammaticality Judgment Task revealed that level of proficiency did not seem to affect the acceptability judgements of grammatical sentences, but it affected the acceptability judgements of ungrammatical sentences. It was found that low-proficiency speakers of both bilingual groups accepted ungrammatical questions with no S-V inversion more than intermediate and advanced speakers of both groups. Confirming Bruhn de Garavito's (2002) conclusion, Montrul et al. (2008) concluded that age of acquisition does not seem to play a role in acquiring obligatory inversion in Spanish wh-questions as no statistically significant differences were found between the early and late bilinguals in both Bruhn de Garavito (2002) and Montrul et al.(2008).

Cuza (2013) examined knowledge of S-V inversion in matrix and embedded wh-questions in adult HSs of Spanish. The control group consisted of Spanish native speakers. The focus

of this study was to explore whether cross-linguistic influence can occur in narrow syntactic structures that do not involve any discourse or pragmatic interfaces, such as S-V inversion in Spanish matrix and embedded wh-questions. This study involved two written tasks, an Acceptability Judgment Task (AJT) and a Dehydrated Sentence Task (DST), as well as two oral production tasks, a story and question task and a Sentence Completion Task. The results revealed that adult HSs showed lower acceptance and production rates of target S-V inversion than the rates of the control group in both matrix and embedded questions. Moreover, adult HSs performed significantly better in the matrix questions than in the embedded questions. They also performed better in the oral tasks than they did in the written tasks, AJT and DST. Given that English does not allow S-V inversion in typical wh- questions, the non-inversion patterns observed in the adult HSs' acceptability judgments and production of Spanish wh-questions can be interpreted as a possible transfer from English to Spanish. Therefore, the researcher concluded that cross-linguistic influence can also occur in narrow syntactic structures.

Perpiñán (2011) tested monolingual speakers of Spanish and first-generation Spanish-speaking immigrants residing in the U.S. in their production and comprehension abilities of S-V inversion in matrix questions and relative clauses. The difference between these two constructions is that inversion in matrix questions is purely syntactic in nature while inversion in relative clauses is determined by pragmatics and/or phonology. The participants performed four tasks, two oral production tasks, a written production task, and an online reading comprehension task. Although all the first-generation immigrants in this study reported using their L1 on a daily basis, results of the three production tasks indicated

that their ability to invert in relative clauses was significantly lower than monolinguals. In comparison, the first-generation immigrants showed robust knowledge of obligatory S-V inversion in matrix wh-questions as they performed in a comparable way to monolinguals. Perpiñán (2011) concluded that structures that exhibit interfaces between syntax and pragmatics and/or phonology (inversion in relative clauses) but not purely syntactic structures (inversion in matrix questions) are vulnerable to L1 attrition.

Inspired by the previous research on acquisition of Spanish wh-question, I conducted a pilot study (Mohamed, 2022) to examine the production of wh-adjuncts among two child HSs of EA (age 6;0), who immigrated to Ontario, Canada with their families around the age of 4. These children were compared to a monolingual child in Egypt (age 6;0) and two first-generation adult EA immigrants. In EA wh-adjuncts, it is optional to front wh-phrases to a clause-initial position, as in English main-clause, or to leave them in their canonical position, that is in-situ (Wahba, 1984). The focus of this study was to explore whether cross-linguistic influence can occur in narrow syntactic structures as documented in Cuza (2013). The findings of an Elicited Production Task showed that all the participants, children and adults, produced target-like questions. However, there was a substantial difference between the child HSs and the monolingual child in terms of the preferred position of the wh-phrase in wh-adjuncts. Wh-fronting was the dominant position in the production of the bilingual children (97.3% of the time) while it was rare in the production of the monolingual child as it occurred once out of 18 tokens (5.6%). Regarding the first-generation immigrants, they did not show any preference, as they produced an approximately equal number of instances of wh-fronting and wh-in-situ (52.8% and 47.2%

respectively). I tentatively attributed the results to cross-linguistic influence from English on EA in the production of child HSs of EA since they preferred wh-fronting, which is the only grammatical position for wh-phrase in non-echo English wh-questions.

Given the scarcity of research on language contact between English and EA in the domain of wh-questions, I review a study that investigated the production of French wh-questions by English-French bilingual children living in France (Prévost et al., 2010). The reason for choosing this study is that French shares some properties with EA regarding the optionality of wh-movement and S-V inversion in wh-questions. In French, there are several grammatical options to form wh-questions, which can be ordered from the least complex to the most complex as follows: wh-in-situ without S-V inversion, wh-fronting without S-V inversion, and wh-fronting with S-V inversion (Prévost et al., 2010). In EA wh-adjuncts, all the abovementioned French options are grammatical, in addition to a fourth option that does not exist in French, which is wh-in-situ with S-V inversion. As for EA wh-complements, the grammatical options are wh-in-situ with and without S-V inversion, but wh-fronting is ungrammatical in this type of EA questions. In comparison, English allows for one grammatical structure in non-echo questions, which is wh-fronting with an obligatory movement of the auxiliaries from T-to-C. That is to say that the English grammatical wh-construction is similar, but not identical, to the most complex option in French, and this is where cross-linguistic influence may occur. Therefore, it is of particular interest for the object of the current study to discuss the findings of Prévost et al.'s (2010) study to explore whether the direction of cross-linguistic influence will be the same as in

Mohamed (2022), from the language that has one grammatical analysis to the language with several possible analyses.

Prévost et al. (2010) examined the production of French wh-questions in 19 English-French bilingual children (age range 6;8-12;7) who immigrated to France with their families after the age of 4 (mean age at first exposure to French 6;11, mean length of exposure 2;10). These bilinguals were compared to four groups of native speakers of French: (i) 13 age-matched children with specific language impairment (henceforth SLI group) (age range 6;6-12;11); 17 4-year-old children (henceforth TD-4) (age range 4;0-4;5); 12 6-year-old children (TD-6) (age range 6;2-6;8), and 12 adults (TD Adults). The results of an Elicited Production Task showed that the accuracy rates of all the groups were high, with no rate below 85%. However, the groups differed in the rate of producing each option. TD Adults did not produce wh-in-situ at all. Regarding the child groups, wh-in-situ was significantly more frequent in the production of both the bilingual group (41.9%) and the SLI group (58.8%) than in the production of the two TD child groups (22% for TD-4 and 3% for TD-6). Within the questions produced by fronting the wh-phrase, the most frequent wh-fronting strategy was wh-fronting with S-V inversion in the speech of the TD Adult whereas it was wh-fronting with no inversion in all the child groups. The bilingual group showed a lower level of using wh-fronting with inversion (16.6%) than TD-6 (21%), but the difference was not statistically significant. In comparison, wh-fronting with inversion was absent in the speech of TD-4 and rare in the production of the SLI group (7.9%). The researchers attributed the avoidance of using complex options observed in the bilingual group to the bilingual children's processing capacity as they have to process two languages and not just

one as monolingual children do. The researchers concluded that computational complexity plays a fundamental role in cross-linguistic influence in child L2 acquisition as it can "neutralize" the effects of L1 transfer to L2 (Prévost et al., 2010, p. 270).

2.4. Research Questions and Hypotheses

Building on the literature reviewed in the previous section, I anticipate finding one of the three following scenarios:

(1) If the domain of wh-questions is affected by incomplete acquisition (for the simultaneous and sequential bilingual children in the CH2_ Experimental group), L1 attrition (in the case of A2_Experimental and early L2 learners in CH2_Experimental), then I expect that one or the two experimental groups will show higher production and acceptance rates of ungrammatical fronted *ʔeh* 'what'. If both experimental groups, CH2_Experimental and A2_Experimental, tend to produce and accept the ungrammatical fronted *ʔeh* 'what', then this tendency can be interpreted as an instance of missing input competence divergence (Pires & Rothman, 2009). This is to say that the parental generations of immigrants may be undergoing gradual L1 attrition in the domain of wh-questions, which is getting transferred to the subsequent generations of HSs.

(2) If it is a case of differential acquisition and cross-linguistic influence from English on EA in narrow syntactic structures, but not a case of incomplete acquisition or L1 attrition, then I predict that one or the two experimental groups will show significant preference towards producing and accepting the English structures, only if these structures are

grammatical options in EA. Instances of this hypothetical scenario would be preferring wh-fronting in wh-adjuncts and SV word order in wh-complements and/or wh-adjuncts since these structures are precisely where English and EA overlap.

(3) If it is not a case of incomplete acquisition, L1 attrition, differential acquisition, or cross-linguistic influence from English on EA in narrow syntactic structures, then one or the two experimental groups will pattern with the control groups and no significant differences will be observed between them.

According to these three scenarios, I propose the following hypotheses for the research questions presented in Chapter 1.

RQ1: Production and judgment of the position of wh-phrases in EA wh-questions

RQ 1.1: Will child HSs, CH2_Experimental, pattern with or differ from the two control groups, A1_Control and CH1_Control, in their production and judgment of the position of wh-phrases in EA wh-questions?

Hypothesis 1.1: Regarding the position of wh-phrases, I predict that CH2_Experimental will differ from both CH1_Control and A1_Control. Based on Mohamed (2022), I hypothesize that CH2_Experimental will predominantly prefer wh-fronting, CH1_Control will prefer to leave adjunct wh-phrases in situ, and A1_Control show true optionality between wh-fronting and wh-in-situ. As for the position of the complement wh-phrase *ʔeh* 'what', I predict that the fronting position of this wh-phrase will be nonexistent in the production and acceptance of both control groups, A1_Control and CH1_Control, as it is ungrammatical. Based on the findings of Spanish-English bilingual children in Cuza

(2016) and Austin et al. (2013), I hypothesize that CH2_ Experimental will show transfer from English, manifested in occasionally producing and accepting the ungrammatical fronted *ʔeh* 'what'.

RQ 1.2. Will the adults who live in a bilingual environment, A2_Experimental, pattern with or differ from the adults living in a monolingual environment, A1_Control, regarding the production and judgment of the position of wh-phrases in EA wh-questions?

Hypothesis 1.2: Based on the results of Perpiñán (2011) who found that narrow syntactic properties are resilient to cross-linguistic influence in first-generation immigrants, I expect that A2_Experimental will pattern with A1_Control and no significant differences will be found between them in terms of the position of wh-phrases. Based on Mohamed (2022), I hypothesize that CH2_Experimental will predominantly prefer wh-fronting, CH1_Control will prefer to leave adjunct wh-phrases in situ, and A1_Control show true optionality between wh-fronting and wh-in-situ. As for the position of the complement wh-phrase *ʔeh* 'what', I predict that the fronting position of this wh-phrase will be nonexistent in the production and acceptance of both control groups,

RQ 1.3. Will the child HSs, CH2_Experimental, pattern with or differ from the first-generation immigrants, A2_Experimental, regarding the production and judgment of the position of wh-phrases in EA wh-questions?

Hypothesis 1.3: Based on the results of Perpiñán (2011), Cuza (2016) and Austin et al. (2013), I predict that the A2_Experimental will differ from CH2_Experimental in the same way that A1_Control differs from CH2_Experimental. To clarify, I expect that

CH2_Experimental, but not the A2_Experimental, will produce and accept the ungrammatical fronted *ʔeh* 'what'. Based on Mohamed (2022), I hypothesize that CH2_experimental will predominantly prefer wh-fronting in wh-adjuncts while A2_Experimental will show true optionality between wh-fronting and wh-in-situ in this type of questions.

RQ2: Production and judgment of subject and verb word order in EA wh-questions

RQ 2.1: Will the child HSs, CH2_Experimental, pattern with or differ from the two control groups, A1_Control and CH1_Control, regarding the production and judgment of subject and verb word order in EA wh-questions?

Hypothesis 2.1: Concerning subject and verb word order, I predict that these three groups will greatly prefer producing and accepting SV word order because it is the default order in EA, but they will differ in accepting VS word order. Given that VS word order is ungrammatical in English, I expect that CH2_ Experimental will completely reject this order while A1_Control and CH1_Control will accept it as it is one of the possible word orders in EA.

RQ 2.2. Will the adults who live in a bilingual environment, A2_Experimental, pattern with or differ from the adults living in a monolingual environment, A1_Control, regarding the production and judgment of subject and verb word order in EA wh-questions?

Hypothesis 2.2: Building on the results of Perpiñán (2011), I anticipate that no significant differences will be found between the two adult groups regarding subject and verb word order in EA wh-questions.

RQ 2.3. Will the child HSs, CH2_Experimental, pattern with or differ from the first-generation immigrants, A2_Experimental, regarding the production and judgment of subject and verb word order in EA wh-questions?

Hypothesis 2.3: Building on the results of Perpiñán (2011), I anticipate that A2_Experimental will differ from CH2_Experimental in the same way that A1_Control differs from CH2_ Experimental described in hypothesis 2.1.

This chapter has provided offer a theoretical and syntactic background for this study. In the next chapter, I describe the methodology of the study.

Chapter 3

3. METHODOLOGY

The goal of this chapter is to examine the methodology that was followed to answer the research questions of the study, including a description of the participants and the tasks. The tasks were designed to examine the position of phrases, and subject and verb word order in two types of wh-phrases in EA (wh-complements and wh-adjuncts). The target wh-phrase used to represent complements was *ʔeh* 'what'; for the adjuncts the wh-phrases used were *feen* 'where', and *ʔimta* 'when'.

This chapter is organized as follows. Section 3.1 discusses the characteristics of the participant groups. Section 3.2 describes the tasks and materials, which include an Elicited Production Picture Task (3.2.1), a Grammaticality Choice Task (3.2.2), a Picture-Vocabulary Test (3.2.3), and a Language Background Questionnaire (3.2.4). Section 3.3 concludes this chapter by presenting the procedures that were taken to analyze the data.

3.1. Participants

A total of 69 participants took part in the study. There were four groups, two groups of child participants and two groups of adult participants. As for the groups of children, there was one control group of EA monolingual children who lived in Egypt (CH1_Control, n=18), and one experimental group of EA-English bilingual children (CH2_Experimental, n=16) who either were born in or moved to Ontario, Canada or the U.K. before the age of

7. Regarding the groups of adults, there were one control group of EA monolingual adults who lived in Egypt (A1_Control, n=16), and one experimental group of first-generation Egyptian immigrants in Ontario, Canada or in the U.K. (A2_Experimental, n=19). Information of the groups is summarized in table 6.

Group	**N.**	**Gender**	**Age range**	**Mean age**	**Country of residence**	**Length of residence in an English-speaking country**
CH1_Control	18	8 M and 10 F	5;2-11;0	7;3	Egypt	N/A
CH2_Experimental	16	4 M and 12 F	5;6-12;6	8;11	Canada (11) U.K. (5)	3;6-12;6
A1_Control	16	6 M and 10 F	18;0-49;6	30;5	Egypt	N/A
A2_Experimental	19	7 M and 12 F	22;9-58;11	37;0	Canada (15) U.K. (4)	3;4-22;11

Table 6. *Information about participants*

The CH1_Control group consisted of 18 EA monolingual children whose L1 was EA and who had not been exposed to any other language before the age of 3. Their mean age was 7;3 years old, ranging from 5;2 to 11;0. All the children were born and raised in Egypt and had never moved to another country. They participated from three Egyptian cities: Port Said (8 participants), Giza (7), and Cairo (3). Both parents of all the participants in this group were native speakers of EA. In an effort to control their exposure of other languages for this study, all the children in this group were carefully selected from schools where the language of instruction was MSA only. However, low proficiency in English was

acceptable, given that English is a mandatory subject for all students, starting from first grade until twelfth grade, in all Egyptian public and private schools. According to the responses of a Language Background Questionnaire completed by the parents/guardians of these children, EA was the only language that these children acquired naturalistically from birth, and they learned MSA when they started school, around the age of 4;0. Although these children studied English at school, they never used it for communication outside of school.

The CH2_Experimental group consisted of 16 EA-English bilingual children whose L1, or one of their first languages, was EA, and English being their L2 or their second L1. Their mean age was 8;11 years old, ranging from 5;6 to 12;6. Regarding their country of residence, 11 children participated from Ontario, Canada and five participated from different cities in the U.K.: Aberdeen City (1), Warwickshire (1), and Stafford (1), and two participants did not specify the city. Both parents of all the participants in this group were native speakers of EA, except the father of one child who was Turkish. It was a requirement for the participants in this group to have some productive abilities in EA. For example, they could say simple sentences, ask questions, and could name some objects, food, and animals in EA. In order to examine the effect of cross-linguistic influence of English on EA, the participants in this group were required to have lived in a region where English is spoken for at least three years. The mean length of residence in an English-speaking environment was 6;5 years, ranging from 3;7-12;6. Four children were born in the country of residence and four moved there before the age of 3. The rest of the participants moved to the country

of residence between 3;0 and 7;0 years old, five before the age of 5, two before the age of 6, and one at 7 years old.

To describe the participants in this group, I adopt the definitions of simultaneous bilinguals, sequential bilinguals, and early L2 learners as explained in Guasti (2016). Following Guasti (2016), I considered as simultaneous bilingual children those who acquired both the minority language of the family (which is their HL) and the majority societal language from birth. If the children acquire the minority language from birth and have been exposed to the majority language (which is their L2) before the age of 3, they are considered sequential bilingual children. If this exposure takes place after the age of 3, it is a case of early L2 learners (Guasti, 2016). According to this distinction, four of the EA-English bilingual children who participated in this study were simultaneous bilingual children, four were sequential bilinguals, and eight were early L2 learners. Based on Kupisch and Rothman's (2018) definition of heritage speakers, the participants in this group are also considered child HSs because they were native speakers of EA, and either native speakers or early L2 learners of English, the majority societal language. Responses to a Language Background Questionnaire completed by the parents/guardians of these children showed that these children greatly differed from the CH1_Control group in terms of patterns of language exposure and use. To clarify, these bilinguals attended schools where English is the language of instruction. They used EA on a daily basis to communicate with their parents and with their relatives back in Egypt, but they greatly preferred to speak English, especially with their siblings and friends. Although these children could speak EA, all of

them, except two children, felt more comfortable and confident speaking English, as reported by their parents/guardians.

I turn now to describe the adult groups. The A1_Control group consisted of 16 EA monolingual adults whose L1 was EA and who have not been exposed to any other language before the age of 3. Their mean age was 30;5 years old, ranging from 18;0 to 49;6. All the participants in this group were born and raised in Egypt and have never moved to another country. They were from three Egyptian cities: Port Said (5 participants), Giza (2), and Cairo (9). Both parents of all the participants were native speakers of EA, except the mother of one participant who was Lebanese. According to the responses reported in a Language Background Questionnaire, MSA was the only the language of instruction in the elementary school for all the participants in this group. Starting from first grade, they began to learn English as a subject in school. However, four participants self-reported that they have no knowledge of any languages other than Arabic, while the rest of the participants reported having low to intermediate proficiency in English. Having some knowledge in a third language was acceptable for this group because learning a third language (either French, German, Spanish, or Italian) is mandatory for the high-school students in the Egyptian educational system. Nine participants preferred not to mention the third language that they had learned in high school. The remainder of the participants learned a third language in high school, which was Italian for one participant, French for three participants, and German for three participants. However, all of them considered themselves as beginners in their third language.

The A2_Experimental group was made up of 19 Egyptian adults who were late bilinguals and who immigrated to an English-speaking region after the age of 19. Their mean age was 37;0 years old, ranging from 22;9 to 58;11. All the participants reported that they acquired EA as their native language and that both of their parents were native speakers of EA. Similar to all the participants in A1_Control and CH1_Control, all the participants in this group reported that EA was the only language of communication that they used at home during their childhood, and they have not been exposed to any other language before the age of three. Regarding their country of residence, 15 adults participated from Ontario, Canada and four participated from three cities in the U.K., Aberdeen City (2 participants), Warwickshire (1), and Birmingham (1). The participants in this group were required to have lived in a region where English is spoken for at least three years. Their mean length of residence in an English-speaking environment was 6;8 years, ranging from 3;4 - 22;11. All of the participants of this group reported using EA on a daily basis. Based on their responses in a Language Background Questionnaire, the participants in this group mainly used English at school, work, and social situations. However, if a text or a video was available in both Arabic/EA and English, most participants reported that they would prefer reading and watching the Arabic version.

3.2. Tasks and Materials

The entire study was conducted online. It took approximately 45 minutes, and it consisted of two parts, attending one Zoom session with the researcher via Western-hosted Zoom (around 35 minutes) and completing a Language Background Questionnaire via Western-hosted Qualtrics (about 10 minutes). Prior to participating, informed consent was obtained

from all the adult participants and the parents/guardians of the children via Qualtrics. As for the children who were above the age of seven, both parental/guardian consent and participant assent were required. After they signed the consent form, an individual Zoom session was scheduled for each participant. During the Zoom session, the participants completed three tasks, an Elicited Production Picture Task (Appendix 2), a Grammaticality Choice Task (Appendix 3), and a Picture-Vocabulary task (Appendix 4). Once the participants completed the first part of the study on Zoom, the adult participants and the parent/guardian of the child participants received a Qualtrics link to complete the Language Background Questionnaire. There are four versions of the questionnaire, two English versions for the participants who lived in Canada and in the UK (Appendices 5 and 6 are for the English child version and adult version respectively), and two Arabic versions for the participants who lived in Egypt (Appendices 7 and 8 for the Arabic child version and adult version respectively). In what follows, I describe the tasks and materials in greater details.

3.2.1. Elicited Production Picture Task

The first task was an Elicited Production Picture Task that took approximately 15 minutes. I adopted the design of this task from Cuza (2016). It aimed to elicit production of two wh-adjuncts and one wh-complement in simple EA wh-questions. The wh-adjuncts were *feen* 'where' and *ʔimta* 'when', and the wh-complement was *ʔeh,* the EA counterpart of the English wh-phrase 'what'. My focus for this task was on examining (i) the position of wh-phrase, and (ii) subject and verb word order in main-clause EA wh-questions.

During this task, all the instructions and communication were conducted in the participants' native language, which was EA. This task was administrated by displaying a PowerPoint presentation on the shared screen with the participants on Zoom. The task started by showing the participants a picture of a kangaroo while telling them that this kangaroo knew all the answers to this task. Then the participants were told that they would watch different scenarios on the shared screen, one at a time, and by the end of each scenario the kangaroo would appear on the screen and the participants would be requested to ask the kangaroo a question about the scenario. While the participants watched each scenario, I was simultaneously narrating to them what was going on in that scenario[30]. The subjects for all the scenarios were purposefully selected to be in third person because using first and second subject pronouns could lead the participants to omit the subject [31]. The task was designed in this way to increase the number of subject elicitations and consequently, to examine the possibility of S-V inversion.

The task consisted of 24 different scenarios (18 target items and 6 distracters) plus 3 scenarios that served as a warm-up session. The 18 target items were distributed equally between the three target wh-phrases, *ʔeh* 'what', *feen* 'where', and *ʔimta* 'when' [32]. The

[30] I am a native speaker of EA and narrated the scenarios to the participants in EA.

[31] As discussed in section 2.2.3., EA is a pro-drop language as it allows omitting subjects if they can be retrieved from agreement features on the verb (Albirini et al., 2011).

[32] The wh-adjuncts introduced by the counterparts of 'why' and 'how' (The EA wh-adjuncts *leeh* and *ʔizzaay* respectively) were excluded from the stimuli to maintain comparable items in Spanish and EA because previous studies on Spanish interrogatives (Baauw, 1998) showed that S-V inversion is optional with *por qué* 'why' and *cómo* 'how'.

distracter items were 6 yes/no questions which aimed to divert the participants' attention away from the focus of this task. The scenarios were randomized, and the same randomized order was used for all the participants.

To familiarize the participants with the format of the task, three warm-up scenarios were included. They aimed to elicit wh-phrases other than the target ones, *mīn* 'who' and *leeh* 'why'. During the warm-up session, I answered all the participants' questions. In order to avoid eliciting embedded questions, I requested that the participants ask the questions directly without starting the question with phrases such as *ʕāiz ʔʕraf ʔeh* 'I want to know'.

In what follows, I will present a scenario for each type of target wh-phrase. Figure 8 and example (71) represent what the participants saw and heard for one of the six scenarios used to elicit the wh-argument *ʔeh* 'what' (please see appendix 2 for the complete items of this task).

Figure 8. *Elicited Production Picture Task. Sample of the pictures used to elicit the complement wh-phrase ʔeh 'what'*

(71) **الموقف:** البنت دي بتشرب حاجة، و إحنا عايزين نعرف إيه.

(71) **Scenario:** *ʔl-bint dī bi-tešrab ħaga,*

the-girl this PROG-drink.3SGF something

'This girl is drinking something,

wi iħna ʕaẓīn neʕraf ʔeh.

and we PRS-want.1PL INF-know.1PL what

and we want to know what.'

الطلب: من فضلك إسأل/ إسألي الكانجرو

Prompt: *min fadlak ʔisʔal/ʔisʔalī ʔl-kangarū.*

please ask.2SGM/ask.2SGF the-kangaroo

'Ask the kangaroo, please.'

الإجابات المحتملة:

Expected responses:

ا. البنت بتشرب إيه؟

a. *ʔl-bint bi-tešrab ʔeh?* [S-V-WH]

the-girl PROG-drink.3SGF what

'What is the girl drinking?'

ب. بتشرب البنت إيه؟

b. *bi-tešrab ʔl-bint ʔeh?* [V-S-WH]

PROG-drink.3SGF the-girl what

'What is the girl drinking?'

ج. بتشرب إيه؟

c. *bi-tešrab ʔeh?* [(S)-V-(S)-WH]

PROG-drink.3SGF what

‘What is the girl drinking?’

In EA wh-complements, the wh-phrase *ʔeh* ‘what’ must occur in situ, but S-V inversion is optional, but it is not common, as mentioned in the previous chapter. Moreover, the subject may be omitted. This situation leads to three possible responses to the above scenario: wh-in-situ without S-V inversion (71a), wh-in-situ with S-V inversion (71b), and wh-in-situ with null subject (71c). Unlike English, fronting the complement wh-phrase is ungrammatical in EA (**ʔeh ʔlbint bitešrab?* ‘what the.girl is.drinking’). Therefore, if the EA-English bilingual children produce fronted *ʔeh*, this may indicate crosslinguistic influence from English on the bilinguals’ native language, that is EA.

To keep the participants engaged in the task, at the end of each scenario the kangaroo answered the participants’ question while a picture of the answer appeared on the shared screen. For instance, after the participants had formed a question about the previous scenario, they saw a picture of orange juice on the screen as shown in Figure 9 while they heard me saying the response of the kangaroo (72).

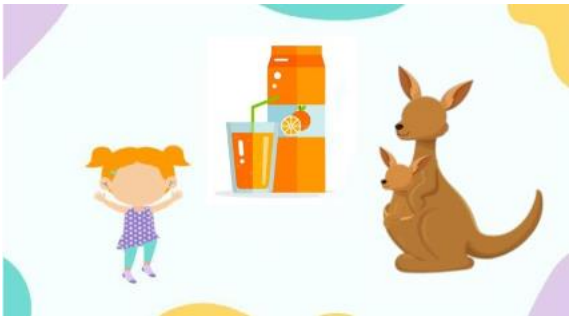


Figure 9. *Elicited Production Picture Task. Sample of the pictures used when the kangaroo provides an answer to the participant's questions with ʔeh 'what'*

(72) **The kangaroo's response:**

ʔl-bint	*bi-tešrab*	*ʕasīr*	*burtuʔān.*
the-girl	PROG-drink.3SGF	juice	orange

'The girl is drinking orange juice.'

Regarding the wh-adjuncts, the expected responses are different from the responses to the wh-arguments because, as discussed in section 2.2.3, wh-movement and verb raising are optional in EA wh-adjuncts. Figure 10 and example (73) represent one of the scenarios used to elicit the adjunct wh-phrase *ʔimta* 'when'.

Figure 10. *Elicited Production Picture Task. Sample of the pictures used to elicit the adjunct wh-phrase ʔimta 'when'*

(73) الموقف: ماما قالت هتودينا المكتبة، و إحنا عايزين نعرف إمتى

(73) **Scenario:** *mama ʔalet ha-twadī-na ʔl-maktaba,*

mom said.3SGF FUT-take.3SGF-us the-library

‘Our mom told us that she would take us to the library,

wi iħna ʕaẓīn neʕraf ʔimta.

and we PRS-want.1PL INF-know.1PL when

and we want to know when.’

الطلب: من فضلك إسأل/ إسألي الكانجرو

Prompt: *min fadlak ʔisʔal/ʔisʔalī ʔl-kangarū.*

please ask.2SGM/ask.2SGF the-kangaroo

‘Ask the kangaroo, please.’

الإجابات المحتملة:

Expected responses:

ا. إمتى ماما هتودينا المكتبة؟

a. *ʔimta mama ha-twadī-na ʔl-maktaba?* [WH-S-V]

when mom FUT-take.3SGF-us library

‘When will mom take us to the library?’

ب. إمتى هتودينا ماما المكتبة؟

b. *ʔimta ha-twadī-na mama ʔl-maktaba?* [WH-V-S]

when FUT-take.3SGF-us mom library

‘When will mom take us to the library?’

ج. ماما هتودينا المكتبة إمتى؟

c. *mama ha-twadī-na ʔl-maktaba ʔimta?* [S-V-WH]

mom FUT-take.3SGF-us library when

'When will mom take us to the library?'

د. هتودينا ماما المكتبة إمتى؟

d. *ha-twadī-na mama ʔl-maktaba ʔimta?* [V-S-WH]

FUT-take.3SGF-us mom library when

'When will mom take us to the library?'

As wh-movement and verb raising are optional in EA wh-adjuncts, there are four possible answers for this scenario[33], wh-fronting without S-V inversion (73a), wh-fronting with S-V inversion (73b), wh-in-situ without S-V inversion (73c), and wh-in-situ with S-V

[33] Although every possible effort was taken to elicit explicit subjects (by choosing all the subjects of the stimuli to be in third person such as *ʔl-walad* 'the boy', *ʔl-bint* 'the girl'), some participants omitted the subject, resulting in two more possible responses, null subjects with wh-fronting (4a), and null subjects with wh-in-situ (4b).

(4) ا. إمتى هنروح المكتبة؟

(4) a. *ʔimta ha-nrūħ ʔl-maktaba?* [WH-(S)-V-(S)]

when FUT-go.1PL the-library

'When will we go to the library?'

ب. هنروح المكتبة إمتى؟

b. *ha-nrūħ ʔl-maktaba ʔimta?* [(S)-V-(S)-WH]

FUT-go.1PL the-library when

'When will we go to the library?'

inversion (73d). After the participants asked a question about this scenario, they saw the picture shown in Figure 9 while they heard me saying the response of the kangaroo (74).

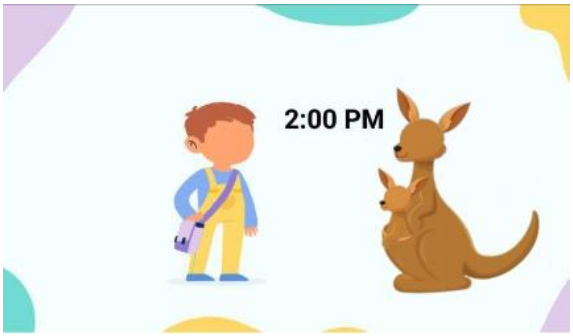


Figure 11. *Elicited Production Picture Task. Sample of the pictures used when the kangaroo provides an answer to the participant's questions with ʔimta 'when'*

(74) ***The kangaroo's response:***

mama ha-twadī-na ʔl-maktaba ʔ-ssaʕah ʔtnīn ʔ-ḍḍuhr.

mom FUT-take.3SGF.us the-library the-clock two the-afternoon

'Mom will take us to the library at 2:00 p.m.'

