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**The Intonation of Questions in Farsi:
Wh-Questions, Yes/No Questions and Echo Questions ***

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1. Introduction

This paper examines the ToBI labeling conventions for labeling intonation and applies it to Farsi interrogatives. In this paper, three types of interrogatives will be examined: wh-questions, yes/no questions, and echo questions. Before presenting the intonation data and analysis, we will first present background on the Farsi language, overview the syntactic structure of questions, and discuss the methods of data collection.

1.1. Language Background

Farsi is an Indo-Iranian language that is spoken by approximately 22 million speakers in central and south central Iran. Farsi is considered the official language of Iran and is used in schools and radio programs.

Farsi's basic word order is SOV yet allows for a few alternatives (Grimes, 2002).

2. Structure of Questions in Farsi

In this section, we will present a brief overview of the syntactic structure of the three types of questions discussed in this paper: wh-questions, yes/no questions and echo questions.

* This paper was a course project for Ling251 (Proseminar: Intonational Field Methods), taught by Prof. Sun-Ah Jun in Spring 2003, UCLA, Department of Linguistics.

2.1 Wh-Questions

In wh-questions, the wh-word is left in-situ and can occur in one of three positions within the sentence: initial (as in example 1), medial (as in example 2), or final (as in example 3).

1. kie moAlem
 who teacher
 “Who is a teacher?”
2. zAne chi mibine
 woman what sees
 “What does the teacher see?”
3. mArde kie
 man who
 “Who is the man?”

2.2 Echo Questions

Echo questions are segmentally identical to wh-questions. Thus, example 4 can be interpreted as either a wh-question or an echo question, depending on the intonation.

4. mArde chi mibine
 man what sees
 “The man sees *what?*” or “What does the man see?”

2.3 Yes/No Questions

Yes/No questions are segmentally identical to declaratives. Example 5 can either be a declarative or a yes/no questions, depending on the intonation.

5. Nazanin sAndAliero nemikeshune
 Nazanin chair not-drag
 “Nazanin doesn’t drag the chair.” or “Doesn’t Nazanin drag the chair?”

3. Methods

We will now briefly discuss the method of data collection.

3.1. Speakers

Two native speakers of Farsi were recorded. Speaker S is a female speaker of Farsi, who was raised in the United States. Speaker H is a male speaker who was born in Tehran, Iran and moved to the United States in his late teens. We would like to thank both of our speakers for their time and patience with this project.

It is necessary to point out that there are a number of grammatical differences between the speakers. For example, Speaker S has a relatively free word order for simple declaratives, which is quite unusual in Farsi. Speaker H, on the other hand, has a more restrictive SOV word order, typical to Farsi. (These inconsistencies might reflect a difference in each speaker's abilities.) While both speakers were a vital part of this project, this paper will concentrate more on the data from Speaker H.

3.2 Procedure

The data used in this paper was recorded with a Telex M-560 noise canceling microphone directly into a Toshiba Satellite S255 laptop. Most of the sentences were recorded once and then analyzed using PitchWorks (Tehrani, 1998-2003).

3.3. Analysis

The analysis presented here was developed in conjunction with the Intonational Field Methods class (UCLA, Spring 2003). We would like to thank the class and our instructor Sun-Ah Jun for their assistance with this project.

In this section, we will discuss some of the general properties of Farsi intonation proposed by our class to account for the data. For the scope of this paper, we will limit our discussion to the intonational properties that are relevant to questions.

3.4. Proposed Tiers for Farsi ToBI

❖ **Tones** – On this tier, the pitch accents and boundary tones are recorded. These are:

- **Pitch Accents**

- **L+H*** - This pitch accent denotes a rising pitch whose peak falls on the stressed syllable and is denoted by a H*. The stressed syllable is preceded by a low in the F0 contour.

Phonetically, this pitch accent can be realized as: L+[^]H*, H*, or [^]H*. (Examples of the phonetic realizations of the L+H* will be shown throughout this paper.)

- **Accentual Phrase**

- **Ha** - This represents a sustained high plateau at the end of an accentual phrase. The domain of the accentual phrase is typically one word.
- **La** – This represents a sustained low plateau at the end of an accentual phrase. The domain of the accentual phrase is typically one word.

- **Boundary Tones**

- **L-L%** - This represents a full intonational phrase with a low or low falling F0 contour.
- **L-H%** - This represents a full intonational phrase with a late sharp-rise in the F0 contour.
- **H-[^]H%** - This represents a full intonational phrase with a long gradual F0 rise.
- **H-L%** - This represents a full intonational phrase with a high F0 plateau.

- **H-H%** - This represents a full intonational phrase with a late gradual rise in the F0 contour.
- ❖ **Words** – This tier is used to represent the Romanized orthographic transcription of Farsi words. The Romanization was developed by the Intonation Field Methods class.
- ❖ **Gloss** – On this tier, an English translation of the Farsi words is provided.
- ❖ **Breaks** – This tier denotes the level of juncture between words. The break indices most relevant to Farsi interrogatives are:
 - **1** – This represents the normal juncture between words.
 - **4** – This represents a full intonational phrase boundary. This boundary tone is typically found at the end of sentences.

4. Wh-Questions

As mentioned earlier, wh-words can appear in three positions: sentence-initial, sentence-medial, or sentence-final. In each position, there is a slight change to the phonetic realization of the pitch accent on the wh-word. (However, this does not produce a change in meaning.) In this section, we will provide example of interrogatives as produced by Speaker H. Data from Speaker H will be supplemented by data from Speaker S, when there is an overlap in each speakers' respective data.

4.1. Intonation of Wh-Questions

4.1.1. Wh-word Sentence-Medially

Sentence-medial wh-words are marked by either a L+H*, for disyllabic wh-words, or ^H* for monosyllabic wh-phrases (Note: all monosyllabic wh-phrases have an initial obstruent

which can act as a confound in determining whether this is truly an $\wedge H^*$ or a $L+\wedge H^*$). Typically, deaccenting or dephrasing occurs after a wh-phrase. (Thus, one expects a L_a accentual phrase boundary next to a $L-L\%$ boundary tone marking the end of the sentence.) Intonationally, wh-questions are very similar to declaratives, with the exception of deaccenting and dephrasing that occurs after wh-words.¹

Figure 1 shows a typical pattern for wh-questions as produced by Speaker H. Before the wh-phrase *kio* “whom”, one can see the regular pattern of ‘ $L+\wedge H^*$ Ha’ (on *mArde* “man”) that is used in declarative sentences. Typically, the wh-phrase is the last word in the sentence that receives a pitch accent, here represented by a $L+\wedge H^*$ on the wh-word *kio* “whom”. Any material after the wh-word is deaccented and dephrased. (This explains that absence of a pitch accent on *mibine* “sees”.) The end of the sentence is marked by a $L_a L-L\%$.

