

## **The Intonation of Focus in Farsi**

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### **Abstract**

This paper examines the intonational correlates of focus in Farsi. Data are presented from two native Farsi speakers illustrating focus (contrastive focus, in particular) in several different types of constructions. Descriptively, focus is characterized by a pitch accent with an extra high F<sub>0</sub> followed by deaccenting and dephrasing to the end of the intonational phrase. Some possible phonological analyses of this pattern in the data are considered. They are further evaluated with respect to several other non-focus constructions that are phonetically similar to focus (i.e., which also involve deaccenting and dephrasing). Finally, a unified phonological analysis of focus and other deaccenting phenomena is suggested.

### **1 Introduction**

#### **1.1 A preliminary model of Farsi intonation**

Farsi intonation can be described within the framework of a hierarchically structured prosodic model. The preliminary model (developed by the UCLA Intonation Field Methods class, Ling251, Spring 2003, taught by Sun-Ah Jun) is comprised of an intonation phrase (IP) at the highest level, which dominates intermediate phrases (ips), which in turn dominate accentual phrases (APs); below these phrasal constituents are (morphologically-decomposed) words, and then, syllables. Each type of phrase is associated with a characteristic intonational pattern. Intonation phrases are marked by a boundary tone on the final syllable: L% or H%. IPs may also optionally be followed by a pause. Intermediate phrases are marked by a final L- or H-boundary tone, which may be accompanied by final lengthening. Accentual phrases are smaller phrases fitting within an ip. APs contain an L+H\* pitch accent and an Ha or La boundary tone. (The possibility of a rising LHa boundary tone will be discussed as well later in this paper.) AP boundary tones may have the property of spreading leftward to the last preceding pitch accent. The L+H\* is typically associated with the last non-affixal syllable (except in verbs, where stress is typically initial); the boundary tone is realized on the final syllable of the AP, even if the syllable belongs to a suffix. Although only one type of pitch accent is suggested here, the L of L+H\* may be undershot, causing it to be realized as H\*. Further, the possibilities of L+H\*L or L+<sup>^</sup>H\* pitch accents for focus will be considered. Typically an AP contains a single word, though it may contain two or more closely related words (such as an adverb and the adjective it modifies) or even many words in cases where phonological dephrasing causes several APs to be combined into one.

## 1.2 What is focus?

In order to delimit the discussion of focus, we need to define what we mean by focus. The terms *narrow focus* and *broad focus* are used to refer to emphasis triggered by context (e.g., a question that is to be answered) on either a single word (narrow) or a longer phrase (broad). *Contrastive focus* is a more specific term that refers to emphasis used to explicitly contrast one thing or action with another thing or action in the discourse. Contrastive focus may be either narrow or broad. This is the type of focus primarily collected and presented in this paper. There may also be a type of focus (or something that looks much like focus) that is *grammatical* or *semantic*. *Grammatical* or *semantic focus* is triggered not by context, but by a syntactic structure or by the semantics of a particular lexical item. This type of focus will be discussed as well.

## 1.3 The current study

The purpose of this study is to examine the intonational correlates of focus in Farsi. To this end, data illustrating a range of focus and focus-like constructions were collected from two speakers. These data are presented along with three possible phonological analyses, characterized by three different proposed focal pitch accent types. These analyses are evaluated by considering their implications not only for a variety of focus constructions, but also for several phonetically similar non-focus constructions (e.g., questions, relative clauses, and negation).

## 2 Methods

The focus data were collected from two native speakers of Farsi, one male (Henry) and one female (Sharon). Both speakers are speakers of English as well: Sharon, since infancy, and Henry, since late adolescence. The recordings were made using a noise canceling USB microphone and were saved directly onto hard disk. For each sentence, pitch and juncture were examined auditorily and visually using pitch tracks and waveforms made with PitchWorks software (*Scicon*). The intonation was labeled based on the model of Farsi intonation described in section 1.1 above.

The sentences elicited include declaratives, yes/no questions, and wh- questions containing one or more focused elements. Focus was elicited by providing the speaker with a sentence that set the context and asking for a contradictory response. (E.g., to elicit the sentence “The MAN sees the chair”, the speaker would be asked “Does the woman see the chair?”) Corresponding non-focus sentences were also collected for each sentence type. There were approximately 30 focus sentences in all for each speaker.

## 3 Focus Data

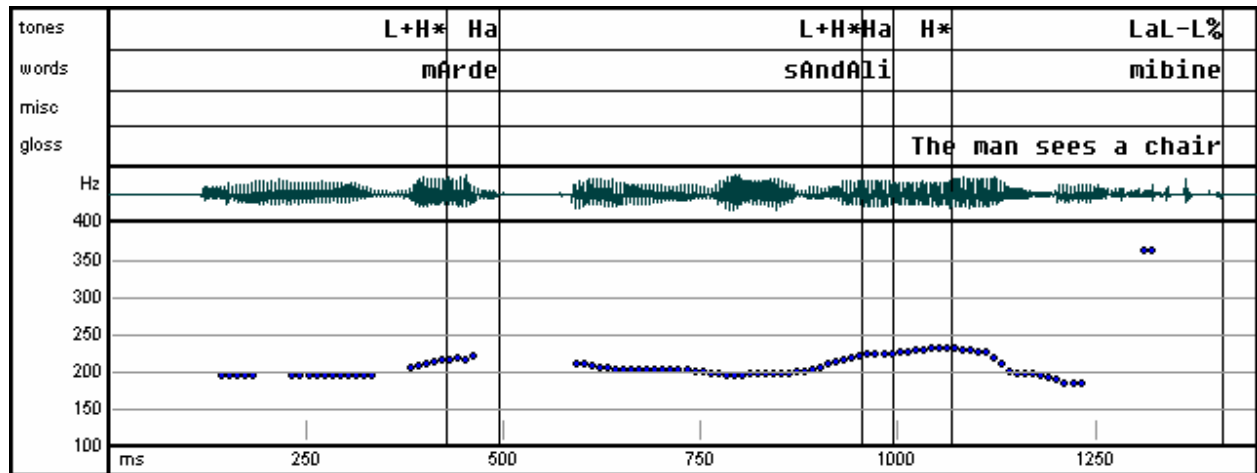
A focused word in Farsi has a higher pitch (in fact, generally the highest pitch peak in the IP). Though high F0 for focus is phonetic in many languages (e.g., English and Korean), it may actually be phonological in Farsi. Focused words are also impressionistically louder and longer (though no systematic phonetic measurements have yet been made). As will be illustrated below, a focused word is further marked phonologically by becoming the left head of an AP with

deaccenting and dephrasing of the following words until the end of the IP. The default focus pitch accent type looks very similar to the normal pitch accent type, L+H\*, though the possibilities of analyzing it as L+^H\* or L+H\*L will also be discussed. In the following pitchtracks, it will simply be labeled as L+H\*, but this should not be considered a commitment to that analysis.