In addition to the optionality of wh-movement and verb raising in EA wh-adjuncts, it is also optional to omit the copular verb. Null copula is common with the EA wh-phrase *feen* 'where'. Figure 12 and example (75) represent one of the scenarios with *feen* and its possible responses.

Figure 12. *Elicited Production Picture Task. Sample of the pictures used to elicit the adjunct wh-phrase feen 'where'*

(75) **الموقف**: البطة مش لاقية بنتها البطة الصغيرة و إحنا عايزين نعرف فين.

(75) **Scenario:** *ʔl-bata miš laʔia bint-aha ʔl-bata ʔ-ssoɣaira,*

the-duck no PRS.find.3SGF daughter-her the-duck the-little

'The duck can't find her little duckling,

wi iħna ʕaẓīn neʕraf feen.

and we PRS-want.1PL INF-know.1PL where

and we want to know where.'

الطلب: من فضلك إسأل/ إسألي الكانجرو

Prompt: *min fadlak ʔisʔal/ʔisʔalī ʔl-kangarū.*

please ask.2SGM/ask.2SGF the-kangaroo

'Ask the kangaroo, please.'

الإجابات المحتملة:

Expected responses:

ا. فين البطة الصغيرة راحت؟

a. *feen ʔl-bata ʔ-ssoɣaira rāħit?* [WH-S-V]

where the-duckling the-little went.3SGF

'Where did the little duckling go?'

ب. فين راحت البطة الصغيرة؟

b. *feen rāħit ʔl-bata ʔ-ssoɣaira?* [WH-V-S]

where went.3SGF the-duckling the-little

'Where did the little duckling go?'

ج. فين راحت؟

c. *feen rāħit?* [WH-(S)-V-(S)]

where went.3SGF

'Where did it go?'

د. فين البطة الصغيرة؟

d. *feen ʔl-bata ʔ-ssoɣaira?* [WH-(V)-S-(V)]

where the-duckling the-little

'Where is the little duckling?'

ه. البطة الصغيرة راحت فين؟

e. *ʔl-bata ʔ-ssoɣaira rāħit feen?* [S-V-WH]

the-duckling the-little went.3SGF where

'Where did the little duckling go?'

و. راحت البطة الصغيرة فين؟

f. *rāħit ʔl-bata ʔ-ssoɣaira feen?* [V-S-WH]

went.3SGF the-duckling the-little where

'Where did the little duckling go?'

ز. راحت فين؟

g. *rāħit* *feen?* [(S)-V-(S)-WH]

went.3SGF where

'Where did it go?'

ح. البطة الصغيرة فين؟

h. *ʔl-bata* *ʔ-ssoɣaira* *feen?* [(V)-S-(V)-WH]

the-duckling the-little where

'Where is the little duckling?'

For this scenario, there are eight possible answers in EA, four with wh-fronting and four with wh-in-situ: wh-fronting without S-V inversion (75a); wh-fronting with S-V inversion (75b); wh-fronting with null subject (75c), wh-fronting with null copular verb (75d); wh-in-situ without S-V inversion (75e); wh-in-situ with S-V inversion (75f); wh-in-situ with null subject (75g), and wh-in-situ with null copular verb (75h). After asking the question, the participants saw a picture of the little duckling swimming in the river, as shown in Figure 13, while they heard me saying the kangaroo's response (76).

Figure 13. *Elicited Production Picture Task. Sample of the pictures used when the kangaroo provides an answer to the participant's questions with feen 'where'*

(76) **The kangaroo's response:**

ʔl-bata	*ʔ-ssoɣaira*	*rāħit*	*teʕūm*	*fī*	*ʔ-nnīl.*
the-duck	the-little	went.3SGF	INF-swim.3SGF	in	the-Nile

'The little duckling went to swim in the Nile River.'

In sum, the first task, which was an Elicited Production Picture Task, aimed to evaluate the production of simple EA wh-questions with two wh-adjuncts, *feen* 'where' and *ʔimta* 'when', and one complement wh-phrase, *ʔeh* 'what'. The questions were elicited by showing the participants 24 scenarios, 18 target items and 6 distracters, and requesting from them to ask the kangaroo, which appeared at the end of each scenario, questions in EA to seek more information about these scenarios. In the following section, I describe the second task, which was Grammaticality Choice Task.

3.2.2. Grammaticality Choice Task

The second task was a Grammaticality Choice task, and it took approximately 15 minutes. The design of this task was adopted from Grinstead et al. (2018). The aim of this task was to assess the participants' judgement of two characteristics of EA wh-questions, wh-movement and S-V inversion. Like the first task, all the instructions and communication were conducted in EA.

The task started by sharing the screen of a PowerPoint presentation with the participants and showing them pictures of two animals, a cat and a panda. The participants were told that these animals were learning to speak EA, but they were still making some mistakes.

The task of the participants was to hear the questions that both animals would form and to decide whether one of the questions sounded more correct and natural than the other or whether both animals had asked the question correctly and naturally. The participants then saw pictures, one at a time. Each picture was displayed in the centre of the slide with the panda at the left side and the cat at the right side of the picture. The panda started by asking a question about the picture in a male voice, then the cat asked a different question about the same picture in a female voice. The recorded voice of the panda and the cat was added to the PowerPoint presentation. The speakers were two native speakers of EA, one male for the panda's voice and one female for the cat's voice. A speech bubble appeared beside the talking animal to indicate who was talking. It was pointed out to the participants that neither animal was smarter nor was more likely to make mistakes than the other. If the participants wanted to hear the animals ask their questions again, the audio was replayed up to three times for each animal.

This task included a total of 24 items, 18 experimental items, and six distracters. In addition, three additional questions were included as warm-ups to get the participants used to the task's format. The distracters were six yes/no questions and they aimed to divert the participants' attention away from the focus of this task. The experimental items were equally distributed between the three target wh-phrases, *ʔeh* 'what', *feen* 'where', and *ʔimta* 'when', six items each. The six experimental items of each wh-phrase were divided into two sets, Set 1 and Set 2, with three items in each set. Set 1 aimed to examine the participants' judgment of the position of the wh-phrase (wh-fronting and wh-in-situ), while Set 2 aimed to test their judgment of the possibility of S-V inversion (no inversion and

inversion). To test one variable in each set, I controlled the other variable. Accordingly, Set 1 was designed to have a fixed SV word order, while Set 2 was designed to have a wh-phrase in situ. I chose SV word order and wh-in-situ as controlled variables because my intuition, as a native speaker of EA, is that the most common and typical option in EA wh-questions is wh-in-situ with SV word order [S-V-WH]. The 24 items were counterbalanced so each animal produced approximately equal number of correct and incorrect items. Moreover, the items within the task were randomised and the same randomized order of the items was maintained for all the participants.

The wh-phrases used in the warm-up session were different from the target ones, and they were *mīn* 'who' and *leeh* 'why'. I explained the task format for the participants during the warm-up session, but no explanation was provided afterwards. The three warm-up items were designed in a way that both animals were right in one item, and each animal was correct once and was incorrect once in the other two items.

Figures 14, 15, and 16 and their corresponding stimuli (77, 78, and 79 respectively) show examples of the pictures and questions used in Set 1 (which aimed to examine the participants' judgment of the position of the wh-phrase). In the following stimuli, the wh-phrases are bolded, the subjects are underlined with a single line, and the verbs are double-underlined.

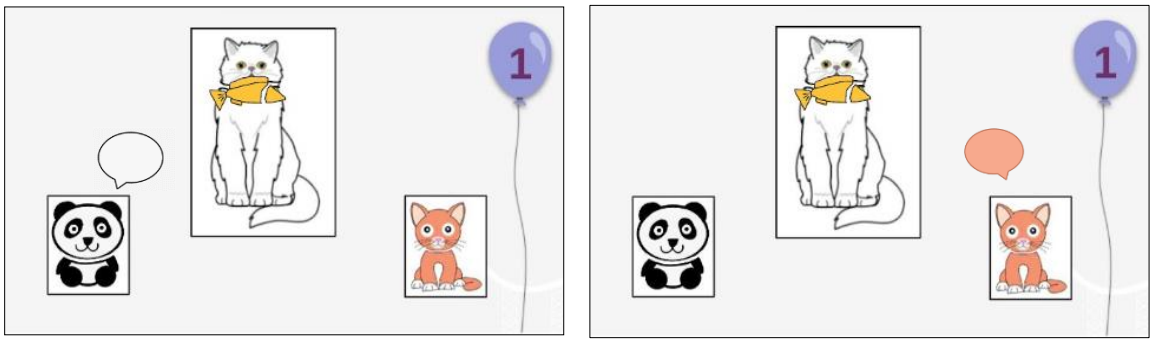


Figure 14. *Grammaticality Choice Task. Example of pictures used to test the judgment of wh-movement with the complement wh-phrase ʔeh 'what'*

(77) **Experimental item from Set 1 with *ʔeh* 'what'**

(77) ا. الباندا: ***إيه** القطة بتاكل؟

a. The panda: * ***ʔeh*** *ʔl-ʔota* *bi-tākol?* [WH-S-V]

what the-cat PROG-eat.3SGF

'What is the cat eating?'

ب. القطة: القطة بتاكل **إيه؟**

b. The cat: *ʔl-ʔota* *bi-tākol* ***ʔeh****?* [S-V-WH]

the-cat PROG-eat.3SGF what

'What is the cat eating?'

الطلب: مين قال السؤال ده أحسن، القطة ولا الباندا، ولا الإثنين قالوه صح؟

Prompt: *mīn* *ʔāl* *ʔ-ssoʔāl* *da* *aħsan,*

who said.3SGM the-question this.3SGM better

'Who said the question better,

ʔl-ota *wala* *ʔl-banda,* *wala* *ʔl-ʔtnīn* *ʔalūh* *ṣaħ?*

the-cat or the-panda or the-two said.3PL correct

the cat or the panda, or both are correct?'

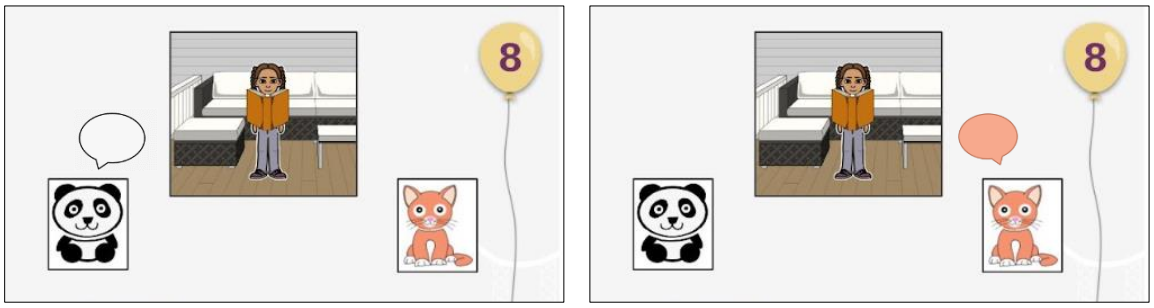


Figure 15. *Grammaticality Choice Task. Example of pictures used to test the judgment of wh-movement with the adjunct wh-phrase feen 'where'*

(78) Experimental item from Set 1 with *feen* 'where'

(78) ا. الباندا: البنت بتقرا القصة **فين؟**

a. The panda: *ʔl-bint* *bi-teʔra* *ʔl-qesa* ***feen?*** [S-V-WH]

the-girl PROG-read.3SGF the-story where

'Where is the girl reading the story?'

ب. القطة: **فين** البنت بتقرا القصة؟

b. The cat: ***feen*** *ʔl-bint* *bi-teʔra* *ʔl-qesa?* [WH-S-V]

where the-girl PROG-read.3SGF the-story

'Where is the girl reading the story?'

الطلب: مين قال السؤال ده أحسن، القطة ولا الباندا، ولا الإثنين قالوه صح؟

Prompt: *mīn* *ʔāl* *ʔ-ssoʔāl* *da* *aħsan,*

who said.3SGM the-question this.3SGM better

'Who said the question better,

ʔl-ota wala ʔl-banda, wala ʔl-ʔtnīn ʔalūh ṣaħ?

the-cat or the-panda or the-two said.3PL correct

the cat or the panda, or both are correct?'

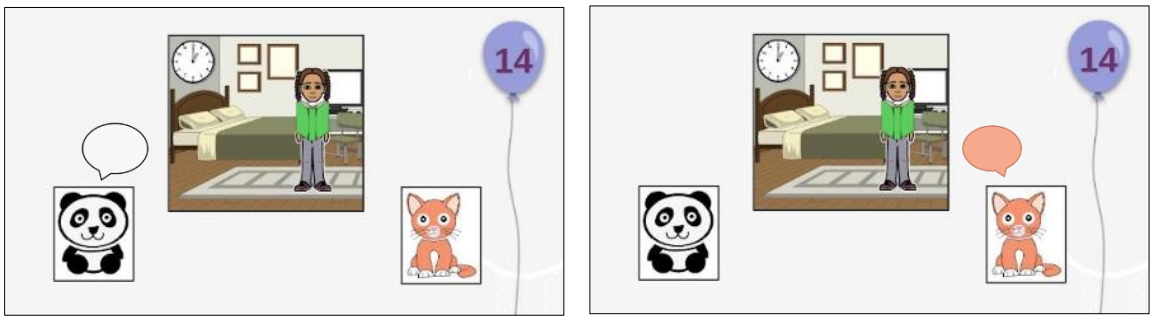


Figure 16. *Grammaticality Choice Task. Example of pictures used to test the judgment of wh-movement with the adjunct wh-phrase ʔimta 'when'*

(79) **Experimental item from Set 1 with *ʔimta* 'where'**

(79) ا. الباندا: **إمتى** البنت بتقرا القصة؟

a. The panda: ***ʔimta*** *ʔl-bint* *bi-teʔra* *ʔl-qesa?* [WH-S-V]

when the-girl PROG-read.3SGF the-story

'When is the girl reading the story?'

ب. القطة: البنت بتقرا القصة **إمتى؟**

b. The cat: *ʔl-bint* *bi-teʔra* *ʔl-qesa* ***ʔimta?*** [S-V-WH]

the-girl PROG-read.3SGF the-story when

'When is the girl reading the story?'

الطلب: مين قال السؤال ده أحسن، القطة ولا الباندا، ولا الإثنين قالوه صح؟

Prompt: *mīn* *ʔāl* *ʔ-ssoʔāl* *da* *aħsan,*

who said.3SGM the-question this.3SGM better

‘Who said the question better,

ʔl-ota wala ʔl-banda, wala ʔl-ʔtnīn ʔalūh ṣaħ?

the-cat or the-panda or the-two said.3PL correct

the cat or the panda, or both are correct?’

In example (77) the panda was incorrect because it produced fronted *ʔeh* ‘what’ (77a) while the cat was correct because it left the complement wh-phrase *ʔeh* ‘what’ in situ (77b). In examples (78) and (79), both animals were correct because EA wh-adjuncts allow both wh-fronting and wh-in-situ.

I turn now to present examples of Set 2, which measures the participants’ judgement of the possibility of S-V inversion. Figures 17, 18, and 19 and their corresponding stimuli (80, 81, and 82 respectively) show examples of the pictures and questions used in this set. All the questions produced by the panda and the cat in this set are correct because S-V inversion is optional in EA wh-questions, regardless of their type.

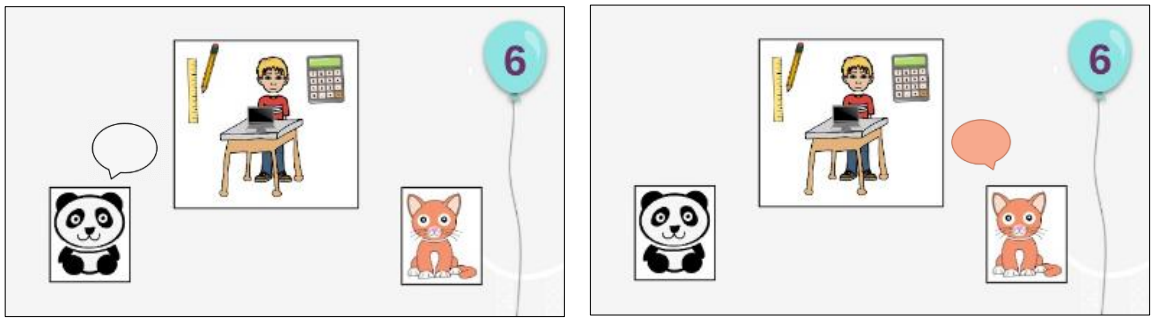


Figure 17. *Grammaticality Choice Task. Example of pictures used to test the judgment of S-V inversion with the complement wh-phrase ʔeh ‘what’*

(80) **Experimental item from Set 2 with *ʔeh* 'what'**

(80) ا. الباندا: الولد بيذاكر **إيه؟**

a. The panda: *ʔl-walad* *bi-ẓāker* ***ʔeh?*** [S-V-WH]

the-boy PROG-study.3SGM what

'What is the boy studying?'

ب. القطة: بيذاكر الولد **إيه؟**

b. The cat: *bi-ẓaāker* *ʔl-walad* ***ʔeh?*** [V-S-WH]

PROG-study.3SGM the-boy what

'What is the boy studying?'

الطلب: مين قال السؤال ده أحسن، القطة ولا الباندا، ولا الإثنين قالوه صح؟

Prompt: *mīn* *ʔāl* *ʔ-ssoʔāl* *da* *aħsan,*

who said.3SGM the-question this.3SGM better

'Who said the question better,

ʔl-ota *wala* *ʔl-banda,* *wala* *ʔl-ʔtnīn* *ʔalūh* *ṣaħ?*

the-cat or the-panda or the-two said.3PL correct

the cat or the panda, or both are correct?'

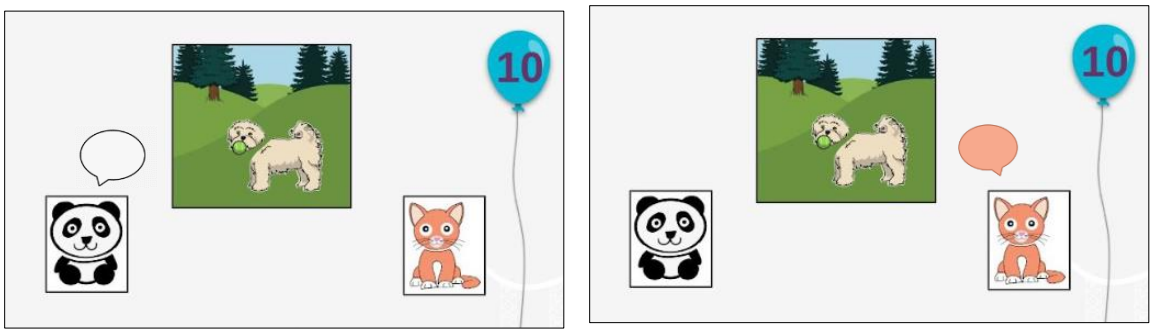


Figure 18. *Grammaticality Choice Task. Example of pictures used to test the judgment of S-V inversion with the adjunct wh-phrase feen 'where'*

(81) **Experimental item from Set 2 with *feen* 'where'**

(81) ا. الباندا: بيلعب الكلب **فين؟**

a. The panda: *bi-ylʕab ʔl-kalb* ***feen****?* [V-S-WH]

PROG-play.3SGM the-dog where

'Where is the dog playing?'

ب. القطة: الكلب بيلعب **فين؟**

b. The cat: *ʔl-kalb bi-ylʕab* ***feen****?* [S-V-WH]

the-dog PROG-play.3SGM where

'Where is the dog playing?'

الطلب: مين قال السؤال ده أحسن، القطة ولا الباندا، ولا الإثنين قالوه صح؟

Prompt: *mīn ʔāl ʔ-ssoʔāl da aħsan,*

who said.3SGM the-question this.3SGM better

'Who said the question better,

ʔl-ota wala ʔl-banda, wala ʔl-ʔtnīn ʔalūh ṣaħ?

the-cat or the-panda or the-two said.3PL correct

the cat or the panda, or both are correct?'

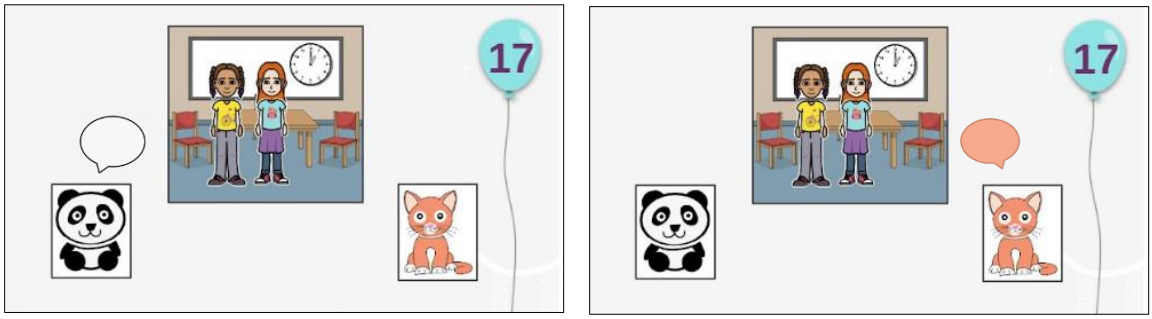


Figure 19. *Grammaticality Choice Task. Example of pictures used to test the judgment of S-V inversion with the adjunct wh-phrase ʔimta 'when'*

(82) **Experimental item from Set 2 with *ʔimta* 'when'**

(82) ا. الباندا: هتزرو البنت صاحبتها **إمتى؟**

a. The panda: *ha-tẓūr* *ʔl-bint* *ṣaħbet-ha* ***ʔimta?*** [V-S-WH]

FUT-visit.3SGF the-girl friend-her when

'When will the girl visit her friend?'

ب. القطة: البنت هتزور صاحبتها **إمتى؟**

b. The cat: *ʔl-bint* *ha-tẓūr* *ṣaħbet-ha* ***ʔimta?*** [S-V-WH]

the-girl FUT-visit.3SGF friend-her when

'When will the girl visit her friend?'

الطلب: مين قال السؤال ده أحسن، القطة ولا الباندا، ولا الإثنين قالوه صح؟

Prompt: *mīn* *ʔāl* *ʔ-ssoʔāl* *da* *aħsan,*

who said.3SGM the-question this.3SGM better

'Who said the question better,

ʔl-ota wala ʔl-banda, wala ʔl-ʔtnīn ʔalūh ṣaħ?

the-cat or the-panda or the-two said.3PL correct

the cat or the panda, or both are correct?'

In sum, the Grammaticality Choice Task consisted of listening to questions formed by two characters, a panda and a cat, and judging which character asked the question in the most correct form or deciding that both of them were correct. The third task was a Picture-Vocabulary test where the participants were shown some drawings in a PowerPoint presentation and were requested to describe them in EA.

3.2.3. Picture-Vocabulary Test

The aim of this task was to ensure that all the children had some degree of the production abilities in EA in order to ensure that they meet the inclusion criteria of this study. All the children in both child groups passed this test and, consequently, their data were included in this study. This task took about five minutes and it consisted of displaying four pictures of a panda, one at a time, through the shared screen on Zoom (Appendix 4). The task of the participants was to describe the panda and to say what it was doing in each picture. There was a warm-up session where one picture of the panda was presented to the participants to get them ready for the actual task. During the warm-up session and task, the participants were requested to describe the picture in as much detail as they could. Figure 20 illustrates one of the pictures for this task.

Figure 20. *Picture-Vocabulary Test. Example of pictures used to measure the production abilities of the participants in their native language*

3.2.4. Language Background Questionnaire

Once the participants completed the three online tasks described above (the Elicited Production Picture task, the Grammaticality Choice Task and the Picture-Vocabulary test), they received a link to a Western-hosted Qualtrics survey to complete a ten-minute language background questionnaire. There were two versions of the questionnaire, one for adult participants and one for child participants, and each version was available in two languages, English and Arabic. The participants who lived in an English-speaking country completed the English version (Appendices 5 and 6 for the English child version and adult version respectively). As for the participants and the parents/guardians of children who participate from Egypt, they filled out the Arabic version of the questionnaire (Appendices 7 and 8 for the Arabic child version and adult version respectively). Regarding adult participants, they completed the questionnaire for themselves, while the parents/guardians of children filled the questionnaire on their behalf because all the children who participated were under the age of 13.

The purpose of this questionnaire was to shed light on the linguistic background of the participants, which would allow me to explain and interpret the results in relation to extralinguistic factors if necessary. The questionnaire had four sections of questions. The first section requested personal information such as age, birthplace, country of origin of the participants and their parents, and age of arrival in an English-speaking country (if applicable). The second section of questions was about language acquisition such as the first language(s) of the participants and their parents, the age at which they started acquiring this language (or these languages), spoken language(s) at home and the language(s) of communication with parents, siblings and friends during the participants' childhood. The last question in the second section of questions asked whether the participant spoke English at home during childhood. If the adult participants or the children's parents/guardians answered 'no' to this question, they were directed to the third section of questions, and if they answered affirmatively, a new subsection of questions was displayed to them to collect further information about the input quantity of English that they were exposed to. This subsection requested information about the frequency of speaking English with parents, siblings, and friends during childhood and about the current comfort level in speaking English. The third section of questions focused on education and language use. The questions in the third section were about the language(s) of instruction in the different levels of education, and the language(s) used in eight different contexts (at work, to interact with family, to interact with friends, to communicate in social situations, to communicate in social media, to read a text which is available in all the participant's languages, to speak with a person who is equally fluent in all the participant's languages, to watch a video which is available in all participant's languages). The fourth section of questions asked the

participants to evaluate their linguistic ability (writing, reading, speaking, listening abilities as well as their overall competence) in five languages, MSA, Spanish, English, French, and EA. For each ability in each language, the participants had five levels of proficiency to choose from (I do not speak this language, beginner, intermediate, advanced, and native/near native language).

3.3. Data Collection and Analysis

This study was carried out after receiving the approval of the Western University Non-Medical Research Ethics Board (NMREB) (Appendix 1). Informed consent was obtained from all adult participants and the parents/guardians of the children prior to their participation in this study. After receiving the consent form, the researcher signed it and sent a PDF of the signed consent to the participants via the email that they used to contact the researcher. Direct identifiers, such as full name and contact information, for each participant were kept separate from the study data and linked to it by a unique participant ID number.

All the tasks of this study took place online. The Elicited Production Task, the Grammaticality Choice Task, and the Picture-Vocabulary test were performed in one individual session on Zoom. The responses of all the tasks were audio-recorded using Zoom and then transcribed and coded after the session by the researcher. Upon completing the Zoom session, the adult participants and the parents/guardians of the child participants completed a Language Background Questionnaire via Qualtrics. The responses of the questionnaire were saved in Qualtrics under the unique participant ID number.

Regarding the Elicited Production Picture Task, it consisted of 18 target items distributed equally between the three target wh-phrases, *ʔeh* 'what', *feen* 'where', and *ʔimta* 'when'. The aim of this task was to examine the position of wh-phrase, and subject and verb word order in EA wh-complements and wh-adjuncts. In order to achieve this goal, the utterances of each participant were transcribed and coded according to four variables, (i) participant's group (A1_Control, A2_Experimental, CH1_Control, CH2_Experimental), (ii) wh-phrase type (wh-complements and wh-adjuncts), (iii) the position of the wh-phrase (wh-fronting and wh-in-situ), and (iv) subject and verb word order (SV word order, VS word order, null copular verb, and null subject). Table 7 illustrates the 16 different categories for each group.

Wh-complements				**Wh-adjuncts**			
Wh-in-situ		**Wh-fronting**		**Wh-in-situ**		**Wh-fronting**	
SV	VS	Null verb	Null subject	SV	VS	Null verb	Null subject
SV	VS	Null verb	Null subject	SV	VS	Null verb	Null subject

Table 7. *Elicited Production Picture Task. Categories of coding the data per group*

It is important to point out that wh-fronting and wh-in-situ were mutually exclusive in this task. That is to say that the participants produced either wh-fronting or wh-in-situ for each target item. Therefore, the sum of wh-fronting and wh-in-situ in each wh-phrase type, wh-

complement and wh-adjuncts, must add up to 100% for each group. Similarly, the sum of all the eight word orders for each wh-phrase type must add up to 100% for each group.

Although the data of the two adjunct wh-phrases, *feen* 'where', and *ʔimta* 'when' were merged together in the final analysis under the category of wh-adjuncts, the utterances of these two wh-phrases were initially coded separately to examine whether there was a difference between these wh-phrases regarding the position of wh-phrases and subject and verb word order. Moreover, a category of 'other responses' was added to include incomplete utterances and questions beyond the scope of the study such as cleft structures, embedded questions, and questions with more than one wh-phrase. Only five tokens from the production of the wh-phrase *ʔeh* 'what' were coded as 'other responses' because they were cleft structures. Four of these five excluded tokens were from the production of the A1_Control group, and one from the A2_Experminental group. These tokens were discarded from the total number of tokens.

Concerning the Grammaticality Choice Task, it consisted of 18 target items distributed equally between the three target wh-phrases, *ʔeh* 'what', *feen* 'where', and *ʔimta* 'when'. Recall that the six experimental items of each wh-phrase were divided into two sets, Set 1 and Set 2. Set 1 aimed to examine the participants' judgment of the position of the wh-phrase and Set 2 aimed to test their judgment of the possibility of S-V inversion. Accordingly, the utterances of each participant in each set were transcribed and coded according to three variables, (i) participant's group (A1_Control, A2_Experimental, CH1_Control, CH2_Experimental), (ii) wh-phrase type (wh-complements and wh-

adjuncts), and (iii) the position of the wh-phrase (wh-fronting and wh-in-situ) for Set 1 or subject and verb word order (SV word order, VS word order) for Set 2. Table 8 shows the four categories in each set per group.

Set 1				**Set 2**			
Wh-complements		**Wh-adjuncts**		**Wh-complements**		**Wh-adjuncts**	
Wh-in-situ	Wh-fronting	Wh-in-situ	Wh-fronting	SV	VS	SV	VS

Table 8. *Grammaticality Choice Task. Categories of coding the data per group*

Different from the Elicited Production Picture Task, the two positions of wh-phrase in Set 1 (and the two subject and verb word orders in Set 2) for each wh-phrase type were not mutually exclusive in this task. This is to say that the mean value of each category in Table 8 can reach 100% because the participants had the option to accept one or both questions uttered by the two characters in this task.

The data of the two main tasks, the Elicited Production Picture Task and the Grammaticality Choice Task, were analyzed using one-way ANOVA in order to assess if there were differences between the four groups (A1_Control, A2_Experimental, CH1_Control, and CH2_Experimental) in terms of the position of the wh-phrases as well as subject and verb word order. If one-way ANOVA reported a *P* value equal or less than

0.05, then the difference was considered statistically significant, and a post hoc Scheffé F-test was conducted to identify which groups differ from each other.

This chapter has described the participants and the tasks. The following chapter will present the findings of this investigation.

CHAPTER 4

4. RESULTS

This chapter describes the results of the two main tasks of this study: the Elicited Production Picture Task and the Grammaticality Choice Task. The tasks were designed to test the production and judgment of i) the position of wh-phrases, and ii) subject and verb word order in EA main-clause wh-questions in EA monolinguals and bilinguals. The results presented in this chapter will be compared in the next chapter with previous research on knowledge of obligatory S-V inversion in Spanish wh-questions among first-generation immigrants and Spanish-English bilingual children.

