

EMERGENCE AND DEVELOPMENT OF WH-QUESTIONS IN JORDANIAN ARABIC-SPEAKING CHILDREN: A LONGITUDINAL STUDY

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Abstract. The main objective of this paper is to examine the emergence and development of wh-questions in two Jordanian Arabic-speaking pre-school children. Specifically, it investigates (1) how these children interact with wh-questions; which questions they find easier and thus earlier to acquire and why, and finally (2) what symptoms one can identify as characteristics of the intra-stage development of such questions. The data of the study are a subset of a large body of a longitudinal audio-taped corpus collected by the principal author, who happened to be a psycholinguist and the children's grandparent, on the basis of three-day, weekly sessions over a period of five years. The recordings were made in the family home environment during routine activities, mainly after dinner, and mostly in the presence of family members. The findings reveal the acquisition of wh-questions is a complex process that supports a general cognitive maturity model interpretation. The acquisition of wh-questions that ask about concrete objects/entities, that is *mi:n* 'who', *we:n* 'where' and *?e:ʃʃu:* 'what' are produced and developed at an earlier stage than those questions which ask about abstract objects/entities, that is *le:f* 'why', *ke:f* 'how', *gadde:ʃʃkam* 'how many/much' and *wakte:ʃʃe:mta* 'when'. However, the subjects do not find the questions within each of the two sets equally easy/difficult. Put differently, in the first category, *mi:n* ranked first on the easy/difficult scale while *?e:ʃʃu:* ranked third. Moreover, the order of acquisition in the second category suggested that it is easier for Jordanian Arabic-speaking children to ask about reason (*le:f-why*) than about time (*wakte:ʃʃ-when*) and that to ask about quantity (*gadde:ʃʃkam-how many/much*) is more difficult than to ask about manner (*ke:f-how*). The study argues that the emergence of wh-words does not mark but the onset of an accumulative process which includes a host of symptoms on the way to adult-like acquisition.

Keywords: *acquisition, Arabic, longitudinal, wh-questions.*

Гамдан Джихад, Гамдан Хаді. Поява й перебіг опанування спеціальних питань йорданськими арабомовними дітьми: лонгітюдне дослідження.

Анотація. Головна мета статті – вивчити виникнення та вікові особливості процесу опанування спеціальних питань двома йорданськими арабомовними дітьми дошкільного віку. Зокрема, автори досліджують (1) як ці діти взаємодіють зі спеціальними питаннями; які питання їм легше зрозуміти, а, отже, якими питаннями їм легше оволодіти і чому, і

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нарешті (2) які симптоми можна визначити як характеристики внутрішньоетапного розвитку таких питань. Дані цього дослідження є частиною великого корпусу аудіозаписів, зібраного першим співавтором, який є психолінгвістом, а також дідусям дітей, на основі триденних щотижневих сеансів протягом п'ятирічного часу. Записи зроблені в родинному колі під час звичайних занять, переважно після обіду, і переважно у присутності членів родини. Результати дослідження засвідчили, що опанування спеціальних питань – це складний процес, який підтримує загальну інтерпретацію моделі когнітивної зрілості. Далі, висновки показують, що придбання спеціальних питань, що задають конкретні об'єкти / сутності, тобто *mi:n* 'хто', *we:n* 'де' та *ʔe:fʃu:* 'що' представлені і розвинені у більш ранньому етапі, ніж ті питання, які задають про абстрактні об'єкти/сутності, тобто *le:f* 'чому', *ke:f* 'як', *gadde:f/kam* 'скільки' та *wakte:f/ʔe:mta* 'коли'. Однак випробувані не знаходять запитань у кожному з цих двох наборів однаково легкими / складними. Інакше кажучи, у першій категорії *mi:n* посідає перше місце за шкалою легких / складних, тоді як *ʔe:fʃu:* посідає третє місце. Більше того, порядок здобуття в другій категорії передбачав, що для йорданських арабомовних дітей легше запитувати про причину (*le:f-чому*), ніж про час (*wakte:f-коли*), а про кількість (*gadde:f/kam-скільки*) складніше, ніж запитати про спосіб (*ke:f-як*). Дослідження доводить, що поява спеціальних слів означає не ознаку, а початок накопичувального процесу, який включає безліч симптомів на шляху до оволодіння, подібного до дорослого.

Ключові слова: опанування, арабська мова, лонгітюдне дослідження, спеціальні питання.

1. Introduction

Asking and answering questions is an important feature of child language, particularly 3–6 year olds. Apparently, children use them as a discovery tool to learn about or to show knowledge of their immediate environment, including, objects, people and events. This paper reports on the findings of a qualitative longitudinal study on the acquisition of wh-questions by two Jordanian Arabic-speaking children. It traces the emergence and development of each question, showing the age of intra-development within each question exemplar as well as the age of inter-development from one question type to another. Thus, it does not highlight frequencies but focuses on the transitional qualitative changes and the age associated with the onset and progress of each along the acquisition path.

Arabic, in its various varieties, is spoken by approximately 300 million people; however, its acquisition, particularly by native speakers, has not been well researched. Though still limited in scope and number, the acquisition of phonology and morphology has attracted more research attention than other aspects of language (Abulhaija, 1989; Abdo & Abdo, 1991; Amayreh & Dyson, 1998; Ravid & Farah, 1999; Hamdan & Amayreh, 2007; Kalaldehy, 2018; Ghodayyah, 2019).

The acquisition of wh-questions in many languages, other than Arabic, has been the subject of many studies over the past three decades. It has been perceived as a complex process that involves a host of considerations, mainly linguistic and cognitive. On the linguistic level, the child cannot ask questions before acquiring the concepts underlying their answers, e. g., time, reason, quantity, etc. Nor can this be possible unless the question words needed for asking have already been encoded, rightly or wrongly, in one's lexicon. On the cognitive level, question words which may not appear significantly different in terms of concreteness/abstraction and lexical complexity (length and syllable structure) are

more likely to be associated with varying complexity levels of cognition. Thus, it is quite reasonable to verify whether concrete concepts and question words associated with them are more likely to be acquired earlier and easier than abstract ones. Further, if the complete acquisition of wh-questions appears to be a complex process that extends over a number of years, can we identify a set of symptoms that characterize the intra-development of each wh-question?

Cairns & Hsu (1978) indicated that subjects aged 3;0 to 5;6 years did not find wh-questions equally difficult. It was argued that the variable difficulty of the various forms of *who* questions "supports a parallel model of information retrieval and processing during discourse" (p. 477). In contrast, the variable difficulty of *why* and *when* questions was ascribed to progression in the children's ability to encode the concepts of causality and time linguistically. Further, the study reported that the subjects' interaction with *how* questions was found to be difficult because these questions "involve a number of unrelated skills" (p. 477).

Bloom, Markin and Wooten (1982) were not convinced that the acquisitional sequence of wh-questions in children is solely dependent on cognitive development. They argued that an integrative model of acquisition which hinges on both linguistic and nonlinguistic cognitive factors would provide a more feasible interpretation of this sequence.

Radford (1990) argued that English-speaking children comprehended subject questions before object questions. Further, he added that children sometimes misinterpreted object questions, e.g., *who did you play with?* as subject questions, and hence their answer *Me*. Stromswold (1995) suggested that this type of comprehension-based evidence needs further verification (p. 16). On examining the results of Cairns and Hsu (1978) and Ervin-Tripp (1970), among others, Stromswold (1995, p.16) posited that "previous acquisitional studies do not uniformly suggest that children acquire subject matrix questions before object questions".

Li, Tse, Wong, Wong & Leung (2013) investigated the acquisition of interrogative forms and functions in Cantonese-speaking children beyond 3 years of age. Cantonese has six categories of questions. The first three are formed by adding simple interrogative words or rising intonation while the latter three involve the use of multiple question words, e.g. *where and when ...*, and more complex sentence structures. The researchers expected the latter three types to develop beyond age 3 (p. 170). The data were given by 492 Cantonese-speaking children belonging to three age groups (3;0, 4;0 and 5;0). All the six categories of interrogatives were produced by the three groups of children. Likewise, the children produced a total of 13 types of interrogative function that could classify into the three major categories: (1) information-seeking (request for information, RFI), (2) action-beseeching (request for action, RFA), and (3) non-information-seeking.

Specifically, the study reported here seeks answers to the following questions:

1. How do Jordanian Arabic-speaking pre-school children interact with wh-questions? Which questions do they find easier and earlier to acquire? Why?