### 3.1 Simple focus in declaratives

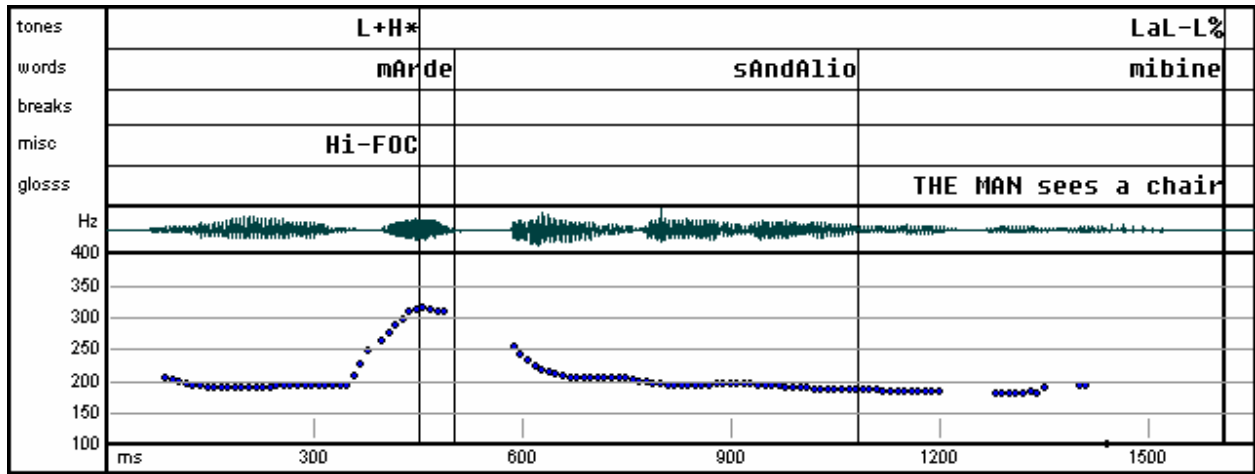
Simple declarative sentences are characterized by a series of accentual phrases, usually one per word. The non-final APs contain an L+H\* pitch accent and an Ha boundary tone; the final AP of the sentence contains a pitch accent and a La boundary tone, followed by an L-L%. Pitchtrack 1 shows a neutral declarative sentence uttered by Sharon. Henry's version of the same sentence shows an identical intonational pattern.

Pitchtrack 1 Neutral declarative

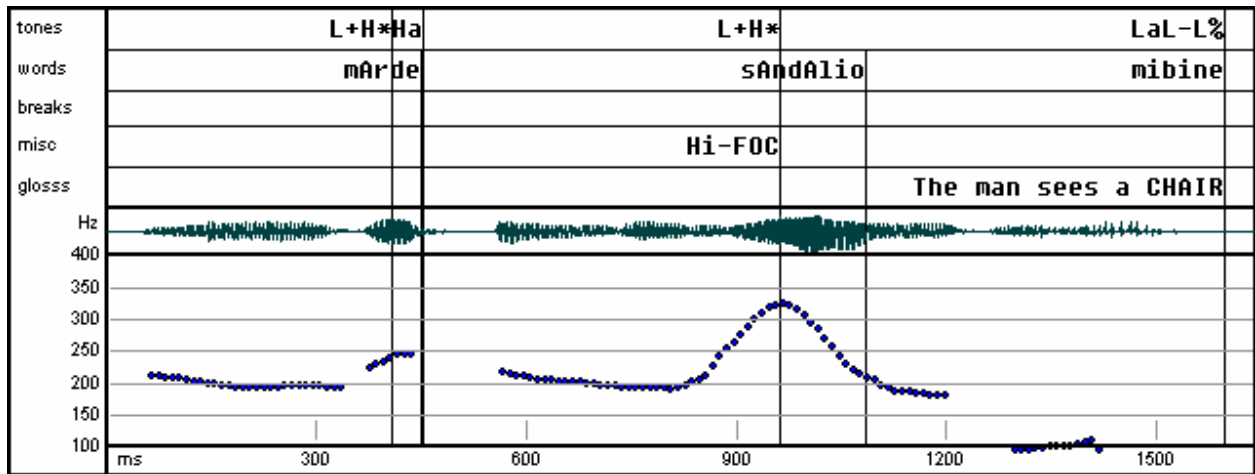


Pitchtrack 2 through Pitchtrack 4 show the effect of focus on each word in the sentence. As can be seen, when a word is accented, its F0 is raised relative to the default neutral case, and it becomes the highest pitch peak in the utterance. Furthermore, due to deaccenting and dephrasing following the focused word, the focus pitch accent becomes the nuclear pitch accent. (The intended focused word is indicated in all caps in the gloss tier and, if realized, by the designation FOC in the misc. tier. Farsi word order is subject-object-verb.)