Recall that there were four groups in this study, two control groups, and two experimental groups. The control groups consisted of EA monolingual adults (A1_Control, n=16) and EA monolingual children (CH1_Control, n=18). The experimental groups consisted of first-generation adult Egyptian immigrants (A2_Experimental, n=19) and EA-English bilingual children (CH2_Experimental, n=16). The participants in the control groups lived in Egypt at the time of study and had never lived abroad. In comparison, the participants of the experimental groups lived in an English-speaking region, Ontario, Canada, or the U.K., and had immigrated there at least three years prior to the time of the study.

This chapter is organized as follows. Section 4.1 describes the results of the first task, the Elicited Production Picture Task, in terms of the position of wh-phrases (4.1.1), and subject and verb word order (4.1.2). Section 4.2 presents the results of the second task, the

Grammaticality Choice Task, regarding the position of wh-phrases (4.2.1), and subject and verb word order (4.2.2). Section 4.3 concludes the chapter with a comparison of the results of the two tasks.

4.1. Results of the Elicited Production Picture Task

The first task that the participants performed was the Elicited Production Picture Task. The goal of this task was to elicit main-clause wh-questions with three wh-phrases, the complement wh-phrase *ʔeh* 'what', and two adjunct wh-phrases, *feen* 'where' and *ʔimta* 'when'. This task included a total of 24 items, 18 target items, and six distracters (Appendix 2). The target items were equally distributed between the three target wh-phrases, six items each. To prompt each item, I narrated a scenario in EA for the participants during the Zoom session while they were following a series of images that represented the narrated scenario on the shared screen. By the end of each scenario, a picture of a kangaroo appeared on the screen, and the participants were requested to ask the kangaroo a question about the scenario (kindly refer to section 3.2.1 for more details about this task).

Five tokens were excluded from the total number of the complement wh-phrase *ʔeh* 'what' because they were formed by a cleft structure, namely Class II Resumptive Strategy (Aoun et al., 2009), which is a structure beyond the scope of this study. As discussed earlier in section 2.2.3, this structure consists of using the complementizer *illi* and a resumptive pronoun in the wh-phrase extraction site. The following example from a participant's production illustrates this structure.

(83) **إيه** اللي بتآكله القطة؟

(83) ***ʔeh*** *illi* *bi-tākl-h* *ʔl-ʔota?*

what that PROG-eat-it the-cat

'What is the cat eating?' (A1#210)

Four of these five excluded tokens were from the production of the A1_Control group, and one from the A2_Experimental group. The means of the complement wh-questions for both groups were calculated after excluding these tokens from the total responses. The next section presents the results of the position of wh-phrases in the first task.

4.1.1. Position of Wh-Phrases

As explained earlier, previous theoretical descriptions have established that the position of wh-phrases in EA is determined by the type of wh-phrase, suggesting that it is obligatory to leave the complement wh-phrase *ʔeh* 'what' in situ, while it is optional for adjunct wh-phrases to be fronted or to be left in situ (Wahba, 1984; Lassadi, 2003). Following this analysis, wh-in-situ was expected with *ʔeh* 'what', and wh-fronting and wh-in-situ were expected with the two adjuncts wh-phrases, *feen* 'where' and *ʔimta* 'when'.

There were six possible response types in terms of the position of wh-phrase that participants could produce in this task, *ʔeh* in situ (84a, 84b), *fronted *ʔeh* (85a, 85b), *feen* in situ (86a, 86b), fronted *feen* (87a, 87b), *ʔimta* in situ (88a, 88b), and fronted *ʔimta* (89a, 89b). All these response types are grammatically correct except the fronted *ʔeh* 'what'. In what follows, I present examples from the participants' production to illustrate the six

possible response types. It is important to point out that examples (85a) and (85b) are produced by EA-English bilingual children and they were two of the few ungrammatical questions produced in this task. These two examples also involve code-switching from English.

- ***ʔeh* 'what' in situ**

(84) ا. البنت دي هتلون **إيه؟**

(84) a. *ʔl-bint di ha-tlawin **ʔeh**?*

the-girl this.3SGF FUT-draw.3SGF what

'What will this girl draw?' (A1#210, A2#403, CH1#111)

ب. البنت دي بينتنج **إيه؟**

b. *ʔl-bint painting **ʔeh**?*

the-girl painting what

'What is the girl painting?' (CH2#321)

- ***Fronted *ʔeh* 'what'**

(85) ا. ***إيه** هيي ستادينج؟

(85) a.***ʔeh** he studying?*

what he studying

'What is he studying?' (CH2#320)

ب. ***إيه** الولد درويِنج؟

b.***ʔeh** ʔl-walad drawing?*

what the-boy drawing

‘What is the boy drawing?’ (CH2#321)

- ***Feen* ‘where’ in situ**

(86) ا. الكلب ده بيلعب **فين؟**

(86) a. *ʔl-kalb dah bi-ylʕab **feen**?*

the-dog this PROG-play.3SGM where

‘Where is the dog playing?’ (A2#408, CH1#102, CH2#312)

ب. القطة الصغيرة **فين؟**

b. *ʔl-bata ʔ-ssoɣaira **feen**?*

the-duck the-little where

‘Where is the little duck?’ (A1#212, A2#402, CH2#311)

- **Fronted *feen* ‘where’**

(87) ا. **فين** نضارة الولد؟

(87) a. ***feen*** *naḍḍārit ʔl-walad?*

where glasses the-boy

‘Where are the boy’s glasses?’ (A1#202, A2#407)

ب. **فين** ولدز نضارة؟

b. ***feen*** *walad’s naḍḍārah?*

where boy’s glasses

‘Where are the boy’s glasses?’ (CH2#320)

- ***ʔimta* ‘when’ in situ**

(88) ا. بابا هيجيبلنا البيتزا **إمتى؟**

(88) a. *baba ha-yigib-li-na ʔl-bitẓa **ʔimta**?*

dad FUT-get.3SGM-for-us pizza when

'When will Daddy get the pizza?' (CH1#105)

ب. فرح هتزرونا **إمتى؟**

b. *farah ha-tẓor-na **ʔimta**?*

Farah FUT-visit.3SGF-us when

'When will Farah visit us?' (A1#208, CH2#316)

- **Fronted *ʔimta* 'when'**

(89) ا. **إمتى** ماما هتودينا المكتبة؟

(89) a. ***ʔimta*** *mama ha-twadi-na ʔl-maktaba?*

when mom FUT-take.3SGF-us the-library

'When will mom take us to the library? (A1#215, A2#411, CH2#302)

ب. **إمتى** ماما جوينج تو ذا ليبراري؟

b. ***ʔimta*** *mama going to the library?*

when mom going to the library

'When will mom go to the library? (CH2#320)

Recall that wh-fronting and wh-in-situ were mutually exclusive in this task. Therefore, the sum of wh-fronting and wh-in-situ in each wh-phrase type, wh-complement and wh-adjuncts, must add up to 100% for each group. Figure 21 illustrates the mean values of the position of wh-phrases in each wh-phrase type by group.

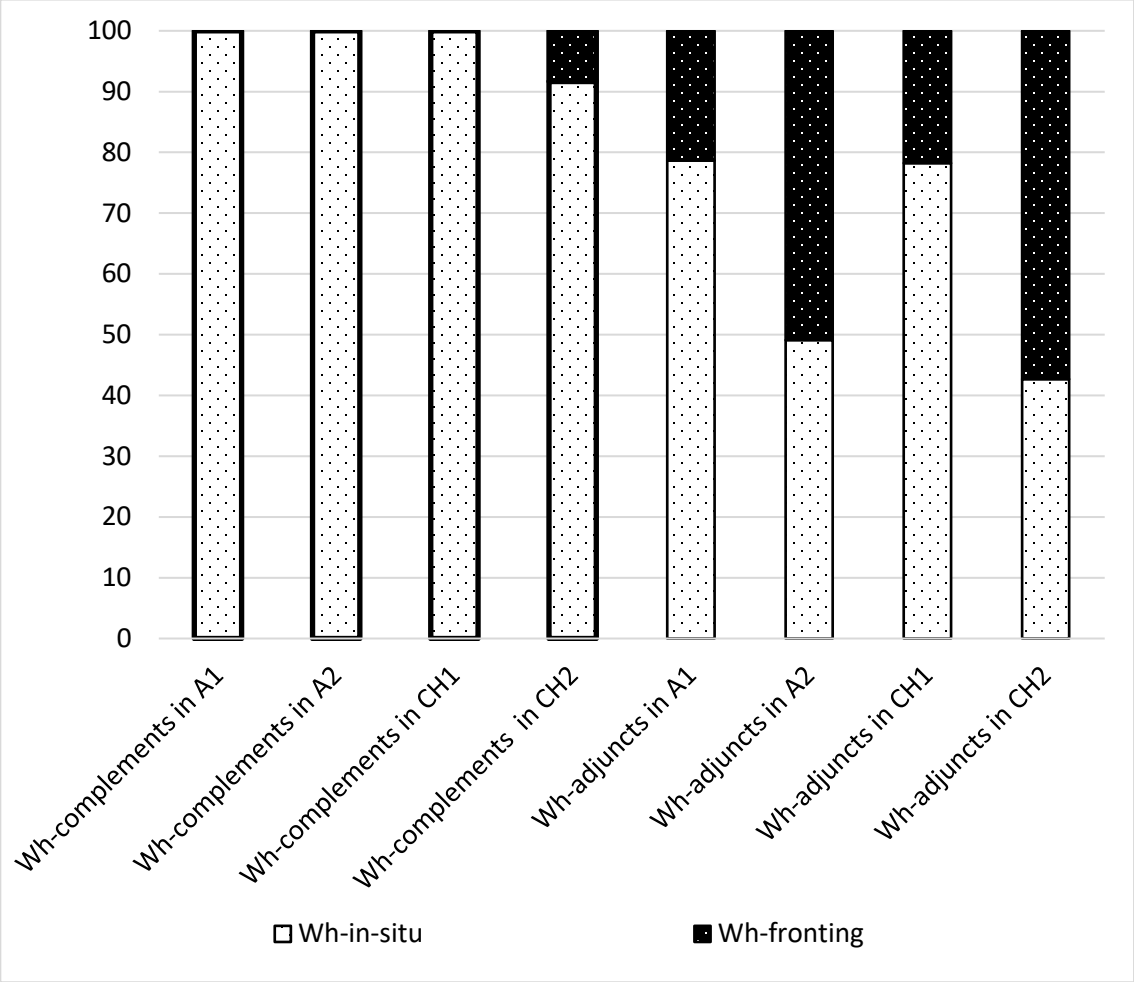


Figure 21. *Elicited Production Picture Task. Mean values of wh-in-situ and wh-fronting with wh-complements and wh-adjuncts by group*

As Figure 21 shows, all the groups produced the complement wh-phrase *ʔeh* 'what' in situ, as in (84) above, performing at or close to ceiling levels (+90%). The group mean values for *ʔeh* 'what' in situ was 100% for three groups, A1_Control, CH1_Control, and A2_Experimental, while there was a slight decline of accuracy among the CH2_Experimental group (Mean = 91.67, SD = 25.09). A one-factor ANOVA shows no

statistically significant difference between the groups in the position of the complement wh-phrase *ʔeh* ‘what’ (F(3, 65) = 1.958, p = 0.129).

Another observation from Figure 21 is that wh-fronting with the complement wh-phrase *ʔeh* ‘what’, as in (85), were nonexistent in the production of all the participants except three bilingual children from the CH2_Experimental group. The 8.33% of the fronted *ʔeh* ‘what’ among the CH2_Experimental group accounts for eight tokens out of 96, six of which were produced by one of these three bilingual children. Examples (90a-90d) are illustrations of the ungrammatical fronted *ʔeh* ‘what’ in the production of these three children.

(90) ا. ***إيه*** القطة إيتينج؟

(90) a. ****ʔeh*** *ʔl-ʔota eating?*

what the-cat eating

‘What is the cat eating?’ (CH2#320)

ب. ***إيه*** البنت ريدينج؟

b. ****ʔeh*** *ʔl-bint reading?*

what the-girl reading

‘What is the girl reading?’ (CH2#320)

ج. ***إيه*** الولد دروينج؟

c. ****ʔeh*** *ʔl-walad drawing?*

what the-boy drawing

‘What is the boy drawing?’ (CH2#321)

د. ***إيه*** الولد بيرسم؟

*d. *ʔeh ʔl-walad bi-yirsim?*

what the-boy PROG-draw.3SGM

'What is the boy drawing?' (CH2#322)

What is striking in (90a), (90b), and (90c) is the influence of English in the production of two of these bilingual children, CH2#320 and CH2#321. Such influence in these bilinguals' production was not only clear in producing non-target wh-fronting with the complement wh-phrase but also in using code-switching and grammatical structures from English to construct their questions in EA. To clarify, instead of expressing the progressive tense in EA by the prefix *bi-*, as participant CH2#322 did in (90d), *bi-yirsim* 'is drawing', participants CH2 #320 and CH2#321 used the gerund of the counterpart English verbs (e.g., eating, drawing). Aside from these two bilingual children, no other participant in the CH2_Experimental group used English gerund in this way to produce EA wh-questions. This finding may tentatively indicate crosslinguistic influence from English into these two bilinguals' native language. Using a Pearson Correlation Coefficient test, no strong correlation was found among the CH2_Experimental group, either between the accuracy rate and the AOA (-0.247), or between the accuracy rate and the age of the children (-0.187).

Concerning the production of wh-adjuncts, all the groups used both wh-in-situ, as in (86) and (88) above, and wh-fronting, as in (87) and (89), with both adjunct wh-phrases, *feen* 'where' and *ʔimta* 'when'. However, the control groups differed from the experimental groups regarding the production rate of wh-fronting and wh-in-situ. As illustrated in Figure

21, wh-in-situ was the preferred position of adjunct wh-phrases among A1_Control (M = 78.65, SD = 20.41) and CH1_Control (M = 78.24, SD = 16.7). In comparison, the adults and children living in Ontario, Canada or in the U.K., A2_Experimental and CH2_Experimental groups, showed true optionality. The A2_Experimental group used both options approximately 50% of the time (mean value 49.12% for wh-in-situ, and 50.88% for wh-fronting, SD = 24.04). As for the CH2_Experimental group, the mean of wh-fronting was slightly higher than 50% (M = 57.29, SD = 26.5). An analysis of one-factor ANOVA shows a statistically significant difference between the groups in relation to the position of wh-phrases in wh-adjuncts ($F(3, 65) = 11.467$, $p = 0.0001$). A post hoc Scheffé F-test reveals a significant difference between CH1-Control and both experimental groups, CH2-Experimental and A2-Experimental. Similarly, there was a significant difference between A1_Control and the two experimental groups. However, there was no significant difference between the two control groups or between the two experimental groups.

These findings provide empirical evidence supporting previous research (Wahba, 1984; Lassadi, 2003) which suggested that wh-fronting is ungrammatical in EA wh-complements and that both wh-fronting and wh-in-situ are grammatically well formed in EA wh-adjuncts. The results showed that the experimental groups produced a higher rate of wh-fronting with wh-adjuncts compared to the control groups. A possible explanation of the trend seen in the experimental groups' production may be an effect of crosslinguistic influence from English on EA (as wh-fronting is the only grammatical position of wh-phrase in typical English wh-questions). However, this trend was not seen in the

experimental groups' production of wh-complements, as EA wh-complements do not allow the position of English wh-phrases. The inconsistency between the experimental groups' production of wh-adjuncts and wh-complements suggests that cross-linguistic influence of English on EA occurs only if there is no conflict with the grammaticality of the EA wh-questions.

4.1.2. Subject and Verb Word Order

Regarding the subject and verb word order in EA main-clause wh-questions, I expected to see in the participants' production both VS and SV word order with all the three target wh-phrases, *ʔeh* 'what', *feen* 'where' and *ʔimta* 'when'. Nonetheless, based on previous theoretical descriptions (Lassadi 2003) and my intuition as a native speaker of EA, I anticipated that S-V inversion, that is VS word order, would be rare. I also predicted that there would be cases where the participants would produce questions without the copular verb or the subject, that is with a null verb or a null subject respectively. This is because EA allows omitting either the copular verb or the subject.

There were eight possible response types that participants could produce with each target wh-phrase, *ʔeh* 'what', *feen* 'where' and *ʔimta* 'when', wh-in-situ with SV word order (91); wh-in-situ with VS word order (92); wh-in-situ with null copular verb (93); wh-in-situ with a null subject (94); wh-fronting with SV word order (95); wh-fronting with VS word order (96); wh-fronting with null copular verb (97); and wh-fronting with a null subject (98). Recall that the grammaticality of each word order is determined by the wh-phrase type. Consequently, all the abovementioned word orders are grammatical with the adjunct wh-

phrase *feen* ‘where’ and *ʔimta* ‘when’. In contrast, only the four word orders that occur with wh-in-situ are grammatical with the complement wh-phrase *ʔeh* ‘what’. The following examples from the participants’ production present the eight possible response types. In these examples, the wh-phrases are bolded, the subjects are underlined with a single line, and the verbs are double-underlined.

- **Wh-in-situ with SV word order**

(91) ا. هو بيرسم **إيه؟**

(91) a. *huwwa bi-yirsim* ***ʔeh****?*

he PROG-draw.3SGM what

‘What is he drawing?’ (A1#203, CH2#303, CH1#102)

ب. الولد بيعوم **فين؟**

b. *ʔl-walad bi- yʕūm* ***feen****?*

the-boy PROG-swim.3SGM where?

‘Where is the boy swimming?’ (A1#211, A2#405, CH1#112, CH2#313)

ج. هي ماما هتوديِنا المكتبة **إمتى؟**

c. *hiyya mama ha-twadī-na ʔl-maktaba* ***ʔimta****?*

she mom FUT-take.3SGF-us the-library when

‘When will mom take us to the library?’ (A1#216, CH1#109, CH2#309, A2#404)

- **Wh-in-situ with VS word order**

(92) هو بيلعب الكلب **فين؟**

(92) *huwwa bi-yelʕab ʔl-kalb* ***feen****?*

he PROG-play.3SGM the-dog where

'Where is the dog playing?' (A1#203)

- **Wh-in-situ with null copular verb, [(V)-S-(V)] word order**

(93) البطة الصغيرة **فين؟**

(93) *ʔl-bata ʔ-ssoɣaira **feen**?*

the-duck the-little where

'Where is the little duck?' (A1#212, A2#403, CH1#107, CH2#321)

- **Wh-in-situ with null subject, [(S)-V-(S)] word order**

(94) ا. هتلون **إيه؟**

(94) a. *ha-tlawin **ʔeh**?*

FUT-paint.3SGF what

'What will she paint?' (CH1#116)

ب. هنروح المكتبة **إمتى** مع ماما؟

b. *ha-nrūħ ʔl-maktaba **ʔimta** maʕ mama?*

FUT-go.1PL the-library when with mom

'When will we go to the library with mom?' (A2#418)

- **Wh-fronting with SV word order**

(95) ا. ***إيه** البنت تلون؟

(95) a. ***ʔeh** ʔl-bint tlawin?*

what the-girl paint

‘What is the girl painting?’ (CH2#320)

ب. **فين** الولد بيعوم؟

b. ***feen*** *ʔl-walad* *bi- yʕūm?*

where the-boy PROG-swim.3SGM

‘Where is the boy swimming?’ (A2#417, CH2#307)

ج. هي **إمتى** ماما هتروح الدكتور؟

c. *hiyya* ***ʔimta*** *mama* *ha-trūħ* *ʔ-doctor?*

she when mom FUT-go.3SGF the-doctor

‘When will mom go to the doctor?’ (CH1#110)

- **Wh-fronting with VS word order**

(96) ا. هو **فين** بيعوم الولد؟

(96) *huwwa* ***feen*** *bi-yʕūm* *ʔl-walad?*

he where PROG-swim.3SGM the-boy

‘Where is the boy swimming?’ (CH2#316)

- **Wh-fronting with null copular verb, [(V)-S-(V)] word order**

(97) ا. **فين** اللعبة؟

(97) a. ***feen*** *ʔ-lʕeba?*

where the-toy

‘Where is the toy?’ (A1#209, A2#419, CH1#103, CH2#305)

ب. **إمتى** معاد دكتور الأسنان؟

b. ***ʔimta*** *maʕad* *doctor* *ʔl-asnan?*

when appointment doctor the-teeth

'When is the dentist appointment?' (A1#203, A2#401)

- **Wh-fronting with null subject, [(S)-V-(S)] word order**

(98) **إمتى** هنروح المكتبة؟

(98) ***ʔimta*** *ha-nrūħ* *ʔl-maktaba?*

when FUT-go.1PL the-library

'When will we go to the library?' (CH1#310)

To examine the word order of subject and verb, I designed the stimuli to elicit the greatest possible number of subjects possible by choosing the subjects to be in third person (e.g., *ʔlwalad* 'the boy', *ʔlbint* 'the girl'). Therefore, the number of tokens with null subjects reported here does not reflect the actual use of null subjects in EA wh-questions. I acknowledge that these numbers could have been much higher if the subjects of the stimuli had been in the first person (*ʔana* 'I', *ʔeħna* 'we') or second person (e.g. *ʔenta* 'you.SGM', *ʔenti* 'you.SGF', *ʔentu* 'you.PL').

If a participant's response contained a noun (99a) or a pronoun (99b), I considered their response to have an explicit subject.

(99) ا. الولد ده بيذاكر **إيه؟**

(99) a. *ʔl-walad* *dah* *bi-ẓakir* ***ʔeh****?*

the-boy this PROG-study.3SGM **what**

'What is this boy studying?' (A1#208, A2#403, CH1#111, CH2#301)

ب. هو بيذاكر إيه؟

b. *huwwa bi-ẓakir* ***ʔeh****?*

he PROG-study.3SGM what

'What is he studying?' (A1#203, A2#414, CH1#102, CH2#302)

It was interesting to find many tokens in which the participants produced both a pronoun and a noun in the same question. For these tokens, I considered the noun as the subject and the pronoun (*huwwa* 'he' or *hiyya* 'she') as an interrogative operator, as suggested by Soltan (2011). Table 9 summarizes the overall distribution of interrogative operators by group.

	Wh-complements			**Wh-adjuncts**		
Groups	Questions without interrogative operators	Questions with interrogative operators	**Total**	Questions without interrogative operators	Questions with interrogative operators	**Total**
A1 (n=16)						
Number of tokens	43	49	92/92	100	92	192/192
Group mean	47%	53%	100%	52%	48%	100%
A2 (n=19)						
Number of tokens	61	52	113/113	155	73	228/228
Group mean	54%	46%	100%	68%	32%	100%
CH1 (n=18)						
Number of tokens	57	51	108/108	102	114	216/216
Group mean	53%	47%	100%	47%	53%	100%
CH2 (n=16)						
Number of tokens	78	18	96/96	158	34	192/192
Group mean	81%	19%	100%	82%	18%	100%

Table 9. *Elicited Production Picture Task. Overall distribution of interrogative operators by group.*

Most of the time the pronouns agreed with the nouns, as seen in (100), but in rare cases they did not as shown in (101).

(100) هو الولد ده بيذاكر **إيه؟**

(100) *huwwa ʔl-walad dah bi-ẓakir **ʔeh**?*

he the-boy this.3SGM PROG-study.3SGM what

'What is this boy studying?' (A1#202, A2#409, CH1#106, CH2#309)

(101) هو البنت دي بتقرا **إيه؟**

(101) *huwwa ʔl-bint bi-teʔraa **ʔeh**?*

he the-girl PROG-read.3SGF what

'What is the girl reading?' (A1#204)

The possible eight word orders for each wh-phrase were mutually exclusive in this task. That is to say that if the participants produced a question with one of these word orders, this means that they chose not to use any of the other seven word orders with this question. Therefore, the sum of all the eight word orders for each wh-phrase must add up to 100% for each group. Figure 22 shows the mean values of the word order in each wh-phrase type by group.

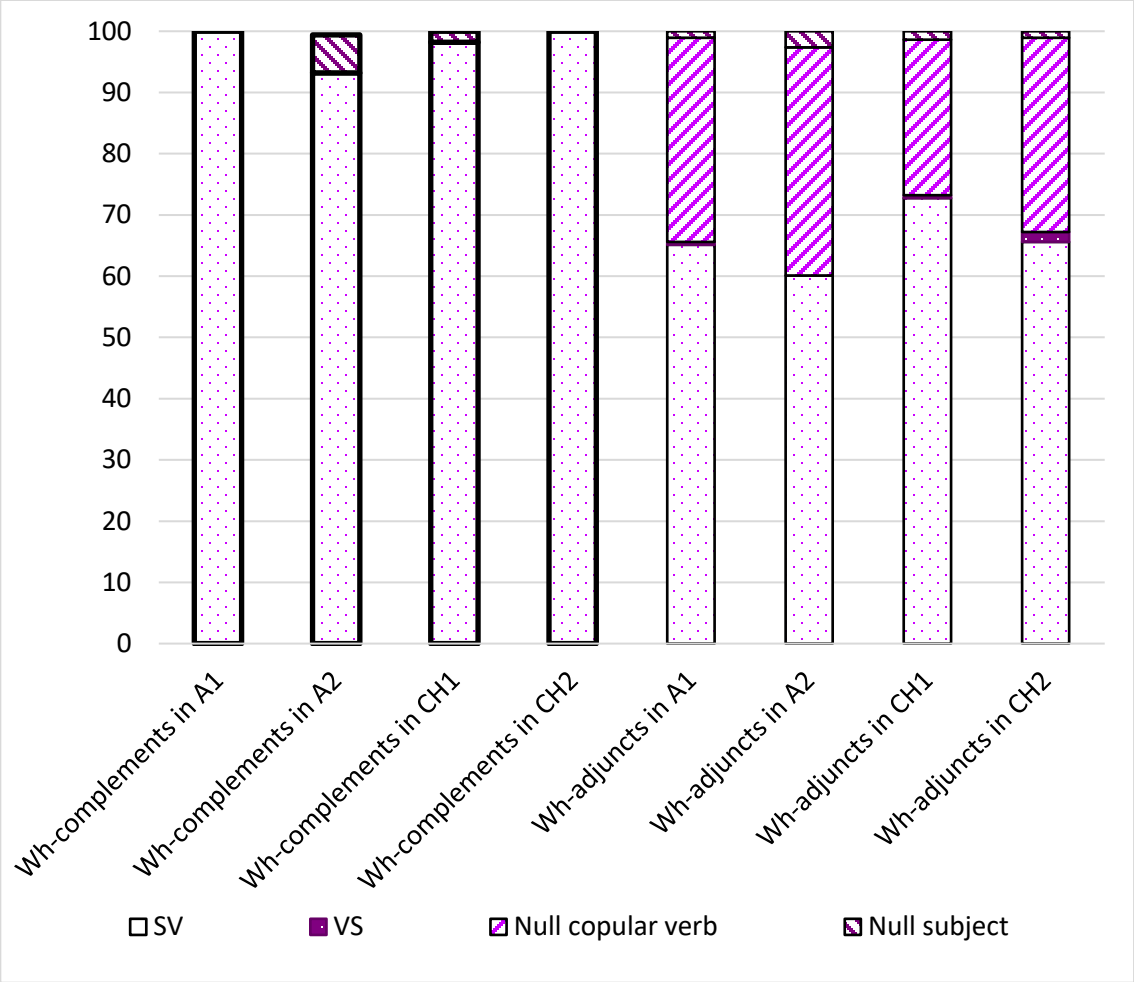


Figure 22. *Elicited Production Picture Task Mean values of subject and verb word order with wh-complements and wh-adjuncts by group*

What stands out in Figure 22 is the overall dominance of SV word order in both wh-complements and wh-adjuncts for all the groups (+90% in wh-complements and +60% in wh-adjuncts[34]). The use of null copular verbs was the second preferred option after the SV word order in wh-adjuncts, in contrast to its absence in wh-complements. As expected, S-

[34] As will be discussed later, the dominance of SV word order is seen in the overall mean of wh-adjuncts, but not when analyzing each adjunct wh-phrase separately.

V inversion, that is VS word order, was rare in the participants' production as it was nonexistent in wh-complements and did not occur more than 2.5% of the time in wh-adjuncts in any of the groups' production. As for the use of null subjects in wh-complements, it only occurred in the production of two groups, A2_Experimental and CH1-Control, but it was rare, with an average of 6.2% for the former and 1.8% for the latter. In comparison, null subjects in wh-adjuncts appeared in the production of all the groups, but they were also few in number, with no group mean over 4%. As mentioned before, the number of tokens with null subjects in this task does not reflect the actual use of null subjects in EA wh-questions because the subjects of all the stimuli in this task were purposefully selected to be in the third person (e.g., *ʔl-walad* 'the boy', *ʔl-bint* 'the girl').

Returning to word order in wh-adjuncts, we saw in Figure 22 that the overall means of SV word order was the dominant word order in wh-adjuncts for all the groups. Nonetheless, analyzing the two adjunct wh-phrases separately revealed that this dominance does not apply with fronted *feen* 'where'. Table 10 illustrates the overall distribution, in absolute numbers (N) and means, of the word order with the adjunct wh-phrases, *feen* 'where' and *ʔimta* 'when' by group.

Groups	Word order with the adjunct wh-phrase *feen* 'where'								
	Wh-in-situ				Wh-fronting				Total
	SV	VS	Null verb	Null subject	SV	VS	Null verb	Null subject	
A1 (n=16)									
Number of tokens	43	1	29	0	0	0	23	0	96/96
Group mean	44.8%	1.0%	30.2%				24.0%		100%
A2 (n=19)									
Number of tokens	41	0	17	1	6	0	49	0	114/114
Group mean	35.9%		14.9%	0.9%	5.3%		43.0%		100%
CH1 (n=18)									
Number of tokens	52	0	21	3	0	0	32	0	108/108
Group mean	48.2%		19.4%	2.8%			29.6%		100%
CH2 (n=16)									
Number of tokens	36	0	12	0	5	2	41	0	96/96
Group mean	37.5%		12.5%		5.2%	2.1%	42.7%		100%
Groups	**Word order with the adjunct wh-phrase *ʔimta* 'when'**								
	Wh-in-situ				**Wh-fronting**				**Total**
	SV	**VS**	**Null verb**	**Null subject**	**SV**	**VS**	**Null verb**	**Null subject**	
A1 (n=16)									
Number of tokens	68	0	8	2	14	0	4	0	96/96
Group mean	70.8%		8.3%	2.1	14.6%		4.2%		100%
A2 (n=19)									
Number of tokens	45	0	7	1	45	0	12	4	114/114
Group mean	39.5%		6.1%	0.9	39.5%		10.5%	3.5%	100%
CH1 (n=18)									
Number of tokens	91	0	2	0	14	1	0	0	108/108
Group mean	84.3%		1.9%		13%	0.9%			100%
CH2 (n=16)									
Number of tokens	30	0	4	0	55	1	4	2	96/96
Group mean	31.25%		4.17%		57.29%	1.04%	4.17%	2.08%	100%

Table 10. *Elicited Production Picture Task. Overall distribution of subject and verb word order with feen 'where' and ʔimta 'when' by group.*

As the table above shows, there is a difference between the control groups and experimental groups regarding the most frequent word order with the adjunct wh-phrase *feen* 'where', which was *feen* in situ with SV order for the control groups, as shown in (102a), and fronted *feen* with null verbs for the experimental groups (102b).

(102) ا. هي البطة الصغيرة راحت **فين؟**

(102) *a. hiyya ʔl-bata ʔ-ssoɣaira rāħit **feen**?*

she the-duck the-little went.3SGF where

'Where did the little duck go?' (A1#205, A1#207, A1#215, A1#216)

ب. **فين** البطة الصغيرة؟

*b. **feen** ʔl-bata ʔ-ssoɣaira?*

where the-duck the-little

'Where is the little duck?' (A2#405, A2#410, CH2#301, CH2#320)

The most striking aspect of this table is that the participants in both control groups never produced fronted *feen* 'where' with SV word order. Instead, when they chose to use *feen* in a fronted position, they used it with null verbs, as seen in (103a) and (104a). In comparison, some of the participants in the experimental groups produced fronted *feen* 'where' with SV word order, as shown in (103b) and (104b).