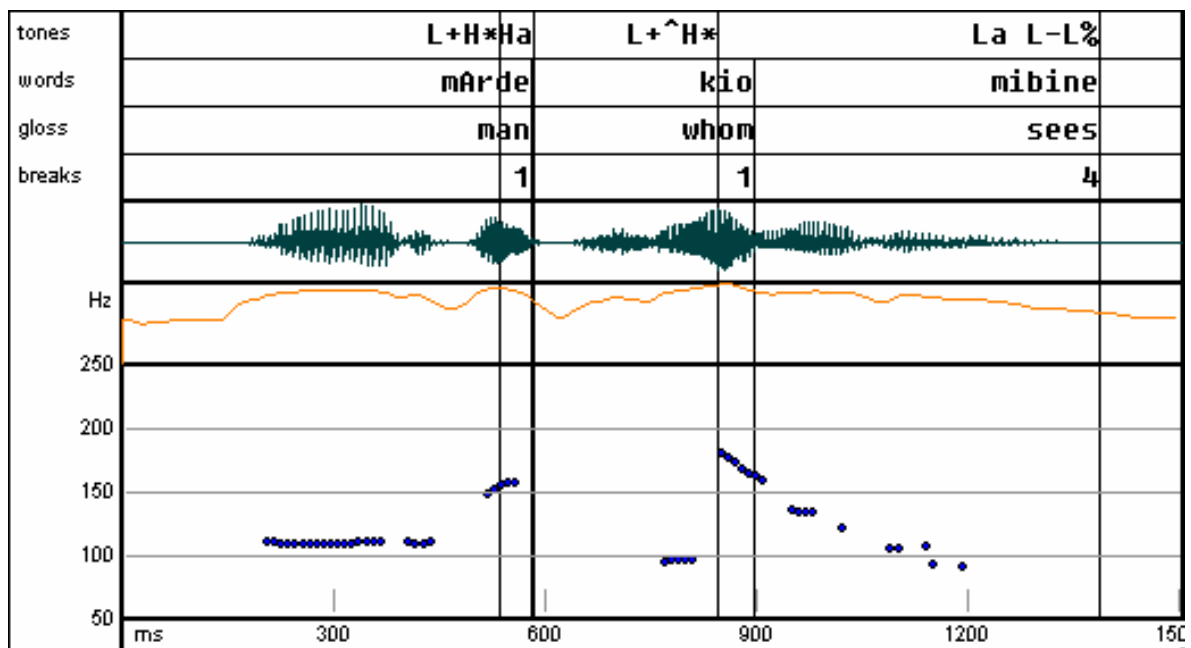


Figure 1. *mArde kio mibine* “Who does the man see?” File: H wh10

¹ Some declaratives also show deaccenting and dephrasing on sentence-final verbs. In these cases, it seems that Speaker H put focus on the object, which appears preverbally, and thus deaccenting the verb.

Further evidence for this pattern can be seen in Figure 2. Again we see an L+[^]H* on the wh-word *chejuri* “how”. After which, there is deaccenting and dephrasing which is followed by La L-L% sentence final boundary tone.

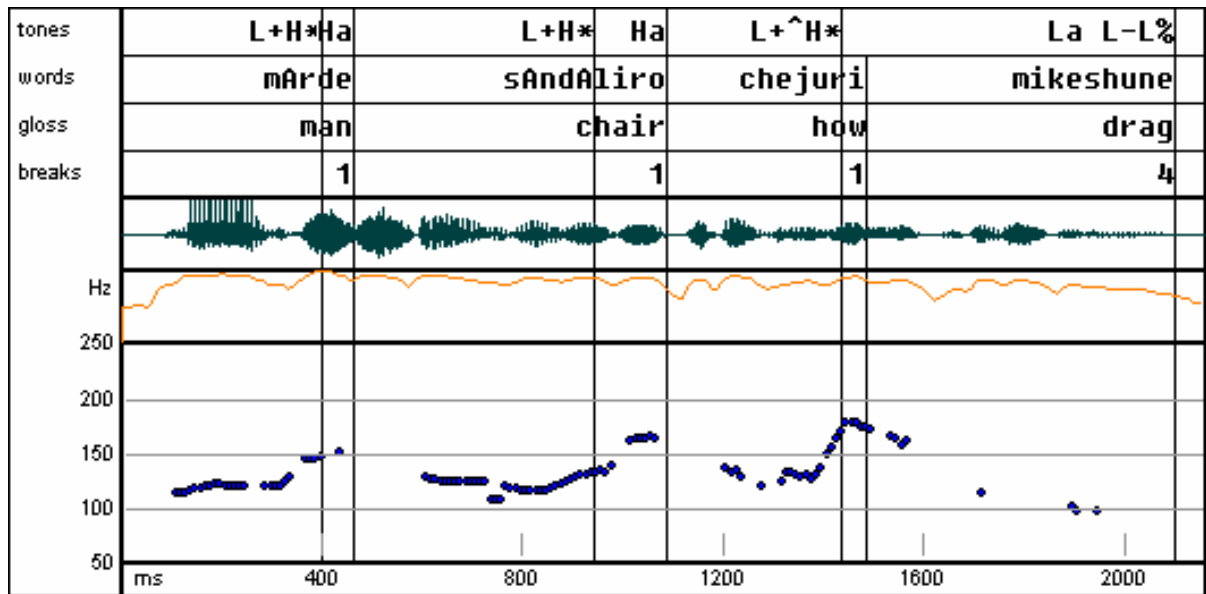


Figure 2. *mArde sAndAliro chejuri mikeshune* “How did the man drag the chair?” File: H wh15

4.1.2. Wh-word sentence-initially and sentence-finally

The intonation of sentence-initial and sentence-final wh-phrases is similar to that of sentence-medial position, with two major exceptions: (1) the type of pitch accent and (2) the boundary tone.