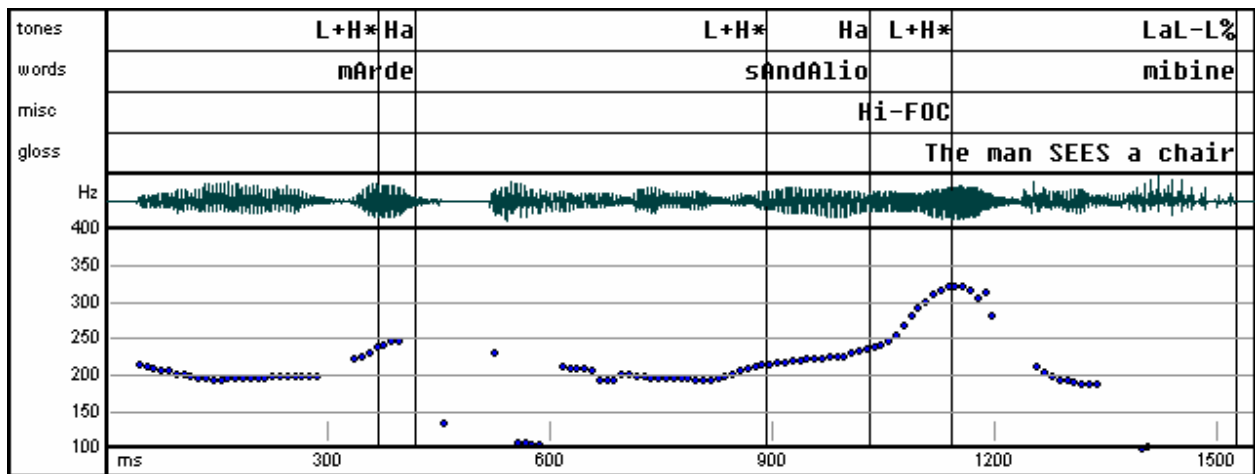
Pitchtrack 2 Subject focus



Pitchtrack 3 Object focus



Pitchtrack 4 Verb focus

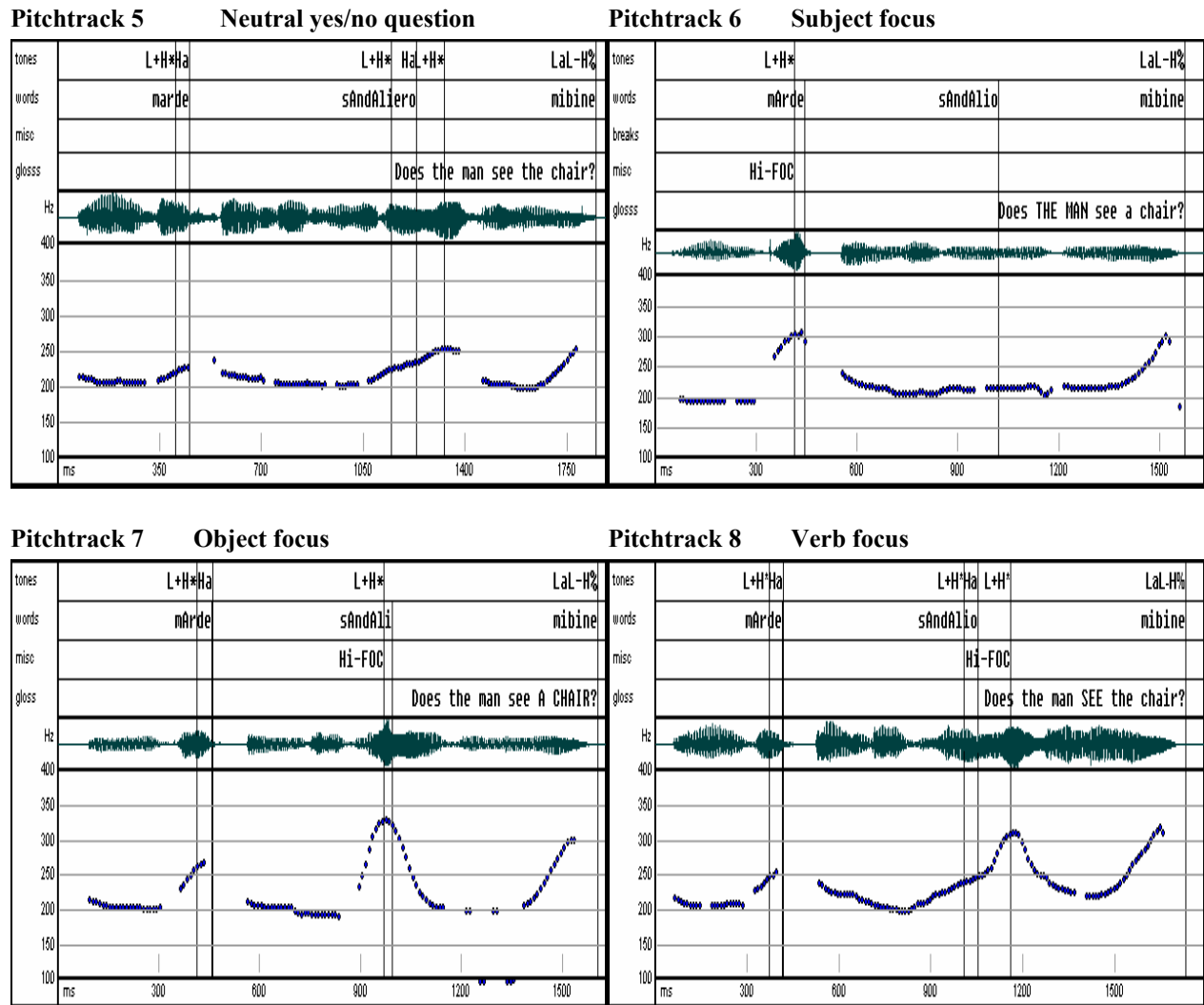


### 3.2 Simple focus in interrogatives

Simple interrogative sentences mark focus in the same way as declaratives, with a high pitch accent and following deaccenting and dephrasing.