(103) ا. **فين** الحفلة؟

(103) a. ***feen*** *ʔl-ħafla?*

where the-party

'Where is the party?' (A1#203)

ب. **فين** الحفلة هتكون؟

b. ***feen*** *ʔl-ħafla ha-tkūn?*

where the-party FUT-be.3SGF

‘Where is the party going to be?’ (A2#419)

(104) ا. **فين** نضارة الولد؟

(104) *a.* ***feen*** *naddārit ʔl-walad?*

where glasses the-boy

‘Where are the boy’s glasses?’ (A1#202)

ب. **فين** نضارة الولد ضاعت؟

b. ***feen*** *naddārit ʔl-walad daʕet?*

where glasses.3SGF the-boy lost.3SGF

‘Where did the boy’s glasses go?’ (A2#408)

A one-factor ANOVA shows a statistically significant difference between the experimental groups and the control groups in the production of fronted *feen* ‘where’ with null verbs ($F(3, 65) = 3.555$, $p = 0.019$) and in the production of fronted *feen* ‘where’ with SV word order ($F(3, 65) = 2.726$, $p = 0.0512$).

4.2. Results of the Grammaticality Choice Task

The second task that the participants performed was a Grammaticality Choice Task. This task measured the participants’ judgment of two characteristics of EA wh-questions, (i) the position of wh-phrases, and (ii) subject and verb word order. The target wh-phrases used to represent complements and adjuncts were the same as the first task, the complement wh-phrase *ʔeh* ‘what’; and the two adjunct wh-phrases *feen* ‘where’, and *ʔimta* ‘when’.

The task consisted of showing the participants pictures of two characters, a cat and a panda, and telling the participants that these animals were learning to speak EA but sometimes they might make some mistakes. Then, the participants saw a series of slides on the shared screen on Zoom. Each slide had a picture in the middle and a picture of the panda on the left and the cat on the right. Each character asked a question about each picture. The questions of the two characters differed in one of the following (i) the position of the wh-phrase (wh-fronting or wh-in-situ), or (ii) the subject and verb word order (SV word order, or VS word order). The task of the participants was to decide whether one of the questions sounded more correct and natural than the other or whether both questions sounded correct.

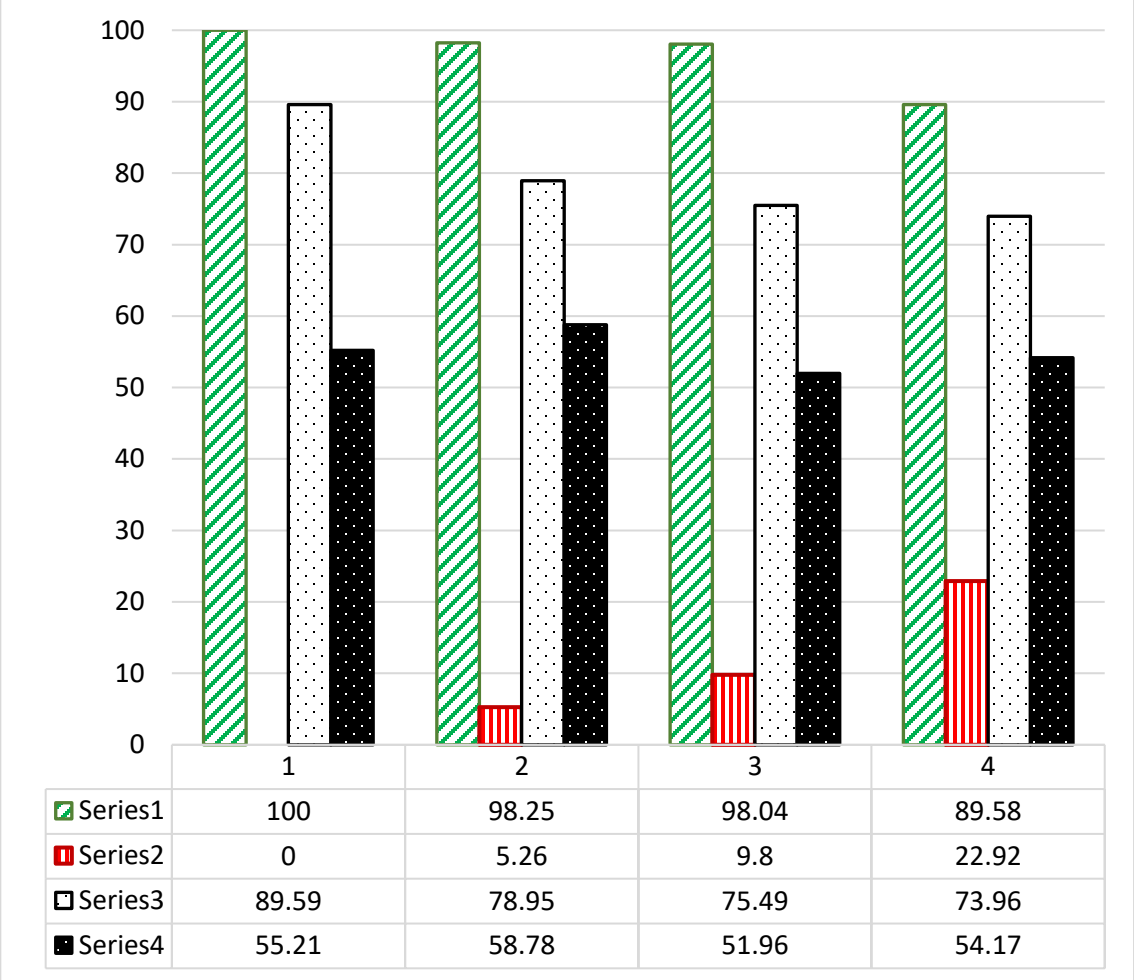
This task included a total of 24 items, 18 experimental items, and six distracters (Appendix 3). The experimental items were equally distributed between the three target wh-phrases, *ʔeh* 'what', *feen* 'where', and *ʔimta* 'when', six items each. The six experimental items of each wh-phrase were divided into two sets, Set 1 and Set 2, with three items in each set. Set 1 aimed to examine the participants' judgment of the position of the wh-phrase, while Set 2 aimed to test their judgment of the possibility of S-V inversion (kindly refer to section 3.2.1 for more details about this task). This section is organized in the following manner. Section 4.2.1 presents the results of Set 1, and section 4.2.2 will be dedicated to the results of Set 2 in this task[35].

[35] All the tokens of one of the monolingual children in the CH1_Control group were excluded because he did not understand this task and he accepted all the questions that both animals formed. Therefore, the mean value of this group was calculated after excluding the 18 tokens of this child from the total responses.

4.2.1. Position of Wh-Phrases

In this section, the results of Set 1, which tested the position of the wh-phrases in this task, will be described. Recall that all the items in this set had a fixed SV word order to examine the variable of the position of the wh-phrases only. As previously explained, the position of the wh-phrase in EA wh-questions is based on the wh-phrase type. According to theoretical analysis on EA to date, the complement wh-phrase *ʔeh* 'what' must appear in situ while the adjunct wh-phrases can appear either in situ or fronted. It was expected that the participants would accept leaving the complement *ʔeh* 'what' in situ and reject fronting it. In contrast, it was anticipated that the participants would accept both wh-fronting and wh-in-situ with the two adjunct wh-phrases, *feen* 'where' and *ʔimta* 'when'.

Different from the Elicited Production Picture Task, the two positions of wh-phrase were not mutually exclusive in this task. This is to say that the mean value of each can reach 100% because the participants had the option to accept one or both positions. Figure 23 below shows the acceptance means by groups for wh-fronting and wh-in-situ in each wh-phrase type. The four positions represented in this figure are, from left to right: (i) wh-in-situ in wh-complements; (ii) wh-fronting in wh-complements; (ii) wh-in-situ in wh-adjuncts; and (iv) wh-fronting in wh-adjuncts.



	1	2	3	4
Series1	100	98.25	98.04	89.58
Series2	0	5.26	9.8	22.92
Series3	89.59	78.95	75.49	73.96
Series4	55.21	58.78	51.96	54.17

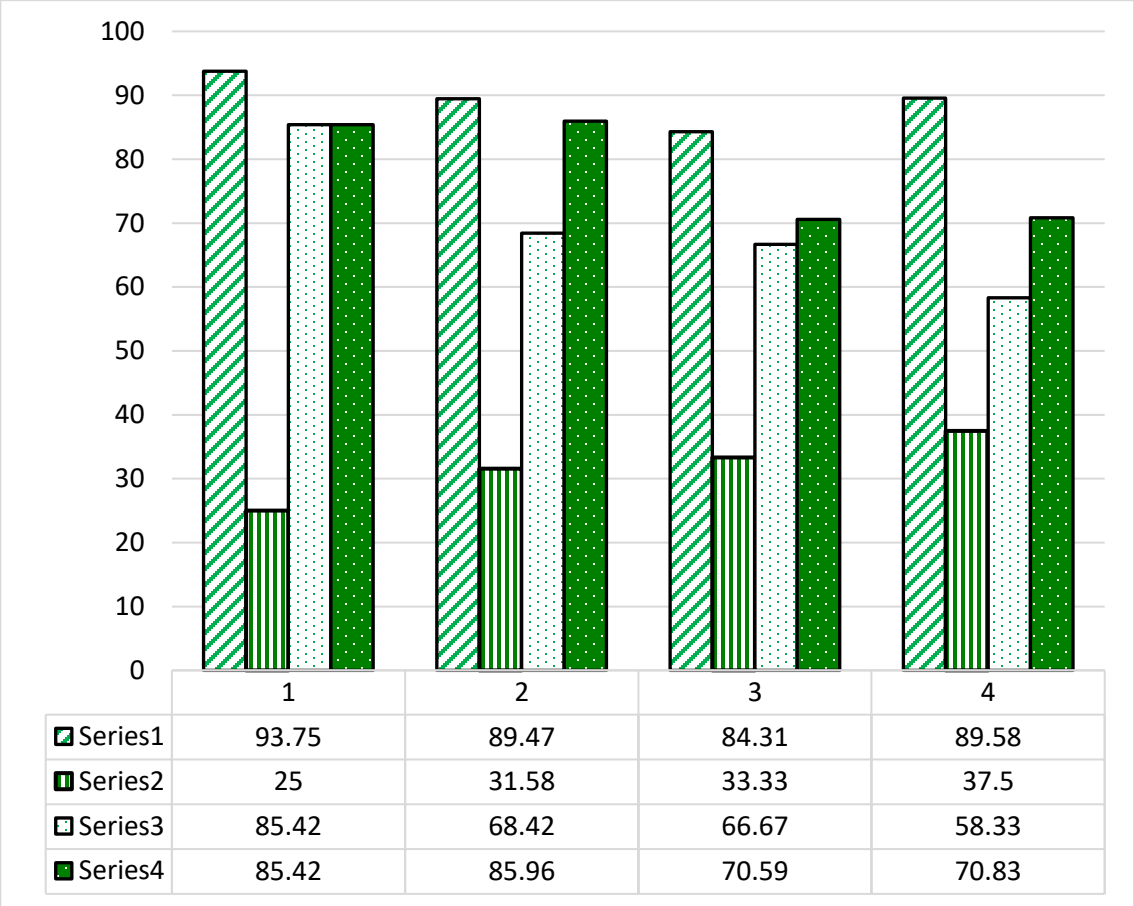
Figure 23. *Grammaticality Choice Task. Acceptance mean values of wh-in-situ and wh-fronting with wh-complements and wh-adjuncts by group*

The first column for each group in Figure 23 represents the results of the complement wh-phrase in situ, which is grammatical in EA but ungrammatical in English. As expected, the A1_Control group accepted the wh-phrase *ʔeh* 'what' in situ 100% of the time. The accuracy slightly declined in the other three groups, A2_Experimental (56 out of 57 tokens, M = 98.25, SD = 7.65), CH1_Control (50 out of 51 tokens, M = 98.04, SD = 8.08), and CH2_expeimental (43 out of 48 tokens, M = 89.58, SD = 20.07).

The second column for each group in Figure 23 displays the results of the fronted position for the complement wh-phrase, which is ungrammatical in EA but grammatical in English. All the participants in the A1_Control group and most of the participants in the other three groups completely rejected this ungrammatical position for the wh-phrase *ʔeh* 'what', as expected. The number of participants who occasionally accepted this ungrammatical position are as follows: two participants in the A2_Experimental group (3 out of 57 group tokens, M = 5.26%, SD =16.7), four participants in the CH1_Control groups (5 out of 51 group tokens, M = 9.8%, SD = 19.6), and seven participants in the CH2_Experimental (11 out of 48 group tokens, M = 22.92%, SD = 29.1). A one-factor ANOVA shows a difference between groups ($F(3, 64) = 4.167$, $p = 0.0093$), and a post hoc Scheffé F-test reveals that the differences are between the CH2_experimental and the A1_Control group only.

The third and fourth columns in Figure 23 show the overall acceptance rates of wh-in-situ and wh-fronting in wh-adjuncts. Recall that the position of wh-phrases in wh-adjuncts is one of the areas that exhibit a surface overlap between English and EA because both wh-in-situ and wh-fronting are grammatical in EA, while wh-fronting is the only grammatical position in typical English wh-questions. As shown in the figure above, all the groups accepted both wh-in-situ and wh-fronting for adjunct wh-phrases, but at different acceptance rates. However, no significant difference was found either in adjunct wh-phrases in situ ($F(3, 64) = 2.202$, $p = 0.0964$) or in fronted adjunct wh-phrases ($F(3, 64) = 0.301$, $p = 0.8242$). Similarly, analyzing the data of the two adjunct wh-phrases separately did not reveal any statistically significant differences between the groups, but it reveals a

dramatic difference between the group acceptance rates of fronted *ʔimta* 'when' and fronted *feen* 'where'. Figure 24 below illustrates the group acceptance means of wh-in-situ and wh-fronting with *feen* 'where' and *ʔimta* 'when'. The four positions presented in this figure are, from left to right: (i) *feen* in situ; (ii) fronted *feen*; (ii) *ʔimta* in situ; and (iv) fronted *ʔimta*.



	1	2	3	4
Series1	93.75	89.47	84.31	89.58
Series2	25	31.58	33.33	37.5
Series3	85.42	68.42	66.67	58.33
Series4	85.42	85.96	70.59	70.83

Figure 24. *Grammaticality Choice Task. Acceptance mean values of wh-in-situ and wh-fronting with the adjunct wh-phrases, feen 'where' and ʔimta 'when', by group*

As Figure 24 illustrates, all the groups accepted fronted *ʔimta* 'when' with means ranging between 70% and 86%. However, when it came to fronted *feen* 'where', their acceptance

means dropped sharply to 25% for A1_Control, 31.58% for A2_Experimental, 33.33% for CH1_Control, and 37.5% for CH2_Experimental. This finding is surprising because, in previous literature about EA wh-questions, there is no mention of differences between accepting and using fronted *ʔimta* 'when' and fronted *feen* 'where'. Therefore, further individual analysis was needed. Tables 10 and 11 below show the number of participants in each group divided into four categories according to the number of fronted *feen* 'where' (Table 11) or fronted *ʔimta* 'when' (Table 12) they accepted. The maximum number of target items with each wh-phrase was three.

	Number of accepted target items with fronted *feen* 'where' (maximum 3)			
Groups	**0**	**1**	**2**	**3**
A1 (n=16)	9	3	3	1
A2 (n=19)	7	8	2	2
CH1 (n=17)	7	5	3	2
CH2 (n=16)	7	2	5	2

Table 11. *Grammaticality Choice Task. Number of participants per group in terms of accepting fronted feen 'where'*

	Number of accepted target items with fronted *ʔimta* 'when' (maximum 3)			
Groups	**0**	**1**	**2**	**3**
A1 (n=16)	0	2	3	11
A2 (n=19)	0	2	4	13
CH1 (n=17)	0	3	9	5
CH2 (n=16)	1	3	5	7

Table 12. *Grammaticality Choice Task. Number of participants per group in terms of accepting fronted ʔimta 'when'*

Considering the number of participants in the first two categories in Table 11, it is clear that more than half of the participants in each group rejected or accepted at least once the

questions with fronted *feen* ‘where’. In contrast, more than three-quarters of the participants in each group accepted fronted *ʔimta* ‘when’ at least twice, as can be seen in the first two categories of Table 12. Therefore, there is no evidence that the discrepancy between the acceptance rates of fronted *feen* ‘where’ and fronted *ʔimta* ‘when’ is due to individual differences.

An alternative explanation for the lower rates of accepting fronted *feen* ‘where’ may be related to the task design. Recall that the set of target items discussed in this section, Set 1, was controlled for the word order to assess the participants’ judgment of the position of the wh-phrase. Accordingly, the two questions that the participants heard from the panda and the cat for the wh-phrase *feen* ‘where’ in this set differed only in the position of *feen* ‘where’, either *feen* ‘where’ in situ with SV word order [S-V-*feen*], or fronted *feen* ‘where’ with SV word order [*feen*-S-V]. Nonetheless, the results of the first task of this study revealed that this latter word order was nonexistent or rare in the production of all the groups. In other words, it was observed that when the participants chose to use fronted *feen* ‘where’, they produced it with null verbs, as shown in (103a), repeated here in (105) (kindly refer to section 4.1.2. for more details about this finding).

(105) فين الحفلة؟

(105) ***feen*** *ʔl-ħafla?*

where the-party

‘Where is the party?’ (A1#203)

The fact that the target items with fronted *feen* ‘where’ in Set 1 had the same word order that was found to be rare in the participants’ production may explain their lower rates of accepting fronted *feen* ‘where’. It seems possible that most of the participants rejected questions with fronted *feen* ‘where’, not because of the position of the wh-phrase *feen* ‘where’, but because of the word order, [*feen*-S-V]. However, this finding should be interpreted with caution because the sample size is too small to provide assumptions about the preferred word order with *feen* ‘where’ in the Egyptian population. Therefore, it is up to future studies to examine the judgment of fronted *feen* ‘where’ with SV word order among larger groups of EA native speakers. This can be done by adding a third set to this task with fixed fronted *feen* ‘where’ and the questions of the two characters differ only in having SV word order and null copular verb.

Another observation from Figure 24 is that the monolingual groups, A1_Control and CH1_Control, showed true optionality between the two positions of the adjunct wh-phrase *ʔimta* ‘when’. The A1_Control group’s acceptance rate for both fronted and in situ *ʔimta* ‘when’ was the same (85.42% of the time). Similarly, the CH1_Control group accepted fronted *ʔimta* ‘when’ (70%) in a comparable way to *ʔimta* ‘when’ in situ (66.67%). In comparison, the A2_Experimental and CH2_Experimental slightly preferred wh-fronting over wh-in-situ with *ʔimta* ‘when’.

4.2.2. Subject and Verb Word Order

In this section, I will present the results of the set that aimed to test the subject and verb word order in this task, namely Set 2. To test word order in this set, I controlled the position

of wh-phrases to be wh-in-situ in all the experimental items. As explained in Chapter 2, EA allows both SV and VS word orders in both wh-complements and wh-adjuncts. Therefore, it was expected that the participants would accept both SV and VS word orders with the three target wh-phrases, *ʔeh* 'what', *feen* 'where' and *ʔimta* 'when'. Nonetheless, based on previous theoretical descriptions (Lassadi, 2003) and my intuition as a native speaker of EA, I anticipated that the participants would accept the VS word order at a lower rate compared to SV word order because the SV word order is the default word order in EA.

Like the positions of wh-phrases in Set 1 of this task, the two word orders of subject and verb tested in this set are not mutually exclusive because the participants could accept one or both word orders. Figure 25 below shows the overall acceptance group means for SV word order and VS word order in each wh-phrase type, wh-complements, and wh-adjuncts. The four word orders represented in this figure are, from left to right: (i) SV word order in wh-complements; (ii) VS word order in wh-complements; (ii) SV word order in wh-adjuncts; and (iv) VS word order in wh-adjuncts.

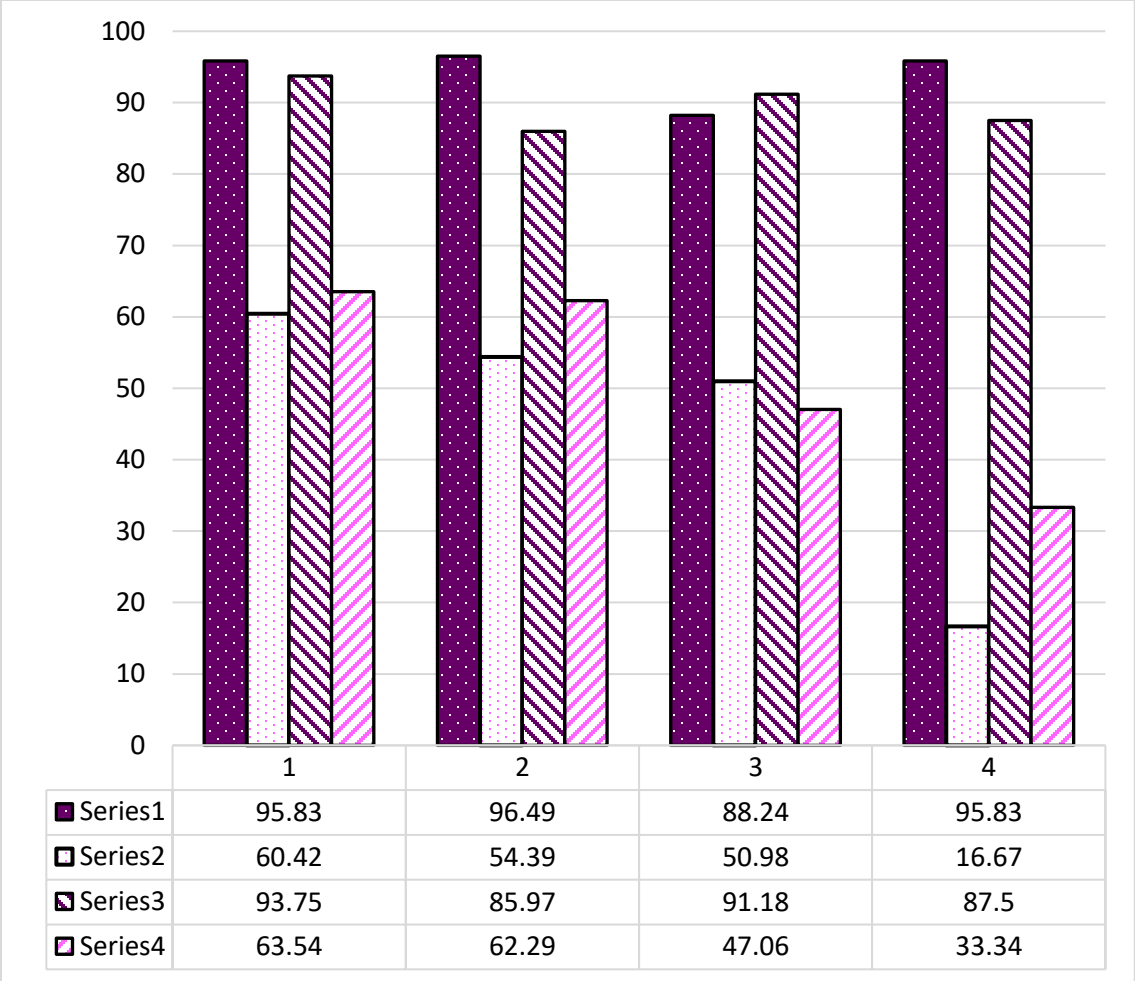


Figure 25. *Grammaticality Choice Task. Acceptance mean values of SV and VS word orders with wh-complements and wh-adjuncts by group*

What stands out in Figure 25 is that all the groups showed a higher rate of accepting SV word order compared to VS in both wh-complements and wh-adjuncts. Considering the group means for both wh-complements and wh-adjuncts, the acceptance means ranged from 85.97% to 95.83% for SV word order and from 16.67 to 63.54% for VS word order. It was unexpected for the CH2_Experimental group to accept the VS word order because

this word order is ungrammatical in English wh-questions. Nonetheless, their acceptance means were the lowest of all the groups for both wh-complements (8 out of 48 tokens, M = 16.67, SD = 24.34) and wh-adjuncts (32 out of 96 tokens, M = 33.34, SD = 26.53). A one-way factor ANOVA shows significant differences for VS word order in wh-complements ($F(3, 64) = 4.576$, $p = 0.0058$). A post hoc Scheffé F-test reveals that the differences are between CH2_Experimental and the two adult groups, A1_Control and A2_Experimental, but not between the two child groups. The difference between groups in SV word order between the groups was not significant, ($F(3, 64) = 1.357$, $p = 0.264$) for SV word order in wh-complements and ($F(3, 64) = 0.705$, $p = 0.5527$) for SV word order in wh-adjuncts

4.3. Comparison between the Results of the Elicited Production Picture Task and the Grammaticality Choice Task

Having presented the results of the position of wh-phrase and subject and verb word order in each task separately, I will now compare the results of different wh-question types in both tasks. This comparison aims to examine whether there are common tendencies between the production and judgment of main-clause EA wh-questions among the four groups who took part in this study, A1_Control (EA monolingual adults, n=16), A2_Experimental (first-generation of adult Egyptian immigrants, n=19), CH1_Control (EA monolingual children, n=18), and CH2_Experimental (EA-English bilingual children, n=16).

Table 13 below summarizes the overall distribution (represented in group means) of the two tasks regarding the position of the wh-phrase with each wh-question type. At the top of Table 13, the grammaticality of each position in EA and English is indicated, with the grammatical position highlighted.

Wh-phrase type	**Complement wh-questions**		**Adjunct wh-questions**	
Position of wh-phrase	**Wh-in-situ**	**Wh-fronting**	**Wh-in-situ**	**Wh-fronting**
Grammaticality in EA	**yes**	no	**yes**	**yes**
Grammaticality in English	no	**yes**	no	**yes**
Task and groups	**Mean**	**Mean**	**Mean**	**Mean**
Elicited Production Picture Task				
A1 (n=16)	100	0	78.65	21.35
A2 (n=19)	100	0	49.12	50.88
CH1 (n=18)	100	0	78.24	21.76
CH2 (n=16)	91.67	8.33	42.71	57.29
Grammaticality Choice Task				
A1 (n=16)	100	0	89.58	55.21
A2 (n=19)	98.25	5.26	73.96	54.17
CH1 (n=17)	98.04	9.8	75.49	51.96
CH2 (n=16)	89.92	22.92	78.95	58.77

Table 13. *Group means of the position of wh-phrases in the Elicited Production Picture Task and the Grammaticality Choice Task*

By considering the results of the position of wh-phrases presented in Table 13 together, several trends can be observed. The first and most salient observation is that all the participants in the A1_Contol accepted wh-in-situ in wh-complements with *ʔeh* 'what' 100% and completely rejected fronting it in both tasks. Similarly, almost all the participants in the other three groups, apart from a few cases discussed earlier, did the same as the

A1_Control group. This finding is important because it gives empirical evidence to confirm previous theoretical analysis that the complement wh-phrase *ʔeh* 'what' must occur in situ and fronting it to a clause-initial position is ungrammatical (Wahba 1984, Lassadi, 2003).

The second observation is regarding the acquisition of complement wh-questions in bilingual children. It was anticipated that the bilingual children, CH2_Experimental, would produce and accept wh-fronting more than the other three groups. This result was expected because wh-fronting in typical wh-questions is obligatory in English, which is the majority societal language for these children. In contrast to what was expected, almost all the bilingual children in the CH2_Experimental group showed a robust knowledge of the obligatory wh-in-situ in wh-complements in their heritage language, EA, as they performed in a comparable way to monolingual EA speakers and adult immigrants. As shown in Table 13, the differences between groups in terms of the position of wh-phrases in wh-complements were not statistically significant except between the CH2_Experimental group and A1_Control in the Grammaticality Choice Task.

The third observation is that the control groups, A1_Control and CH1_Control, preferred producing adjunct wh-questions with the wh-phrase left in situ the first task. Yet, they accepted both positions, wh-in-situ, and wh-fronting, without showing preference towards one of them in the second task. As for the two experimental groups, A2_Experimental and CH2_Experimental, they showed true optionality concerning the position of adjunct wh-phrases in both tasks. The results showed a tendency among both experimental groups to produce and accept fronted adjunct wh-phrases more than the control groups. Statistical

analysis, using a post hoc Scheffé F-test, reveals significant differences between the experimental groups and the control groups in the two positions of adjunct wh-phrases in the production task. One possible interpretation of this result is that there may be incipient and ongoing change in the grammar of first-generation immigrants, which is probably passed down to the input that bilingual children are receiving. However, even if this is the case, such changes do not lead to producing or accepting ungrammatical structures in EA as both wh-in-situ and wh-fronting are allowed in EA wh-adjuncts.

I turn now to compare the results for subject and verb word order in the two tasks, the Elicited Production Picture Task and the Grammaticality Choice Task. Table 14 below presents the overall distribution (in group means) of the two tasks regarding the subject and verb word order with each wh-question type. Like the previous table, the grammaticality of each word order in EA and English is indicated at the top of the table.

Wh-phrase type	**Complement wh-questions**				**Adjunct wh-questions**			
Subject and verb word order	**SV**	**VS**	**Null verb**	**Null subject**	**SV**	**VS**	**Null verb**	**Null subject**
Grammaticality in EA	yes	yes	yes	yes	yes	yes	yes	yes
Grammaticality in English	yes	no	no	no	yes	no	no	no
Task and groups	**Mean**	**Mean**	**Mean**	**Mean**	**Mean**	**Mean**	**Mean**	**Mean**
Elicited Production Picture Task								
A1 (n=16)	100	0	0	0	65	0.71	33.33	1.042
A2 (n=19)	93.81	0	0	6.2	59.57	0	37.59	2.85
CH1 (n=18)	98.15	0	0	1.85	72.7	0.45	25.46	1.39
CH2 (n=16)	100	0	0	0	65.62	1.56	31.88	1.04
Grammaticality Choice Task								
A1 (n=16)	95.83	60.42			93.75	63.54		
A2 (n=19)	96.49	54.39	—	—	85.97	62.28	—	—
CH1 (n=17)	88.24	50.98			91.18	47.06		
CH2 (n=16)	95.83	16.67			87.5	33.33		

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Table 14. *Group Means of subject and verb word order in the Elicited Production Picture Task and the Grammaticality Choice Task*

The first tendency that can be observed in Table 14 is the dominance of SV word order in both tasks across all the groups. Nonetheless, an exception to this tendency was found when the results of the adjuncts wh-phrases in the first task were analyzed separately. As explained earlier in section 4.1.2, the results of the Elicited Production Picture Task revealed that the SV word order was extremely rare with fronted *feen* 'where'.

The second tendency in Table 14 is that all the groups showed higher acceptance rates than production rates for the VS word order. As can be seen in the table above, VS word order was nonexistent in the production of wh-complements across all the groups, and extremely rare in the production of wh-adjuncts, with no group mean over 2%. In comparison, when the participants were presented with VS word order in the Grammaticality Choice Task, they accepted it to some degree, but with no group mean over 65%. The only statistically significant differences with word order were found in VS word order in wh-complements between CH2_Experimental and the two adult groups, A1_Control and A2_Experimental.

