THE TONAL FEATURES AND THE ATTITUDINAL IMPLICATIONS OF THE ECHOING NUCLEAR TONES IN ARABIC AND ENGLISH WH-QUESTIONS: A CONTRASTIVE STUDY

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Abstract

The aim behind conducting this study is to compare the tonal shapes and the attitudinal implications of the echoing nuclear tones used in Arabic and English wh-questions. The findings of the study have shown that both of the two languages share the existence of simple and complex rising tones. They have also shown that only half of the number of the echoing nuclear tones in Arabic occurs in English, and that the Arabic tones express more attitudinal judgements than the English ones.

1. Introduction

Recently, it has been shown that Arabic and English wh-questions can be signalled intonationally through the use of twenty-one nuclear tones ranging from simple to complex pitch quality (Gatta, 1988). Nearly half of these tones suggest an echoing impression; they can, therefore, be suitably termed as 'echoing nuclear tones'.

These tones can be divided into two categories. The first category includes simple echoing nuclear tones, and the second contains complex echoing nuclear tones. The Arabic first category comprises three tones: echoing high rise (EHR), echoing mid rise (EMR), and echoing low rise (ELR). The complex category
includes three echoing falling-rising tones: echoing high fall-rise (EHF-R), echoing mid fall-rise (EMF-R), and echoing low fall-rise (ELF-R). As for English, the first category consists of two rising tones: echoing high rise (EHR), and echoing low rise (ELR); whereas the second is composed of only one complex falling-rising tone, namely the echoing mid fall-rise (EMF-R).

This makes this study different from two previous related studies that appeared at the same time. The first was conducted by El-Hassan, and the other by Gatta. El-Hassan (1988) drew an intonational contrast between English and Arabic wh-questions, yes/no questions, tag questions, and alternative questions. He came out with the conclusion that “questions in the two languages do share certain patterns of intonation with much the same illocutionary force.” (El-Hassan, ibid: 106). Gatta (1988), on the other hand, contrasted the intonational patterns of six types of question existing in English and Arabic, namely yes/no questions, declarative questions, repetitive questions, wh-questions, and alternative questions. She concluded, among other things, that

Although English and Arabic have some interrogative intonational patterns in common, yet each language has its own intonational ways of asking questions depending on the types of the nuclear tone that are employed, the interrogative structures which are signalled, and on the context of the discourse. (Gatta, ibid: 136)

The present study mainly aims at investigating the similarities and differences in the tonal features and the attitudinal implications between the echoing tones existing in the two languages. A contrastive analysis has been, then, carried out to detect the co-occurrences of these tones in Arabic and English wh-questions. The English illustrative examples were selected from a number of different sources, e.g. Gimson (1989), Halliday (1970), Kingdon (1958), O’Connor and Arnold (1973), and Roach (1983); whereas the Arabic examples were extracted from Najib Mahfudh’s celebrated novel ‘Meramar’, and from Abdul-Rahman Munif’s ‘?al?aʃd3aar waGtijaal marzuq’, as well as from individual constructed utterances.
2. Analysis of the Echoing Nuclear Tones

2.1 The Simple Echoing Nuclear Tones:

2.1.1 The Echoing High Rise (EHR): /↗/

This nuclear tone commences its ascending movement from a point slightly above, and sometimes below, the fourth level of pitch range.¹ Then, it rises until it terminates at a point below the fifth pitch level. Pretonic segments that precede this tone are usually high in Arabic. The speaker may, sometimes, wish to reflect a contrast through which he expresses his astonishment or puzzlement, he may therefore use lower preheads and heads, and in very limited situations, ascending heads.

Syllables in the high head are usually said on the same rather high pitch that ranges from the fourth to the fifth level of pitch. The low head, on the other hand, marks all the syllables that are said on a low pitch within the limits from pitch level number one to the second pitch level. High and low preheads have almost the same pitch levels as those of the high and low heads. Tails that follow the rising tones generally continue the rising glide of the nuclear syllable in an ascending pattern. This tone sounds of a considerably shorter duration in comparison with the other echoing rising tones, for its movement starts and ends in the area of the fourth and fifth levels of pitch range.