2. What are the symptoms that characterize the intra-stage development of such questions?

2. Method

Subjects

Two normally developing male children named Jihad and Mohammad provided the data of the study. Jihad was born on 21 July 2002 and Mohammad on 19 October 2003. The children's nicknames, Juje and Ham will be used. In actuality, they were two siblings brought up in a middle class Ammani family whose native language is Jordanian Spoken Arabic (JSA). Further, it happened that Juje and Ham were the grandsons of the principal researcher and they lived with their parents and grandparents in the same family house. Two dialects, urban (by the children's mother) and rural (by all family members), were used at home; this explains why some sounds, particularly the velar voiced stop /g/ sometimes surfaced as a glottal stop /ʔ/ in their speech. The subjects were not exposed to any other language or regional Arabic variety before schooling, i.e., the age of 6 years when the data collection came to an end.

Data collection

The wh-question data of this study were a subset of a large body of longitudinal audio-taped corpus collected from the subjects by their grandparent, the principal author, who happened to be a psycholinguist on the basis of three-day, one-hour sessions per week over a period of five years. The recordings were made in the family home environment during routine activities, mainly after dinner, and mostly in the presence of family members.

For the purpose of this study, the whole set of data were carefully examined with a view to identifying all utterances that relate to subjects' actual production of, or response to wh-questions. This subset of data was extracted and saved in a separate file. The data were transcribed independently by the principal researcher and two research assistants with full observation and documentation of the date each wh-question was produced by each child. To examine transcription reliability, 20 percent of the sample was selected from the independently transcribed versions and examined against the audio-taped records. Most disagreements were resolved the first or second time the text was replayed. Transcription agreement between the three transcribers was 0.953 percent. The parents' informed consent to allow the collection of data from their children was obtained before the onset of the research.

2.1. Structure of wh-questions in Jordanian Spoken Arabic

First, it is important to observe that Arabic wh-interrogative pronouns serve the same discourse functions conveyed by their relevant English wh-question words. In terms of syntactic position, they generally preface questions whose main purpose is to seek information that goes beyond 'yes' or 'no' responses on issues related to things (physical or abstract), time, place, reason, manner, possession, quantity, etc. JSA tends to put interrogative words first in wh-interrogative

constructions. Although JSA allows for both VSO and SVO word order, it is believed that SVO is its more dominant and preferred order in declarative sentences among Jordanians, focus aside (Al-Momani and Al-Saidat, 2010). JSA which is spoken natively by around seven million speakers in Jordan is intelligible to a large number of speakers of Arabic, particularly in the Levant, Egypt, Iraq, Yemen and the Gulf.

JSA has eight *wh*-forms, viz., two nominals (*mi:n* 'who/whom' and *ʔe:ʃʃu:* 'what'), two adjectives (*ʔaj* 'which' and *kam* 'how many') and four adjuncts (*we:n* 'where' *wakte:ʃ/ ʔe:mta:ʔ* 'when', *ke:f* 'how' and *le:f* 'why'). Below are illustrative examples of JSA *wh*-questions words in these three main categories. All exemplars appear in clause-initial position, i.e. the neutral and canonical word order marked with a falling intonation contour. Three levels of presentation will be used if necessary; otherwise, transliteration and translation will be displayed.

Nominal wh-words

These words can fill both subject and object positions. Further, they generally ask about persons and things or objects. Each question is followed by its answer.

Subject position

- (1) a. *salim saʔal salma.*
 'Salim asked Salma.'
 b. *mi:n saʔal salma? salim.*
 'Who asked Salma?' 'Salim.'
- (2) a. *l-ba:b ʔinfataħ.*
 the-door opened-passive
 'The door opened.'
 b. *ʔe:ʃʃu: ʔinfataħ? l-ba:b*
 what opened-passive the-door
 'What opened?' 'The door.'

Object position

- (3) a. *salim saʔal salma.*
 'Salim asked Salma.'
 b. *mi:n sa:lim saʔal? salma.*
 who(m) salim asked? salma
 'Who(m) did Salim ask?' 'Salma.'
- (4) a. *salim fara kursi.*
 'Salim bought a chair.'
 b. *ʔe:f fara sa:lim? kursii.*
 what bought salim? a chair
 'What did Salim buy?' 'A chair.'

Adjectival wh-words

These include *ʔaj* + N, e.g., *ʔaj findʒa:n* 'which cup' and *ʃu: + N*, e.g. *ʃu: l-lo:n* 'what colour'.

- (5) a. *fare:t l-findza:n li-kbi:r.*
 I bought the-cup the-large
 'I bought the large cup.'
 b. *ʔaj findza:n fare:t? li-kbi:r*
 Which cup you bought?' The large.
 'Which cup did you buy?' 'The large one.'
- (6) a. *lo:n gami:si ʔazrag.*
 colour shirt-my blue.
 'The colour of my shirt is blue'.
 b. *fu: lo:n gami:sak? ʔazrag.*
 what colour shirt-your? blue
 'What colour is your shirt?' 'Blue.'

Adjunct wh-words

These include *we:n* 'where' for place, *wakte:f* (= *ʔe:mta*) 'when' for time, *le:f* 'why' for reason and *ke:f* 'how' for manner.

Place adjunct

There is only one place adjunct, namely, *we:n* 'where'.

- (7) a. *mu:sa laga likta:b fi l-maktabi.*
 'Musa found the book in the library.'
 b. *we:n mu:sa laga likta:b? fi l-maktabi.*
 where musa found the-book? in the-library
 'Where did Mousa find the book?' 'In the library.'

Time adjunct

The time adjunct in JSA is *wakte:f* 'when' or its synonym *ʔe:mta*.

- (8) a. *mu:sa firib il-ħali:b gabil fwajji.*
 mu:sa drank the-milk before a while
 'Musa drank the milk a while ago.'
 b. *wakte:f mu:sa firib l-ħali:b? gabil fwajji.*
 when musa drank the-milk? before a while
 'When did Musa drink the milk?' 'A while ago.'

Reason adjunct

le:f 'why' is the only reason adjunct in JSA.

- (9) a. *sa:lim burgus laʔinnu mabsu:t.*
 salim dancing because he happy
 'Salim is dancing because he is happy.'
 b. *le:f sa:lim burgus? laʔinnu mabsu:t.*
 why salim dancing? because he happy
 'Why is Salim dancing?' 'Because he is happy.'

Manner adjunct: ke:f 'how'

- (10) a. *sa:lim ʔadza ho:n bi-ssajja:ra.*
 salim came here by-the car

'Salim came here by car.'

b. *ke:f sa:lim ʔadʒa ho:n? bi-ssajja:ra.*

how salim came here? by-the car

'How did Salim come here?' 'By car.'

3.Results and Discussion

As the study is based on two subsets of wh-question data, the first elicited from Juje and the second from Ham, the results pertinent to each subset will be presented and discussed separately before a systematic comparison between the two subsets is provided. The age at which the subject was able to comprehend a particular wh-question before actual production will be reported but the acquisition focus will be placed on the age at which each question form was actually produced. In this context, it is useful to observe that the complete acquisition of each form tends to undergo a number of sub-stages as will be shown in the course of presentation and discussion. Put another way, the emergence of the question or its first occurrence marks the onset of acquisition only. In light of this, a set of symptoms that characterize that characterize the intra-stage development of such questions will be suggested.

Juje's path of acquisition

The analyzed data consisted of 2219 wh-questions which were collected from age 1;4,3 to 6;0. Below is a brief account of Juje's acquisition path of wh-questions.

The acquisition of mi:n 'who' and lami:n 'whose'

The first wh-question attested in Juje's data was *mi:n* 'who'. It appeared in subject position as a one-word question at the age of 1;8, 2 when he responded to a knock on the main door of their flat by his grandmother who was visiting them. In fact, *mi:n* was mispronounced as *ni:m* providing an earlier example of metathesis. In this context, adults tend to use *mi:n* as a single word question or as part of a short question, i.e. *mi:n* ^c*a lba:b?* 'who's knocking at the door?' At this age, Juje was also able to answer *mi:n* questions that are not specifically used to identify door knockers.

(11) Grandpa: *mi:n maffat_lak?* 'Who combed your hair?'

Juje: *ha:di* 'Hady'.

At 2;1.3, Juje was able to answer prepositional *mi:n* questions, i.e. *ma^c mi:n* 'with whom' as in:

(12) Mom: *ma^c mi:n kunt barra?* 'With whom were you outside?'