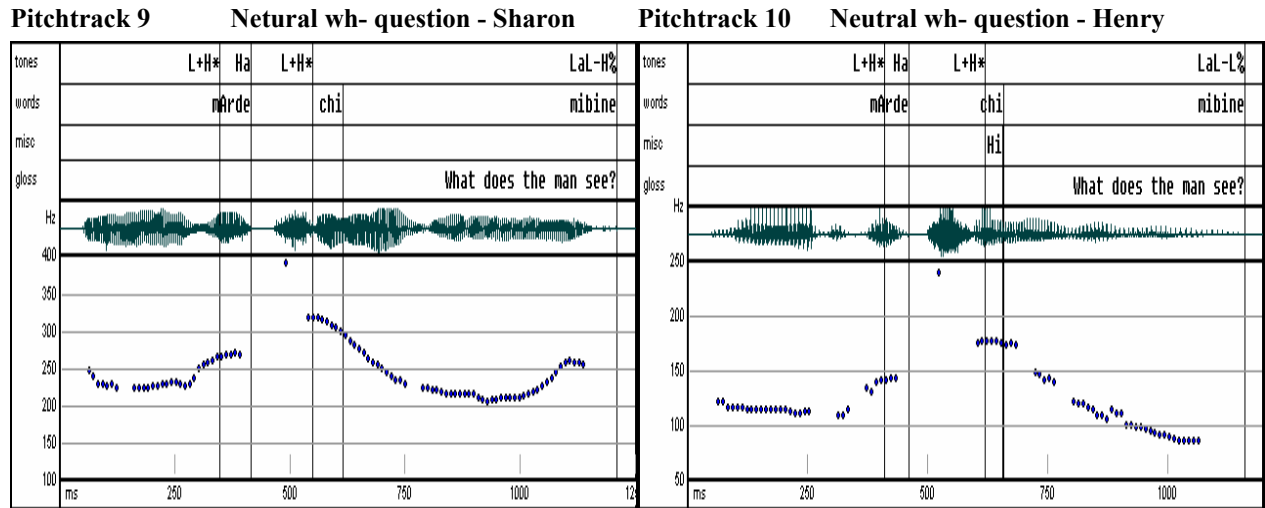
#### 3.2.1 Yes/no questions

In yes/no questions, as in declaratives, non-final APs contain an L+H\* pitch accent and an Ha boundary tone, and the final AP of the sentence contains a pitch accent and a La boundary tone. In yes/no questions, however, the ip- and IP-boundary tones are L-H%. Pitchtrack 5 shows a neutral yes/no question. Pitchtrack 6 through Pitchtrack 8 show the effect of focus in yes/no questions, with an L+H\* pitch accent on the focused word and deaccenting following. Again, the utterances shown are spoken by Sharon, but Henry's versions of these sentences show essentially the same intonational pattern.

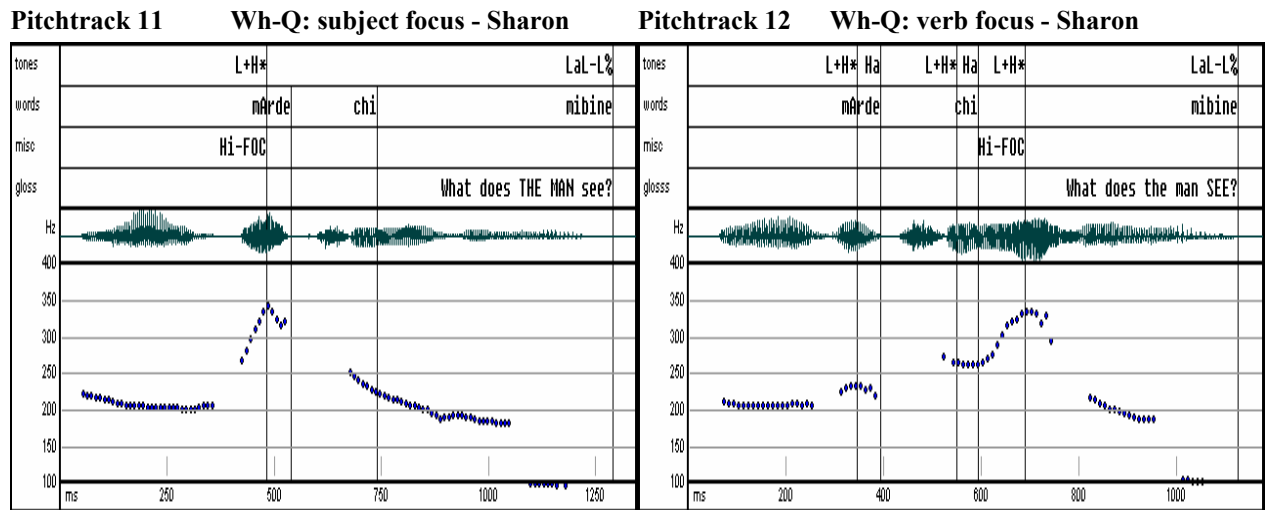


#### 3.2.2 Wh- questions

Wh-questions are also essentially like declaratives with respect to their intonational pattern. They characteristically contain a series of L+H\* ... Ha accentual phrases and end with an LaL-L% (typical for Henry) or an LaL-H% (common for Sharon). The primary way in which they differ from declaratives (other than the IP boundary tone for Sharon) is the presence of a wh-word with following deaccenting. Pitchtrack 9 and Pitchtrack 10 show neutral wh-questions for the two speakers.



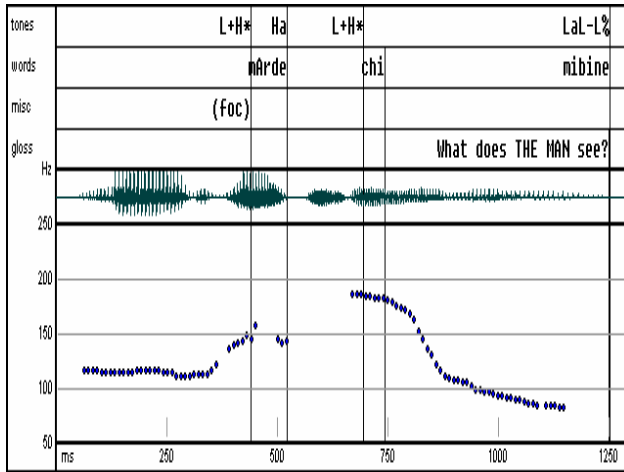
For Sharon, focus is realized as in other sentences, with an L+H\* pitch accent on and deaccenting, as shown in Pitchtrack 11 and Pitchtrack 12.