The third and fourth tendencies that can be observed in Table 14 correspond to the use of null verbs and null subjects in the Elicited Production Picture Task. The results showed that the use of null copular verbs was the second preferred option after the SV order in wh-adjuncts, in contrast to its absence in wh-complements. For the use of null subjects in wh-complements, it was rare as it only occurred in the production of two groups, A2_Experimental and CH1_Control, with no average over 6.5%. In comparison, null subjects in wh-adjuncts appeared in the production of all the groups, but they were also few, with no group mean over 3%. As mentioned before, the number of tokens with null subjects in the task does not reflect the actual use of null subjects in EA wh-questions because the subjects of all the stimuli in this task were selected to be obligatorily realized as a DP to elicit the highest number of subjects.

Having presented the results in this chapter, the next chapter will move on to compare the results with previous research on the acquisition of obligatory S-V inversion in Spanish

wh-questions. This comparison aims to explore whether cross-linguistic influence can occur in narrow syntactic structures with no pragmatic or discourse motivations, as found in recent empirical studies (Albirini et al., 2011; Cuza, 2013, 2016; Mohamed, 2022).

CHAPTER 5

5. DISCUSSION AND CONCLUSION

In this chapter, the findings of the present research are discussed in light of the proposed hypotheses and the theoretical approaches reviewed in Chapter 2. The results are also compared to the results of previous studies on knowledge of obligatory S-V inversion in Spanish main-clause wh-questions. The aim of this comparison is to explore whether first-generation immigrants and child HSs of two different languages, EA and Spanish, exhibit similar or different linguistic outcomes in the domain of wh-questions when their native languages become minority languages in English-speaking countries.

The current chapter is organized in the following manner. Section 5.1 evaluates the research questions and hypotheses. The hypotheses related to the production and judgment of the position of wh-phrases are discussed in Section 5.1.1 and those which are concerned with the production and judgment of subject and verb word order are presented in Section 5.1.2. Section 5.2 compares the results of this study with the results of the literature on the knowledge of obligatory inversion in Spanish wh-questions. In Section 5.2.1, the findings of the first-generation Egyptian immigrants in my dissertation are compared with findings of first-generation immigrants in Perpiñán's (2011) study. In Section 5.2.2, connections are made between the results of child HSs of EA in my study and the results of child HSs of Spanish in the studies of Austin et al. (2013) and Cuza (2016). Section 5.3 is dedicated to

the conclusion. Section 5.4 concludes this dissertation with directions for prospective studies.

5.1. Evaluation of the Proposed Hypotheses

The current study was guided by two main research questions. The first question sought to examine whether the experimental groups would pattern with or differ from the control groups or within themselves regarding the production and judgment of the position of wh-phrases in EA wh-questions. The second question was about investigating whether there were similarities or differences between the same groups in terms of the production and judgment of the subject and verb word order in EA wh-questions.

In this section, I analyze the findings of this study according to the proposed research questions and hypotheses presented in Chapter 2. Wherever it is relevant, I draw connections between the results of this study and the literature reviewed in Chapter 2. Moreover, I discuss the results in light of the five main theoretical approaches found in the literature on HL bilingualism; L1 attrition, incomplete acquisition, differential acquisition, missing input competence divergence, and cross-linguistic influence.

5.1.1. Hypotheses Related to the Position of Wh-Phrases

Based on previous theoretical descriptions (Wahba, 1984; Lassadi, 2003), the position of wh-phrases is determined by their type in EA. According to these descriptions, the only target grammatical position for the complement wh-phrase *ʔeh* 'what' is wh-in-situ and wh-fronting is ungrammatical (with the exception of cleft structures which are beyond the

scope of this study). Regarding adjunct wh-phrases, it is optional to front them or to leave them in situ, although wh-in-situ is believed to be the default position with EA adjunct wh-phrases (Aoun et al., 2009; Soltan, 2011) (please refer to section 4.1.1 for examples of the participants' production for each wh-phrase type).

Consistent with the theoretical descriptions mentioned above, this dissertation found that wh-fronting with the complement wh-phrase *ʔeh* 'what' was non-existent in the production and judgment of the monolingual EA adults, the A1_Control group. All the participants in the A1_Control group completely rejected wh-fronting with *ʔeh* 'what' in the Grammaticality Choice Task and none of them ever produced it in the Elicited Production Picture Task. As expected, the A1_Control group produced and accepted both wh-fronting and wh-in-situ with the adjunct wh-phrases, but they showed higher acceptance and production rates with wh-in-situ (with group mean around 80% in the Elicited Production Picture Task and 90% in the Grammaticality Choice Task) than wh-fronting (with group mean about 20% in the Elicited Production Picture Task and 55 % in the Grammaticality Choice Task). This finding further supports the idea that wh-in-situ is the default position for the adjunct wh-phrases in EA. Similar trends were found in the results of the monolingual children, the CH1_Control group. Surprisingly, four monolingual children (age range 6;4-9;1), who should presumably have mastered the wh-questions, accepted the ungrammatical fronted complement wh-phrase *ʔeh* 'what' once (one time for each child) in the Grammaticality Choice Task. However, there were no significant differences in any of the tasks between the group means of A1_Control and CH1_Control. The findings of both control groups, A1_Control and CH1_Control, are essential to establish the position

of wh-phrases in the variety of EA spoken in Egypt. Taking these results into consideration, let us answer the research questions that are concerned with the position of wh-questions.

RQ 1.1: Will child HSs, CH2_Experimental, pattern with or differ from the two control groups, A1_Control and CH1_Control, in their production and judgment of the position of wh-phrases in EA wh-questions?

Based on the findings of Spanish-English bilingual children in Cuza (2016) and Austin et al. (2013), I hypothesized that CH2_ Experimental would show transfer from English, manifested in high acceptance and production rates of the English wh-construction, namely, wh-fronting, regardless of whether wh-fronting is grammatical or not in their HL. My hypothesis was partially confirmed because the results revealed that CH2_Experimental mostly favoured wh-fronting when it was one of the grammatical options available in EA, as in the case of the adjunct wh-phrases *feen* 'where' and *ʔimta* 'when', but not when it was ungrammatical in EA, namely wh-fronting with the complement wh-phrase *ʔeh* 'what'.

Regarding the position of adjunct wh-phrases, CH2_Experimental significantly produced less wh-in-situ with adjunct wh-phrases (around 42%) than both control groups did (about 78%). This finding does not support the Derivational Complexity Hypothesis (Jakubowicz, 2011) because the EA-English bilingual children in this study diverge from the monolingual children by preferring the more complex derivation, wh-fronting, over the less complex one, wh-in-situ. This outcome is also contrary to that of the English-speaking

early L2 learners of French in Prévost et al.'s (2010) study who produced considerably more wh-in-situ (around 41%) than the French-speaking adults (who did not produce wh-in-situ at all) and the typically developed French-speaking children (22% for 4-year-old children and 3% for 6-year-old children). Interestingly, the production rate of wh-in-situ was very similar among the EA-English bilingual children in my study (around 42%) and the English-French bilingual children in Prévost et al.'s (2010) study (around 41%). Nonetheless, the interpretation of the results was very different because of the frequency of wh-in-situ in French and EA is different, as documented by the production rates of the control groups in both studies. Prévost et al. (2010) found that wh-in-situ is rare among French-speaking adults and children, while I found in this study that wh-in-situ is more frequent than wh-fronting in adjunct wh-phrases among EA monolingual adults and children. Consequently, the wh-in-situ, which is ungrammatical in English non-echo questions, was more frequent in the production of the English-French bilinguals in Prévost et al.'s (2010) study than in the control groups. In contrast, wh-fronting, the only grammatical option in English non-echo questions, was more frequent in the production of the EA-English bilinguals in this dissertation than in the control groups. I argue that this discrepancy between the transfer effects from English in these two studies can be attributed to the demographic situation of English, which is the minority language in Prévost et al.'s (2010) study, and the majority language in this dissertation.

Regarding the position of the complement wh-phrase *ʔeh* 'what', the results showed that the child HSs, CH2_Experimental, have a robust knowledge of the ungrammaticality of fronting *ʔeh* 'what'. In the Elicited Production Picture Task, all the children in the

CH2_Experimental group, except for three children, showed ceiling performance by correctly leaving *ʔeh* 'what' in situ in all complement wh-questions, exactly as both control groups did. As for the three children who produced non-target fronted *ʔeh* 'what', they were either simultaneous or sequential bilinguals (two of them were born in the U.K. while the third one arrived in Canada at the age of 1;6). Nonetheless, no strong correlation was found between AOA and producing non-target fronted *ʔeh* 'what'. As for the Grammaticality Choice Task, CH2_Experimental showed a higher rate of accepting the non-target fronted *ʔeh* 'what' than CH1_Control, but the difference between these groups was not statistically significant. Moreover, no strong correlation was found between accepting non-target fronted *ʔeh* 'what' and age or AOA. It is necessary to point out that accepting the non-target position for *ʔeh* 'what' cannot be interpreted as incomplete acquisition or L1 attrition as it was also found among monolingual children of comparable age (age range 6;4-9;1).

RQ 1.2. Will the adults who live in a bilingual environment, A2_Experimental, pattern with or differ from the adults living in a monolingual environment, A1_Control, regarding the production and judgment of the position of wh-phrases in EA wh-questions?

I predicted, drawing on the results of Perpiñán (2011), that properties of narrow syntactic structures would be resilient to cross-linguistic influence in first-generation immigrants. This hypothesis was partially confirmed as the first-generation immigrants, A2_Experimental, preferred to produce and accept the English structures, but only when these structures are grammatical options in EA. That is to say that they patterned with the

monolingual adults, A1_Control, in terms of producing and accepting the complement wh-phrase *ʔeh* 'what' in situ and rejecting the non-target fronted *ʔeh* 'what'. As for the results of the production of adjunct wh-phrases, there was a significant difference between A1_Control and A2_Experimental. This difference was seen in the A1_Control group favoring wh-in-situ (78.65%) and A2_Experimental showing true optionality between wh-in-situ (49.12%) and wh-fronting (50.88%). The true optionality observed in this study among first-generation immigrants is in line with my earlier study (Mohamed, 2022).

RQ 1.3. Will the child HSs, CH2_Experimental, pattern with or differ from the first-generation immigrants, A2_Experimental, regarding the production and judgment of the position of wh-phrases in EA wh-questions?

I hypothesized that CH2_Experimental would deviate from A2_Experimental with respect to the position of wh-phrases in EA wh-questions. However, this hypothesis was not supported as the results showed that CH2_Experimental did not differ from A2_Experimental. The most unexpected result is that both experimental groups differed from the control groups in the same way, as the former groups tended to produce more wh-fronting with adjunct wh-phrases than the latter groups. This finding suggests an incipient change in the variety of EA spoken in English-speaking regions as the first-generation immigrants and subsequent generations of immigrants seem to gradually shift towards producing more wh-fronting than the monolingual children and adults living in Egypt. However, this change was only found when the majority language's structures are allowed by the linguistic system of the minority language, namely wh-fronting in wh-adjuncts, but

not when they are ungrammatical in the minority language, as in the case of wh-fronting in wh-complements. The results of the experimental groups in this study corroborate the view of Pires and Rothman (2009) that HSs may be receiving a qualitatively different input from the monolingual input. However, the results of this study cannot be interpreted as an instance of missing input competence divergence (Pires & Rothman, 2009) because both experimental groups showed ceiling performance in producing and accepting target structures.

5.1.2. Hypotheses Related to Subject and Verb Word Order

Before discussing the research question related to subject and verb word order, it is necessary to address the results of the two control groups, A1_Control and CH1_Control, which represent the variety of EA spoken in Egypt. The results of the two control groups in the Elicited Production Picture Task revealed that the VS word order was almost non-existent (less than 1%) with both wh-complements and wh-adjuncts. Nonetheless, both control groups accepted the VS word order to some degree (between 50%-60% of the time) in the Grammaticality Choice Task. This finding accords with previous theoretical descriptions which suggest that both SV and VS orders are grammatically correct in EA wh-questions, although SV is the default order (Lassadi 2003, Edwards, 2010) (kindly refer to section 4.1.2 for examples of the participants' production for SV and VS word orders). Let us answer the research questions that are related to subject and verb word order.

RQ 2.1: Will the child HSs, the CH2_Experimental group, pattern with or differ from the two control groups, the A1_Control and the CH1_Control groups, regarding the production and judgment of subject and verb word order in EA wh-questions?

Concerning subject and verb word order, I hypothesized that these three groups, CH2_Experimental, A1_Control, and CH1_Control, would predominantly prefer producing and accepting SV word order because it is the default order in EA, but they will differ in accepting VS word order. Given that VS word order is ungrammatical in English, I hypothesized that the CH2_ Experimental group would completely reject this order, while the A1_Control and the CH1_Control groups would accept it to some degree. This hypothesis was partially confirmed. The SV word order was the dominant order in the production of these three groups. However, contrary to my hypothesis, no statistically significant differences were found in the acceptance rates of VS word order between the CH2_Experimental and the CH1_Control groups. Comparing the CH2_Experimental and the A1_Control groups, there was a significant difference in their acceptance rates of VS word order in wh-complements, but not in wh-adjuncts.

RQ 2.2. Will the adults who live in a bilingual environment, the A2_Experimental group, pattern with or differ from the adults living in a monolingual environment, the A1_Control group, regarding the production and judgment of subject and verb word order in EA wh-questions?

Building on the results of Perpiñán's (2011) study, I anticipated that no significant differences would be found between the two adult groups, A1_Control and A2_Experimental, regarding subject and verb word order in EA wh-questions. This hypothesis was confirmed as the A2_Experimental patterned with the A1_Control in both tasks. This finding suggests that, at least in the domain of wh-questions, there is no difference between the linguistic competence of Egyptian adults who live in a bilingual environment and those who live in a monolingual environment.

RQ 2.3. Will the child HSs, the CH2_Experimental group, pattern with or differ from the first-generation immigrants, the A2_Experimental group, regarding the production and judgment of subject and verb word order in EA wh-questions?

I hypothesized that the CH2_Experimental group would diverge from both adult groups, the A2_Experimental and A1_Control groups, in the same way. This hypothesis was confirmed as the CH2_Experimental group did not differ from the A2_experimental group in producing and accepting SV word order in wh-questions, but they differed in accepting VS word order with wh-complements. A comparison of these findings with those discussed in RQ 2.1 confirms that the CH2_Experimental group deviated from both adult groups in the same way.

5.2. Connections with the Literature on Obligatory S-V Inversion in Spanish

This section is dedicated to comparing the results of this dissertation with the results of three previous studies done on the knowledge of the obligatory S-V inversion in Spanish matrix wh-questions (Perpiñán, 2011; Austin et al., 2013; Cuza, 2016). The comparison is done in the following manner. In section 5.2.1, I compare the findings of the experimental group in Perpiñán's (2011) study, which comprised first-generation immigrants from Spanish-speaking countries living in the U.S., with the findings of the first-generation Egyptian immigrants, A2_Experimental, in my dissertation. In Section 2.2.2, I make connections between the results of child HSs of EA, CH2_Experimental, in my study and the results of child HSs of Spanish, that is Spanish-English bilingual children, in the studies of Austin et al. (2013) and Cuza (2016).

5.2.1. Discussion of the Results of the First-Generation Immigrants

Recall that the focus of Perpiñán's (2011) study was on investigating the potential effects of L1 attrition in two Spanish structures, inversion in relative clauses and inversion in matrix questions. These two structures are similar in having obligatory inversion, but they differ in whether or not they involve interfaces between syntax and discourse and/or phonology. To clarify, inversion in matrix questions is purely syntactic nature, while inversion in relative clauses involves interfaces between syntax and discourse and/or phonology. In comparison, the properties of EA wh-questions that I examine in this

dissertation are similar in being purely syntactic in nature, but they are different in being obligatory or optional. The position of the complement wh-phrase *ʔeh* 'what' is obligatorily wh-in-situ. In contrast, there are two possible positions for adjunct wh-phrases, wh-in-situ and wh-fronting, and two possible word orders, SV and VS word order. This combination enables me to explore the possible effects of L1 attrition and cross-linguistic influence on the knowledge of obligatory structures as well as the potential transfer effects in optional structures.

Consistent with Perpiñán (2011), the current research found no evidence of L1 attrition among first-generation immigrants in the production or judgment of obligatory structures, that is the obligatory wh-in-situ in EA wh-complements. However, when it came to the optionality in the position of adjunct wh-phrases, the first-generation immigrants significantly tended to produce wh-fronting more than EA monolingual adults. This finding can be an indication of cross-linguistic influence of English on EA. Regarding subject and verb word order, no differences were found in this study between the first-generation immigrants and the EA monolingual adults.

5.2.2. Discussion of the Results of Child HSs

In this section, the results of the child HSs of EA, CH2_Experimental, in my study are compared to the results of the Spanish-English bilingual children in the studies of Austin et al. (2013) and Cuza (2016). The comparison is limited to the results of the production of the obligatory structures in Spanish and EA because the studies of Austin et al. (2013) and Cuza (2016) did not involve a judgment task nor structures that exhibit optionality.

The linguistic outcomes of Spanish-English bilingual children (child HSs of Spanish) in Austin et al. (2013) and Cuza's (2016) studies differ from the EA-English bilingual children (child HSs of EA) in my study. While Austin et al. (2013) and Cuza (2016) observed that child HSs of Spanish had difficulties with producing the obligatory S-V inversion in Spanish wh-questions, all the child HSs of EA in my study showed a robust knowledge of the obligatory position of the complement wh-phrase *ʔeh* 'what'.

Austin et al. (2013) examined the longitudinal development of wh-questions in Spanish and English among 13 Spanish-English bilingual children, two were born in Honduras, and the rest of whom were born in the U.S. The age ranges of the children in the three sessions of Austin et al.'s (2013) study were as follows, 5-6 in the first session, 6-7 in the second session, and 8-9 in the third session. Cuza (2016) investigated the acquisition of matrix and embedded Spanish wh-questions among 27 simultaneous Spanish-English bilingual children (age range 5;0-13;3, mean age 8;4) living in the U.S. The control group consisted of 17 Spanish monolingual children (age range 6;6-12;4). As for my study, I examined the acquisition of matrix EA wh-questions among 16 EA-English bilingual children living in Ontario, Canada, or in the U.K. (age range 5;6-12;6, mean age 8;11). The mean length of residence in an English-speaking environment was 6;5 years, ranging from 3;7-12;6. Unlike Cuza's (2016) study, not all the bilingual children in my study were simultaneous bilinguals. Only four of them were born in the country of residence (simultaneous bilinguals), and four participants moved there before the age of 3 (sequential bilinguals). The rest of the bilingual children (n=8) were early L2 learners who moved to the country

of residence between 3;0 and 7;0 years old. The other child group in my study consisted of 18 EA monolingual children living in Egypt (age range 5;2-11;0, mean age 7;3).

Using an Elicited Production Task, Austin et al. (2013) observed that the longitudinal development of wh-questions in Spanish and English was not parallel. In the first session, the bilingual children tended to be more accurate in Spanish questions than in English questions (accuracy rates of 40% in Spanish and 30% in English). However, as the children grew older and were more exposed to English, this tendency of accuracy was reversed in the second and third sessions. The accuracy rate in English markedly increased to 80% in both the second and third sessions, whereas the accuracy rate in Spanish increased in the second session (60%) and then slightly decreased in the third (50%). Consistent with Austin et al.'s (2013) findings, Cuza (2016) reported that the younger children (age range 5;0-8;5) performed better than the older children (age range 8;8-13;3) as they correctly produced S-V inversion 86% in all the target questions combined, in contrast to older children who achieved target inversion in only 22% in total.

Both my study and Cuza's (2016) study found a negative correlation between age and accuracy rates, that is to say, that as developmental age increases the accuracy rates decrease. Nonetheless, the correlation was strong in Cuza's (2016) study, whereas the correlation was very weak in my study (-0.187), as a Pearson Correlation Coefficient test revealed. A possible explanation for the differences between child HSs of Spanish and child HSs of EA could be the AOA because all the bilingual children in Cuza's (2016) study, and all except two in Austin et al.'s (2013) study, were simultaneous bilinguals,

while only four of the child HSs in my study were simultaneous bilingual children. In fact, this could be a plausible explanation as the three children who produced non-target fronted *ʔeh* 'what' were either simultaneous or sequential bilinguals. Nonetheless, this non-target pattern was only found in the speech of these three simultaneous and sequential bilinguals (once for two of them and all the utterances of the third child), while the rest of the simultaneous and sequential bilinguals in this study (n=6) performed at ceiling. Moreover, a Pearson Correlation Coefficient test revealed a weak correlation between AOA and the accuracy rates (-0.247).

An interesting similarity between the results of my study and those of the study of Cuza (2016) is the use of code-switching utterances from English to indicate the tense or the aspectual features in the HL. Cuza (2016) found instances of code-switching among some of the older child HSs (age range 8;8-13;3), represented in the use of the English *do*-support with Spanish finite or non-finite verbs, as seen in (106) and (107) respectively[36].

(106) ¿A dónde **did** Diego **comió** sus galleticas? [finite]
where did Diego ate.3SG his cookies
'Where did Diego eat his cookies?'

(107) ¿A quién **did** Dora **pintar**? [non-finite]
who did Dora draw.INF
'Who did Dora draw?'

(Cuza, 2016, p.134)

[36] The interlinear gloss for examples (106) and (107) is added by the author.

Likewise, I found instances of code-switching in the speech of two child HSs (ages 7;11, and 9;10). These two children sometimes expressed the progressive aspect by replacing the Arabic verb and the aspectual features (the EA prefix *bi-*) with the English gerund, as can be seen in (108) and (109). The correct verb inflection for the verbs in these two examples should be *bi-yirsim* 'he is drawing', and *bi-teqra?* 'she is reading' respectively.

(108) *إيه الولد **دروينج؟**

(108) ******ʔeh ʔl-walad* ***drawing****?*

what the-boy drawing

'What is the boy drawing?'

(109) *إيه البنت **ريدينج؟**

(109) ******ʔeh ʔl-bint* ***reading****?*

what the-girl reading

'What is the girl reading?'

The use of the auxiliary *do* in Cuza's (2016) study and the English gerund in my study is clear evidence of cross-linguistic influence from English in the speech of these bilingual children. However, I observed that this type of code-switching only in the speech of two of the three children who produced non-target fronted *ʔeh* 'what'. In light of the information from the Language Background Questionnaire, it is difficult to explain why

these two children showed more transfer effects from English than the rest of the bilingual children in this study.

5.3. Conclusion

This study examined the production and judgment of wh-movement and the subject and verb word order in EA main-clause wh-questions in four groups of EA native speakers: two monolingual control groups living in Egypt (18 children and 16 adults) and two bilingual experimental groups living in Ontario, Canada or in the U.K. (16 child HSs of EA and 19 first-generation adult immigrants). My aim was to explore whether cross-linguistic influence can occur in properties in narrow syntax in heritage language acquisition, as observed in previous studies (Albirini et al.; 2011; Cuza, 2013, 2016; Mohamed, 2022).

Results from an Elicited Production Picture Task and a Grammaticality Choice Task showed that the bilingual experimental groups have a robust knowledge of the obligatory wh-in-situ in EA wh-complements. The child HSs of EA performed in a comparable way to monolingual children of a similar age. As for EA wh-adjuncts, where both wh-fronting and wh-in-situ are possible options, the two experimental groups produced significantly more wh-fronting than the monolingual control groups. This finding suggests an incipient shift in the variety of EA spoken in English-speaking regions towards producing more wh-fronting. However, this change was only found when the majority language's structures are allowed by the linguistic system of the minority language, namely wh-fronting in wh-adjuncts, but not when they are ungrammatical in the minority language, as in the case of

wh-fronting in wh-complements. Regarding subject and verb word order, the results do not allow for a clear conclusion on whether there is a cross-linguistic influence from English on EA because the SV word order was the dominant word order for all the groups. The VS word order was almost non-existent in the production of all the groups, yet all of them accepted this word order to some degree in the Grammaticality Choice Task. Although the child control group accepted the VS word order more than the experimental group of the child HSs of EA, the difference between the acceptance rates of these two groups was not statistically significant. The results showed the obligatory structure to form wh-questions in MSA, that is wh-fronting with S-V inversion, was one of the most infrequent options in the production of all the groups. Therefore, no transfer effects were found from MSA into EA in this study.

The results of this study were compared to previous studies done on the knowledge of the obligatory S-V inversion in Spanish wh-questions among first-generation immigrants (Perpiñán, 2011) and child HSs of Spanish (Austin et al., 2013; Cuza, 2016). This study confirms Perpiñán's (2011) conclusion that obligatory structures of a purely syntactic nature are resistant to L1 attrition among first-generation immigrants. As for the child HSs, the results of this study are different from those of Austin et al. (2013) and Cuza's (2016) studies which observed that child HSs of Spanish had difficulties with producing the obligatory S-V inversion in Spanish wh-questions. In comparison, all the child HSs of EA in this study, except three, showed a robust knowledge of the obligatory position of the complement wh-phrase *ʔeh* 'what'.

This study contributes to the growing empirical evidence that cross-linguistic influence is not limited to structures that exhibit syntax-pragmatics interfaces as it can also occur in narrow syntactic structures with no pragmatic or discourse motivations. By examining both obligatory and optional structures in EA wh-questions, this study gives us novel insights into the selective nature of the cross-linguistic influence observed among the bilingual groups. That is to say that possible transfer effects from English are found when the English structure is one of the grammatical options available in EA, but not when the English structure is ungrammatical in EA. These results are consistent with the results of Albirini et al. (2011) and Mohamed's (2022) studies, who reported that the HSs prefer the structure of the majority societal language when it is one of the possible structures in their HL.

5.4. Limitations of this study

There were several limitations for this study. The main limitation was meeting my participants in-person due to the circumstances and restrictions of COVID. Therefore, I had to design the whole study to be conducted online. Another limitation was recruiting all the bilingual participants from the same English-speaking region. It was challenging for me to find Egyptian immigrants who live in Ontario, Canada and who meet the study's inclusion criteria. The CH2_Experimental group was the group that I struggled with most because it was hard to find child HS of EA who continue to use EA on a daily basis. Because I was unable to find all the participants I needed in Ontario, Canada, I had to extend my search to include Egyptian immigrants living in other English-speaking countries such as the U.K.

I also faced a number of challenges during the Zoom meetings. For instance, it was challenging for me to engage the younger children (age 5-6) throughout the entire session. I found that they were easily distracted, which might have influenced their performance. There was also another unexpected challenge during the Grammaticality Choice Task, which was to convince the children that both the panda and the cat were learning EA and neither character was more likely than the other to make mistakes. I found that the younger participants were eagerly trying to find out which character was smarter in order to assume that this character would be correct for the rest of the task. For this reason, I tried my best to explain to the children during the warm-up session that neither character was smarter nor was more likely to make mistakes than the other. Another challenge was that some of the younger children did not want to say that the characters were wrong to avoid upsetting them. For example, I had to exclude all of the answers of the Grammaticality Choice Task for a child in the CH1-Control group (age 5;7) because he accepted all the answers of the panda and the cat because he liked both of them and he did not want to upset any of the characters.

5.5. Future Directions

My hope is that this dissertation opens lines for future research to examine the fascinating overlapping areas that EA wh-questions share with other languages, such as Spanish, English, and French. For instance, this study can be replicated with child HSs of EA living in France and Spanish-speaking countries. The language contact between Spanish and EA, on the one hand, and between French and EA, on the other, offers an interesting locus of investigation to examine the Derivational Complexity Hypothesis (Jakubowicz, 2011) and

the role of cross-linguistic influence in obligatory and optional structures. The reason for this is that the obligatory structure in Spanish non-echo wh-questions, which is wh-fronting with S-V inversion, is the most complex structure in EA wh-adjuncts and ungrammatical in EA wh-complements. In contrast, French allows for several structures that exist in EA except for wh-in-situ with S-V inversion. Therefore, it is worthwhile to examine the acquisition of wh-questions in the two languages of these bilingual children, either EA and Spanish or EA and French, to examine the roles of derivational complexity and cross-linguistic influence in bilingual acquisition.

Another potential study is to expand this study by following the pioneering methodology of Polinsky (2011) and adding an experimental group of adult HSs of EA. The comparison between child HSs and adult HSs, who are "future HSs" and "current HSs" respectively in terms of Polinsky (2018), is essential to understand whether an aspect of grammar is fully acquired in childhood and then eroded in adulthood, or this aspect of grammar experiences different levels of attainment compared to monolingual children and adults.

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Appendices

Appendix 1. *Ethical Approval*

Western Research

Date: 21 September 2022

To: Prof. Joyce Bruhn de Garavito

Project ID: 112824

Study Title: Knowledge of Wh-questions in Bilingual Children and Adult Heritage Speakers of Egyptian Arabic and Spanish

Short Title: Questions and Answers in Egyptian Arabic and Spanish

Application Type: NMREB Initial Application

Review Type: Delegated

Full Board Reporting Date: October 7 2022

Date Approval Issued: 21/Sep/2022 17:52

REB Approval Expiry Date: 21/Sep/2023

Dear Prof. Joyce Bruhn de Garavito

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the WREM application form for the above mentioned study, as of the date noted above. NMREB approval for this study remains valid until the expiry date noted above, conditional to timely submission and acceptance of NMREB Continuing Ethics Review.

