The effect of post-tonic lengthening and F0 in Syrian Arabic prosody
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The role of final boundary is well-known in the intonation literature [1], but whether post-tonic lengthening (PTL) influences intonation and prosodic structure in languages is not very well-known. There is some literature on prosodically conditioned PTL across languages [2] & [3], but the additional factor in Syrian Arabic (henceforth SyrA) is the pragmatic factor. In this paper, we investigate this in SyrA and show how it plays an important role in SyrA sentence-level prosody.

Experiment: Twenty utterances of statements and questions were recorded from six native speakers of SyrA. The target words consisted of two syllables representing stressed and unstressed conditions with stress falling on the penultimate syllable. The alignment of F0 peaks and valleys in the utterances along with the duration of the phrase-final segments were investigated. Durational measures were obtained from statements (SVO word order) and question utterances (wh & yes/no) to determine the acoustic features of vowel PTL [4] occurring in ips (non-utterance-final units) and in questions. In addition, similar utterances of statements were compared with the yes/no questions to determine the degree of post-tonic lengthening occurring in questions. Yes/no questions in SyrA have no morphological markings or syntactical means to differentiate them from statements. Since they have the same morpho-syntactic form, yes/no questions are distinguished from statements by intonation only.

[5] proposed an analysis of three levels of phrasing for SyrA intonation, the Accentual Phrase (AP), the Intermediate Phrase (ip), and the Intonational Phrase (IP). The AP in SyrA contains one or more prosodic words, and the IP can have more than one AP. The Intermediate Phrase (ip) is a domain of a syntactic structure SVO (the subject, the verb, and the direct object) in SVO (Subject – Verb (ditransitive) – Direct Object – Indirect Object) word order.

F0 was found to play a crucial role in conveying the prominence (pitch accents) and boundary information within the AP in SyrA. The AP in SyrA is marked on its left edge by a high tone H* realized on the stressed syllable and marked by a low tone La on the right edge of the AP. This suggests that the stressed syllable is the locus of the High tone and is associated with the rising tonal pattern of the AP. The default pattern of APs in SyrA was realized as [H* La], as shown in Fig. 1 below.

F0 and duration were considered to be important factors in cueing the Intermediate Phrase (ip) in SyrA. The ip in SyrA is also characterized by a rising contour but with a high tone aligned to its right edge. The ip boundary tone H* is distinct from the AP-initial tone H* in which the ip boundary tone H* has a higher pitch and boosted pitch range than the AP-initial tone H*. In Fig. 2 below, the peak on the last syllable of the word [ˈləʕbeh] ‘doll’ is higher than the preceding H* peak, breaking the declination slope among H* peaks. This higher peak is an ip boundary tone H* marking the direct object of the sentence. In addition to this, durational lengthening was reported in the ip (utterance-non-final item). The vowel duration of the last unstressed syllable [be] of the word [ˈləʕbe] is longer than the preceding stressed counterpart (Fig. 5).

The pitch contour of Wh-questions in SyrA is characterized by a downstepped rise on the last unstressed syllable of the phrase-final content word. The reason for this final downstepped rise in SyrA question tunes is due to phrase-final PTL in SyrA. Similarly, the utterance-final up-step in yes/no questions is accompanied by a phrase-final PTL. In SyrA questions, post-tonic short vowels are lengthened phrase-finally in word-final position. We show the durational differences between statements and questions in Fig. 6 below. A linear mixed-effects model was conducted using the lmer function from the lme4 package in R to test the durational measurements in statements and questions. The results of the model showed a significant effect where the durations of the vowels in the target words were different. The results and the model will be presented later in the full paper.

PTL was found to play an essential discourse-level function in SyrA prosody at the phrasal level, which is found to be a typical feature of SyrA differentiating it from the other dialects of Arabic. The utterance-final high rise in SyrA questions is accompanied by a phrase-final PTL which is referred to by Kulk et al. [4] as “singing intonation.” PTL in SyrA is both prosodically conditioned and at the discourse pragmatic level. Prosodic boundaries that have significant lengthening are the ip and the question IPs.

Duration has been shown to play a significant role in the dialects of Arabic such as Lebanese [6], Egyptian [7], and Jordanian [8]. However, SyrA is unique in the role that PTL plays at the level of
intonation, not just in lengthening unstressed syllables but influencing the up-stepped F0 in yes/no questions and the downstepped rise in wh-questions.

Figure 1: AP in SyrA with VSO word order in the utterance [ˈraːsal ‘maːzen ˈleːla] “Mazen corresponded Laila.”

Figure 2: The ip in SyrA with SVO word order in the utterance [ˈmaːzen ‘ram-ə ləxbe lə-ˈyə:del] “Mazen threw the doll to Adel”

Figure 3: Wh-Q in the utterance [ˈweːn ˈsaːken ‘ya del?] “Where is Adel staying?”

Figure 4 : YNQ in the utterance [ˈnaːme lə lə] “Did Laila sleep?”

Figure 5: Vowel duration of stressed vs. unstressed vowels representing post-tonic vowel lengthening in SyrA statements in the ip-final word of the utterance in Figure 2.

Figure 6: post-tonic vowel lengthening in SyrA questions, and Yes/no utterances compared to similar statement utterances.

References