When the wh-word is sentence-initial, the L+H*, which is usually seen on the first accented word, is undershot to a H*. This is exemplified in Figure 3, where the wh-word *chera* “why” is marked with a H* rather than a L+[^]H*.

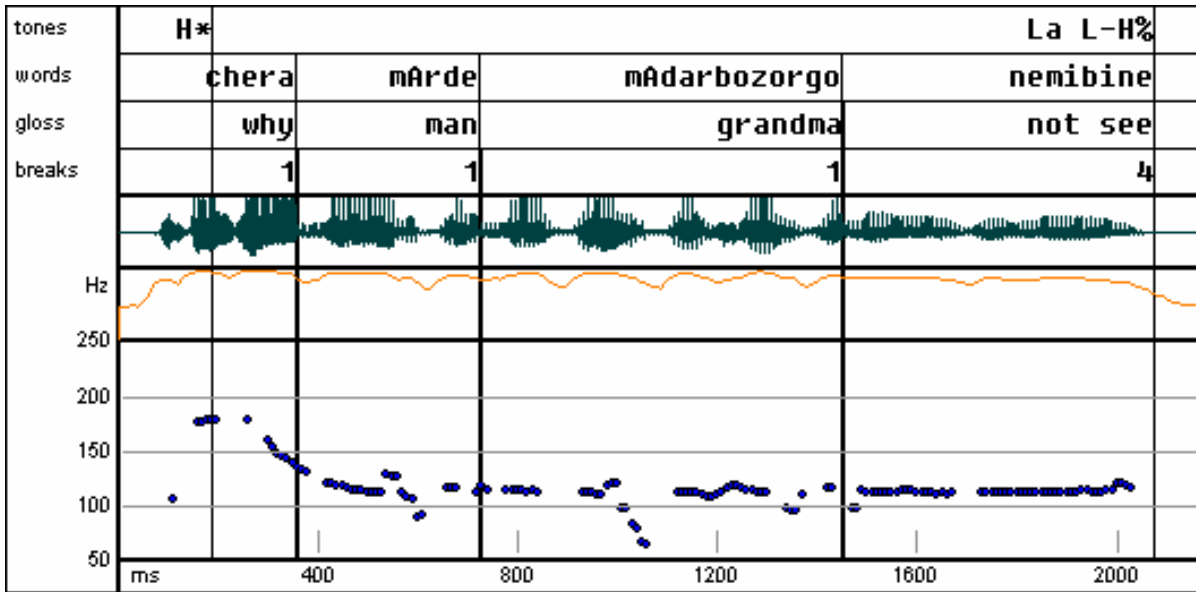


Figure 3. *chera mArde mAdarbozorgo nemibine*. “Why doesn’t the man see grandma?” File: H Q6-2-4(1)

When the wh-word is in sentence-final position, the L+[^]H*, that is typical for the wh-word, is also undershot to a [^]H*. This is exemplified in Figure 4 where instead of the L+[^]H*, the wh-word *kie* “who” is marked with a [^]H*.

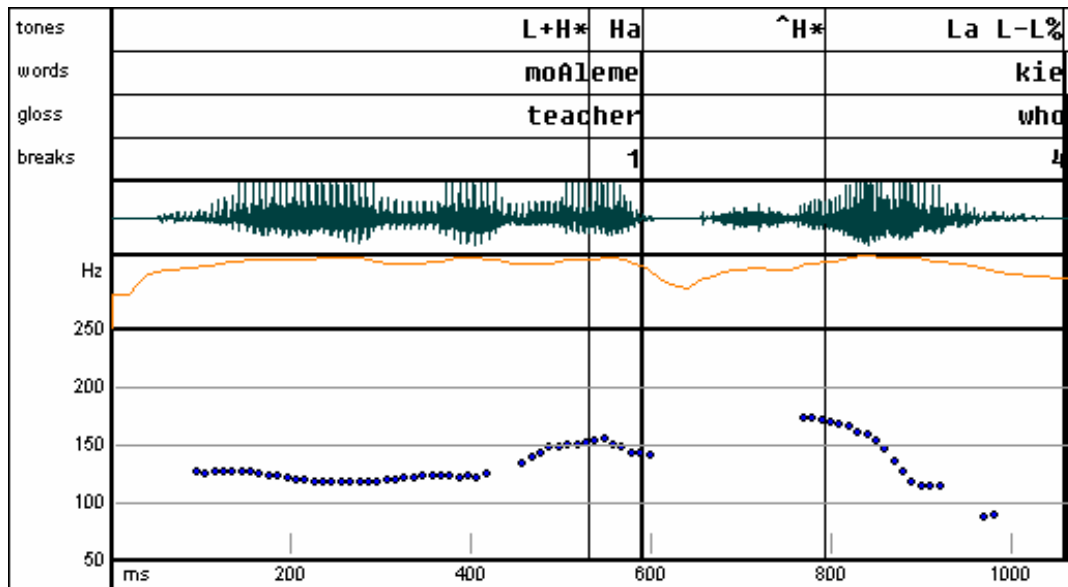


Figure 4 : *moaleme kie* “Who is the teacher?” File: H wh1

4.1.3. Monosyllabic Wh-words

Thus far, we have only seen examples of disyllabic wh-phrases. Generally, monosyllabic wh-phrases are realized as $\wedge H^*$, since there is not enough time for the L to be realized; hence, it is undershot. In Figure 5, the monosyllabic wh-word *chi* “what” is realized as an $\wedge H^*$ rather than an L+H*.