Juje: *si:du* 'Grandpa'.

On examining all Juje's *mi:n* questions, none of the question words was found to be in the object position; actually all functioned as subject. However, the question constructions varied from verbless sentences to constructions with intransitive and transitive verbs as in:

- (13) Juje: *mi:n maratak si:du* 'Who's your wife, grandpa?' [Verbless at 2;9,20]
 Grandpa: *?illi ga:^cdi* 'The one who is sitting'.
 Juje: *la? ?illi najmi* 'No, the one who is sleeping'.
- (14) Juje: *mi:n tabbil* 'Who's knocking?' [Intransitive at 2;2,15]
 Mom: *si:du* 'Grandpa'.
- (15) Juje: *mi:n tafa iddaw* 'Who turned off the light?' [Transitive at 2;9,11]
 Grandpa: *?ana. ?idwi:* 'It's me. Turn it on'.
 Juje: *dawe:tu. xalli:ni ?al^cab* 'I turned it on. Let me play'.

The absence of object *mi:n* questions may be ascribed to the more complexity of this construction compared with their subject counterparts. The object form, unlike the subject *mi:n*, requires, inter alia, the obligatory use of the relative pronoun *?illi* 'that' and the retention of reflexive relative pronoun as in (15).

- (16) *mi:n (?illi) fa:f salma? sa:lim.* [Subject]
 who that saw salma? Sa:lim.
 'Who is the one who saw Salma?' 'Salim'.
- (17) *mi:n ?illi fa:fha sa:lim? salma.* [Object]
 who that saw-her salim? salma.
 'Who is the one that Salim saw?' 'Salma'.

At 2;4,25, Juje produced the prepositional question *lami:n*, literally 'to whom' which is equivalent to 'whose' in English as in:

- (18) Juje: [looking at a shirt held by his grandma] *lami:n il-?ami:s* 'Whose shirt is this?'
 Grandma: *la ha:di* 'Hady's'.

It is worth noting that *lami:n* in this sense can be viewed as a separate wh-word that indicates possession. An important feature of this question word is that it is always followed by a definitive noun, e.g., a noun preceded by the definite article *?il* 'the' as in *lami:n ?il-galam* 'whose pen is this?' Further, it is different from the literal combination of the preposition *la* 'to' and *mi:n* 'who' which exemplifies pied-piping as in *lami:n dzibit likta:b* 'To whom did you bring the book?' A possible answer to this question is *la sa:lim* 'to Salim'.

The acquisition of we:n 'where'

Juje showed comprehension that *we:n* 'where' questions ask about place or location. It appeared that the earliest forms of *we:n* questions Juje was introduced to were in the context of his mom's testing his knowledge of body parts, belongings and close family members. The analysis of data revealed that at the age of 1;4,14, Juje was able to respond correctly to such questions, by pointing, touching, etc., as in:

- (19) *we:n ?a:nak/ lu^cibtak/ ma:ma?* 'Where's your ear/toy/mom?'

Body parts included, inter alia, ear, nose, mouth, hair, teeth, hand, finger, head, back and leg. Belongings and objects in the immediate environment included

socks, shirt, trousers, pillow, bed and toy car. Family members included dad, mom, brother and grandparents.

The data showed that Juje was able to produce and respond correctly to other *we:n* questions when he was around 1;10 as in:

(20) Juje: *we:n ba:ba?* 'Where's dad?'

Mom: *fi-ffukul* 'At work'.

Mom: *tajjib ?inta we:n kunit?* 'Ok! Where were you?'

Juje: *balla* [for barra] 'Outside'.

Sometimes, his answer was a whole sentence:

(21) Grandpa: *we:n il-galam?* 'Where is the pen?'

Juje: *zatte:tu bawwa* [for barra] 'I threw it outside.' [1;11,26]

Further, Juje was able to answer *we:n* questions which included a specific time reference:

(22) Grandpa: *we:n biddak tru:h bukra?* 'Where do you want to go tomorrow?'

Juje: *jawa* 'To Yara'. [1;11,26]

At a later stage, at the age of 2;3,6, he was able to answer prepositional *we:n* questions as in:

(23) Mom: *mi we:n bi:dzi iffita* 'Where does rain come from?'

Juje: *sama* 'Sky'. [Note the absence of the preposition *min* 'from' as Juje was in the telegraphic stage].

While the structural complexity of wh-question constructions tends to increase over time, a simple construction, sometimes the wh-word alone or combined with a noun or a pronoun, may also occur rather late on the path of acquisition as in:

(24) Juje (to grandpa while watching a man shooting with a gun on TV): *?inta ʿindak baru:di* 'Do you have a gun?' [3;8,13]

Grandpa: *?a:* 'Yes'

Juje: *we:nha* 'Where is it?'

Grandpa: *biddi:f ?agullak* 'I don't want to tell you'.

Here, the wh-question is part of a rich context which started with a yes/no question by the child. The wh-question unfolded as a follow up, and thus the simple and short construction.

Juje was also able to use *we:n* in indirect questions, a sign of developing an adult-like understanding and use of the function of this question word whether to ask for information or report it.

(25) Juje (to grandpa): *haj ?alam ?ahki:lak we:n la?e:tu* 'Here's a pen. Shall I tell you where I found it?' [4;9,23]

Grandpa: *ʔa*: 'Yes'.

Although Jordanian children are not formally introduced to Modern Standard Arabic (MSA) before schooling, Juje was able to perceive that *we:n* and its MSA *ʔajna* are free variants that ask about place.

(26) Juje: *ʔajna ʔanta muxtafi ja: si:du* 'Where are you hiding, grandpa?' [4;10]

Grandpa: *fil- ħadi:qa* 'In the garden'. [Answer in MSA]

Juje's ability to use dialectal and standard forms may be taken as an indication of mastery of this question form.

The acquisition of ʔe:f/fu: 'what'

In JSA, *ʔe:f* 'what' has another dialectal variant, viz., *fu:*. Juje was able to answer *ʔe:f/fu:* questions in object position where the answer refers to a thing/object around 1;6 as in:

(27) Grandpa: *ʔe:f ʔakalit?* 'What did you eat?'

Juje: *ta:ta*. 'Potato'.

At 2;0,20, he was able to report actions in response to *fu:* questions as in:

(28) Grandpa: *fu: bisawwi il-walad?* 'What's the boy doing?'

Juje: *ʔukkud*. 'Running.'

Mom: *fu: bitsawwi?* 'What are you doing?'

Juje: *bamsaħ itta:wli*. 'Cleaning the table'.

The first production of *ʔe:f* attested in the data was at the age of 2;2 when he was stunned by a loud sound on television.

(29) Juje: *ʔe:f ʔisso:t?* 'What's this sound?'

Grandpa: *min il- dziha:z*. 'From the device'.

Around three months later, Juje started to use *ʔe:f* with colour terms while his uncle was fixing the gas bottle.

(30) Juje: *ʔe:f lo:nha* [the bottle]? 'What colour is it?' [2;6,21]

Uncle: *ʔazrag*. 'Blue'.

Shortly afterward, Juje used *ʔe:f* or *fu:* to convey pragmatic functions other than mere asking for information, e.g. to show unease with something, seek clarifications a multi-purpose question, whether the focus is an object, colour, smell, clarification, protest, service, comment, etc.

(31) Juje (showing unease with a bad smell): *fu: ri:ħa?* 'What's this bad smell?' [2;8,4]

Grandpa: *sama:d*. 'Fertilizer'.

(32) [Juje's father was saying something which Juje didn't understand and thus asked for clarification].

Juje: *ʔe:f ʔiħki?* 'What did you say?' [2;8,9]

Dad: *halla bagullak*. 'I'll tell you right now'.

(33) Mom: *bala:f til^cab fi-ttra:b*. 'Stop playing with soil'.

Juje (protesting): *fu: daxlik ?inti?* 'What have you to do with this?' [This *fu:* is similar to *le:f*. Compare: *le:f btiddaxli?* 'Why are you interfering?'] [3;0,27]

(34) Juje (commenting on an English-speaking presenter on TV): *fu: bihki ha:ð ?izzalami?* 'What language does this man speak?' [4;2,13]

Grandpa: *?ingli:zi*. 'English'.

Juje also used *fu:* as part of a monologue/fake dialogue in which he imagined himself conversing with Mom who was about to go shopping.