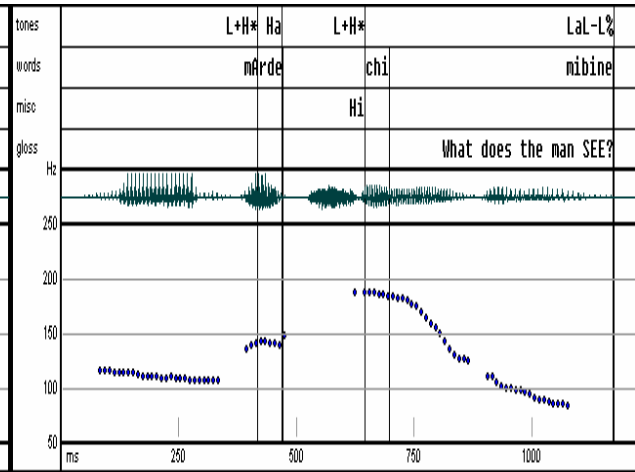
(In these sentences, it is unclear whether the wh-word *chi* triggers deaccenting as in the neutral cases. When *chi* follows the focused word, as in Pitchtrack 11, there is deaccenting due to the preceding focus. When it precedes the focused word, as in Pitchtrack 12, the focus overrides the deaccenting, if it is present.)

For Henry, on the other hand, contrastive focus on any of the words does not lead to a difference in intonational realization, as illustrated in Pitchtrack 13 and Pitchtrack 14, which match the neutral sentence in Pitchtrack 10.

**Pitchtrack 13 Wh-Q: subject focus - Henry**



**Pitchtrack 14 Wh-Q: verb focus - Henry**

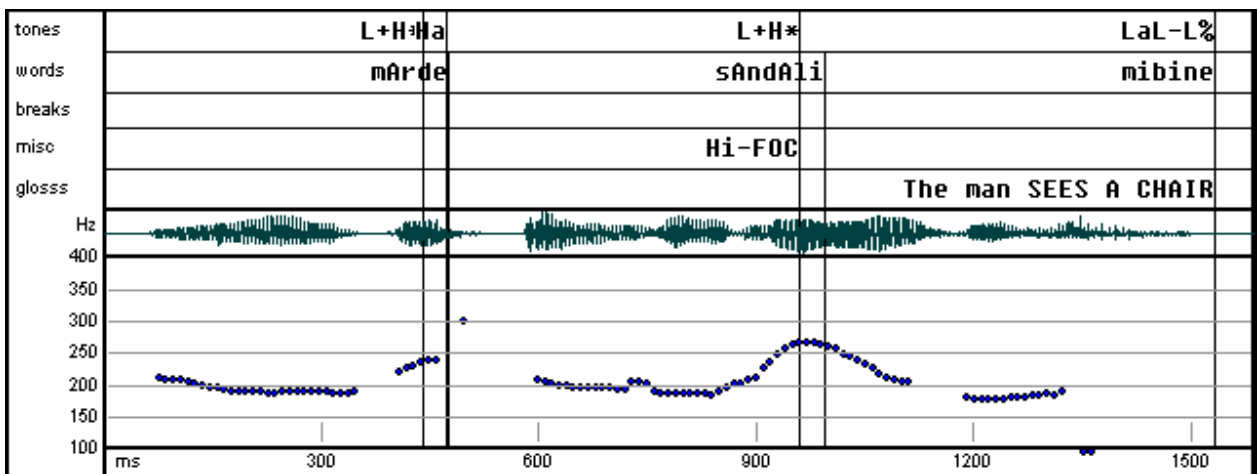


More data, and data from more speakers are needed to determine what the usual pattern for focus in wh- questions is in Farsi. It may be that Sharon's ability to focus in wh- questions results from her dominant familiarity with English, and that Henry's pattern is more natural in Farsi.

### 3.3 Simple focus on more complex constituents

Sections 3.1 and 3.2 describe the effect of focus on single words within an utterance (narrow contrastive focus). However, focus may also mark an entire phrase (as in the case of broad contrastive focus). Pitchtrack 15 and Pitchtrack 16 show verb phrase (VP) focus (e.g., the focus elicited as the contrary answer to the question "What is the man doing at the furniture store? Does he buy a lamp?")

**Pitchtrack 15 VP focus - Sharon**

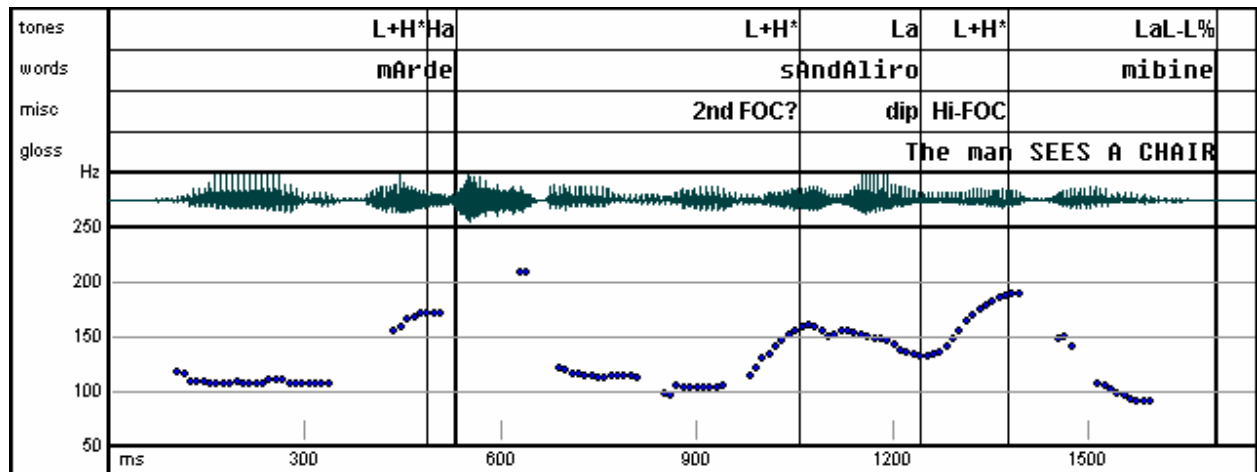


Notice that in Pitchtrack 15, where a phrase longer than a word is focused, namely an entire VP, the focus pitch accent falls on the first word of the phrase (with the consequence that

the rest of the focused phrase is deaccented). This pattern looks identical to the object focus shown in Pitchtrack 3.