This research study is to be conducted by the investigator noted above. **All other required institutional approvals and mandated training must also be obtained prior to the conduct of the study.**

Documents Approved:

Document Name	Document Type	Document Date	Document Version
Screening form_Adults_English version	Screening Form/Questionnaire	04/May/2022	1
Screening form_Children_English version	Screening Form/Questionnaire	04/May/2022	1
Screening form_Adults_Arabic version with English translation	Translated Documents	04/May/2022	1
Screening form_Children_Arabic version with English translation	Translated Documents	04/May/2022	1
Screening form_Adults_Spanish version with English translation	Translated Documents	04/May/2022	1
Screening form_Children_Spanish version with English translation	Translated Documents	04/May/2022	1
Grammaticality Choice Task_Arabic version with English translation	Translated Documents	11/May/2022	1
Grammaticality Choice Task_Spanish version with English translation	Translated Documents	11/May/2022	1
Production Picture Task_Arabic version with English translation	Translated Documents	15/May/2022	1
Production Picture Task_Spanish version with English translation	Translated Documents	15/May/2022	1
Production Picture Task_English version	Other Data Collection Instruments	26/Jul/2022	2

Grammaticality Choice Task_English version	Other Data Collection Instruments	26/Jul/2022	2
Grammaticality Choice Task_Presentation	Other Data Collection Instruments	26/Jul/2022	2
Picture Vocabulary Test_Presentation	Other Data Collection Instruments	26/Jul/2022	2
Recruitment Poster_English version	Recruitment Materials	26/Jul/2022	2
Recruitment Email_English version	Recruitment Materials	26/Jul/2022	2
Classroom Recruitment Script	Oral Script	26/Jul/2022	2
Language Background Questionnaire_Adults_English Version	Online Survey	26/Jul/2022	2
Language Background Questionnaire_Children_English Version	Online Survey	26/Jul/2022	2
Language Background Questionnaire_Adults_Spanish Version	Translated Documents	26/Jul/2022	2
Language Background Questionnaire_Children_Spanish Version	Translated Documents	26/Jul/2022	2
Language Background Questionnaire_Adults_Arabic Version	Translated Documents	26/Jul/2022	2
Language Background Questionnaire_Children_Arabic Version	Translated Documents	26/Jul/2022	2
Recruitment Email_Spanish Version with English translation	Translated Documents	26/Jul/2022	2
Recruitment Poster_Arabic version	Translated Documents	26/Jul/2022	2
Recruitment Email_Arabic Version with English translation	Translated Documents	26/Jul/2022	2
Letter of Information and Consent_Adults_English Version	Implied Consent/Assent	31/Jul/2022	2
Letter of Information and Consent_Children_English Version	Implied Consent/Assent	31/Jul/2022	2
Assent letter_Participants between 7-17_English Version	Implied Consent/Assent	31/Jul/2022	2
Recruitment Poster_Spanish version	Translated Documents	31/Jul/2022	2
Assent Letter_ Participants between 7-17_Arabic Version	Translated Documents	31/Jul/2022	2
Letter of Information and Consent_Adults_Arabic Version	Translated Documents	31/Jul/2022	2
Letter of Information and Consent_Children_Arabic Version	Translated Documents	31/Jul/2022	2
Assent letter_Participants between 7-17_Spanish Version	Translated Documents	31/Jul/2022	2
Letter of Information and Consent_Adults_Spanish Version	Translated Documents	31/Jul/2022	2
Letter of Information and Consent_Children_Spanish Version	Translated Documents	31/Jul/2022	2

Documents Acknowledged:

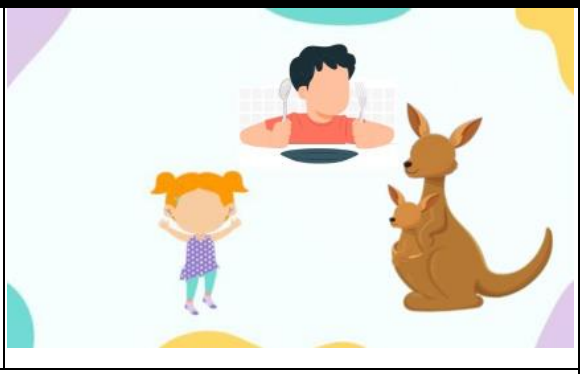
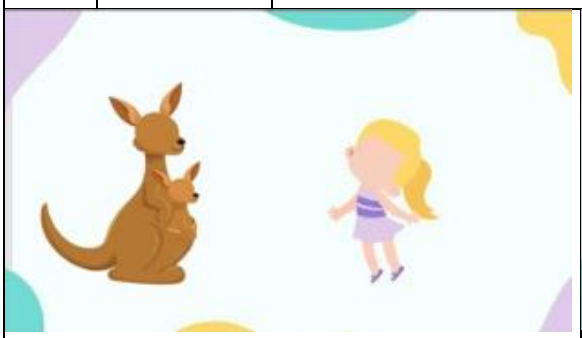
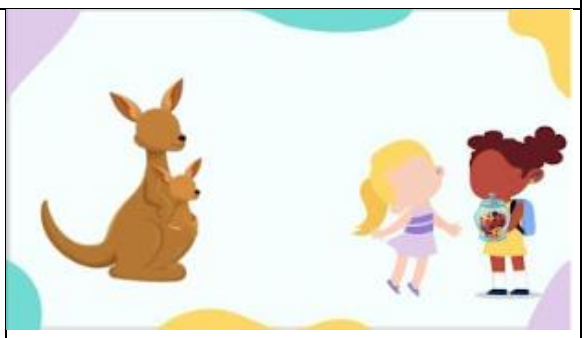
Document Name	Document Type	Document Date	Document Version
Arabic translation certificate	Translation Certificate	13/May/2022	1
Spanish translation certificate	Translation Certificate	13/May/2022	1

No deviations from, or changes to the protocol should be initiated without prior written approval from the NMREB, except when necessary to eliminate immediate hazard(s) to study participants or when the change(s) involves only administrative or logistical aspects of the trial.

Appendix 2. *Elicited Production Task*[37]

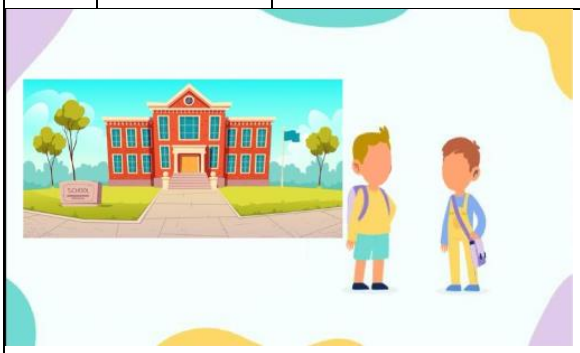
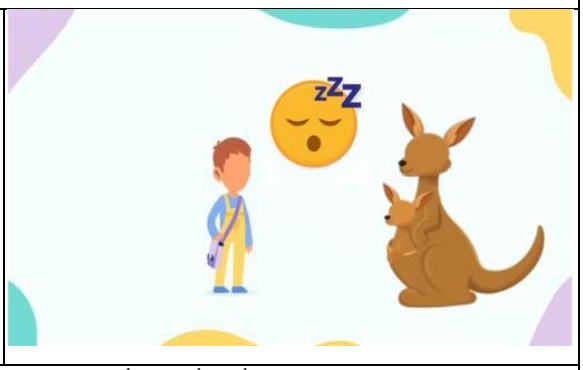
Non-randomized images[38] *of the Elicited Production Task with Egyptian Arabic stimuli and their English translations*

1. Warm-up session (3 items)

<table>
<tr><th>N.</th><th>Language</th><th>Stimuli</th></tr>
<tr><td rowspan="3">A</td><td colspan="2">   </td></tr>
<tr><td>EA</td><td>صاحبك يوسف قال إنه هيلعب معاك طول اليوم، بس مشي بدري وأنت عايز تعرف ليه. إسأل الكانغرو.</td></tr>
<tr><td>English translation</td><td>Your friend, Youssef, told you that he would play with you all day, but he left early, and you want to know why. Ask the kangaroo.</td></tr>
<tr><td rowspan="2">B</td><td colspan="2">   </td></tr>
<tr><td>EA</td><td>لما صحيت لاقيت حد أخد الكوكيز بتاعتك، و أنت عايز تعرف مين. إسأل الكانغرو.</td></tr>
</table>

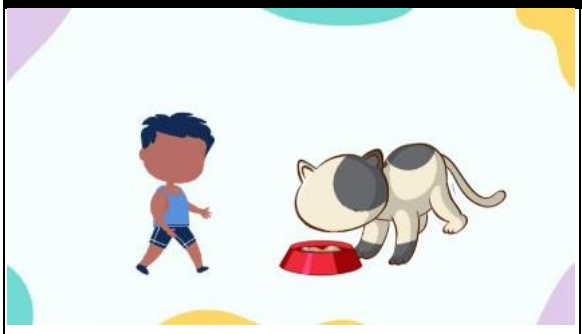
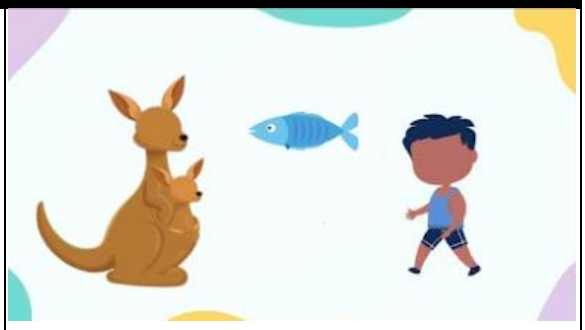
[37] I would like to thank my daughter, Aya Elmawazini, for creating this wonderful presentation specifically for this study.

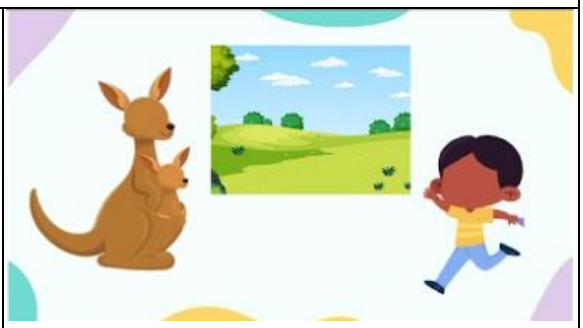
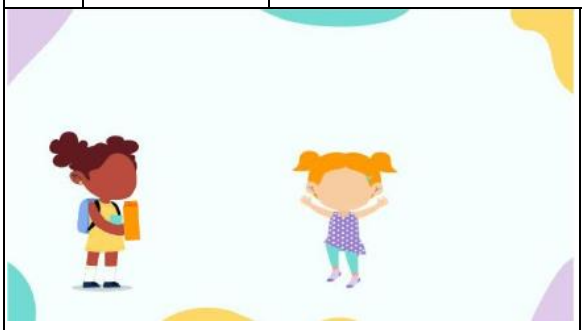
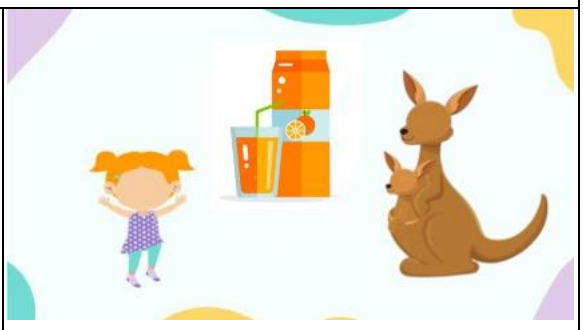
[38] The template used for this task is a free-copyright PowerPoint template from Slidesgo.com (https://slidesgo.com/theme/take-a-walk-today#search-kids&position-9&results-731). The images used in this PowerPoint are copyright free and they have been designed using assets from Freepik.com (https://www.freepik.com/)

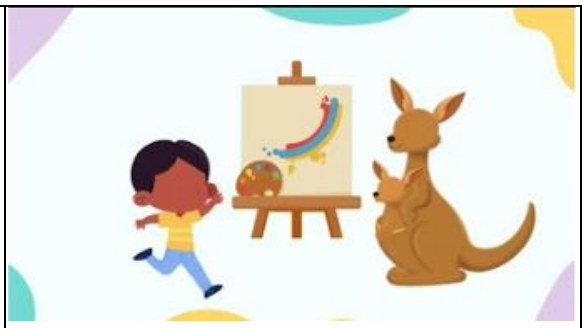
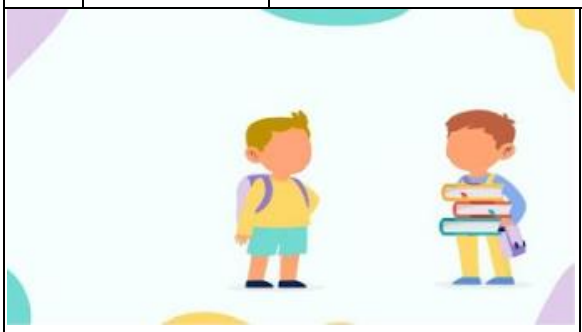
	English translation	When you woke up you found that someone took your cookies, and you would know who took them/the person who took them. Ask the kangaroo about it.
		
C	EA	صاحبك ماكس وصل المدرسة متأخر أوي و أنت عايز تعرف ليه. إسأل الكانغرو.
	English translation	Your friend, Max, came to school really late, and you would like to know why. Ask the kangaroo.

2. Experimental items (18 items)

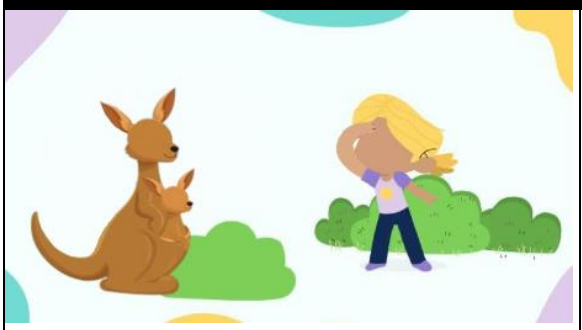
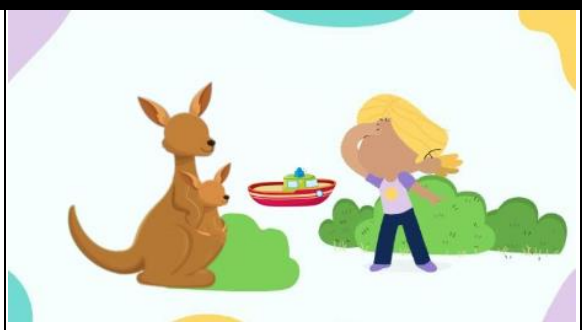
2.1. Items to elicit *ʔeh* ‘what’ (6 items)

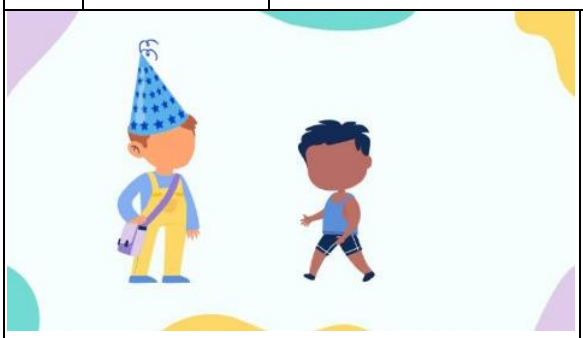
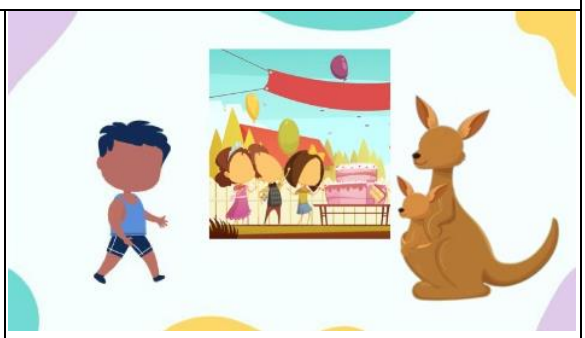
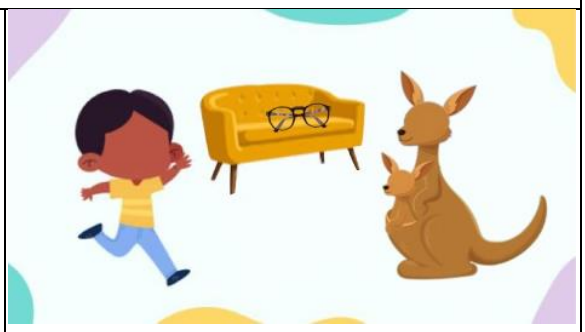
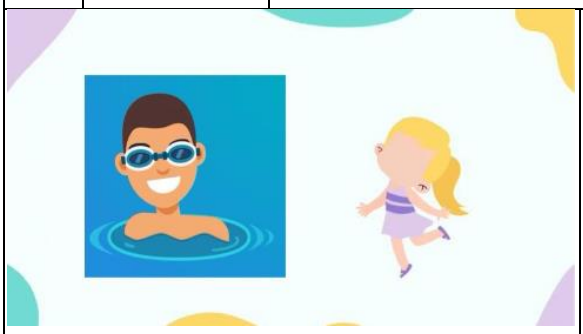
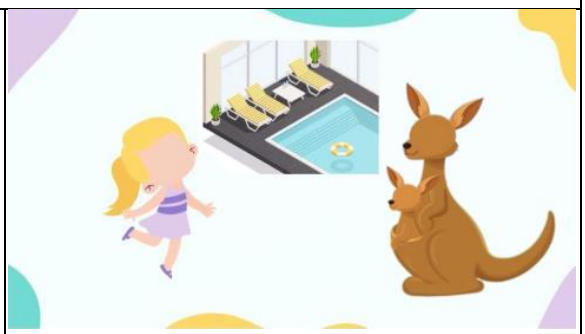
N.	Language	Stimuli
		 
1	EA	القطة بتاكل حاجة وأنت عايز تعرف إيه. إسأل الكانغرو.
	English translation	The cat is eating something, and you want to know what. Ask the kangaroo.

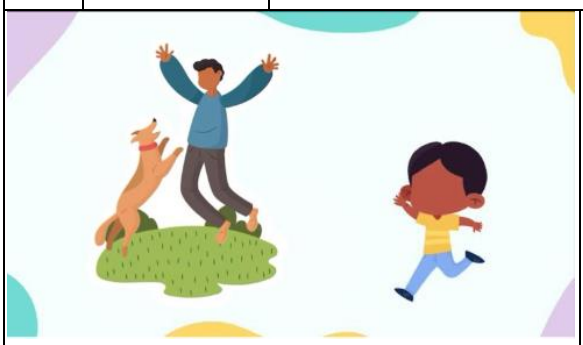
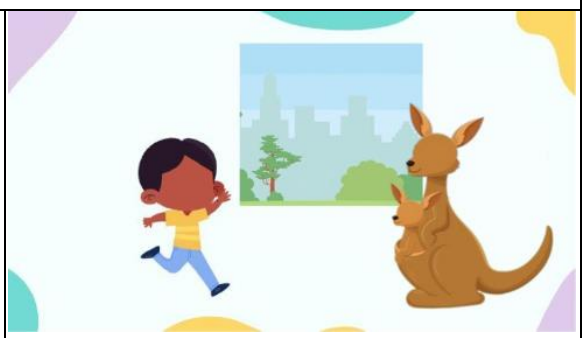
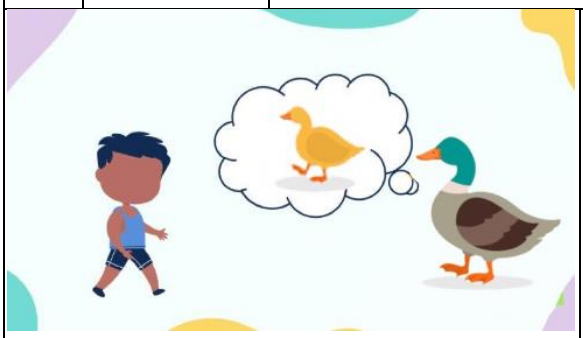
		
2	EA	الولد بيرسم حاجة و أنت عايز تعرف إيه. إسأل الكانغرو.
	English translation	The boy is drawing something, and you want to know what. Ask the Kangaroo.
		
3	EA	البنت بتقرأ حاجة و أنت عايز تعرف إيه. إسأل الكانغرو.
	English translation	The girl is reading something, and you want to know what. Ask the Kangaroo.
		
4	EA	البنت بتشرب حاجة و أنت عايز تعرف إيه. إسأل الكانغرو.
	English translation	The girl is drinking something, and you want to know what. Ask the Kangaroo.

		 
5	EA	البنت بتلون حاجة و أنت عايز تعرف إيه. إسأل الكانغرو.
	English translation	The girl is painting something, and you want to know what. Ask the Kangaroo.
		 
6	EA	الولد بيذاكر حاجة و أنت عايز تعرف إيه. إسأل الكانغرو.
	English translation	The boy is studying something, and you want to know what. Ask the Kangaroo.

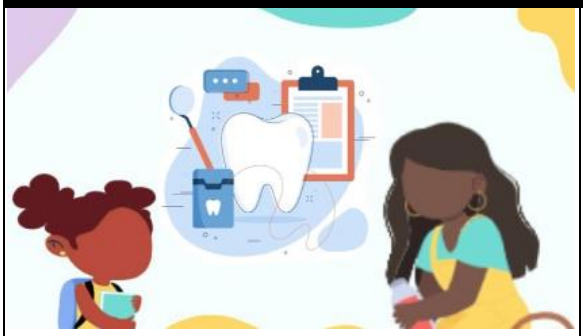
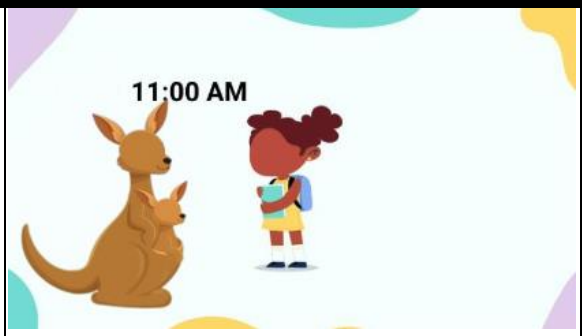
2.1. Items to elicit *feen* 'where' (6 items)

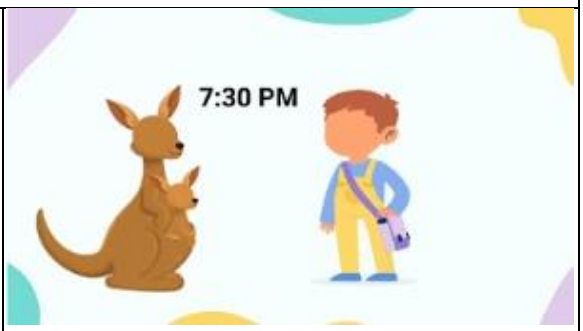
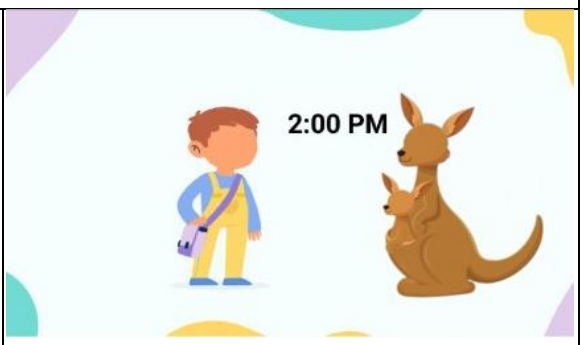
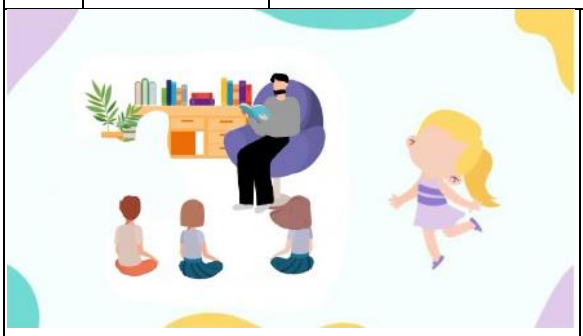
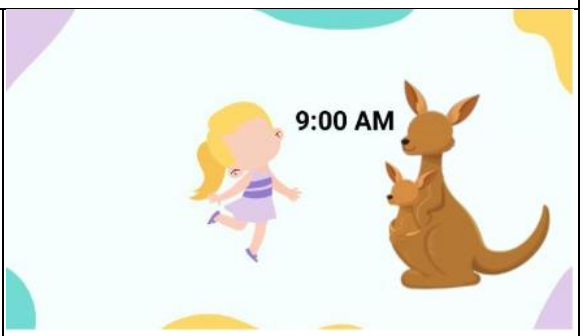
N.	Language	Stimuli
		 
7	EA	الينت مش لاقية لعبتها و أنت عايز تعرف فين. إسأل الكانغرو

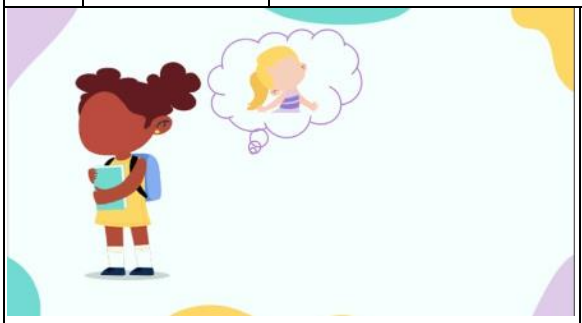
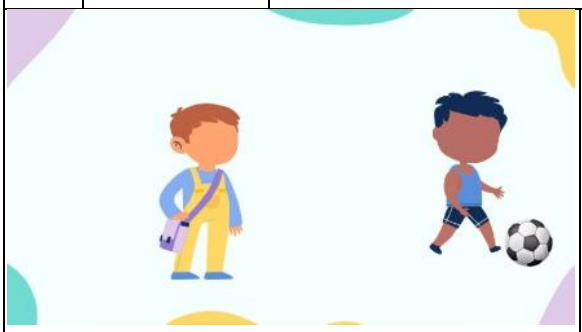
	English translation	Th girl cannot find her toy, and you want to know where. Ask the kangaroo.
		
8	EA	الولد مبسوط جدا علشان هيروح حفلة في مكان حلو أوي و أنت عايز تعرف فين. إسأل الكانغرو.
	English translation	The boy is so happy because he is going to a party in a fancy place, and you want to know where. Ask the kangaroo.
		
9	EA	الولد مش لاقي نضارته و أنت عايز تعرف فين يلاقيهم. إسأل الكانغرو.
	English translation	The boy cannot find his glasses and you want to know where. Ask the kangaroo.
		
10	EA	الولد بيعوم في بيسين في مكان حلو أوي و أنت عايز تعرف فين. إسأل الكانغرو.

	English translation	The boy is swimming in a pool in a special place and you want to know where. Ask the kangaroo.
		
11	EA	الكلب بيلعب في مكان حلو أوي و أنت عايز تعرف فين. إسأل الكانغرو.
	English translation	The dog is playing in a nice place, and you want to know where. Ask the kangaroo.
		
12	EA	البطة الكبيرة مش لاقيه بنتها البطة الصغيرة و عايزة تعرف هي فين. إسأل الكانغرو
	English translation	The mommy duck can't find her little duckling and she wants to know where to find it. Ask the kangaroo.

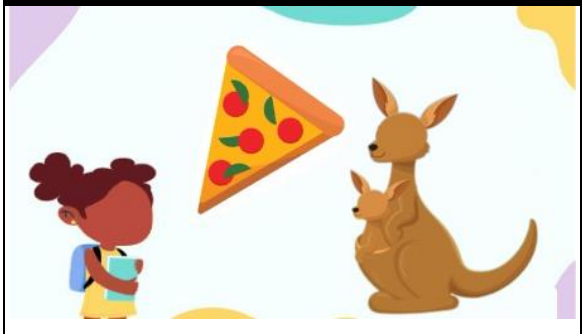
2.3.Items to elicit *ʔimta* 'when (6 items)

N.	Language	Stimuli
		
		

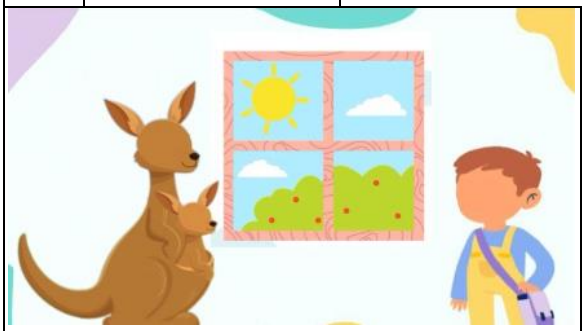
13	EA	مامتك رايحة لدكتور الأسنان و أنت عايز تعرف إمتى. إسأل الكانغرو.
	English translation	Your mom is going to the dentist appointment, and you want to know when. Ask the kangaroo.
		
14	EA	باباك قال إنه هيطلب بيتزا و أنت عايز تعرف إمتى. إسأل الكانغرو.
	English translation	Your dad said that he would order pizza and you want to know when. Ask the kangaroo.
		
15	EA	مامتك قالت لك إنها هتوديك المكتبة و أنت عايز تعرف إمتى. إسأل الكنغرو.
	English translation	Your mom told you that she would take you to the library and you want to know when. Ask the kangaroo.
		
16	EA	المدرس هيقرأ قصة للطلاب و أنت عايز تعرف أمتى. أسأل الكنغرو.

	English translation	The teacher is going to read a story for his students, and you want to know when. Ask the kangaroo.
		
17	EA	أصحابك هيجوا يزوروك و أنت عايز تعرف أمتى. أسأل الكنغرو.
	English translation	Your friends are coming to visit you and you want to know when. Ask the kangaroo.
		
18	EA	صاحبك هيجي يلعب معاك كورة قدم وأنت عايز تعرف أمتى. أسأل الكنغرو.
	English translation	Your friend is going to play soccer with you, and you want to know when. Ask the kangaroo.

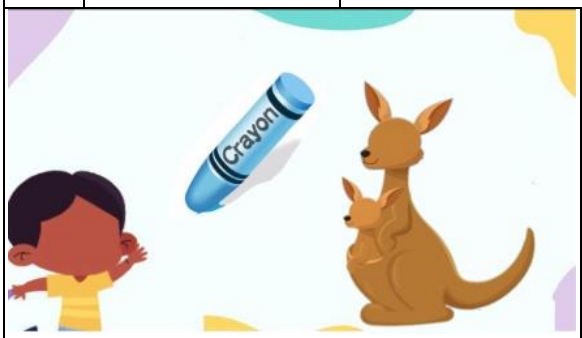
3. Distractor items (6 yes/no questions)

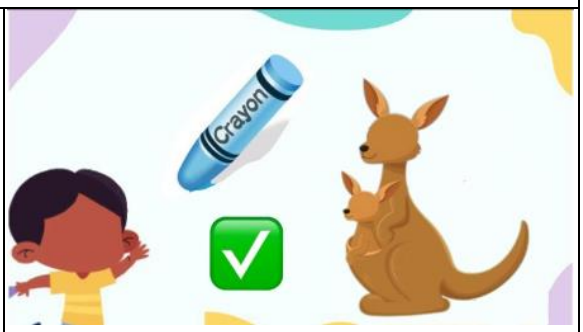
N.	Language	Stimuli
		
		

1	EA	أسأل الكنغرو لو هي بتحب البيتزا.
	English translation	Ask the kangaroo if she likes pizza.

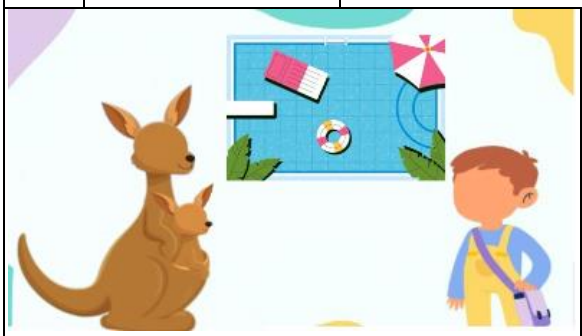


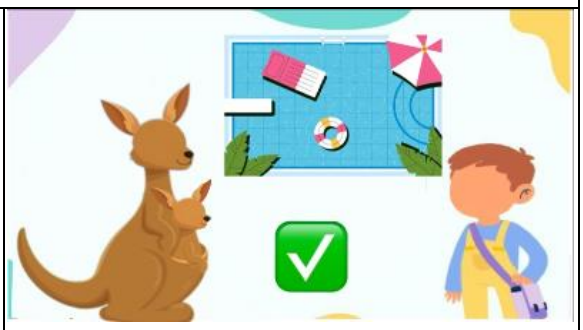
2	EA	أسأل الكنغرو لو هي بتصحى بدري.
	English translation	Ask the kangaroo if she wakes up early.