(35) Juje impersonating Mom (as if offering a service)

Mpm: *fu: ?adzi:blak ma^ci dzu:dzu?* 'What do you want me to bring you Juje?'

Juje: *^cilki*. 'Gum'. [3;5,19]

Signs of complete mastery of *?e://fu:* questions might have shown up in Juje's use of the idiomatic expression *fu: ra:jak* 'what about', after turning five, to make suggestions or seek approval as in:

(36) Juje: *fu: ra:jak ja Ham nil^cab ha:ji illu^cbi?* 'What about playing this game Ham?' [5;2]

Ham: *e:f* 'What?'

Juje: *niftah_h ridzle:na he:k winharrikhum*. 'Open our legs this way and move them'.

Ham: *ma:fi*. 'Okay'.

The acquisition of le:f 'why'

The first adjunct *le:f* 'why' question was attested in Juje's data at the age of 2;4,10 when he saw his uncle Wael upset and sitting alone. Juje commented on his uncle's status then asked about the reason.

(37) Juje: *wa: ?il za^cla:n. le:f za^cla:n?* 'Wael is upset'. 'Why are you upset?'

Wael: *ru:h fik^c anni* 'Leave me and go away'.

Another *le:f* question using the same adjective *za^cla:n* 'upset' appeared a month later.

(38) Juje (while Ham was crying): *le:f hammu:di za^cla:n* 'Why is Ham upset?' [2;5,17]

Grandpa: *?is?alu*. 'Ask him'.

Juje: *hammu:di ... le:f bitsarrix?* 'Hammoud .. Why are you crying?'

Ham: *mif fu^cblak*. 'None of your business.'

A third transitional *le:f* question attested in Juje's data was around the age of 2;6,10 when his uncle threw away Juje's toy. It seems that his uncle's behaviour was a reaction to Juje's noisy play around as revealed in the following exchanges:

(39) Uncle: *xalaş dzu:dzu. bikaffi li^cib*. 'Juje! Stop playing. Enough is enough' (and he threw away Juje's toy truck).

Juje (in an angry tone): *le:f tzittu* 'Why did you throw it away?'

Uncle: *he:k*. 'Just like that'.

Juje: (burst into crying)

Apparently, the main function of Juje's question was to protest against his uncle's act rather than to seek its reason.

A further example was attested in another context at the age of 2;7. His mother was dressed and about to leave. He was watching, then he asked her a *we:n* question whose answer invited a *le:f* question.

(40) Juje: *we:n biddik tru:hi?* 'Where are you going?'

Mom: *^ca-lbank*. 'To the bank'.

Juje: *le:f* 'Why?'

Mom: *^ca fa:n ʔadzi:b masa:ri*. 'To get money'.

It seems that Juje at that point in time knew the word *bank* but he did not probably know why his mother wanted to go there.

In another context, at the age of 2;7, 10, Juje asked a *le:f* question and suggested an answer in a follow up yes/no question.

(41) Juje (watching his grandpa putting on his jacket): *le:f la:bis dzake:t? la ʔinnak barda:n?* 'Why are you wearing a jacket? Feeling cold?'

Grandpa: *mazbu:t*. 'Yes.'

It seems that Juje was not looking for a genuine reason but trying to confirm a hypothesis.

Although the timeframe of a large number of *le:f* questions was the present moment, Juje sometimes asked about events with a past time reference as in:

(42) Juje (to grandpa): *zama:n ʔinta ma^callamtif ha:di ya si:du*. 'It has been a long time since you taught Hady'.

Grandpa: *sa^hi:h*. 'Right'.

Juje: *le:f?* 'Why?' [3;7, 11]

Grandpa: *ma^talabif minni. bas jutlub*. 'He has not approached me. I'll do if he asks'.

As is clear, Juje recalled a past event that had not been repeated for a long time and asked about the reason.

Mostly after turning five, Juje used *le:f* to preface embedded clauses in indirect questions. When faced with a follow up *le:f* question by his mom, Juje provided information that showed his full understanding of the main function of this question type, i.e. to give reason.

(43) Juje: *ma:ma, ʔaḥki:lik le:f inna:s biḥib if-fatta?* 'Mom, shall I tell you why people like minced pepper?' [5;6]

Mom: *le:f?* 'Why?'

Juje: *la ʔinha btuktil il-jaraḥi:m* 'Because it kills germs'.

Before closing, one may wish to observe that Juje did not always accept the given answers; in effect, he sometimes showed his unease with some answers.

(44) Juje: *le:f^c ammu ha:di ma: bila:^cibna?* 'Why doesn't uncle Hady play with us?' [5;7]

Grandpa: *tfa:ham ma^ca: .* 'Talk to him'.

Juje: *^cammu ha:di ma: bi^crif ittafa:hum.* 'Uncle Hady doesn't leave room for this'.

The acquisition of ke:f 'how'

The first *ke:f* 'how' question which Juje showed understanding of and was able to respond to verbally was the ritualized and routine question *ke:f ḥa:lak* 'how are you' as in:

(45) Grandpa: *ke:f ḥa:lak ja dzu:dʒ?* 'How are you Juje?'

Juje: *ḥamdulla.* 'Thanks to Allah'. [1;11]

At 2;3 Juje was able to engage in short exchanges beyond the ritualized *ke:f*. The example below included both *we:n* and *ke:f*.

(46) Grandpa: *we:n ruḥit ʔinta w ba:ba?* 'Where did you go with your dad?'

Juje: *^ca-ssu:g.* 'To the market'.

Grandpa: *ke:f ka:n il-mifwa:r?* 'How was the trip?'

Juje: *munta:z.* 'Excellent'.

The first *ke:f* question Juje produced was when he was nearing three [2;9,22] and it consisted of the wh-word only. Juje at the time was sharpening a pencil but with obvious difficulty.

(47) Grandpa: *xalli:ni ʔasa:^cdak* 'Let me help you'.

Juje: *ke:f* 'How?'

Grandpa: *ha:t ʔawardzi:k* 'Look! I'll show you'.

Shortly after that, Juje used *ke:f* in a complete sentence while he and his grandpa were picking figs in the garden.

(48) Juje: *ke:f bididi ʔagatti^c ti:n?* 'How can I pick figs?' [3;1]

Grandpa: *halla baḥimlak ^cafa:n ittu:l.* 'Now I'll carry you up to reach the figs'.

Even more interesting is Juje's use of *ke:f* in fake dialogues imagining himself conversing with the bathroom as well as with his mother, a clear indication that *ke:f* questions became a vibrant component of his semantico-syntactic repertoire.

- (49) Juje [talking to the bathroom]: *ke:fak ja ĥamma:m? ifta?t illak. bididi ?armi:k fil-ĥa:wji*. 'How are you bathroom? I missed you. I want to throw you into the garbage container'. [3;3, 4]
- (50) [Part of a fake/imaginative dialogue with his mom]
 Juje: *ke:f ĥa:lik?* 'How are you?' [3;5,19]
 Mom: (taking her turn) *kwajsi*. 'Fine'.
 Juje was also able to use *ke:f* as a direct object clause, another indication of his understanding that *ke:f* expresses manner.
- (51) Juje: *bas ?akbar lim^calmi bit^dllimni ke:f ?aktub*. 'When I grow up the teacher will teach me how to write'. [3;4, 26]

3.1. The acquisition of *gadde:f/ kam* 'how many/how much'

When Juje was exposed to a *gadde:f* 'how many' question at the age of 2;6,7, he answered using the plural noun of the thing he was asked about (e.g. fingers) but he did not specify number.

- (52) Grandpa: (spreading his right hand before Juje) *?ittalla^c ĥa:n. gadde:f ĥa?o:l [?a?sa:bi^c 'fingers]?* 'Look here. How many are these?'
 Juje: *?a?sa:bi^c*. 'Fingers'.

Either Juje did not perceive that *gadde:f* here requires quantity or he confused it with *?e:f* 'what', which requires mere nomination of substance/things. The confusion may be due to phonic prominence as both words have the same ending *e:f*.

Almost a year later, Juje's grandpa asked him to count and the latter counted from 1 to 5. [route memory], then he showed up two fingers to Juje and asked:

- (53) Grandpa: *gadde:f ĥa?o:l?* 'How many are these?'
 Juje: *wa:ĥad* 'One'. [3;5]
 Grandpa: *la? ?intabih kwajjis*. 'No, look carefully'.
 Juje; *kta:r*. 'Too many'.