With Arabic wh-questions the EHR conveys a feeling of surprise, bewilderment or mishearing a word or a certain portion from the original utterance. Sometimes it only seeks information.

\text{\textit{E.g.}}

1. A: // waman \textcolor{red}{\text{\texttt{a}}} l\textcolor{red}{\text{\texttt{a}}} l\textcolor{red}{\text{\texttt{ka}}} ll \textcolor{red}{\text{\texttt{r}}ad\textcolor{red}{\text{\texttt{3}}} ul //
   \text{\textit{(And who is that man?)}}

B: // \textcolor{red}{\text{\texttt{w}}} aman \textcolor{red}{\text{\texttt{\text{x}}} aalikal \textcolor{red}{\text{\texttt{r}}}ad\textcolor{red}{\text{\texttt{3}}} ul //

\text{\textit{\begin{center} \end{center}}}}

\text{\textit{(And who is that man?) 'Don't you know him?'}}
2. A: // ?ajna baaqil mad3muu9a //
   (Where is the rest of the group?)
B: // ? ajna - baaqil mad3-muu9a //

   (Where is the rest of the group?)

3. A: // limaa aarad3i9t //
   (Why did you come back?)
B: // li3maa aarad3i9t //

   (Why did I come back?)

The English EHR can be preceded by a low prehead and/or a high head. O'Connor and Arnold (1973:36) state that when the nuclear tone is on the interrogative word, the EHR calls for the repetition of information already given. They also add that when it is not on the interrogative word, the speaker is often echoing the listener's question in order to get it clear in his mind before giving an answer.

e.g.

1. A: Where are you staying?
   B: Where? // (At the Grand.)
2. A: What is that?
   B: 'What' is that?

3. A: When did I tell him to scam?
   B: When you 'told him' What?

2.1.2 The Echoing Low Rise (ELR): /↑/

The tonal features of this nuclear tone are identical in both Arabic and English. That is, the rising movement starts from almost the lowest level of pitch range and glides smoothly upwards until it ends at the lower-mid level or slightly above it. Arabic tone-units that contain the ELR can be initiated by a low pretonic segment. But sometimes when the speaker expresses a point of contrast, he may use a high prehead and either a high or a descending head before this tone. In this respect, Ghalib (1977:98) remarks that in the descending head each syllable is relatively higher than the one following it. This downward movement can make the whole tone-unit sound weightier or more influential than the normal upper head.

Generally, the Arabic ELR repeats a previously mentioned idea to convey a feeling of surprise or puzzlement.

e.g.
1. A: // mataa bada?ta bil9amal //
   (When did you start working?)
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B: /mataa bada?t//

(When did I start?)

(Who are you?)
B: /1man ? anaa//

(Who am I?)

(Why did he ask you about me?)
// *li-maa xaa sa--? alanii 9anka//

(Why did he ask me about you?)

A: /maa bisa//
(What is the matter with you?)
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// maa bii //

(What is the matter with me?)

The English ELR, on the other hand, may follow a low prehead and/or a high head. Such tone-units ask for the repetition of part of a previously mentioned idea.

1. A: When did you see him?
   B: I saw him when?

2. A: How many children has he got?
   B: 'How many?

The Arabic language contains another simple echoing nuclear tone which has no counterpart in English, namely the echoing mid rise (EMR, // ). This tone begins its movement from above the lower-mid level of pitch range and terminates slightly below the upper-mid level. Consequently, its duration is longer than that of the EHR since the pitch range of the former is wider than that of the latter.
The EMR can be preceded by low or high preheads and/or low, ascending, descending, or mid heads. A mid head usually occupies the pitch range which extends from the second level of pitch to the fourth level. This tone echoes either when demanding repetition or when signalling irony.

**e.g.**

1. A: // limaa xaa 9utta //
   (Why did you come back?)
   B: // li , maal xaa //

   (Why?)