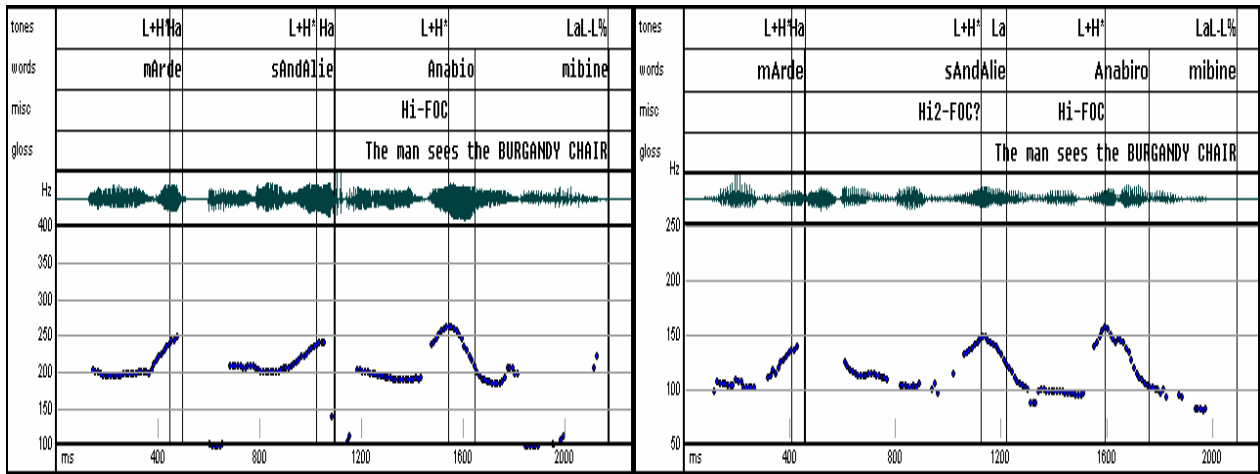
In the same sentence uttered by Henry, however, there is a pitch accent on both words of the phrase, as shown in Pitchtrack 16. It is not clear, though, whether both pitch accents represent focus, and if they do, whether they represent a single focus or two separate focuses. Because the pitch accent on *sAndAliro* is no higher in pitch than the preceding pitch accent on *mArde*, it might be the case that the accent on *sAndAliro* is a regular, non-focus accent and only *mibine* is focused. Notice the slight dip between *sAndAliro* and *mibine*, however, and compare this to Pitchtrack 4 showing verb focus (on *mibine*), where there is no dip. Presumably, the dip is the result of an La boundary between *sAndAliro* and *mibine*. If focus triggers a following La (to account for the usual deaccenting), the most straightforward account of the pattern in Pitchtrack 16 might be to assume that *sAndAliro* is focused, triggering the La, but that the additional focus on *mibine* overrides the deaccenting in order to be realized. This pattern suggests that the utterance actually illustrates double focus (discussed below in section 3.4) rather than broad focus.

**Pitchtrack 16 VP focus – Henry**



When the focused phrase is a two-word noun phrase (NP), the intonational patterns of Sharon's and Henry's utterances look similar, but show subtle though possibly very significant differences. In Sharon's utterance, shown in Pitchtrack 17, the focus pitch accent appears to be realized only on the *second* word of the focused two-word object phrase (cf., Pitchtrack 15: VP focus), with an Ha boundary between the two words. On the other hand, in Henry's utterance, shown in Pitchtrack 18, *sAndAlie* has a slightly higher F0 than the preceding word and an La boundary tone, as does the following word *Anabiro*. Both words of the object NP seem to be part of the focus representation, but as in Pitchtrack 16, this is likely actually double focus.

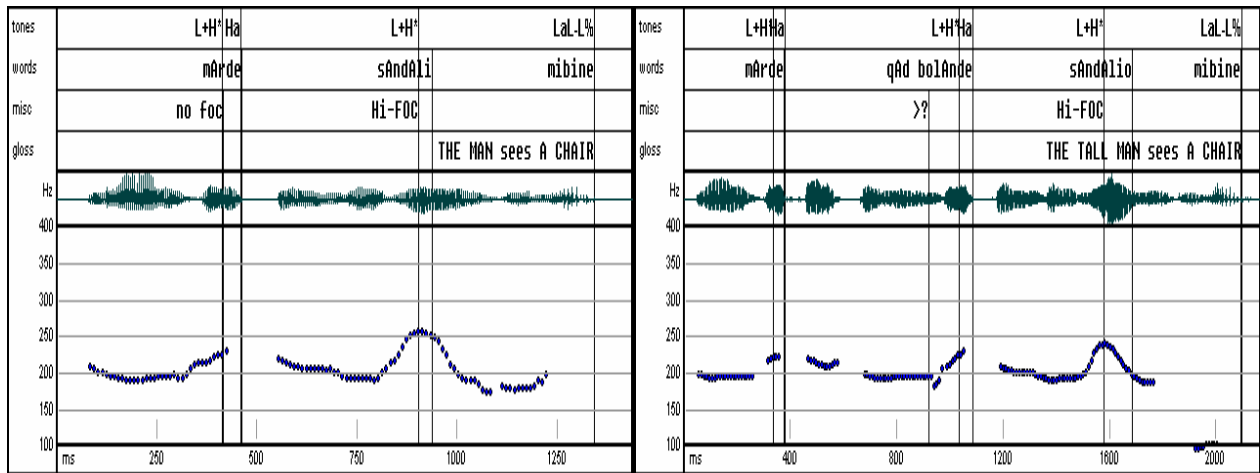
**Pitchtrack 17 Two-word object focus - Sharon Pitchtrack 18 Two-word object focus - Henry**