Grandpa repeated the *gadde:f* question with his three fingers up but received the same answer. This may explain why *gadde:f* is acquired rather late. Below is the first accurate use of *gadde:f* by Juje while communicating with Ham and grandpa. He was 3;8, 26.

- (54) Juje: *ĥam! ?ittalla^c gadde:f^c indi sajjara:t. kti:r*. 'Ham! Look how many cars I have. Too many'.
 Juje: (to his grandpa): *fufillak sajjara ze:ti*. 'I found you a dark green car'.
 Grandpa: *gadde:f ĥagha* 'How much is it?'
 Juje: *ma: ba^c rif. il-bajja^c bi^c rif gadde:f ĥagha*. 'I don't know. The seller knows how much it is'.

On the second day, the following question was produced.

- (55) Juje: *gadde:f ĥa? lihra:m?* 'How much is the blanket?' [3;8, 27]
 Ham: *sitti* 'Six'.

The acquisition of *wakte:f/?e:mta* 'when'

Juje was able to show understanding of the concept of time when he was around two years. From a cognitive perspective, it is believed that such understanding is a prerequisite for initiating adjunct time questions. The following example illustrates Juje's correct use of time reference, *?imba:riħ* 'yesterday', when his mother offered him *kna:fi* 'type of sweet'.

(56) Mom: *biddak kna:fi?* 'Do you want kna:fi?' [2;3,24]

Juje: *?akalit na:fi ba:wih [?imba:riħ]*. 'I ate kna:fi **yesterday**'.

At 2;4,2, Juje responded to a time question prefaced with *wakte:f* 'when' asked by his grandpa. He used a time reference in the answer, an indication of his awareness that *wakte:f* asks about time, though the answer is not fully accurate. In the family both *wakte:f* and *?e:mta* were used interchangeably.

(57) Grandpa: *wakte:f ruħit °a-tta:dʒ?* 'When did you go to Taj?'

Juje: *jo:m* 'Today'. [In fact, it was a few days ago.]

The first occurrence of *wakte:f* questions attested in the data was at the age of 4;6.

(58) Juje: *si:du zama:m ma ?idʒi:t °inna. wakte:f biddak ti:dʒi?* 'Grndpa, you haven't visited us for a while. When will you be coming?'

Grandpa: *mif°arif. jimkin bukra.* 'I don't know. Maybe tomorrow'.

Apparently, if no earlier examples were produced by the subject but missed by the data collector, then *wakte:f* was probably the last question word Juje had acquired.

The acquisition of *?aj/?anu:* 'which'

The question word *?aj* can be followed by both masculine and feminine nouns, e.g. *?aj walad/binit?* 'which boy/girl?' In contrast, *?anu:* is followed by masculine nouns only, e.g. *?anu: walad?* 'which boy?' while *?ani:* by a feminine noun, e.g. *?ani: binit?* 'which girl?'. An example of an adult *?aj* question is *?aj/?ani: fugga ftare:t?* 'which flat did you buy?' The answer often provides a description or further qualification of the noun, eg. *likbi:ri* 'the big one' or *?illi dʒanb il-madrasi* 'the one near the school'. This question construction emerged rather late in Juje's data.

(59) Juje (to grandma): *?iza biddi:k tru:ħi °a ra:mi baru:ħ ma°a:ki.* 'If you want to visit Rami, I'll go with you'.

Grandma: *biddi.* 'Yes, I want'.

Juje: *?aj sa:°a?* [literally which hour?] 'What time?' [4;2,20]

Grandma: *bukra l-°asir* 'Tomorrow afternoon'.

(60) Juje (watching a dog race on TV): *?anu: [kalb] ?illi fa:z?* 'Which dog is the winner?' [5;5,13]

Mom: *halla binfu:f*. 'Now we'll know'.

Ham's path of acquisition

The analyzed data consisted of 2008 wh-questions which were collected from age 1;2,26 to 6;0. Below is a brief account of Ham's acquisition path of wh-questions.

The acquisition of mi:n 'who'

Just like Juje, Ham's first wh-question was *mi:n* 'who' as a one-word question in subject position. It emerged at the age of 1;5,18 exactly in the same context it was produced by Juje, i.e. when he responded to a knock on the main door of their flat. However, it took Ham a few more months to produce *mi:n* in more complex constructions, particularly with the prepositions *la* 'to', *ma^c* 'with' and *min* 'from'.

- (61) Ham: *we:n ra:h ba:ba?* 'Where did dad go?'
 Grandpa: *ra:h ?idzi:b laban*. 'He went to bring yogurt'.
 Ham: *la mi:n?* 'To whom?' [2;1,2]
 Grandpa: *?ilak*. 'To you'.
- (62) Ham (to grandpa): *ma^c mi:n ?ihiti [?ihki]?* 'With whom are you speaking?' [2;5,15]
 Grandpa: *ma^c ?abu ?ija:d*. 'With Abu Iyad'.
 Ham: *mi:n ?abu ?ija:d?* 'Who's Abu Iyad?'
 Grandpa: *sahbi*. 'My friend'.
- (63) Ham: *ha:j hadijji. ?a?ullak min mi:n?* 'This is a gift. Shall I tell you from whom I got it?; [4;1,29]
 Grandpa: *?a:*. 'Yes'.
 Ham: *min ?il-miss*. 'From the teacher'.

On examining Ham's *mi:n* questions, one finds that the overwhelming majority of the question words functioned as subject or part of a prepositional phrase; only an insignificant minority functioned as object/object complement as in:

- (64) (Grandpa was in the bathroom and Ham's footsteps could be heard).
 Grandpa: *mi:n ha:ða illi dza:j?* 'Who is there coming?'
 Ham: *hammu:di, mi:n fakkartni?* 'Ham. Who did you think I was?' [4;3,26]
 Grandpa: *fakkartak ?arnab*. 'I thought you were a rabbit'.

The first prepositional question *lami:n*, 'whose', an independent question word was attested in Ham's speech shortly after he turned two.

- (65) Ham: *lami:n ha:j [ilbit bo:dra]?* 'Whose powder can is this?' [2;1,18]
 Grandpa: *ma ba^crif*. 'I don't know'.

The acquisition of we:n 'where'

Ham was able to understand and respond to *we:n* 'where' questions when he was around a year and a half. Just like Juje, he demonstrated ability to identify his main body parts (e.g. ear, head, hand), belongings (e.g. shirt, toy, socks) and close family members (e.g. dad, mom, grandma) when asked to do so. It seems that this type of question-answer exercise is a common Jordanian and probably Arab conversational practice which, as it happened, showed up here.

- (66) Grandpa: *we:n dzu:dʒ?* 'Where is Juje?'
Ham: *o:n [ho:n]*. 'Here]. *we:n ba:aba?* 'Where's dad?' [1;7,16]
Grandpa: *fī-ʃʃuʃul*. 'At work'.

A few months later, he was able to respond to and produce other *we:n* questions, including the use of *we:n* in final position, when he was between 2;0 and 2;6 as in:

- (67) Ham: *we:n wayih [rayih]?* 'Where are you going?' [2;1,20]
Grandpa: *?adʒi:b sama:d*. 'To bring a fertilizer'.
(68) Ham (to grandpa): *?inta tunt [kunt] we:n?* 'Where were you?'
Grandpa: *fil-ħamma:m*. 'In the bathroom'. [2;6,15]

Prepositional *we:n* questions which are structurally and cognitively more complex than their plain counterparts were attested in Ham's data when he turned three years and eight months.

- (69) Ham: *ha:j ?il-barra:ʒi min we:n faritu:ha?* 'Where did you buy this sharpener from?' [3;8,1]
Grandpa: *min ?issu:g*. 'From the market'.
Just like Juje, Ham used *we:n* in indirect questions.
(70) Ham: *?ana ba^crif **we:n ra:ħ ba:ba***. 'I know where dad went'. [3;6,13]
Grandpa: *we:n?* 'Where?'
Ham: *ra:ħ ʒiftri sajjara*. 'He went to buy a car'.

At a later stage, Ham sometimes used *we:n* questions to confirm a hypothesis rather than to seek new information about location. This was usually done through a follow-up yes/no question.

- (71) Ham: *we:n ?il-kanabaja:t? wadde:thum ^cal be:t lidʒdi:d?* 'Where are the couches? Did you take them to the new flat?' [4;6,18]
Grandpa: *?a:.* 'Yes'.