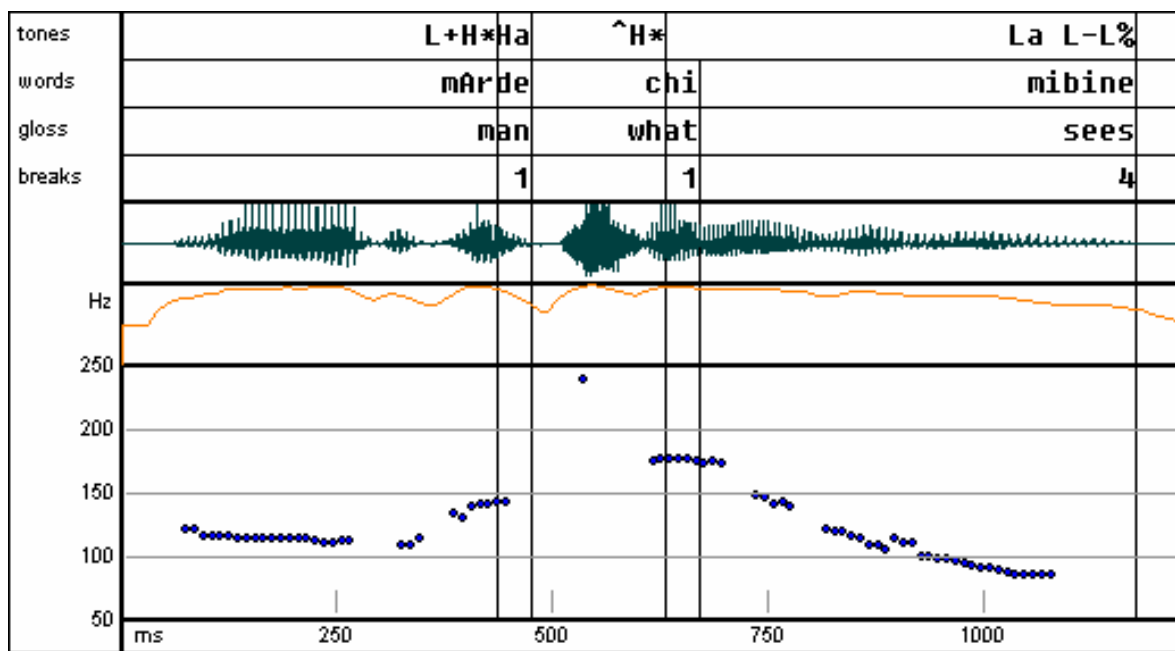


Figure 5: *mArde chi mibine* “What does the man see?” File: H wh3

The undershooting phenomenon seen in Figure 5 is found in the speech of both the speakers.

Figure 6, produced by Speaker S, shows a similar pattern to that of Speaker H (Figure 5).

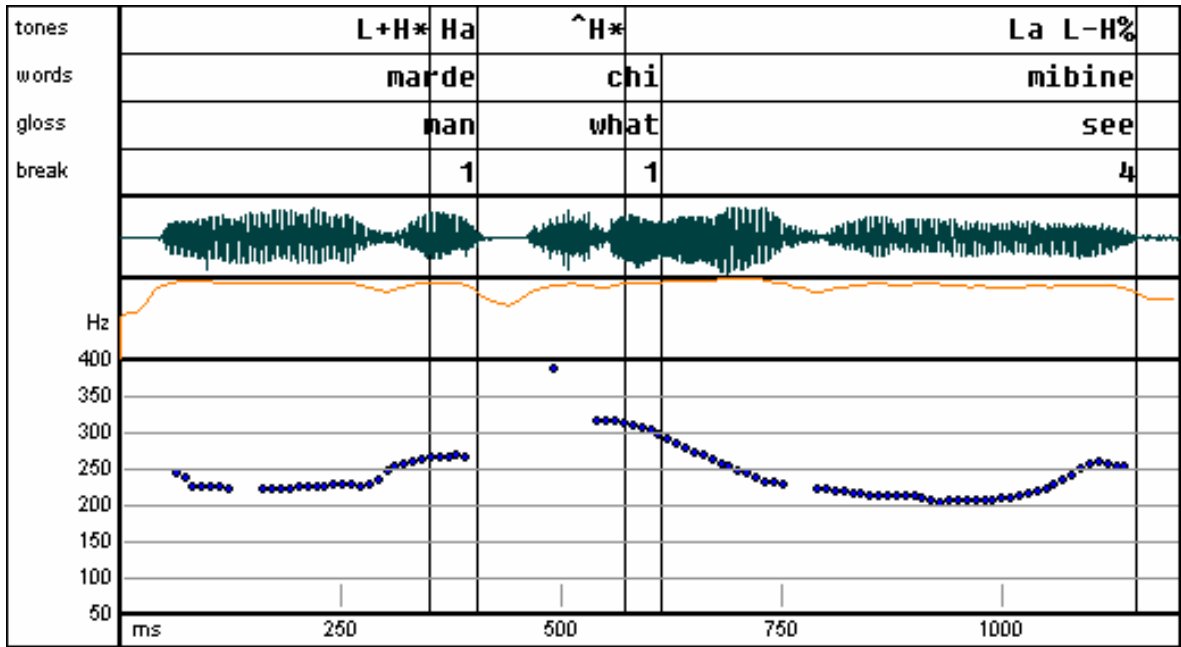


Figure 6: *mArde chi mibine* “What does the man see?” File: S wh3

However, as can be seen in Figure 7 below², if the pitch accent is delayed one syllable to the right, then the contour tone is fully realized. Here, we would expect an H* on *ki* “what” since it is monosyllabic and sentence-initial. However, the pitch accent is delayed and realized on *nemibine* “not-see”. Since the pitch accent is no longer in sentence-initial position and no longer on a monosyllabic word, the full L+H* can be realized.

² The typical boundary tone for wh-questions is La L-L%. However, in this example, the speaker has produced an Ha H-L%. This boundary tone is more similar to that of the boundary tone of yes/no questions. We believe that the speaker was blending the intonational patterns of wh- and yes/no questions in this example.