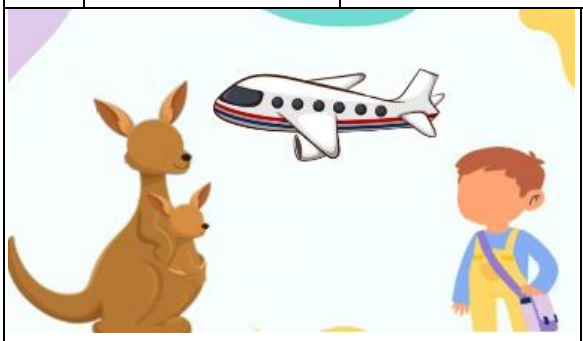
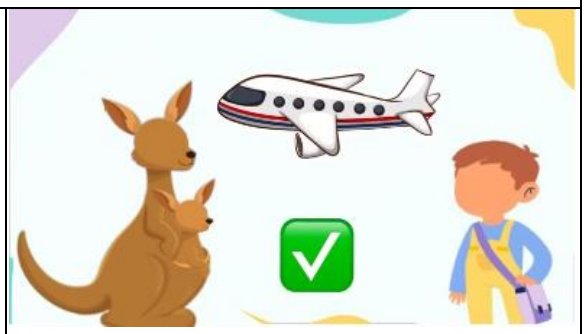


3	EA	أسأل الكنغرو لو هي بتحب اللون الأزرق.
	English translation	Ask the kangaroo if she likes the color blue.





4	EA	أسأل الكنغرو لو هي بتحب تعوم.
	English translation	Ask the kangaroo if she if she can swim.

		
5	EA	أسأل الكنغرو لو هي هتروح المول النهاردة.
	English translation	Ask the kangaroo if she will go to the mall today.
		
6	EA	أسأل الكنغرو لو هي بتحب تسافر بالطيارة.
	English translation	Ask the kangaroo if she likes travelling by plane.

Appendix 3. *Grammaticality Choice Task*[39]

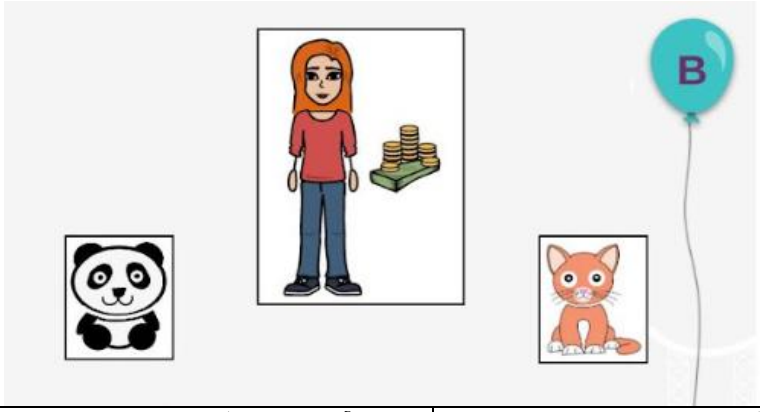
Non-randomized images[40] *of the Grammaticality Choice Task with Egyptian Arabic stimuli and their English translations*

1. Warm-up session (3 items)

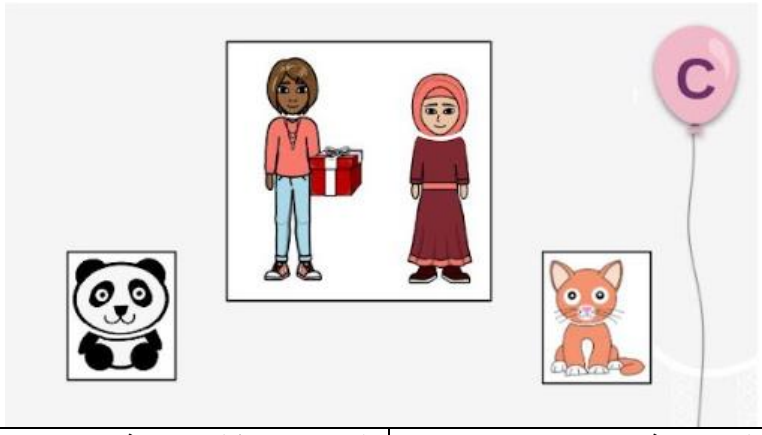
Language	Stimuli	
		
EA	ا. **مين** بيوصل الولد للمدرسة؟	ب. *بيوصل الولد للمدرسة **مين؟**
EA	1a. ***mīn*** *biwasal ʔlwaled lilmadrasah?*	1b. **biwasal ʔlwaled lilmadrasah **mīn**?*
English	1a. **Who** drives the boy to school?	1b.* Drives the boy to school **who**?

[39] I would like to thank my daughter, Aya Elmawazini, for creating this wonderful presentation specifically for this study.

[40] The template used for this task is a free-copyright PowerPoint template from SlidesMania.com (https://slidesmania.com/funfair-exit-ticket-fun-animated-theme/). The images used in this PowerPoint are copyright free and they have been designed using the free version of Storyboard That (https://www.storyboardthat.com/)



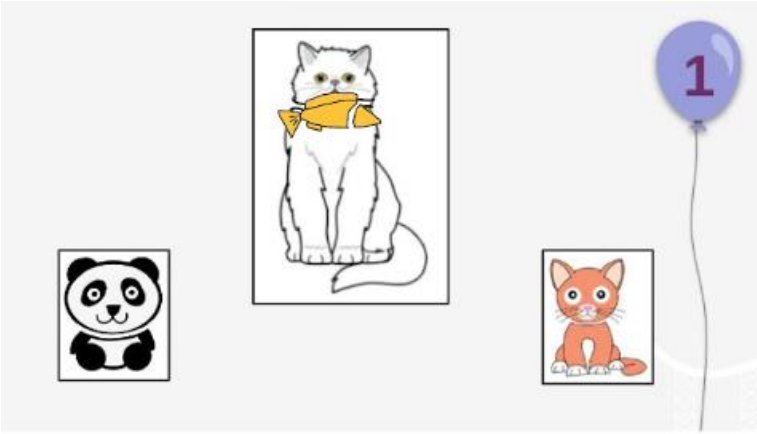
EA	ا. **ليه** آنا بتحوش فلوس؟	ب. آنا بتحوش فلوس **ليه؟**
EA	2a. ***leeh*** *ānā bitaḥoš felūs?*	2b. *ānā bitaḥoš felūs* ***leeh****?*
English	2a. **Why** does Ana save money?	2b.* Does Ana save money **why**?

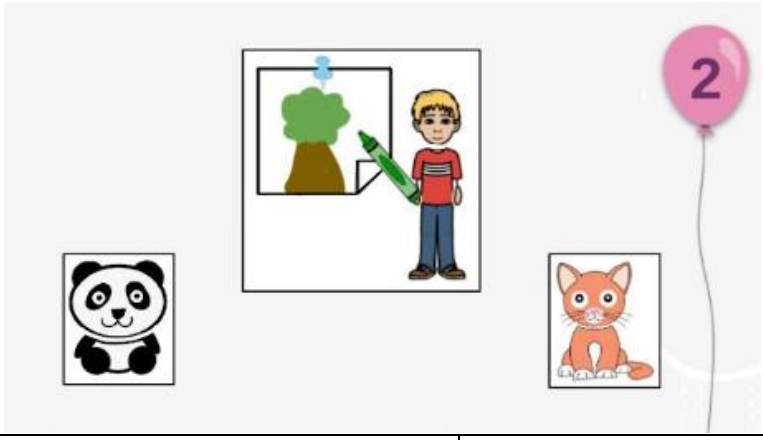


EA	ا. **مين** بيدي كارمن هدية؟	ب. *بيدي كارمن هدية **مين؟**
EA	3a. ***mīn*** *biyedī cārmen hedya?*	3b. *biyedī cārmen hedya* ***mīn****?*
English	3a. **Who** is giving Carmen a gift?	3b. * Is giving Carmen a gift **who**?

2. Experimental items (18 items)

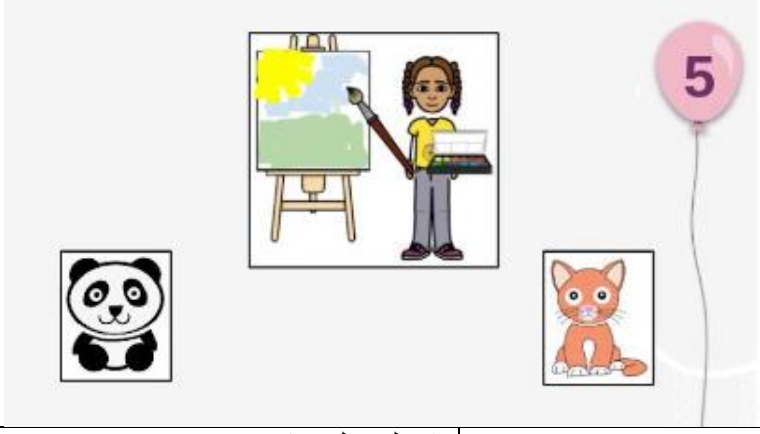
2.1. ʔeh ‘what’ (6 items)

Language	Stimuli	
		
EA	ا. *إيه القطة بتاكل؟	ب. القطة بتاكل إيه؟
EA	1a.* ***ʔeh*** *ʔlota bitākol?*	1b. *ʔlota bitākol* ***ʔeh****?*
English	1a. **What** is the cat eating?	1b.*Is the cat eating **what**?

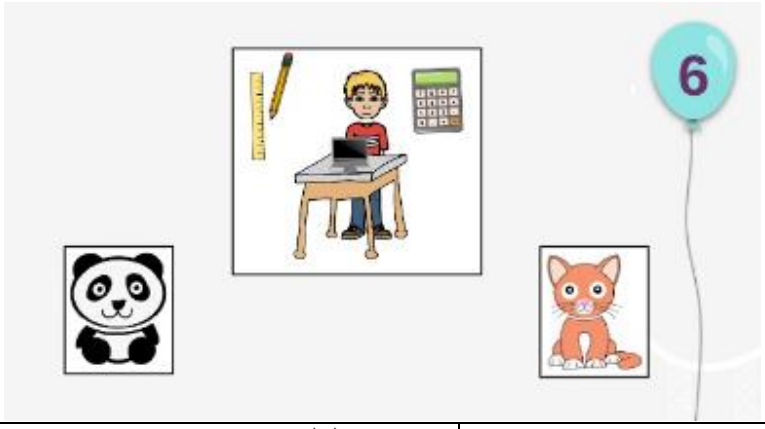
		
EA	ا. *إيه الولد بيرسم؟	ب. الولد بيرسم إيه؟
EA	2a.* ***ʔeh*** *ʔlwalad biyirsim?*	2b. *ʔlwalad biyirsim* ***ʔeh****?*
English	2a. **What** is the boy drawing?	2b.*Is the boy drawing **what**?

EA	ا. ***إيه** البنت بتقرأ؟	ب. البنت بتقرأ **إيه؟**
EA	3a. ****ʔeh** *ʔlbint biteʔra?*	3b. *ʔlbint biteʔra **ʔeh**?*
English	3a. **What** is the girl reading?	3b. *Is the girl reading **what**?

EA	ا. بتشرب البنت إيه؟	ب. البنت بتشرب إيه؟
EA	4a. *bitešrab ʔlbint ʔeh?*	4b. *ʔlbint bitešrab ʔeh?*
English	4a. What is the girl drinking?	4b.*What the girl is drinking?



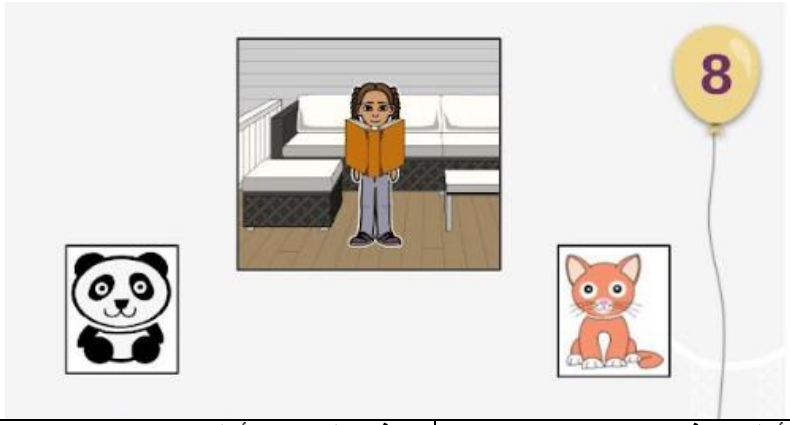
EA	ا. بتلون البنت إيه؟	ب. البنت بتلون إيه؟
EA	5a. *bitlawen ʔlbint ʔeh?*	5b. *ʔlbint bitlawen ʔeh?*
English	5a. What is the girl painting?	5b.*What the girl is painting?

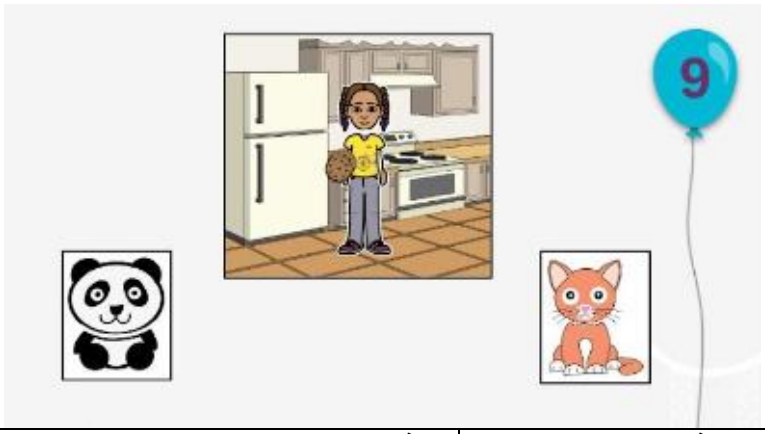


EA	ا. بيذاكر الولد إيه؟	ب. الولد بيذاكر إيه؟
EA	6a. *biẓāker ʔlwalad ʔeh?*	6b. *ʔlwalad biẓāker ʔeh?*
English	6a. What is the boy studying?	6b.*What the boy is studying?

2.2.*Feen* ‘where (6 items)

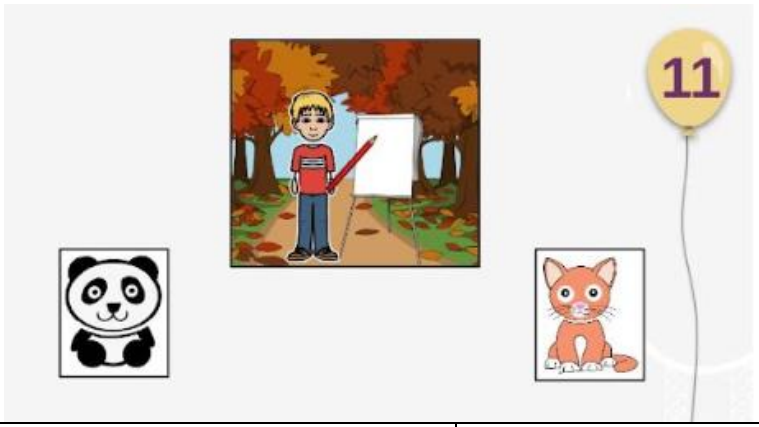
Language	Stimuli	
		
EA	ا. **فين** الولد بيلعب كرة السلة؟	ب. الولد بيلعب كرة السلة **فين؟**
EA	7a. ***feen*** *ʔlwalad biyelʕab kuratessala?*	7b. *ʔlwalad biyelʕab kuratessala* ***feen****?*
English	7a. **Where** is the boy playing basketball?	7b.*Is the boy playing basketball **where**?

		
EA	ا. **فين** البنت بتقرأ القصة؟	ب. البنت بتقرأ القصة **فين؟**
EA	*8a.* ***feen*** *ʔlbint biteʔra ʔlqesa?*	*8b. ʔlbint biteʔra ʔlqesa* ***feen?***
English	8a. **Where** is the girl reading the story?	8b.*Is the girl reading the story **where**?

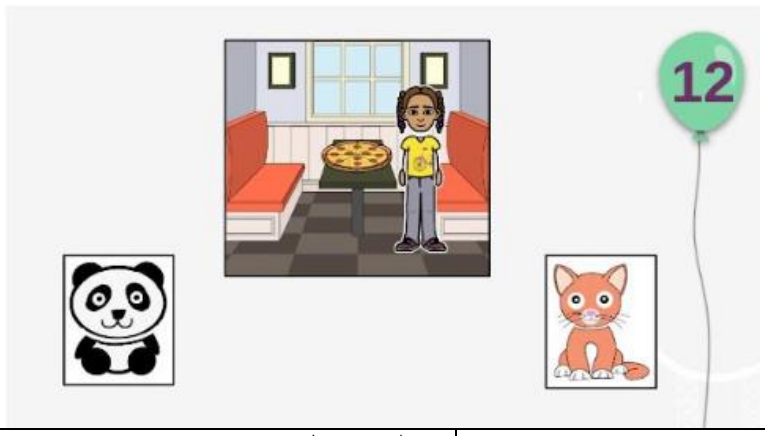


EA	ا. **فين** البنت بتاكل بسكوت؟	ب. البنت بتاكل بسكوت **فين؟**
EA	9a. ***feen*** *ʔlbint bitākol baskūt?*	9b. *ʔlbint bitākol baskūt* ***feen****?*
English	9a. **Where** is the girl eating biscuits?	9b.*Is the girl eating biscuits **where**?

EA	ا. بيلعب الكلب فين؟	ب. الكلب بيلعب فين؟
EA	10a. *biyelʕab ʔlkalb feen?*	10b. *ʔlkalb biyelʕab feen?*
English	10a. Where is the dog playing?	10b.*Where the dog is playing?

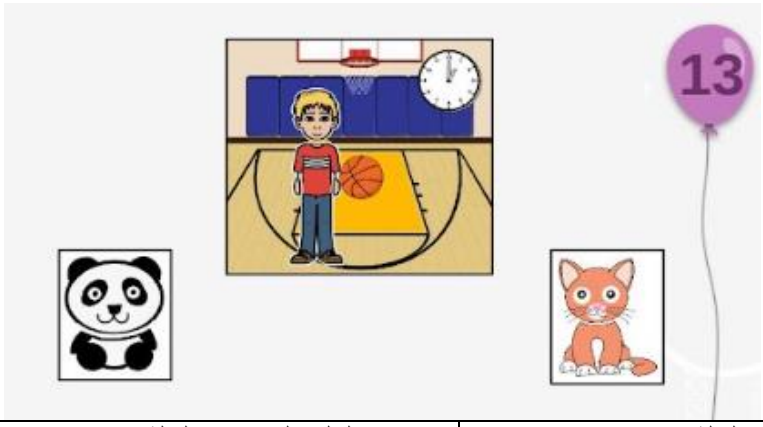


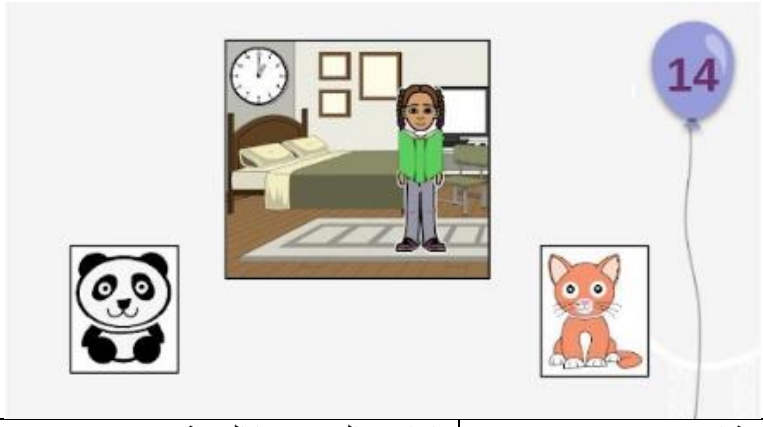
EA	ا. بيرسم الولد شجرة فين؟	ب. الولد بيرسم شجرة فين؟
EA	11a. *biyirsim ʔlwalad šagara feen?*	11b. *ʔlwalad biyirsim šagara feen?*
English	11a. Where is the boy drawing a tree?	11b.*Where the boy is drawing a tree?

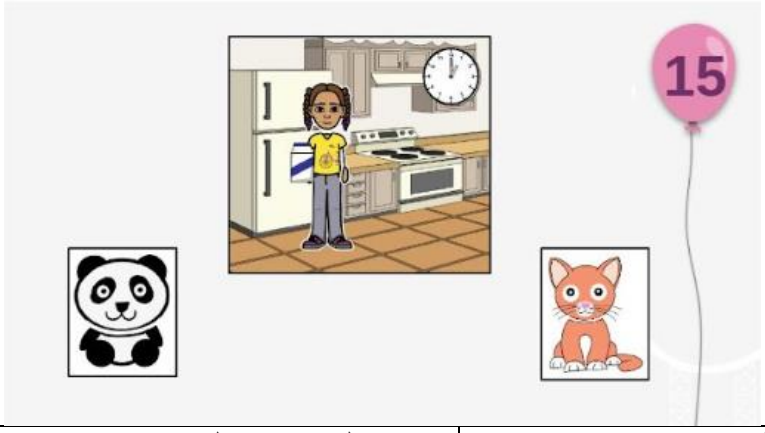


EA	ا. البنت بتاكل بيتزا فين؟	ب. بتاكل البنت بيتزا فين؟
EA	12a. *ʔlbint bitākol bitẓa feen?*	12b. *bitākol ʔlbint bitẓa feen?*
English	12a. Where is the girl eating pizza?	12b.*Where the girl is eating pizza?

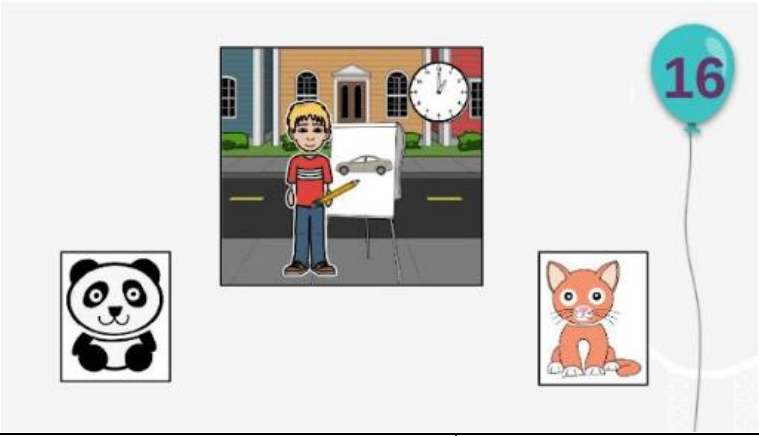
2.3.***ʔimta*** **'when (6 items)**

Language	Stimuli	
		
EA	ا. **إمتى** الولد بيلعب كرة السلة؟	ب. الولد بيلعب كرة السلة **إمتى؟**
EA	*13a.* ***ʔimta*** *ʔlwalad biyelʕab b kuratessala?*	*13b. ʔlwalad biyelʕab kuratessala* ***ʔimta****?*
English	13a. **When** is the boy playing basketball?	13b.*Is the boy playing basketball **when**?

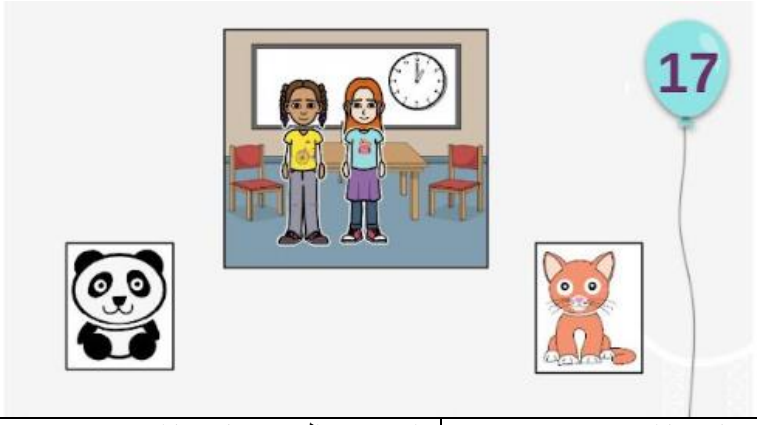
		
EA	ا. **إمتى** البنت بتقرا القصة؟	ب. البنت بتقرا القصة **إمتى؟**
EA	*14a.* ***ʔimta*** *ʔlbint bitʔera ʔlqesa?*	*14b. ʔlbint bitʔera ʔlqesa* ***ʔimta****?*
English	14a. **When** is the girl reading the story?	14b.*Is the girl reading the story **when**?



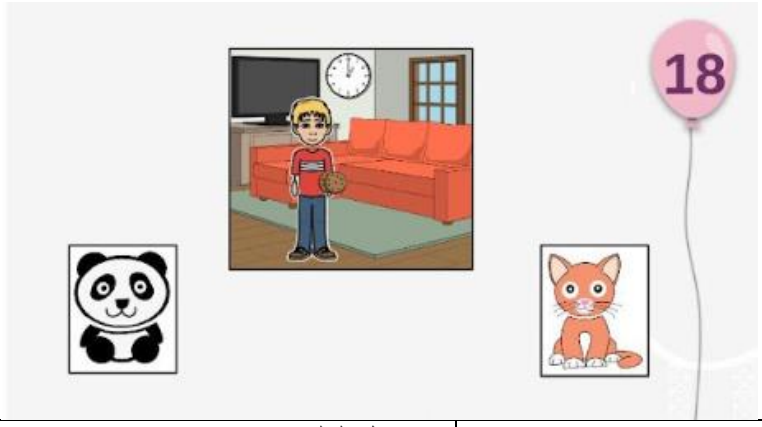
EA	ا. **إمتى** البنت بتشرب لبن؟	ب. البنت بتشرب لبن **إمتى؟**
EA	*15a.* ***ʔimta*** *ʔlbint bitšrab laban?*	*15b. ʔlbint bitšrab laban* ***ʔimta****?*
English	15a. **When** does the girl drink milk?	15b.*Does the girl drink milk **when**?



EA	ا. بيرسم الولد عربية إمتى؟	ب. الولد بيرسم عربية إمتى؟
EA	*16a. biyirsim ʔlwalad ʕarabiya ʔimta?*	*16b. ʔlwalad biyirsim ʕarabiya ʔimta?*
English	16a. When is the boy drawing a car?	16b.*When the boy is drawing a car?



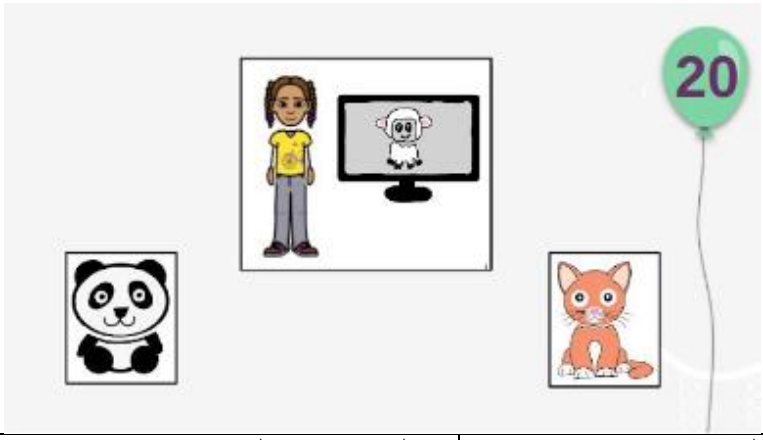
EA	ا. هتزور البنت صاحبتها إمتى؟	ب. البنت هتزور صاحبتها إمتى؟
EA	*17a. hatẓūr ʔlbint ṣaħbetha ʔimta?*	*17b. ʔlbint hatẓūr ṣaħbetha ʔimta?*
English	17a. When will the girl visit her friend?	17b.*When the girl will visit her friend?



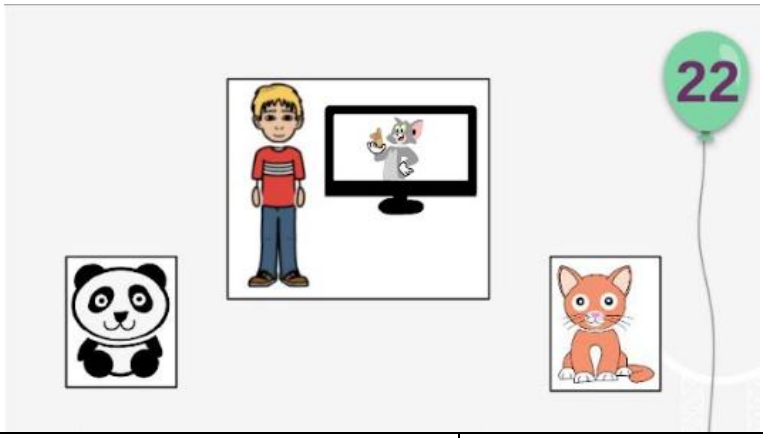
EA	ا. بياكل الولد بسكوت إمتى؟	ب. الولد بياكل بسكوت إمتى؟
EA	*18a. biyakol ʔlwalad baskūt ʔimta?*	*18b. ʔlwalad biyakol baskūt ʔimta?*
English	18a. When does the boy eat biscuits?	18b.*When the boy does eat biscuits?

B. Distractors (6 yes/no questions)

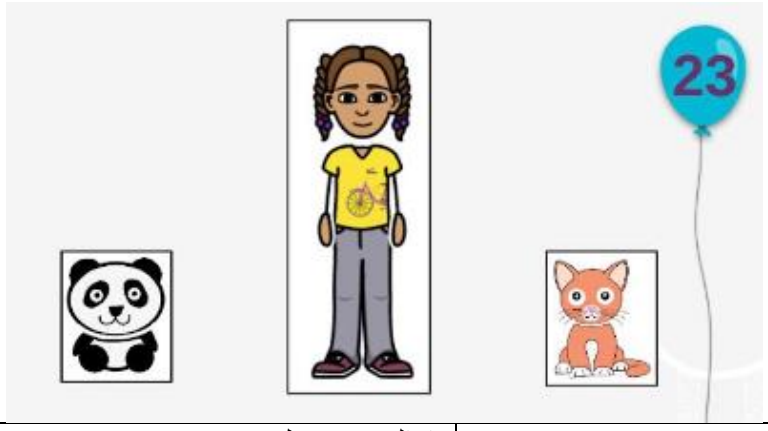
Language	Stimuli	
		
EA	ا. الولد بياكل بيتزا؟	ب. بياكل الولد بيتزا؟
EA	*19a. ʔlwalad biyakol bitẓa?*	*19b. biyakol ʔlwalad bitẓa?*
English	19a. Does the boy eat pizza?	19b.*Eats the boy pizza?

		
EA	ا. البنت بتتفرج على دورا؟	ب. بتتفرج البنت على دورا؟
EA	*20a. ʔlbint bitetfarag ʕala dorā?*	*20b. bitetfarag ʔlbint ʕala dorā?*
English	20a. Does the girl watch Dora?	20b.*Watches the girl Dora?

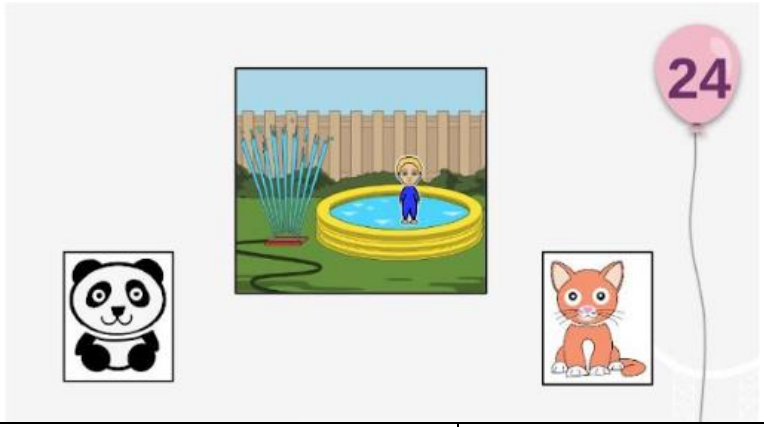
EA	ا. البنت بتاكل بروكلي؟	ب. بتاكل البنت بروكلي؟
EA	*21a. ʔlbint bitākol broklī?*	*21b. bitākol ʔlbint broklī?*
English	21a. Does the girl eat broccoli?	21b.*Eats the girl broccoli?



EA	ا. الولد بيتفرج على توم وجيري؟	ب. بيتفرج الولد على توم وجيري؟
EA	*22a. ʔlwalad biyetfarag ʕala tom wi žerī?*	*22b. biyetfarag ʔlwalad ʕala tom wi žerī?*
English	22a. Does the boy watch Tom and Jerry?	22b.*Watches the boy Tom and Jerry?



EA	ا. البنت بتضحك؟	ب. بتضحك البنت؟
EA	*23a. ʔlbint biteḍḥak?*	*23b. biteḍḥak ʔlbint?*
English	23a. Does the girl laugh?	23b.*Laughs the girl?