Probably as a sign of mastery of a certain wh-question is its use with other wh-questions in the same exchange. Below are two examples of Ham's use of *we:n* followed by *min ʔaj* 'which' and *le:f* 'why'.

(72) Ham: *we:n sa:ħbak?* 'Where's your friend?' [3;8,12]

Grandpa: *ra:ħ*. 'Left'.

Ham: *min ʔaj ba:b tili^c?* 'Which door did he leave from?'

Grandpa: *min ha:ǰa lba:b*. 'From this door'.

(73) [Ham came to his grandpa's study room in the evening and found him well dressed]

Ham: *ta:lⁱ:n we:n?* 'Where are you going?' [4;1,19]

Grandpa: *laʔ miʃ ta:lⁱ:n?* No, we are not going anywhere?'

Ham: *le:f la:bis?* 'Why are you well dressed?'

Grandpa: *ʕafa:n ʔatnaʃfat*. 'To feel active'.

The acquisition of ʔe:f/fu: 'what'

The first *ʔe:f* questions attested in the data asked about things/objects in the immediate environment whose lexemes were known to Ham. Around 1;9, he was able to answer *ʔe:f/fu:* questions.

(74) Grandpa: *ʔe:f ha:j* 'What's this?'

Ham: *ħabbi [ħabbit ʕinab]* 'A grape'. [1;9, 7]

The first *ʔe:f* question emerged toward the end of the second year.

(75) Ham (looking at wrapped boots): *ʔe:f ha:d* 'What's this?' [1;12,10]

Grandpa: *bo:t* 'Boots'

Ham continued to use *ʔe:f* questions, particularly in game-like conversations which focused on naming and identifying body parts, e.g. eye, ear, head, face.

(76) Grandpa (touching his eye): *ʔe:f haj?* 'What's this?' [2;0,12]

Ham: *ʔe:n [ʕe:n]*. 'Eye'.

Ham (touching his ear): *ʔe:f haj?* 'What's this?'

Grandpa: *ǰa:n*. 'Ear'.

Further, Ham used *fu:* to seek answers to observations which he could not understand or explain.

(77) Ham (to his grandma who was not feeling well): *fu: ma:lit [ma:lik]?* 'What's wrong with you?' [2;3,23]

Grandma: *ta^cba:ni*. 'Tired'.

Ham also used *fu:* in indirect questions.

(78) Ham: *si:di fi: namil ho:n. ʔaullak fu: lo:nu?* 'Grandpa! There are ants here. Shall I tell you what colour they are?' (offer information) [3;7,17]

Grandpa: *ʔa:*. 'Yes'

Ham: *ʔaswad*. 'Black'.

Eventually, Ham also used the idiomatic expression *ʔu: ra:ʔak* 'what about' to make suggestions and exchange views on imaginary/sophisticated matters.

(79) Ham: *si:du! ʔu: ra:ʔak t^ci:ni ʔide:k w a^ci:k ʔidajji?* 'Grandpa! What about you give me your hands and I give you mine?' (make suggestions) [2;11,17]

Grandpa: *le:f*. 'Why?'

Ham: *liʔannu ʔide:k bardi:n*. 'Because your hands are cold'.

(80) [Fake telephone conversation with Yousef, an imaginary friend]

Ham: *ʔu: ra:ʔak ʔinħut xutta nsa:ʔir^c ala ʔamri:ka?* 'What about having a plan to visit America?'

[He didn't invent an answer but went on and on]

tidzdzawwaz? ʔu: ʔisim maratak? liana? walla zaj ʔisim ma:ma. 'Do you want to get married? What's the name of your wife? Liana? Just like my mom's name'. [5;1,18]

However, the main purpose of *e:f* questions was to seek information on events or phenomena whether in the immediate environment or not.

(81) Ham (to grandpa): *ʔe:f tabaxtu?* 'What did you cook?' [3;3,28]

Grandpa: *bando:ra, wintu?* 'Tomato and you?'

Ham: *ninda:n [ba:ðindza:n]*. 'Eggplant'.

(82) Hammoud (talking about a school trip): *ʔaʔullak ʔu: aktar li^cbi ʔa^cdzbatni?* 'Shall I tell you what game I liked most?' [5;7,0]

Grandpa: *ʔa:*. 'Yes'.

Ham: *ble: ste:ʔin*. 'Play Station'

The acquisition of le:f 'why'

The first adjunct *le:f* 'why' question was attested in Ham's data at the age of 2;5,15 when he saw his grandpa flipping through some sheets.

(83) [Grandpa flipping through some sheets]

Ham: *bididi*. 'I want (a sheet)'.
Grandpa: *daffirhin* 'Leave them'.
Ham: *le:ʔ?* 'Why?' [2;5,15]
Grandpa: *haðo:l la-ldza:m^ca*. 'These are university sheets'.

Ham was aware that *le:f* asks about reason. Further, he knew that in his dialect one can also ask about reason using *ma:l* [or *ʔu: ma:l*], a lexical synonym of *le:f*, as in:

(84) [Grandpa was laughing]

Ham (commented): *ma:l si:du bidħakk?* 'Why is grandpa laughing?' [2;6,7]

As is clear, Ham was a sharp observer of the conversation context. When he did not understand the reason underlying a certain phenomenon, he promptly asked about it.

(85) [Uncle Wael stepped in. He frowned at Ham and made loud and strange sounds]

Ham: *ˁammu wa:ʔil le:f bitxawwif fiji?* 'Uncle Wael, why are you frightening me?' [3;3, 10]

Uncle: *ʔana balˁab maˁak.* 'I am playing with you'.

His late *le:f* questions showed Ham's more direct involvement in discussions and events, voicing his views, particularly when disagreeing, as in.

(86) [The maid was offering coffee to guests and family members. Some didn't take coffee and a discussion started on whether coffee was a healthy drink or not]

Ham: *le:f si:idi bithib ʔilʔahwi?* 'Grandpa! Why do you like coffee?' [4;3,11]

Grandpa: *laʔinha za:kji.* 'Because it's delicious'.

Ham: *laʔ ħa:m̄da.* 'No, it's sour'.

When Ham turned five and went to kindergarten, he learnt *lima:ða*, the standard Arabic variant of *le:f* and started using it.

(87) [Juje appeared with a mask and started playing monkey]

Ham: *lima:ða: ʔinta he:k?* 'Why are you wearing a mask?' [5;1]

Juje: *munki munki jaˁni ʔird.* 'Munki munki. This means monkey'.

Ham also used *le:f* for purposes other than requesting an explanation or asking for a reason. Below is an example of using *le:f* to tease his grandpa, another manifestation of cognitive development.

(88) [After the sunset]

Ham: *saba:h ʔilxe:r.* 'Good morning'.

Grandpa: *la: masa lxe:r.* 'No, good evening'.

Ham: *le:f? hijji ʔiddinja lmasa?* 'Why? Is it evening?' [5;10]

Grandpa: *ʔa:.* 'Yes'.

Ham: *la ʔiddinja ssubuħ. ʔitlaˁ fu:f.* 'No, it's morning. Go out and see'.

Grandpa: *btixawwath ja ħammu:di?* 'Are you fooling me Ham?'

Ham: *laʔ badza:kir.* 'No, I am teasing you'.

Just like Juje, Ham used *le:f* in embedded clauses in indirect questions with a view to providing information that was not sought by his interlocutor.

(89) Ham: *btiˁrif le:f ʔana basa:ˁdak?* 'Do you know why I help you?' [5;6,19]

Grandpa: *la?*. 'No'.

Ham: *ʿafa:n tsi:r hədi:qitku ʔahla hədi:qa*. 'So that your garden will become the most beautiful'.

Grandpa: *fukran*. 'Thanks'.

The acquisition of ke:f 'how'

Just like Juje, Ham showed a relatively early understanding of the ritualized and routine question *ke:f ha:lak* 'how are you' and was able to respond to it verbally when he was two years old.

(90) Grandpa: *ke:f ha:lak?* 'How are you?'

Ham: *ħamdulla*. 'Thanks to Allah'. [2; 0]

The first *ke:f* construction Ham produced was in an embedded nominal clause when he was around three, trying to reach a toy on a shelf.

(91) Ham (to grandpa): *ʔittallaʿ ke:f ʔaʔu:l haj. ʔana tawi:l*. 'Look **how I can reach this**. I am tall'. [2;11,18]

Grandpa: *mazbu:t*. 'Right'.