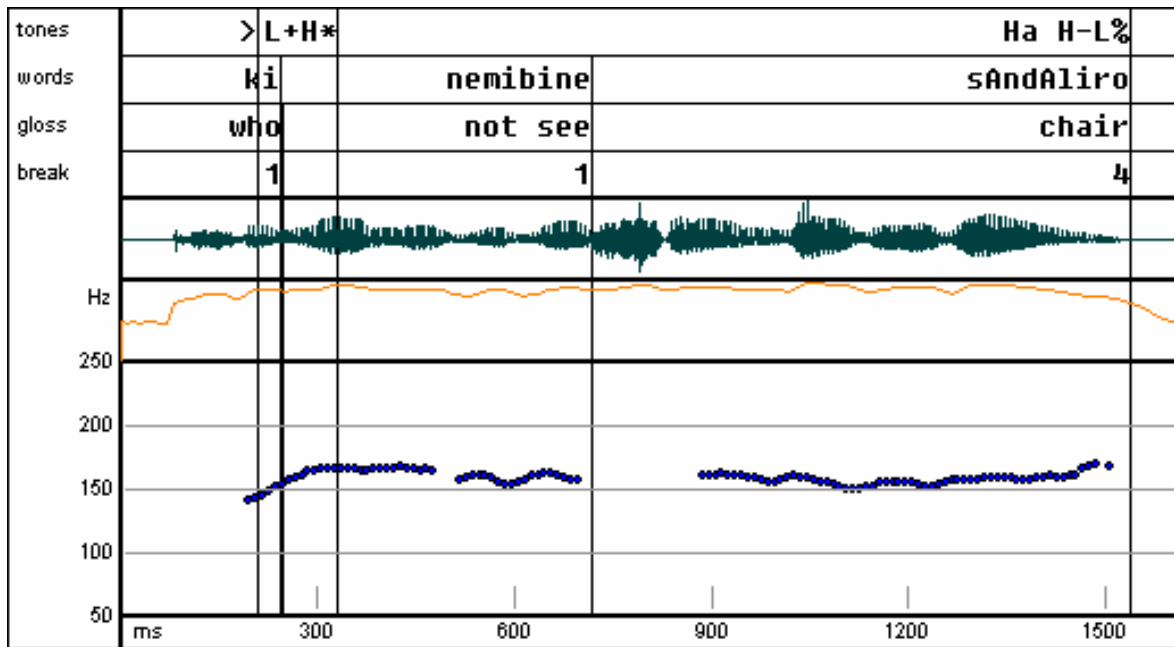


Figure 7: *ki nemibine sAndAliro* “Who does not see the chair?” File: H Q6-2-1 (2)

4.2. Speaker S

For the most part, Speaker S and Speaker H display the same intonation pattern for wh-questions, with one major exception. In sentences where Speaker S has the same intonation as Speaker H, they only differ in their boundary tones. While Speaker H uses an La L-L%, Speaker S tends to use an La L-H% boundary tone as default. Figure 8 is an example of a wh-question produced by Speaker S. As we can see, everything up to and including the wh-phrase is identical for both speakers (compare Figure 6 to Figure 8). However, Speaker S has a late sharp rise leading to a L-H%, while Speaker H produces an La L-L% boundary tone in wh-questions (as in Figure 5).

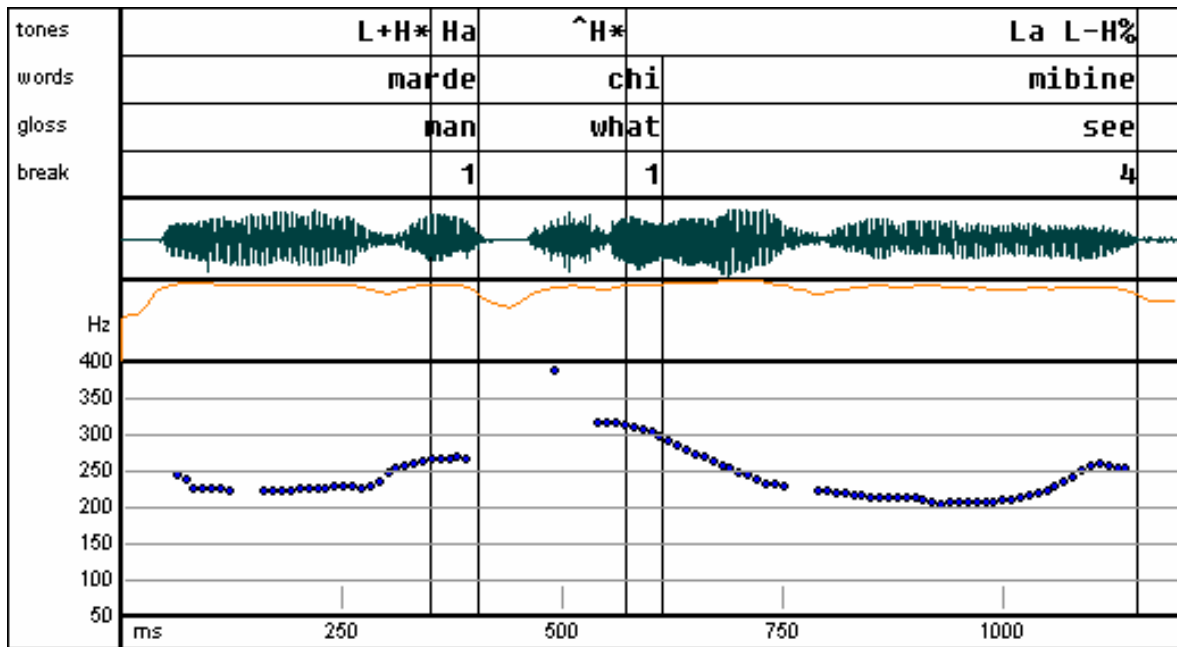


Figure 8: *mArde chi mibine* “What does the man see?” File: S wh3

5. Yes/No questions

In the next section, we will present the analysis of yes/no questions.

5.1. Speaker H

The intonation of yes/no questions is the same as that of declaratives, with two major exceptions: (1) there is a L+H* on the verb in the declarative, while in the yes/no questions the verb is not pitch accented and (2) declaratives have a La L-L% boundary tone, while yes/no questions are marked by a La L-H% boundary tone.

Figure 9 is an example of the yes/no question *mArde anase residAro mibine* “Does the man see the ripe pineapple?”. In yes/no questions, the verb is not pitch accented and the boundary tone is La L-H%. Compare Figure 9, a yes/no question, to Figure 10, a pitch track of the same sentence produced as a declarative. The declarative has a pitch accented (H*) verb and the boundary tone is La L-L%.