2. A: // maal waqt //
   (What is the time?)
   // 3maal, waqt //

3. A: // walaakin mataa ja9uudu samiir //
   (But when will Samir be back?)
   // 'mataa ja-9uudu sa, miir //

   (when will Samir be back?)
4.  A:  // kam si9rul kitaab //
    (What is the price of this book?)
    // -kam 2si9rul ki, taab //

    (What is the price of this book?)

5.  A:  // kajfa 9arafta makaanii //
    (How did you know my place?)
    // --kajfa - 9araftu ma_kaanak //

    (How did I know your place?)

2.2 The Complex Echoing Nuclear Tones:

2.2.1 The Echoing Mid Fall-Rise (EMF-R): /*/

The EMF-R is obviously composed of two elements. The first element is the falling movement which begins at any point within the region extending from the upper-mid to the lower-mid range of pitch; it ends at the lowest line on the pitch level scale. The second element starts its rising movement right from the terminating point of the first element and glides upwards until it ends at a point lying above the lower-mid pitch level but not higher than the starting point of the first element of the tone.
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The Arabic EMF-R may follow a pretonic segment containing a low prehead and/or a mid, or a descending head. This tone retains the echoing quality expressed by the EMR.

E.g.

1. A: // limaab ahuturi du qatlī //
   (Why do you want to kill me?)
   // li “maaab aa //

   (Why?)

   (Where did your sister go?)
   // “ajnā ahut “uxtii //

   (Where did my sister go?)

3. A: // maa 9inwaanu Sadīquk //
   (What is your friend's address?)
   // 2 maa 9in'waanub //

   (What is his address?)

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English tone-units that contain the EMF-R can be initiated by a low prehead and/or a falling head.

e.g.-

1. A: Who'll play the cello part?
   B: "Who? // (Andrew, you idiot!)

2. A: Which one's mine?
   B: "Which one?

3. A: How far to Ipswich?
   B: How 'far? // (Oh, twenty miles at least.)

4. A: How far to Luton?
   B: How far to 'Luton? // (What's Luton got to do with it?)
It is worth mentioning here that the EHF-R and the ELF-R are two Arabic echoing nuclear tones that have no equivalents in English. The EHF-R /ؤ/ starts its falling movement at a point extending from the high level of pitch range to the upper-mid level. Then, this pitch movement goes down in a smooth pattern until it ends at a certain point in the mid region of pitch range. Thereafter, the rising movement commences its way up till it terminates at a point below or slightly above, but not higher than, the starting point of the falling pitch movement.

This nuclear tone can be preceded by a low or a high prehead and/or a high head. It denotes an impression of bewilderment or astonishment. It sometimes asks for an explanation.

**e.g.**

1. A: // mal farqu bajnal؟ iθraaj //
   (What is the differences between the two?)
   // mal ُfarq //

2. A: // man huwar raazii //
   (Who is Al-Raazy?)
B: // ُman huwar ُraazii //
3. A: // kam luGatan tatakallam //
   (How many languages do you speak?)
B: // 1kam rLuGa //</

   -

   (How many languages?)

The ELF-R /v/ initiates its falling movement at a point slightly above or below the lower-mid level of pitch range and terminates at the lowest level. The rising movement at a point slightly above or below the lower-mid level of pitch range and terminates at the lowest level. The rising movement starts from the same terminating point at that of the falling movement and ends at a point somewhere slightly below the starting point of the falling movement.

This tone shares two common features with the EHF-R and the EMF-R. Firstly, it resembles the EHF-R in its degree of duration and in its width of pitch range. Secondly, its first element ends at the lowest pitch level as that of the EMF-R.

The ELF-R may follow a high or a low prehead and/or low or descending heads. By and large, the ELF-R conveys impressions similar to those express by the ELR.

E.g.

1. A: // maa āa juud3adu fil Haqiiba //</
   (What is there in the bag?)
   // /,maa āa juud3ad //</

   (What is there?)
2. A: // mataa jard3a9u maHmuud //
   (When will Mahmud be back?)
B: // 'mataa - jard3a9u maHmuud //

(When will Mahmud be back?)