Shortly after that, he displayed sufficient awareness that *ke:f* is a manner adverbial when he used it to convey different pragmatic functions including to request clarification, check on someone, or ask about the weather, etc.

(92) Grandpa: *biddi ʔahuttilak sawa:rib*. 'I want to make a moustache for you?' [3;1,22]

Ham: *ke:f biddak huttili sawa:rib?* 'How can you make a moustache for me?' (Request for clarification)

Grandpa: *baguṣ min sawa:rbi w baħuṭ ʿale:k*. 'I cut from my moustache and put on yours'.

(93) Ham: *ke:f ʔilhimmi?* 'How is your morale?' [4;6,5] (asking about one's psyche)

Grandpa: *ʿa:lji*. 'Great'.

(94) Ham: *ke:f ʔildzaw?* 'What's the weather like?' [4;11,28] (Asking about the weather)

Grandpa: *da:fi*. 'Warm'.

Ham also used *ke:f* in fake dialogues (of his own creation) with his grandma.

(95) [Fake telephone conversation with his grandma]

Ham: *ʔalo:, ke:f ha:lku? ke:f ha:l dzo:zik?* 'Hello, how are you? How is your husband?' [3;6,26]

Grandma: *kwajjis. fukran*. 'He is doing well. Thanks'.

Ham also used *ke:f* as a direct object clause to express manner and provide subsequent feedback.

- (96) Ham: *bti^c rif ke:f tsawwi tajjara?* 'Do you know how to make a plane?' [5;2,7]
 Grandpa: *la?* 'No'.
 Ham: *?ana ba^c rif.* 'I know'. [He drew a plane]

The acquisition of gadde:f/kam 'how many/how much'

When Ham was exposed to a *gadde:f* question, he answered, unlike Juje, using a specific number followed by the word *kti:r* 'a lot'.

- (97) Grandpa: *bithibni ja hammu:di?* 'Do you love me Ham?' [2;11]
 Ham: *?a:.* 'Yes'.
 Grandpa: *gadde:f?* 'How much?'
 Ham: *?tne:n. kti:r* 'Two, a lot'.

It seems that he was not sure that *gadde:f* does not require a specific number when it collocates with 'love' and thus he continued with a neutral term (*kti:r*) that can be used for both quantity and quality.

Analysis of Ham's data suggests that *gadde:f* is acquired rather late, not before turning four. Below is his first *kam/gadde:f* question which required a quantitative answer.

- (98) [Ham had a haircut]
 Grandpa: *na^ci:man ja hammu:di.* 'A very nice haircut, Ham'.
 Ham: *?alla jin^cim^c ale:k.* 'God may bless you'.
 Grandpa: *na^ci:man ja hammu:di.* 'A very nice haircut, Ham'.
 Ham: *kam marra ?ultilli?* 'How many times have you told me?' [4;3]

The acquisition of wakte:f/?e:mta 'when'

Although Ham was able to show understanding of the concept of time when he was around two years old, his first *?e:mta* 'when' question was attested after four.

- (99) Grandpa: *?ana bididi ?at^hammam.* 'I want to have a bath'.
 Ham: *?e:mta biddak tit^hammam?* 'When do you want to have a bath?' [4;5]
 Grandpa: *bas jidfa l^hammam.* 'When the bathroom becomes warm'.
 Ham's late productions of *?e:mta* occurred in longer and more complex constructions.

- (100) Ham: *ba:ba, ?e:mta bidna nru:h^c a da:r xa:ltu dja:la?* 'Dad! When do we want to go to Aunt Diala's house?' [5;10,26]
 Dad: *mif^ca:rif.* 'I don't know'.

3.2. The acquisition of ?aj/?anu: 'which'

The first *?aj* question emerged rather late in Ham's data.

- (101) Mom: *dzi:b ?il-mukinsi.* 'Bring the vacuum cleaner'.
 Ham: *fi ?aj kurfi?* 'In which room?' [3;2,16]
 Mom: *xalas bala:f.* 'Not needed any more'.

ʔaj + Noun is sometimes equivalent to *ʔe:mta* ‘when/what time’ as in:

(102) [Ham found that his favourite TV series episode is over]

Ham: *ha:da lmusalsal mxallis. ʔaj sa:ʕa bibda.* ‘This episode is over. What time does it start?’ [4;2]

3.3. Comparison between the two paths

Before we proceed, it is useful to observe that the age of first use is sometimes suggested as the acquisition criterion. In this context, Stromswold (1995, p. 28) considers the age of first use as "the most sensitive measure of acquisition because it measures the earliest age at which a child could be said to have acquired a construction." However, we think that acquisition is a long and complex process and thus the age of first use is better viewed as the emergence point of acquisition. To minimize the possibility that the first use is not a natural and spontaneous utterance, i.e. a speech error or a formulaic question or an imitation, the context of each occurrence was carefully checked. To answer the first study question on which wh-questions the subjects found easier and thus acquired earlier and the reasons underlying this sequence, one first needs to identify the first natural and spontaneous use of each question word and construction. Once this sequence is known, an interpretation will be provided. Below is a chronological order of the age of first use (emergence) of each wh-question by Juje and Ham.

Table 1

*Chronological order of the age of first use (emergence) of each wh-question by Ju:ju and Ham**

Wh-question	Juje (Y, M, D)	Ham (Y, M, D)
mi:n ‘who’	1;8,2 (1)	1;5,18 (1)
we:n ‘where’	1;10 (2)	1;7,16 (2)
ʔe:f/ʔu: ‘what’	2;2 (3)	1;12,10 (3)
le:f ‘why’	2;4,10 (4)	2;5,15 (5)
lami:n ‘whose’	2;4,25 (5)	2;1,18 (4)
ke:f ‘how’	2;9,22 (6)	2;11,18 (6)
gadde:f/kam ‘how many/much’	3;8,26 (7)	4;3 (8)
wakte:f/ʔe:mta ‘when’	4;6 (9)	4;5 (9)
ʔay/ʔanu: ‘which’	4;2,20 (8)	4;2 (7)

Note. *Rank order of each wh-question appears in brackets next to the age of first use.

The table shows that while mi:n ‘who’ was the first wh-question both Juje and Ham produced, *wakte:f/ʔe:mta* ‘when’ was the last. The former was acquired around age one year and a half and the latter around four years and a half. The other questions appeared in almost the same sequence with the exception of *gadde:f/kam* ‘how many/much’ which ranked seven for Juje and eight for Ham and *ʔaj/ʔanu:*

'which' that ranked eight for Juje and seven for Ham. These findings are not always in line with the data given by Marwan and Dima in Abdo and Abdo (1991). While Marwan acquired *we:n* 'where' first followed by *ʔe:f/ʃu:* 'what', Dima acquired both *mi:n* 'who' and *we:n* first and at the same age. However, the two studies showed more harmony with regard to those wh-questions that were acquired last or toward the end of the acquisition path, viz., *ʔe:mta* 'when' and *ʔaj* 'which'. These differences might be a reflection of parental input, frequency of occurrence and acquisitional context. Marwan and Dima were brought up by Palestinian highly educated parents while they were working and residing as a nuclear family in Kuwait. In contrast, Juje and Ham were part of a large extended Jordanian family in Amman with frequent visitors knocking at the door or ringing the intercom bell who were requested to disclose their identity by responding to a *mi:n* question.

The early emergence of *mi:n*, *we:n* and *ʔe:f/ʃu:* questions is in line with the nature of children's early and urgent communicative needs which include, among other things, learning the names of objects, people and places around them to make their lives easier and more meaningful. This is enforced by their care givers' frequent use of these questions in the context of introducing names of objects, people and places or asking children to identify or verify them.

Apparently, the sequence of acquisition of wh-questions as revealed in the data supports a cognitive maturity interpretation regardless of language and culture. The acquisition of wh-questions that ask about concrete objects/entities, i.e. *mi:n* 'who', *we:n* 'where' and *ʔe:f/ʃu:* 'what' were emerged earlier than those questions which ask about abstract objects/entities, i.e. *le:f* 'why', *ke:f* 'how', *gadde:f/kam* 'how many/much' and *wakte:f/ʔe:mta* 'when'. However, the questions within each of the two sets were not equally easy/difficult. In the first category, *mi:n* ranked first on the easy/difficult scale while *ʔe:f/ʃu:* ranked third. The order of acquisition in the second category suggests that it was easier to ask about reason (*le:f*) than about time (*wakte:f/ʔe:mta*) and that to ask about quantity and quality (*gadde:f/kam*) was more difficult than to ask about manner (*ke:f*).