**3.4 Double focus**

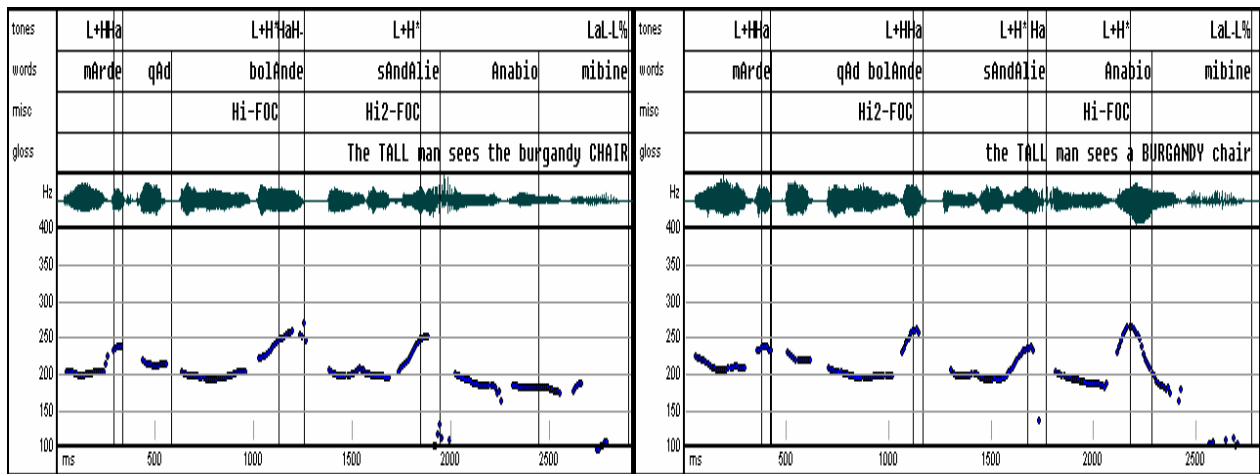
Semantically, there may be two words in a sentence that are equally focused. For example, in answering the question “Does the woman see a table?”, one could say “The MAN sees a CHAIR”, contrasting both the subject and the object. Despite the use of this elicitation method, both Sharon and Henry expressed reluctance to produce double focus, suggesting that it may be uncommon or unnatural in Farsi. Given the speakers’ reluctance to produce double focus and the slight differences between speakers, this data may be somewhat unreliable as natural speech; however, a few tentative generalizations emerge. Pitchtrack 19 through Pitchtrack 22 show different instances of double focus in utterances spoken by Sharon.

**Pitchtrack 19 Double focus: adjacent words Pitchtrack 20 Double focus: adjacent words 2**



**Pitchtrack 21 Double focus: adjacent w/break**

**Pitchtrack 22 Double focus: non-adjacent words**



In Pitchtrack 19 and Pitchtrack 20, where the two foci fall on adjacent words, Sharon realizes focus on only the object, which is the second word. In Pitchtrack 21, the foci are again on adjacent words, but in this case, both receive focus pitch accents (L+H\*s with raised F0). Notably, however, an H- ip break separates the two foci. Pitchtrack 22 shows a sentence in which the two foci are separated by an intervening word. Here, both words sound prominent and receive focus pitch accents, but only the final focus triggers deaccenting.

In Henry’s versions of the sentences in Pitchtrack 19 and Pitchtrack 20, where double focus is on adjacent words, Henry also realizes focus on only one item. However, he puts the focus on the subject (the first word) in both cases rather than on the object. His production of the sentence in Pitchtrack 21 is quite similar to Sharon’s, with an ip break between the adjacent foci. However, Henry produces an LaL- break rather than an HaH-. For non-adjacent focus (as in Pitchtrack 22), Henry’s intonation is identical to Sharon’s.

It can be said, then, that double focus is generally avoided, particularly on adjacent words (or at least when the syllables are nearly adjacent (see Pitchtrack 16). Adjacent words may both receive focus (or at least extra prominence), however, if an ip break falls between them. And if the two focus words are not adjacent, both foci can be realized. The first focused item receives a focus pitch accent (with a raised F0) but does not trigger deaccenting or dephrasing.

#### 4 Other constructions that look like focus

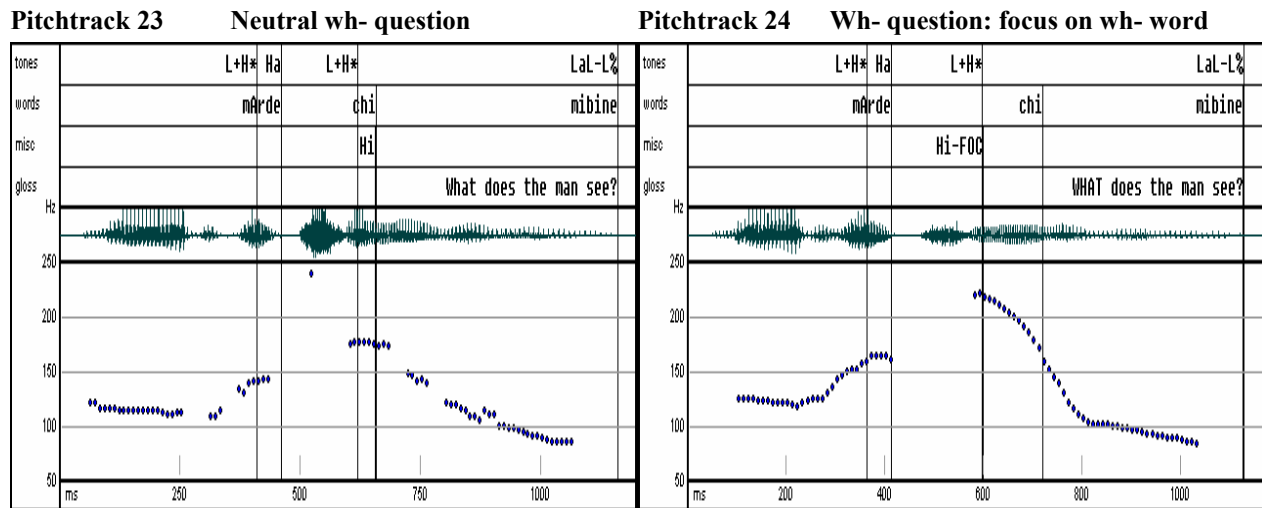
There are several other kinds of constructions (listed in Figure 1) that bear a resemblance to focus, as they are marked by a high pitch accent followed by deaccenting and dephrasing.