   (Where are you going?)
B: // ?ilaa ,?ajn //

(Where to?)

   (What is the matter?)
B: // 'mal ,?amr //

(What is the matter?)
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3. Conclusion

This study recognizes six Arabic nuclear tones and three English ones. The Arabic tones comprises three simple rising tones and three complex falling-rising ones; whereas the English counterparts consist of two simple rising tones and only one complex falling-rising tone. The difference in number between the tones existing in the two languages is due to the fact that the distinction of the rising varieties, with regard to the degree of height attained by the tonic syllable, is placed at greater levels of delicacy in our description.

In accordance with the shapes and attitudes implied by the investigated tones, we can firmly argue that there is a good deal of an overall resemblance between the echoing nuclear tones of the two languages. In this regard, our findings are in good agreement with those reported by El-Hassan (1988). Both languages, in fact, have two simple rising tones in common, viz the EHR and the EIR, which convey the feelings of mishearing, misunderstanding, surprise, or puzzlement. Besides, both have a complex falling-rising variety, namely the EMF-R, which denotes, among other things, an impression of astonishment.

However, there are some differences that may fall into two types. The first type suggests that only half of the number of the echoing nuclear tones in Arabic exists in English; whereas the second type suggests that the richness of the Arabic nuclear tones express more attitudinal judgements than the English ones. Finally, we may conclude that the English nuclear tones are almost always restricted to indicating a feeling of surprise or puzzlement.

Tables (1 and 2) display the co-occurrences of the Arabic wh-questions with six echoing nuclear tones signalling their attitudinal implications, and the co-occurrences of the English wh-questions with three echoing nuclear tones reflecting different attitudinal implications, respectively.3
Appendices

Appendix (A):
The Arabic Segmental Symbols Used in This Study:

1. The Vowels:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>A short half-close front with lip spreading vowel</td>
</tr>
<tr>
<td>ii</td>
<td>A long close front with lip spreading vowel</td>
</tr>
<tr>
<td>a</td>
<td>A short half-open front unrounded vowel</td>
</tr>
<tr>
<td>aa</td>
<td>A long open front unrounded vowel</td>
</tr>
<tr>
<td>u</td>
<td>A short half-close back rounded vowel</td>
</tr>
<tr>
<td>uu</td>
<td>A long close back rounded vowel</td>
</tr>
</tbody>
</table>

2. The Consonants:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>f</td>
<td>A voiceless labio-dental fricative</td>
</tr>
<tr>
<td>θ</td>
<td>A voiceless interdental fricative</td>
</tr>
<tr>
<td>ş</td>
<td>A voiced interdental fricative</td>
</tr>
<tr>
<td>s</td>
<td>A voiceless denti-alveolar fricative</td>
</tr>
<tr>
<td>S</td>
<td>A voiceless denti-alveolar emphatic fricative</td>
</tr>
<tr>
<td>z</td>
<td>A voiced denti-alveolar fricative</td>
</tr>
<tr>
<td>ž</td>
<td>A voiceless palato-alveolar fricative</td>
</tr>
<tr>
<td>x</td>
<td>A voiceless velar fricative</td>
</tr>
<tr>
<td>G</td>
<td>A voiced velar fricative</td>
</tr>
<tr>
<td>H</td>
<td>A voiceless pharyngeal fricative</td>
</tr>
<tr>
<td>9</td>
<td>A voiced pharyngeal fricative</td>
</tr>
<tr>
<td>h</td>
<td>A glottal fricative</td>
</tr>
<tr>
<td>b</td>
<td>A voiced bilabial plosive</td>
</tr>
<tr>
<td>t</td>
<td>A voiceless denti-alveolar plosive</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>phoneme</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>d</td>
<td>A voiced denti-alveolar plosive</td>
</tr>
<tr>
<td>k</td>
<td>A voiceless velar plosive</td>
</tr>
<tr>
<td>q</td>
<td>A voiceless uvular plosive</td>
</tr>
<tr>
<td>?</td>
<td>A glottal plosive</td>
</tr>
<tr>
<td>ŋ</td>
<td>A voiced palato-alveolar affricate</td>
</tr>
<tr>
<td>m</td>
<td>A voiced bilabial nasal</td>
</tr>
<tr>
<td>n</td>
<td>A voiced denti-alveolar nasal</td>
</tr>
<tr>
<td>r</td>
<td>A voiced alveolar flap</td>
</tr>
<tr>
<td>l</td>
<td>A voiced alveolar lateral</td>
</tr>
<tr>
<td>w</td>
<td>A voiced labio-velar approximant</td>
</tr>
<tr>
<td>j</td>
<td>A voiced palatal approximant</td>
</tr>
</tbody>
</table>