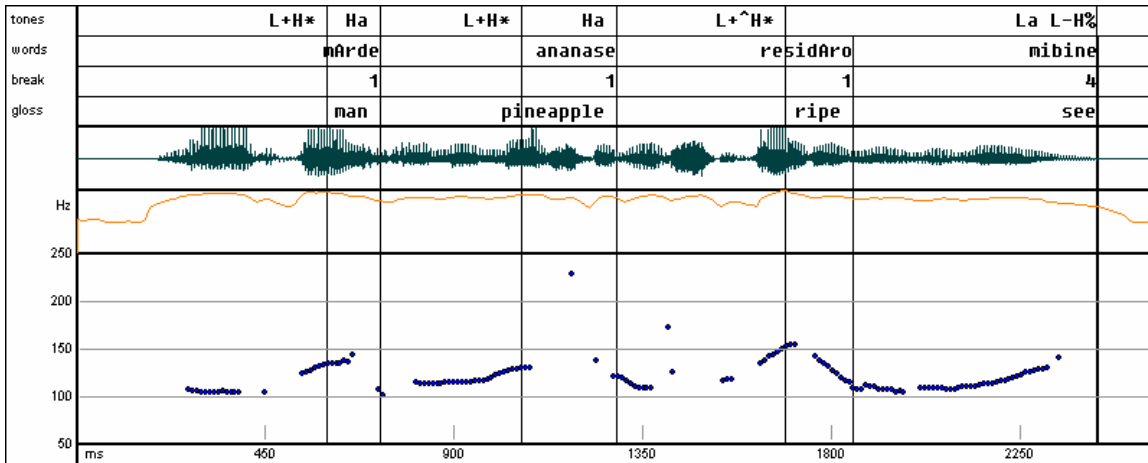


Figure 9: *mArde anase residAro mibine* “Does the man see the ripe pineapple?” File: H 5-14

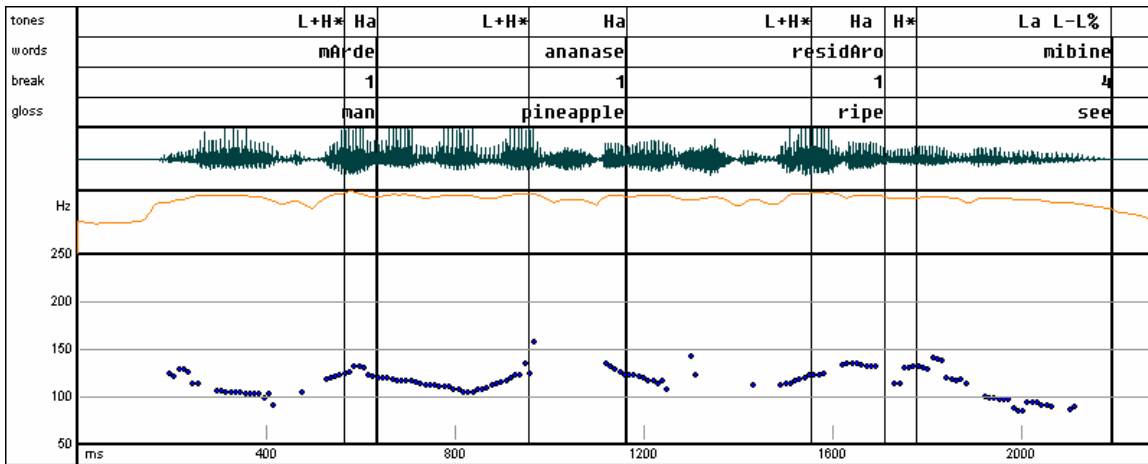


Figure 10: *mArde ananase residAro mibine* “The man sees the ripe pineapple.” File: H 5-14D

5.2. Speaker S

Speaker S has the same intonation contour for yes/no questions as Speaker H except that Speaker S uses a L+H* pitch accent on the verb in both the yes/no questions and the declaratives. Compare Figure 11 to the same sentence as produced by Speaker H (Figure 9).

For Speaker S, the boundary tone is the only factor that distinguished a yes/no question from a declarative. The yes/no question in Figure 11 is marked by an La L-H%, while the declarative in Figure 12 is marked by an La L-L%.

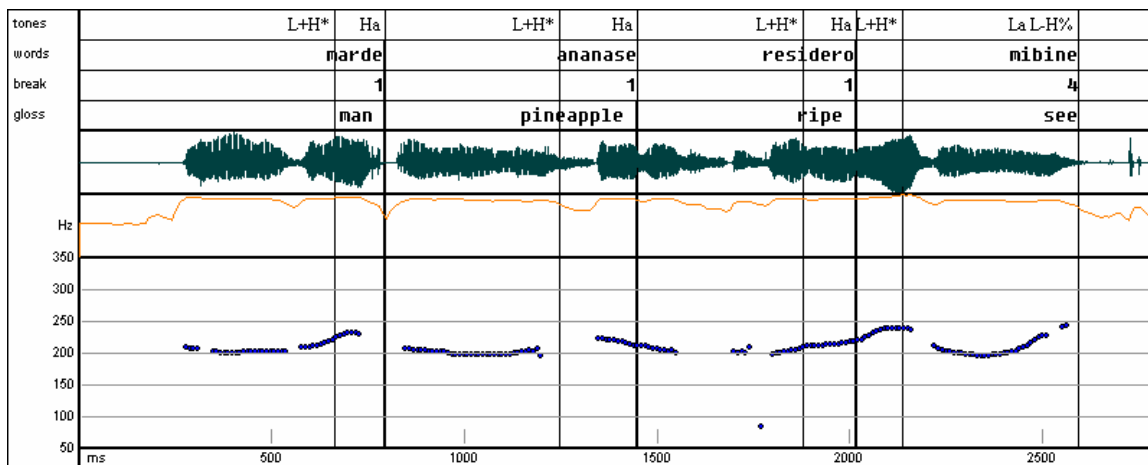


Figure 11: *mArde ananase residero mibine* “Does the man see the ripe pineapple?” Example: S 5-14

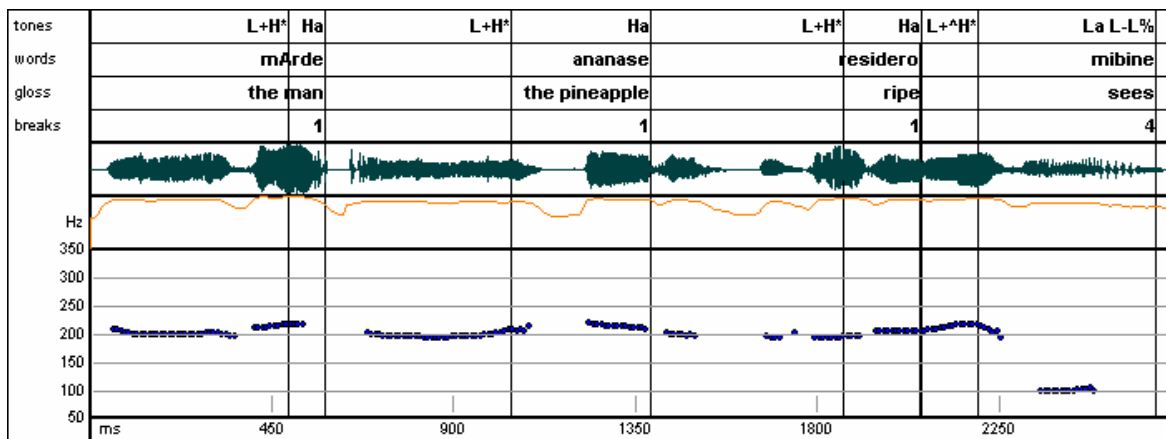


Figure 12. *mArde ananase residero mibine* "The man sees the ripe pineapple." File: decl-II-1