Cairns & Hsu (1978) ascribed the variable difficulty of 'why' and 'when' questions in English-speaking children to progression in the children's ability to encode the concepts of causality and time linguistically. This interpretation is supported by Juje's and Ham's late acquisition of *wakte:f/ʔe:mta* 'when' and *le:f* 'why' though to a lesser extent. It seems that children also encounter serious difficulty on their way to encode the concepts of quantity/numbering and quality scale. Further, Cairns & Hsu (1978) reported similar difficulty with *how* questions because they "involve a number of unrelated skills" (p. 477). In effect both Juje and Ham found *ke:f* 'how', the manner interrogative adverbial, relatively difficult as manner involves change of state and sharp observation of this change.

The cognitive maturity interpretation approach suggested by this study received support by the generally similar path of acquisition found in English-speaking children regardless of the different morphophonemic structure of wh-question words in Arabic and English, the two genetically unrelated languages.

While question words in English start with a round bilabial glide /w/ or a voiceless glottal fricative /h/ and consist of one syllable, and thus do not display variable linguistic difficulty, question words in JSA do not share the same initial sound nor do they consist of the same number of syllables. In this context, one may wish to observe that *mi:n*, *we:n*, *ʔe:f* and *le:f* start with sounds that young children usually find easy to produce in addition to the fact that these words are monosyllabic. In contrast, the (rather) late acquired words *ke:f*, *gadde:f* and *wakte:f/ʔe:mta* either start with velar sounds which Jordanian Arabic-speaking children tend to acquire rather late and/or consist of more than one syllable. Apparently, this morphophonemic difference has not significantly impacted the sequence of acquisition of these questions in the two languages. However, the late acquisition of /k/ and /g/ in JSA might have also contributed, together with their multiple syllable structure, to the late acquisition of *ke:f*, *gadde:f* and *ʔe:mta*.

An earlier study on the acquisition of wh-questions by English-speaking children highlighted that such a sequence was also a feature of their path of acquisition.

In light of the foregoing, one can claim that there seems to be a universal acquisition path of wh-questions regardless of language background and language-specific complexity.

Symptoms of complete acquisition of wh-questions

Careful analysis of the dynamic and detailed progress of wh-questions in the two children from the first use (emergence) of each question until the onset of schooling suggested that the following symptoms characterize the final or near-final stage of JSA children's acquisition of wh-questions.

1. Use of the wh-question complex and long constructions , e.g. object in indirect questions

The use of wh-questions in a complex sentence where the wh-word prefaces a clause with a grammatical function (object) is seen as an indicator of the child's ability to control the target question compared with initial use of it as a one-word question or a question in a short simple one clause sentence. Below are two examples are extracted from the data presented earlier and repeated below for the reader's convenience.

(103) Juje: *bas ʔakbar lim^calmi bi^callimni ke:f ʔaktub*. 'When I grow up the teacher will teach me how to write'. [3;4,26] (51 above)

(104) Ham: *ʔana ba^crif we:n ra:h ba:ba*. 'I know where dad went'. [3;6,13] (70 above)

2. Use of the standard Arabic (SA) variant and the dialectal variant as alternates

The ability to alternate between the standard and vernacular forms before schooling where the official exposure to standard Arabic starts is seen as a sign of language maturity.

(105) (Juje using SA *ʔajna* 'when' for JSA *we:n*)

Juje: *ʔajna ʔanta muxtafi ja: si:du* 'Where are you hiding, grandpa?' [4;10] (26 above)

(106) (Ham using SA *lima:ða* ‘why’ and for JSA *le:f* wondering why Juje was wearing a mask playing a monkey)

Ham: *lima:ða: ?inta he:k?* ‘Why are you wearing a mask?’ [5;1] (87 above)

It seems that the use of Standard Arabic here is influenced by the children’s exposure to dubbed TV cartoons.

3. Use of the target wh-question with other questions in the same exchange

Juje used wh- and yes/no questions as in:

(107) Juje: *?inta ʿindak baru:di* ‘Do you have a gun?’ [3;8,13] (24 above)

Grandpa: *?a:* ‘Yes’

Juje: *we:nha* ‘Where is it?’

Grandpa: *biddi:f ?agullak* ‘I don’t want to tell you’.

Ham used *we:n* ‘where’ followed by *min ?aj* ‘which’ as in:

(108) Ham: *we:n sa:ħbak?* ‘Where’s your friend?’ [3;8,12] (72 above)

Grandpa: *ra:h.* ‘Left’.

Ham: *min ?aj ba:b tili^c?* ‘Which door did he leave from?’

4. Use of the target wh-question to convey different pragmatic functions

It is believed that the child’s ability to use the target wh-question to convey pragmatic functions other than seeking mere information is a sign of remarkable advancement along the acquisition path. This was evident in Juje’s 31–34 tokens above in which he showed unease with a bad smell (109 below), requested clarification, protested and made a comment.

(109) Juje (showing unease with a bad smell): *fu: ri:ħa?* ‘What’s this bad smell?’ [2;8,4]

Grandpa: *sama:d.* ‘Fertilizer’.

Likewise, Ham used using *ke:f* in tokens 92–94 to ask for clarification, one’s check on someone (110 below) and ask about the weather, among others.

(110) Ham: *ke:f ?ilhimmi?* ‘How is your morale?’ [4;6,5]

Grandpa: *ʿa:lji.* ‘Great’

5. Use of the target wh-question as part of an idiomatic expression

Idiomatic use of language is often viewed as a sign of acquisition. In this context, both Juje and Ham used the JSA expression *fu: ra:jak* ‘what about?’ (36 and 79 above).

6. Use of the target wh-question in fake or imaginary dialogues

The child’s ability to include a wh-question in an imaginary dialogue of his own creation in which he assumes two roles (he and another person) is a sign significant progress along the acquisition path. This was evident in Juje’s and Ham’s fake dialogues illustrated in 35, 49, 50, 80 and 95 above, among others.

7. Use of wh-word synonyms

Both Juje and Ham were able to use *?e:f* and *fu:*, the equivalents of ‘what’ as synonyms. This was illustrated in 29 vs. 31 (Juje) and 76 vs. 77 (Ham).

8. The use of the same wh-question in different structural constructions

The ability to use the same question word in different structural constructions (e.g. (verbless, intransitive, transitive, prepositional phrase) is viewed as a sign of acquisition.

Juje's use of *mi:n* 'who' in 12 (verbless), 14 (intransitive) and 17 (transitive) above is self-evident.

Ham also used the prepositional construction *min we:n* 'from where' in 69 above and repeated below for convenience:.

(111) Ham: *ha:j ?il-barra:ji min we:n faritu:ha?* 'Where did you buy this sharpener from?' [3;8,1]

Grandpa: *min ?issu:g.* 'From the market'

To conclude, these features need to be further examined on the basis of cross-linguistic data to decide whether they are language specific or show a tendency toward universality.

4. Conclusions and Recommendations

The longitudinal study reported here was solely devoted to offering a description of wh-questions in Jordanian Spoken Arabic in addition to investigating how these questions were acquired by Jordanian-Arabic speaking children residing in Amman, Jordan. It argued for a cognitive maturity approach to interpret the sequence of acquisition suggested by the data regardless of language and culture. The acquisition of wh-questions that ask about concrete objects/entities, i.e. *mi:n* 'who', *we:n* 'where' and *?e:f/fu:* 'what' were produced and developed earlier than those questions which ask about abstract objects/entities, i.e. *le:f* 'why', *ke:f* 'how', *gadde:f/kam* 'how many/much' and *wakte:f/?e:mta* 'when'. However, the subjects did not find the questions within each of the two sets equally easy/difficult. In the first category, *mi:n* ranked first on the easy/difficult scale while *?e:f/fu:* ranked third. The order of acquisition in the second category suggested that it is easier to ask about reason (*le:f*-why) than about time (*wakte:f*-when) and that to ask about quantity (*gadde:f/kam*-how many/much) is more difficult than to ask about manner (*ke:f*-how). The study also identified a set of features which may be used to judge how close the child is to native-like competence. The more features are available, the closer the child is to complete or almost complete acquisition of wh-questions.

Future research may examine the acquisition of these questions by speakers of other spoken varieties of Arabic. It may also focus on the acquisition of yes/no questions in JSA and beyond.

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