Appendix (B):
A diagrammatic scale showing the five pitch levels identified in normal non-emphatic speech.

5 -------------------- High
4 --------------------- Upper-mid
3 --------------------- Mid
2 --------------------- Lower-mid
1 -------------------- Low

Appendix (c):
Pitch notation: (The marks to the syllable /man/ 'who' in each case).
// 'man // A high prehead
// man // A low prehead (unmarked)
// 'man // A high head
// 2man // A mid head
// 3man // A low head
// 'man--man__man // A descending head

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Appendix (D):

Table (1): The co-occurrences of the Arabic wh-questions with six echoing nuclear tones signalling their attitudinal implications. Tonal shapes are of monosyllabic words.

<table>
<thead>
<tr>
<th>Nuclear Tone</th>
<th>Description</th>
<th>Tonal Shape</th>
<th>Attitudinal Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>EHR</td>
<td>rising from about level 4 to level 5</td>
<td></td>
<td>surprise, bewilderment or mishearing</td>
</tr>
<tr>
<td>EMR</td>
<td>rising from about 2 to a region below level 4</td>
<td></td>
<td>demanding repetition or denoting irony</td>
</tr>
<tr>
<td>ELR</td>
<td>rising from about level 1 to level 2</td>
<td></td>
<td>surprise or puzzlement</td>
</tr>
</tbody>
</table>
### Table 2

The co-occurrences of the English wh-questions with three echoing nuclear tones signalling different attitudinal implications. Tonal shapes are of monosyllabic words.

<table>
<thead>
<tr>
<th>Nuclear Tone</th>
<th>Description</th>
<th>Tonal Shape</th>
<th>Attitudinal Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>EHF-R</td>
<td>falling from a point between levels 5 to a point between levels 3 and 2, then rising to a point below the tone's initiation</td>
<td></td>
<td>astonishment, bewilderment or demanding explanation</td>
</tr>
<tr>
<td>EMF-R</td>
<td>falling from a point between levels 4 and 2 to level 1, then rising to a point below the tone's initiation</td>
<td></td>
<td>surprise, demanding repetition or seeking information</td>
</tr>
<tr>
<td>ELF-R</td>
<td>falling from about level 2 to level 1, then rising to a point below the tone's initiation</td>
<td></td>
<td>surprise or demanding a definite answer</td>
</tr>
<tr>
<td>EHR</td>
<td>rising from about level 4 to level 5</td>
<td></td>
<td>demanding repetition of a given information while thinking of what to say</td>
</tr>
<tr>
<td><strong>ELR</strong></td>
<td>Rising from level 1 to about level 2</td>
<td>Puzzlement, interest or disapproval</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>-------------------------------------</td>
<td>------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>EMF-R</strong></td>
<td>Falling from a point between levels 4 and 2 to level 1, then rising to a point below the tone's initiation</td>
<td>Great astonishment</td>
<td></td>
</tr>
</tbody>
</table>
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Notes

1. See diagrammatic scale of pitch levels in Appendix B.

2. Among their ten tone groups, O'Connor and Arnold (1973) use the EHR in the 'High Bounce' either with or without the pretonic segment.

3. See tables 1 and 2 Appendix D.
References