A major difference between Speaker S’s and Speaker H’s productions is that Speaker S can produce sentence-initial verbs. In the case of verb-initial yes/no questions (Figure 13), there is a L+H* on the verb and all post-verbal material is deaccented and dephrased resulting in a La L-H% final boundary tone.

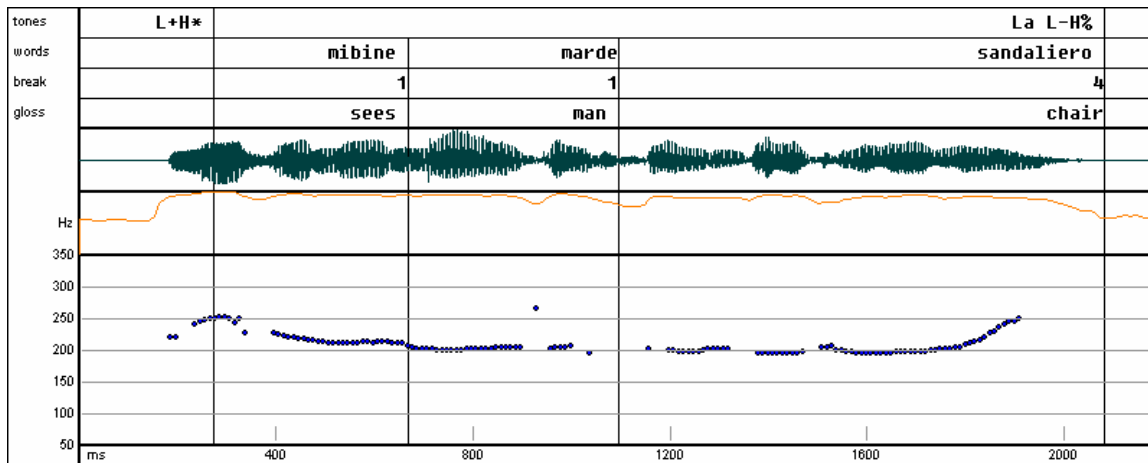


Figure 13: *mibine marde sandaliero* “Does the man see the chair?” Example: S 5-12

6. Echo Questions

In this section, we will discuss the analysis for echo questions.

6.1. Analysis

As stated earlier, *wh*-questions and echo questions are segmentally identical. The distinguishing factor between these two types of questions is the boundary tone. While *wh*-questions are marked by a *La L-L%* boundary tone, echo questions are marked by two possible boundary tones: (1) *Ha H-^H%*, when the *wh*-word is sentence-final or (2) *Ha H-H%*, when the *wh*-word is followed by a verb. One similarity between *wh*-questions and echo questions is the pitch accent used on the *wh*-word (*L+H**, with various phonetic realizations) and the deaccenting and dephrasing following the *wh*-word. Thus, echo questions, like *wh*-questions, are marked by an *L+H** on the *wh*-word which is followed by deaccenting and dephrasing after the *wh*-word.

Figure 14 presents an example of an echo question where the *wh*-word *chie* “what” is marked with an *L+H** pitch accent. Since the *wh*-word is in final position, the boundary tone is *Ha H-^H%*.

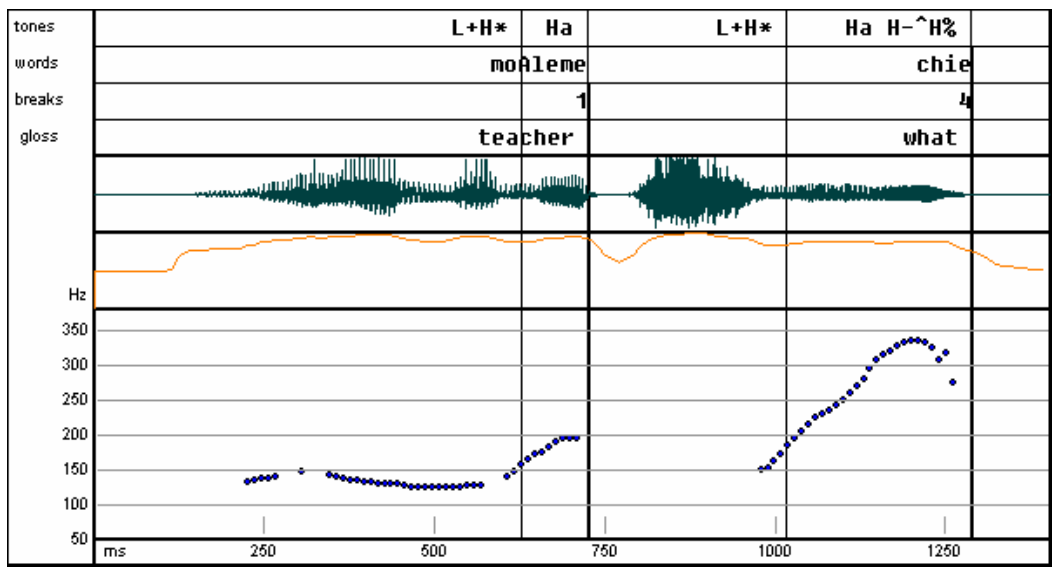


Figure 14: *moAleme chie* “The teacher is what?” File: H Echo 2

When the echo question is formed with the verb sentence-finally, Figure 15, the boundary tone is Ha H-H%.