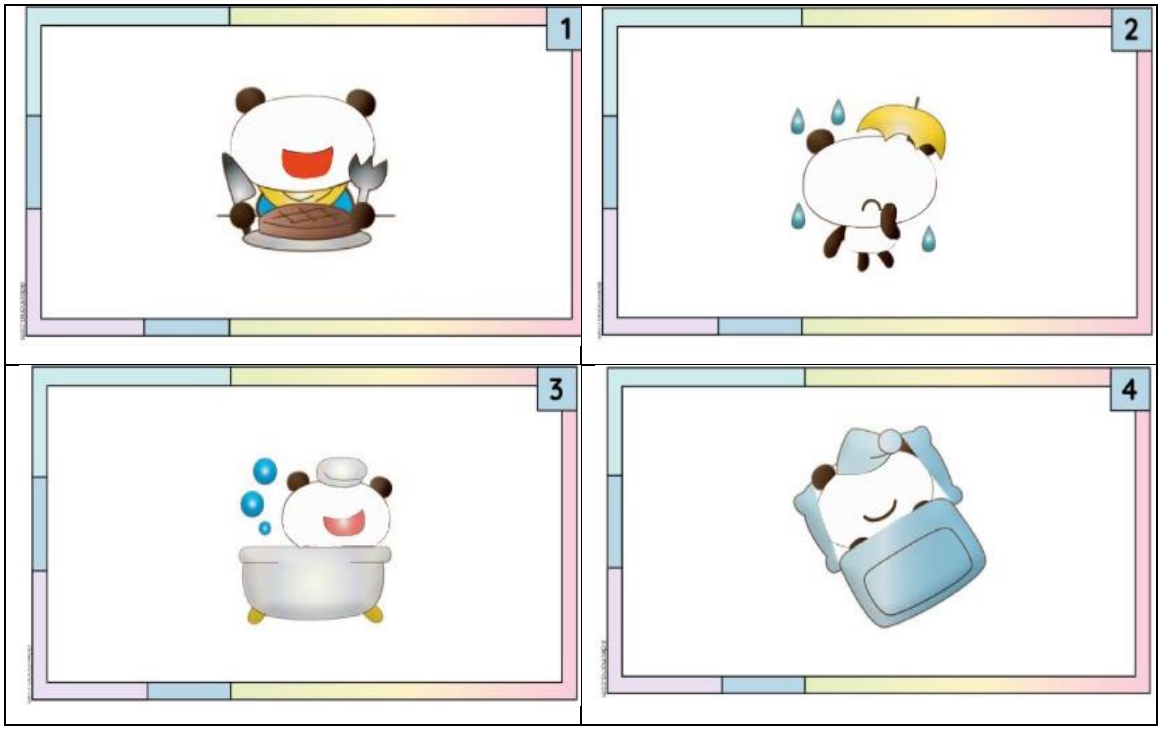


EA	ا. البيبي بيعوم في البيسين؟	ب. بيعوم البيبي في البيسين؟
EA	*24a. ʔlbaby biyʕūm fi elbesīn?*	*24b. biyʕūm ʔlbaby fi elbesīn?*
English	24a. Does the baby swim in the pool?	24b.*Swims the baby in the pool?

Appendix 4. *Vocabulary Picture Task*[41]

Warm-up:

Task:



[41] The template used for this task is a free-copyright PowerPoint template from SlidesMania.com (https://slidesmania.com/thena-free-presentation-template). Pictures used in this presentation are free copyright from Pixabay.com(https://pixabay.com/illustrations/kawaii-panda-bear-bathtub-4206189/)

Appendix 5. *Linguistic Profile Questionnaire (Children _ English Version)*

To be filled in by the child's parent/guardian

(Information will remain confidential. Please do not add your child's name)

Instructions for parents/ guardians:

Please answer the following questions about the language profile of your child

A. Personal Information

1. Unique code of your child (given to you by the researcher): _____
2. *Age of your child:

   Year_____ Months:_____
3. Gender of your child: _____
4. *Place of Birth of your child:

   Country _____province/state_____
5. *Where is the mother of your child originally from?

   Country _____province/state_____
6. *Where is the father of your child originally from?

   Country _____province/state_____
7. *Where does your child currently live?

   Country _____province/state_____
8. *Your child currently lives in

   - French-speaking region
   - English-speaking region
   - Arabic-speaking region
   - Spanish-speaking region
   - None of the above
9. *Does your child currently live in the same country where he/she was born?

   - Yes
   - No

   - *[If no is selected] At what age did he/she move to the current country of residence? ___
10. What grade/year is your child currently in? _____
11. *Does your child have any language or learning problems?

    - Yes
    - No
    - Prefer not to answer

    - [If yes is selected] Please specify if this/these language or learning problem(s) affect his/her understanding and/or speaking ability _____

B. Language Acquisition

12. *What is/are the first language(s) of your child (His/her native language(s) that he/she acquired before the age of 3)? Please choose all the languages that apply

    - Egyptian Arabic
    - Spanish
    - English
    - French

- Other languages

- *If you choose other languages, please specify: _____

13. *What is the first language of the mother of your child (Her native language(s) that she acquired before the age of 3)? Please choose all the languages that apply
    - Egyptian Arabic
    - Spanish
    - English
    - French
    - Other languages
    - *If you choose other language, please specify: _____
14. *What is the first language of the father of your child (His native language(s) that he acquired before the age of 3)? Please choose all the languages that apply
    - Egyptian Arabic
    - Spanish
    - English
    - French
    - Other languages
    - *If you choose other language, please specify: _____
15. *Which language(s) does your child speak at home? _____
16. *Which language(s) does the father of your child use to talk to him/her? (Please write N/A if it is not applicable) _____
17. *Which language(s) does the mother of your child use to talk to him/her? (Please write N/A if it is not applicable) _____
18. *Which language(s) does your child use to talk to his/her siblings? (Please write N/A if it is not applicable) _____
19. *Does your child speak English at home?
    - Yes
    - No

    [If yes is selected in question 19, the participant will see from question 20 to 23. If no is selected, questions 20 to 23 will be skipped and the participant will continue with question 24]
20. *How often does your child speak English at home?
    - all of the time
    - most of the time
    - about half the time
    - often
    - rarely
21. *Who does your child speak English with at home? Please choose all the options that apply
    - Father
    - Mother
    - Siblings
    - Others (e.g., grandparents)
22. How often does the following people speak English to your child? (Please select N/A if it is not applicable)

	All the time	Most of the time	About half of the time	often	rarely	N/A
His/her father						
His/her mother						
His/her siblings						
His/her friends						

23. * In which language do you think your child feels most comfortable? _____

C. Education and Language Use

24. *Please write the language(s) that your child was/is educated in …

    Primary/Elementary school _____

    high school (Please write N/A if it is not applicable) _____

25. *Has your child learned other language(s) (other than his/her native language(s) after the age of 3?

    • Yes • No

    ▪ *[If yes is selected] Please specify which languages your child learned: _____

26. *Which language(s) do your child currently use (Please write N/A if it is not applicable)

    - At school _____
    - to interact with family _____
    - to interact with friends_____
    - in social situations_____
    - to read a text which is available in all his/her languages_____
    - to speak with a person who is equally fluent in all his/her languages _____
    - to watch a video which is available in all his/her languages_____
    - to communicate in social media_____

D. Linguistic Ability

27. Please rate your child's **reading ability** in each of the following languages.

	My child does not speak this language	Beginner	Intermediate	Advanced	Native or native-like
Standard Arabic					
Spanish					
English					
French					
Egyptian Arabic					

28. Please rate your child's **writing ability** in each of the following languages.

	My child does not speak this language	Beginner	Intermediate	Advanced	Native or native-like

Standard Arabic					
Spanish					
English					
French					
Egyptian Arabic					

29. Please rate your child's **speaking ability** in each of the following languages.

	My child does not speak this language	Beginner	Intermediate	Advanced	Native or native-like
Standard Arabic					
Spanish					
English					
French					
Egyptian Arabic					

30. Please rate your child's **listening ability** in each of the following languages.

	My child does not speak this language	Beginner	Intermediate	Advanced	Native or native-like
Standard Arabic					
Spanish					
English					
French					
Egyptian Arabic					

31. Please rate your child's **overall competence** in each of the following languages.

	My child does not speak this language	Beginner	Intermediate	Advanced	Native or native-like
Standard Arabic					

Spanish					
English					
French					
Egyptian Arabic					

Appendix 6. *Linguistic Profile Questionnaire (Adults _ English Version)*

(Information will remain confidential. Please do not add your name)

A. Personal Information

1. Unique code (given to you by the researcher): _____
2. Age of the participant:

   Year:_____ Months:_____
3. Gender of the participant: _____
4. *Place of Birth of the participant

   Country _____province/state_____
5. *Where is your mother originally from?

   Country _____province/state_____
6. *Where is your father originally from?

   Country _____province/state_____
7. *Where do you currently live?

   Country _____province/state_____
8. *You currently live in

   - Egypt
   - Spanish-speaking country
   - English-speaking region
   - French-speaking region
   - None of the above
9. *Do you currently live in the same country where you were born?

   - Yes
   - No

   - *[If no is selected] At what age did you move to the current country of residence? ____
10. *Highest level of schooling:

    - less than Secondary
    - Secondary
    - College
    - University
    - Prefer not to answer
11. *Do you have any language or learning problems?

    - Yes
    - No
    - Prefer not to answer

    - [If yes is selected] Please specify if this/these language or learning problem(s) affect your understanding and/or speaking ability _____

B. Language Acquisition

12. *What is/are your first language(s) (Your native language(s) that you acquired before the age of 3)? Please choose all the languages that apply

    - Egyptian Arabic
    - Spanish
    - English
    - French

- Other languages

- *If you choose other languages, please specify: _____

13. * What is/are your first language(s) of your mother (Her native language(s) that she acquired before the age of 3)? Please choose all the languages that apply
    - Egyptian Arabic
    - Spanish
    - English
    - French
    - Other languages
    - *If you choose other language, please specify: _____
14. * What is/are your first language(s) of your father (His native language(s) that he acquired before the age of 3)? Please choose all the languages that apply
    - Egyptian Arabic
    - Spanish
    - English
    - French
    - Other languages
    - *If you choose other language, please specify: _____
15. *Which language(s) did you speak at home as a child? _____
16. *Which language(s) did your father use to talk to you as a child? (Please write N/A if it is not applicable) _____
17. *Which language(s) did your mother use to talk to you as a child? (Please write N/A if it is not applicable) _____
18. *Which language(s) did you use to talk to your siblings as a child? (Please write N/A if it is not applicable) _____
19. *As a child, did you speak English at home?
    - Yes
    - No

    [If yes is selected in question 19, the participant will see from question 20 to 24. If no is selected, questions 20 to 24 will be skipped and the participant will continue with question 25]

20. *As a child, how often did you speak English at home?
    - all of the time • most of the time • about half the time • often • rarely
21. *As a child, who did you speak English with at home? Please choose all the options that apply
    - Father • Mother • Siblings • Others (e.g., grandparents)
22. As a child, how often did the following people speak English to you? (Please select N/A if it is not applicable)

	All the time	Most of the time	About half of the time	often	rarely	N/A
Your father						
Your mother						
Your siblings						
Your friends						

23. *Currently, how often do you speak English at home?
    - all of the time • most of the time • about half the time • often • rarely
24. *Currently, in which language do you feel most comfortable? _____

C. Education and Language Use

25. *Please write the language(s) that you were educated in …

    Primary/Elementary school _____

    high school (Please write N/A if it is not applicable) _____

    college/university (Please write N/A if it is not applicable) _____
26. *Have you learned other language(s) (other than your native language(s) after the age of 3?

    • Yes • No

    - *[If yes is selected] Please specify which languages you learned: _____
27. * Which language(s) do you currently use (Please write N/A if it is not applicable)
    - At work _____
    - to interact with family _____
    - to interact with friends_____
    - in social situations_____
    - to read a text which is available in all your languages_____
    - to speak with a person who is equally fluent in all your languages. _____
    - to watch a video which is available in all your languages_____
    - to communicate in social media _____

D. Linguistic Ability

28. Please rate your **reading ability** in each of the following languages.					
	I do not speak this language	**Beginner**	**Intermediate**	**Advanced**	**Native or native-like**
Standard Arabic					

Spanish					
English					
French					
Egyptian Arabic					

29. Please rate your **writing ability** in each of the following languages.

	I do not speak this language	Beginner	Intermediate	Advanced	Native or native-like
Standard Arabic					
Spanish					
English					
French					
Egyptian Arabic					

30. Please rate your **speaking ability** in each of the following languages.

	I do not speak this language	Beginner	Intermediate	Advanced	Native or native-like
Standard Arabic					
Spanish					
English					
French					
Egyptian Arabic					

31. Please rate your **listening ability** in each of the following languages.

	I do not speak this language	Beginner	Intermediate	Advanced	Native or native-like
Standard Arabic					
Spanish					

English					
French					
Egyptian Arabic					

32. Please rate your **overall competence** in each of the following languages.

	I do not speak this language	**Beginner**	**Intermediate**	**Advanced**	**Native or native-like**
Standard Arabic					
Spanish					
English					
French					
Egyptian Arabic					

Appendix 7. *Linguistic Profile Questionnaire (Children _ Arabic Version)*

ملف تعريف اللغة لدى الأطفال

يُملأ بواسطة أحد أولياء أمر الطفل

(ستبقى المعلومات سرية. الرجاء عدم كتابة إسمك أو اسمك طفلك/طفلتك في هذا الملف)

أ. المعلومات الشخصية

1. الرقم المميز الخاص بطفلك/بطفلتك (الذي قدمته لك الباحثة)**:**_____

2. * عمر الطفل:

_____سنة و _____شهر

3. جنس الطفل: _____

4.* محل ميلاد الطفل المشترك**:**

البلد _____ المحافظة_____

5.* ما هي جنسية والدة الطفل؟

الجنسية _____من محافظة_____

6.*ما هي جنسية والد الطفل؟

الجنسية _____من محافظة_____

7.* اين يقيم طفلك حاليا؟

البلد _____ المحافظة_____

8*طفلك يقيم حاليًا في

- مصر
- منطقة ناطقة باللغة الإنجليزية
- منطقة ناطقة باللغة الإسبانية
- منطقة ناطقة باللغة الفرنسية
- أياً من الاختيارات السابقة

9.* هل يقيم طفلك حاليا في نفس البلد الذي وُلد فيه؟

- نعم
- لا

*[إذا كان الإختيار لا] في أي سن انتقل طفلك إلى البلد محل إقامته الحالية ؟_____

10. ما هو الصف الدراسي لطفلك/لطفلتك ؟ _____

11. *هل لدى طفلك/طفلتك أي صعوبات في اللغة أو التعلم؟

- نعم
- لا
- افضل عدم الاجابة

[إذا تم اختيار نعم] يرجى تحديد ما إذا كانت هذه الصعوبات تؤثر على فهمه أو قدرته على التحدث _____

ب. اكتساب اللغة

12.* ما هي لغة (لغات) طفلك/طفلتك الأولى (أي لغته الأم التي اكتسبها قبل بلوغك سن الثالثة)؟ الرجاء اختيار جميع اللغات التي تستوفي هذا الشرط

- اللهجة المصرية
- الاسبانية
- الإنجليزية
- الفرنسية
- لغات أخرى

إذا اخترت لغات أخرى، يرجى كتابة ما هي هذه اللغات بالتحديد: _____

13. * ما هي اللغة (اللغات) الأولى لوالدة طفلك/طفلتك (أي اللغة الأم التي اكتسبتها والدة الطفل قبل سن الثالثة)؟ الرجاء اختيار جميع اللغات التي تستوفي هذا الشرط

•اللهجة المصرية •الاسبانية

•الإنجليزية •الفرنسية

•لغات أخرى

إذا اخترت لغات أخرى، يرجى كتابة ما هي هذه اللغات بالتحديد: _____

14.* ما هي اللغة (اللغات) الأولى لوالد طفلك/طفلتك (أي اللغة الأم التي اكتسبها والد الطفل قبل سن الثالثة)؟ الرجاء اختيار جميع اللغات التي تستوفي هذا الشرط

• اللهجة المصرية •الاسبانية

•الإنجليزية •الفرنسية

•لغات أخرى

إذا اخترت لغات أخرى، يرجى كتابة ما هي هذه اللغات بالتحديد: _____

15. * ما هي اللغة (اللغات) التي يتحدث بها الطفل في المنزل؟ _____

16.* ما هي اللغة (اللغات) التي يستخدمها والد طفلك/طفلتك للتحدث معه؟ (يرجى كتابة "غير منطبق علي طفلي " إذا لم يكن هذا السؤال معبراً عنه) _____

17 * ما هي اللغة (اللغات) التي تستخدمها والدة طفلك/طفلتك للتحدث معه؟ (يرجى كتابة "غير منطبق علي طفلي " إذا لم يكن هذا السؤال معبراً عنه) _____

18. * ما هي اللغة (اللغات) التي يستخدمها طفلك/طفلتك للتحدث مع أخوته؟ (يرجى كتابة "غير منطبق علي طفلي " إذا لم يكن هذا السؤال معبراً عنه) _____

19. * هل يتحدث طفلك/طفلتك اللغة الإنجليزية في المنزل؟

•نعم •لا

[إذا تم اختيار "نعم" في السؤال 19، سيرى المشارك من السؤال 20 إلى 23. وإذا تم اختيار "لا"، فسيتم تخطي الأسئلة من 20 إلى 23 وسيتابع المشارك السؤال 24]

20. *هل يتحدث طفلك/طفلتك الإنجليزية في المنزل

•طوال الوقت •معظم الوقت •تقريبًا نصف الوقت

•أحياناً •نادراً

21. *مع من يتحدث الطفل الإنجليزية في المنزل؟ الرجاء اختيار جميع الخيارات التي تنطبق عليك

•الأب •الأم

•الأشقاء •أشخاص أخرى (كالأجداد على سبيل المثال)

22. كم من الوقت يتحدث طفلك اللغة الإنجليزية مع الأشخاص الآتي ذكرهم (يرجى اختيار "غير منطبق علي طفلي" إذا لم يكن هذا السؤال معبراً عنه)

	طوال الوقت	معظم الوقت	تقريباً نصف الوقت	أحياناً	نادراً	غير منطبق علي طفلي
والده						

والدته						
أخوته						
أصدقائه						

23. ما هي اللغة التي تعتقد أن طفلك/طفلتك يشعر براحة أكبر عند التحدث بها؟ _____

ج. التعليم وإستخدام اللغة

24. * ما هي اللغة (اللغات) التي تُستعمل في تدريس جميع أو معظم المواد في مدرسة طفلك/طفلتك

- في المدرسة الابتدائية / الابتدائية _____
- في المدرسة الثانوية (يرجى كتابة "غير منطبق علي طفلي " إذا لم يكن هذا السؤال معبراً عنه) _____

25. *هل تعلم طفلك/طفلتك لغة (لغات) أخرى (بخلاف لغته الأم) بعد سن الثالثة؟

•نعم •لا

- *[إذا كانت الإجابة نعم] يُرجى تحديد هذه اللغات التي تعلمها الطفل بعد سن الثالثة:_____

26. *ما هي اللغة (اللغات) التي يستخدمها طفلك/طفلتك حاليًا (يرجى كتابة "غير منطبق علي طفلي " إذا لم يكن هذا السؤال معبراً عنه)

- في المدرسة_____
- للتحدث مع العائلة_____
- للتحدث مع الأصدقاء_____
- في المواقف الاجتماعية_____
- لقراءة نص متاح بجميع اللغات التي يتحدثها الطفل _____
- للتحدث مع شخص يتكلم جميع لغات الطفل بطلاقة_____ .
- لمشاهدة فيديو متوفر بجميع اللغات التي يتحدثها الطفل _____
- للتواصل في وسائل التواصل الاجتماعي _____

د. المهارات اللغوية

27. يرجي التكرم بتقييم **مهارات طفلك/طفلتك في القراءة** في كل من اللغات التالية

	لايتحدث طفلي هذه اللغة	مستوى مبتدئ	مستوى متوسط	مستوى متقدم	طفلي طليق في هذه اللغة لأنها لغته الأم أو لأنه يتحدثها مثل أهل هذه اللغة
اللغة العربية الفصحى					
اللغة الإسبانية					
اللغة الإنجليزية					
اللغة الفرنسية					
اللهجة المصرية					

28. يرجي التكرم بتقييم **مهارات طفلك/طفلتك في الكتابة** في كل من اللغات التالية

	لايتحدث طفلي هذه اللغة	مستوى مبتدئ	مستوى متوسط	مستوى متقدم	طفلي طليق في هذه اللغة لأنها لغته الأم أو لأنه يتحدثها مثل أهل هذه اللغة
اللغة العربية الفصحى					
اللغة الإسبانية					
اللغة الإنجليزية					
اللغة الفرنسية					
اللهجة المصرية					

29. يرجي التكرم بتقييم **مهارات طفلك/طفلتك في التحدث** في كل من اللغات التالية

	لايتحدث طفلي هذه اللغة	مستوى مبتدئ	مستوى متوسط	مستوى متقدم	طفلي طليق في هذه اللغة لأنها لغته الأم أو لأنه يتحدثها مثل أهل هذه اللغة
اللغة العربية الفصحى					
اللغة الإسبانية					
اللغة الإنجليزية					
اللغة الفرنسية					
اللهجة المصرية					

30. يرجي التكرم بتقييم **مهارات طفلك/طفلتك في الإستماع** في كل من اللغات التالية

	لا يتحدث طفلي هذه اللغة	مستوى مبتدئ	مستوى متوسط	مستوى متقدم	طفلي طليق في هذه اللغة لأنها لغته الأم أو لأنه يتحدثها مثل أهل هذه اللغة
اللغة العربية الفصحى					
اللغة الإسبانية					
اللغة الإنجليزية					
اللغة الفرنسية					
اللهجة المصرية					

31. يرجي التكرم بتقييم **مهارات طفلك/طفلتك اللغوية بصفة عامة** في كل من اللغات التالية

	لايتحدث طفلي هذه اللغة	مستوى مبتدئ	مستوى متوسط	مستوى متقدم	طفلي طليق في هذه اللغة لأنها لغته الأم أو لأنه يتحدثها مثل أهل هذه اللغة
اللغة العربية الفصحى					
اللغة الإسبانية					
اللغة الإنجليزية					
اللغة الفرنسية					
اللهجة المصرية					

Appendix 8. *Linguistic Profile Questionnaire (Adults _ Arabic Version)*

ملف تعريف اللغة للمشتركين

(ستبقى المعلومات سرية. الرجاء عدم كتابة إسمك في هذا الملف)

أ. المعلومات الشخصية

1. الرقم المميز الخاص بك (الذي قدمته لك الباحثة): _____

2. *عمر المشترك:

_____سنة و _____شهر

3. جنس المشترك: _____

4.* محل ميلاد المشترك:

البلد _____ المحافظة_____

5.* ما هي جنسية والدتك؟

الجنسية _____من محافظة_____

6.*ما هي جنسية والدك؟

الجنسية _____من محافظة_____

7.* اين تقيم حاليا؟

البلد _____ المحافظة_____

8.* أنت تقيم حاليًا في

- مصر
- منطقة ناطقة باللغة الإنجليزية
- أياً من الاختيارات السابقة
- منطقة ناطقة باللغة الإسبانية
- منطقة ناطقة باللغة الفرنسية

9.*هل تقيم حاليا في نفس البلد الذي ولدت فيه؟

- نعم
- لا

*[إذا كان الإختيار لا] في أي سن انتقلت إلى البلد محل إقامتك الحالية ؟_____

10. *ما هو أعلى مستوى تعليمي حصلت عليه

- اقل من الثانوية العامة
- معهد
- افضل عدم الاجابة
- الثانوية العامة
- جامعة

11. *هل لديك أي صعوبات في اللغة أو التعلم؟

- نعم
- لا
- افضل عدم الاجابة

[إذا تم اختيار نعم] يرجى تحديد ما إذا كانت هذه الصعوبات تؤثر على فهمك أو قدرتك على التحدث _____

ب. اكتساب اللغة

12.* ما هي لغتك (لغاتك) الأولى (أي لغتك الأم التي اكتسبتها قبل بلوغك سن الثالثة)؟ الرجاء اختيار جميع اللغات التي تستوفي هذا الشرط

- اللهجة المصرية
- الاسبانية

•الإنجليزية •الفرنسية

•لغات أخرى

إذا اخترت لغات أخرى، يرجى كتابة ما هي هذه اللغات بالتحديد: _____

13. * ما هي لغة (لغات) والدتك الأولى (أي اللغة الأم التي اكتسبتها والدتك قبل سن الثالثة)؟ الرجاء اختيار جميع اللغات التي تستوفي هذا الشرط

•اللهجة المصرية •الاسبانية

•الإنجليزية •الفرنسية

•لغات أخرى

إذا اخترت لغات أخرى، يرجى كتابة ما هي هذه اللغات بالتحديد: _____

14.* ما هي لغة (لغات) والدك الأولى (أي اللغة الأم التي اكتسبها والدك قبل سن الثالثة)؟ الرجاء اختيار جميع اللغات التي تستوفي هذا الشرط

• اللهجة المصرية •الاسبانية

•الإنجليزية •الفرنسية

•لغات أخرى

إذا اخترت لغات أخرى، يرجى كتابة ما هي هذه اللغات بالتحديد: _____

15. * ما هي اللغة (اللغات) التي كنت تتحدث بها في المنزل عندما كنت طفلاً؟ _____

16. *ما هي اللغة (اللغات) التي كان يستخدمها والدك للتحدث معك عندما كان طفلاً؟ (يرجى كتابة "غير منطبق عليّ " إذا لم يكن هذا السؤال معبراً عنك) _____

17 ما هي اللغة (اللغات) التي استخدمتها والدتك للتحدث معك عندما كنت طفلاً؟ (يرجى كتابة "غير منطبق عليّ " إذا لم يكن هذا السؤال معبراً عنك) _____

18. * ما هي اللغة (اللغات) التي استخدمتها للتحدث مع إخوتك عندما كنت طفلاً؟ (يرجى كتابة "غير منطبق عليّ " إذا لم يكن هذا السؤال معبراً عنك) _____

19. *عندما كنت طفلاً، هل كنت تتحدث اللغة الإنجليزية في المنزل؟

•نعم •لا

[إذا تم اختيار "نعم" في السؤال 19، سيرى المشارك من السؤال 20 إلى 24. وإذا تم اختيار "لا"، فسيتم تخطي الأسئلة من 20 إلى 24 وسيتابع المشارك السؤال 25]

20. * عندما كنت طفلاً، هل كنت تتحدث الإنجليزية في المنزل...

•طوال الوقت •معظم الوقت •تقريبًا نصف الوقت

•أحياناً •نادراً

21. *عندما كنت طفلاً، مع من كنت تتحدث الإنجليزية في المنزل؟ الرجاء اختيار جميع الخيارات التي تنطبق عليك

•الأب •الأم

•الأشقاء •أشخاص أخرى (كالأجداد على سبيل المثال)

22. عندما كنت طفلاً، كم من الوقت كنت تتحدث اللغة الإنجليزية مع الأشخاص الآتي ذكرهم (يرجى إختيار "غير منطبق عليّ " إذا لم يكن هذا السؤال معبراً عنك)

	طوال الوقت	معظم الوقت	نصف الوقت	أحياناً	نادراً	غير منطبق عليّ
والدك						
والدتك						

أخوتك						
أصدقائك						

23. *حاليًا، هل تتحدث الإنجليزية في المنزل؟

•طوال الوقت •معظم الوقت •تقريبًا نصف الوقت

•أحياناً •نادراً

24. *حاليًا، ما هي اللغة التي تشعر براحة أكبر عند التحدث بها؟ _____

ج. التعليم وإستخدام اللغة

25. * يرجى كتابة اللغة (اللغات) التي تعلمت بها ...

- في المدرسة الابتدائية / الابتدائية _____
- في المدرسة الثانوية (يرجى كتابة "غير منطبق عليّ " إذا لم يكن هذا السؤال معبراً عنك) _____
- في المعهد أو الجامعة (يرجى كتابة "غير منطبق عليّ " إذا لم يكن هذا السؤال معبراً عنك) _____

26. *هل تعلمت لغة (لغات) أخرى (بخلاف لغتك الأم) بعد سن الثالثة؟

•نعم •لا

- *[إذا كانت الإجابة نعم] يُرجى تحديد هذه اللغات التي تعلمتها بعد سن الثالثة:_____

27. *ما هي اللغة (اللغات) التي تستخدمها حاليًا (يرجى كتابة "غير منطبق عليّ " إذا لم يكن هذا السؤال معبراً عنك)

- في العمل_____
- للتحدث مع العائلة_____
- للتحدث مع الأصدقاء_____
- في المواقف الاجتماعية_____
- لقراءة نص متاح بجميع اللغات التي تتحدثها_____
- للتحدث مع شخص يتكلم جميع لغاتك بطلاقة_____ .
- لمشاهدة فيديو متوفر بجميع اللغات التي تتحدثها_____
- للتواصل في وسائل التواصل الاجتماعي _____

د. المهارات اللغوية

28. يرجي التكرم بتقييم **مهاراتك في القراءة** في كل من اللغات التالية

	لا أتحدث هذه اللغة	مستوى مبتدئ	مستوى متوسط	مستوى متقدم	أنا طليق في هذه اللغة لأنها لغتي الأم أو لأنني أتحدث مثل أهل هذه اللغة
اللغة العربية الفصحى					
اللغة الإسبانية					
اللغة الإنجليزية					
اللغة الفرنسية					
اللهجة المصرية					

29. يرجي التكرم بتقييم **مهاراتك في الكتابة** في كل من اللغات التالية

	لا أتحدث هذه اللغة	مستوى مبتدئ	مستوى متوسط	مستوى متقدم	أنا طليق في هذه اللغة لأنها لغتي الأم أو لأنني أتحدث مثل أهل هذه اللغة
اللغة العربية الفصحى					
اللغة الإسبانية					
اللغة الإنجليزية					
اللغة الفرنسية					
اللهجة المصرية					

30. يرجي التكرم بتقييم **مهاراتك في التحدث** في كل من اللغات التالية

	لا أتحدث هذه اللغة	مستوى مبتدئ	مستوى متوسط	مستوى متقدم	أنا طليق في هذه اللغة لأنها لغتي الأم أو لأنني أتحدث مثل أهل هذه اللغة
اللغة العربية الفصحى					
اللغة الإسبانية					
اللغة الإنجليزية					
اللغة الفرنسية					
اللهجة المصرية					

31. يرجي التكرم بتقييم **مهاراتك في الإستماع** في كل من اللغات التالية

	لا أتحدث هذه اللغة	مستوى مبتدئ	مستوى متوسط	مستوى متقدم	أنا طليق في هذه اللغة لأنها لغتي الأم أو لأنني أتحدث مثل أهل هذه اللغة
اللغة العربية الفصحى					
اللغة الإسبانية					
اللغة الإنجليزية					
اللغة الفرنسية					
اللهجة المصرية					

32. يرجي التكرم بتقييم **مهاراتك اللغوية بصفة عامة** في كل من اللغات التالية

	لا أتحدث هذه اللغة	مستوى مبتدئ	مستوى متوسط	مستوى متقدم	أنا طليق في هذه اللغة لأنها لغتي الأم أو لأنني أتحدث مثل أهل هذه اللغة
اللغة العربية الفصحى					
اللغة الإسبانية					
اللغة الإنجليزية					
اللغة الفرنسية					
اللهجة المصرية					

Curriculum Vitae

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