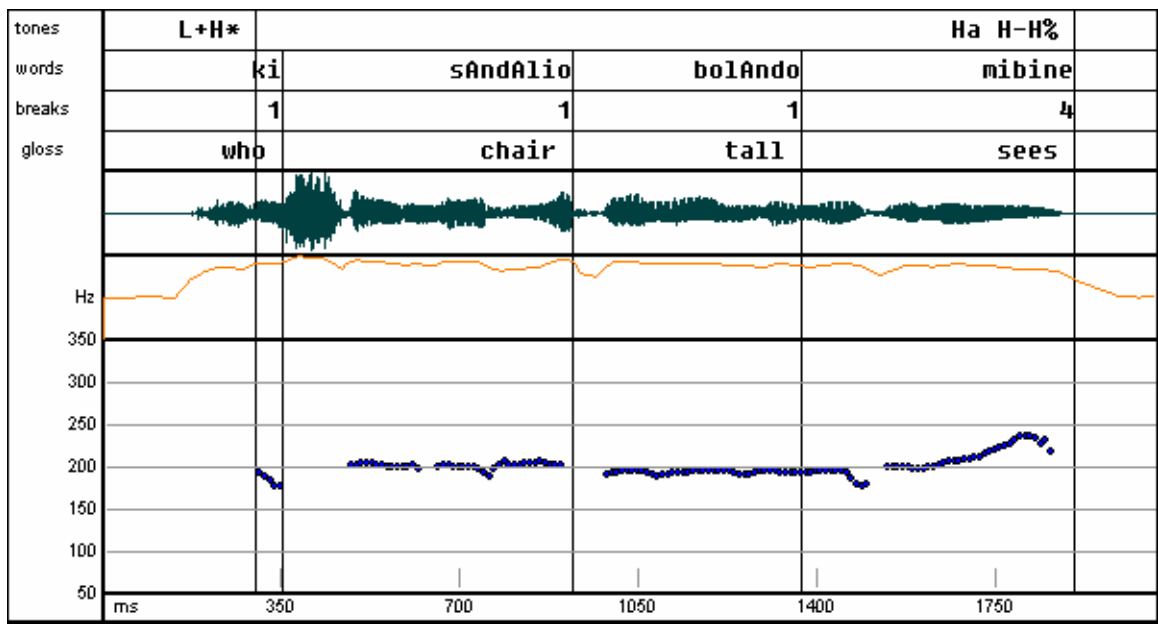


Figure 15: *ki sAndAlio bolAndo mibine* “Who sees a tall chair?” Example: H echo 5

In regards to echo questions, Speaker S displays the same patterns as Speaker H. Figure 16 shows Speaker S's production of the sentence in Figure 15. Note that the pitch accent and boundary tones are identical to that of Speaker H.

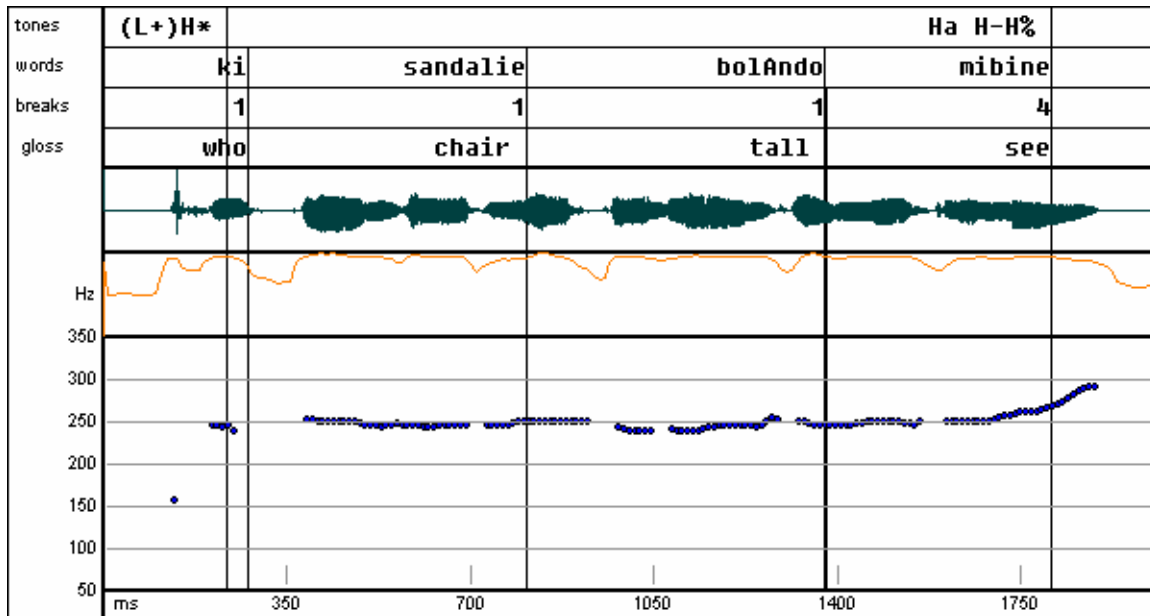


Figure 16: *ki sAndAlio bolAndo mibine* “Who sees a tall chair?” Example: S echo 5

7. Conclusion

In this paper, we have examined three types of Farsi interrogatives: wh-questions, yes/no questions and echo questions. For wh-questions, the data presented, thus far, suggests that interrogatives are fairly regular and predictable. Wh-questions possess features of regular declarative sentences; namely, all stressed words carry the L+H* pitch accent. The major difference between wh-questions and declaratives is the predictable deaccenting and dephrasing after the wh-word. For Speaker H, wh-questions even have the same La L-L% boundary tone that is found in declaratives (while Speaker S has a rising La L-H% for wh-questions). Since wh-phrases can occur in three different positions within a sentence, the

pitch accents with which they are realized are subject to positional variants. Thus, the regular L+^H* pitch accent, which is usually seen in the sentence-medial cases, is realized as either an H*, when the wh-word is found sentence-initially, or ^H* when the wh-word is sentence-finally.

Yes/no questions are segmentally identical to declaratives; the distinguishing factor in the boundary tone. Yes/no questions have the same word ordering and pitch accents as declaratives, yet declaratives use an La L-L% boundary tone, while yes/no questions use an La L-H%.

Echo questions are segmentally identical to wh-phrases. Again, the distinguishing feature is the boundary tone. While Wh-phrases end in a La L-L%, for Speaker H, and an La L-H%, for Speaker S, echo questions are marked with two possible boundaries for both Speakers: Ha H-^H% or Ha H-H%.

While the collected sentences indicate a regularity in the intonational paradigm, more data needs to be collected from other fluent speakers in order to confirm these observations.

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