**Figure 1 Focus-like constructions**

- wh- questions
- relative clauses
- clauses introduced by a phrase such as *know that*
- negation
- verb-initial yes/no questions

## 4.1 Wh- questions

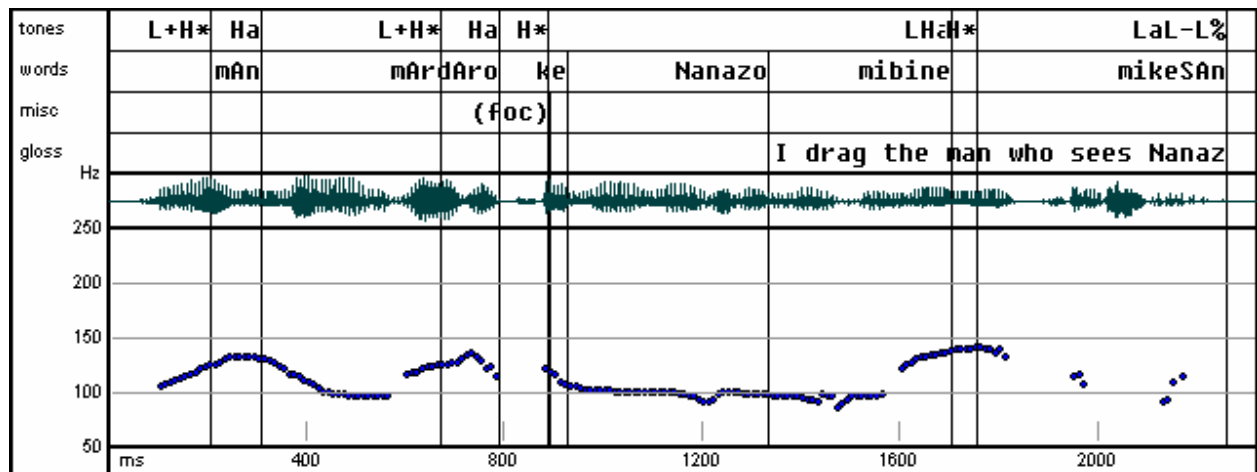
As discussed in section 3.2.2 above, wh- questions are characterized by the presence of a wh- word with a L+H\* pitch accent and following dephrasing to the end of the IP. This looks like focus on the wh- word. In fact, however, a wh- question with focus on the wh- word has a consistently higher F0 than a neutral wh- question, as illustrated in Pitchtrack 23 and Pitchtrack 24 (though it should be noted that the pitch accent on *mArde* is higher in the wh- focus sentence as well, suggesting an overall broader pitch range in this utterance). It is not clear what the status of this difference is.



## 4.2 Relative clauses

Pitchtrack 25 shows a typical relative clause, as uttered by Henry. Sharon's relative clauses have the same intonational pattern.

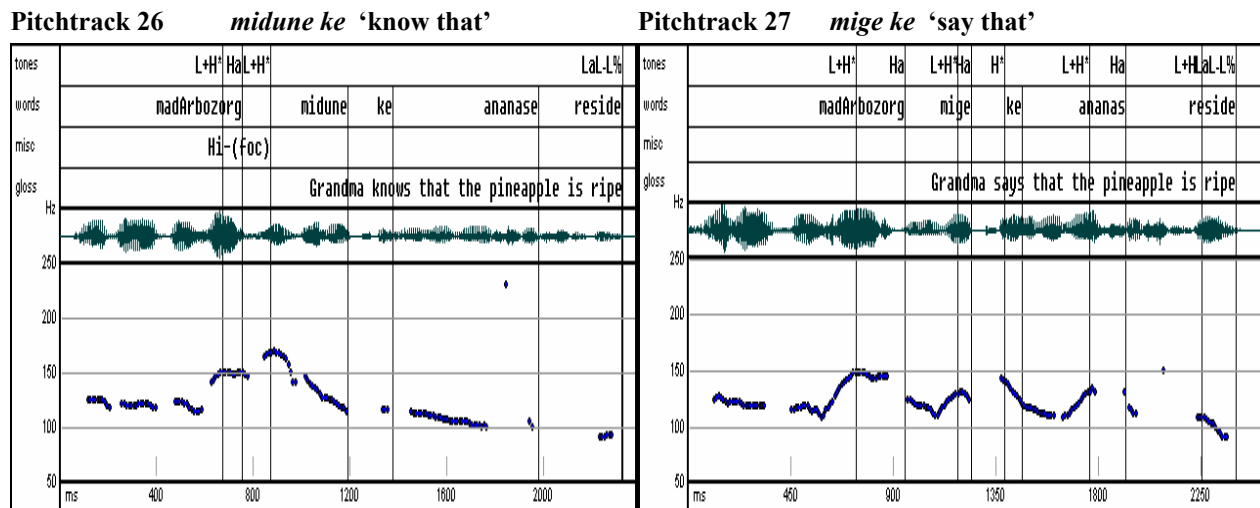
Pitchtrack 25 Relative clause



The complementizer *ke*, which introduces the relative clause, is marked by a H\* and following deaccenting/dephrasing. In the case of relative clauses, the deaccenting and dephrasing extend only to the end of the relative clause. Sometimes the pitch accent on the complementizer is not very strong, and often it doesn't sound focused. Therefore, the relative clause construction might be a type of purely grammatical focus that doesn't give special prominence to the complementizer that bears the "focus". Furthermore, the rise into the H\* typical for focus (L+H\*) is not apparent on complementizers. But since *ke* is so short, this could be explained as a simple case of phonetic undershoot.

### 4.3 *Midune ke* 'know that' verb + complementizer pairs

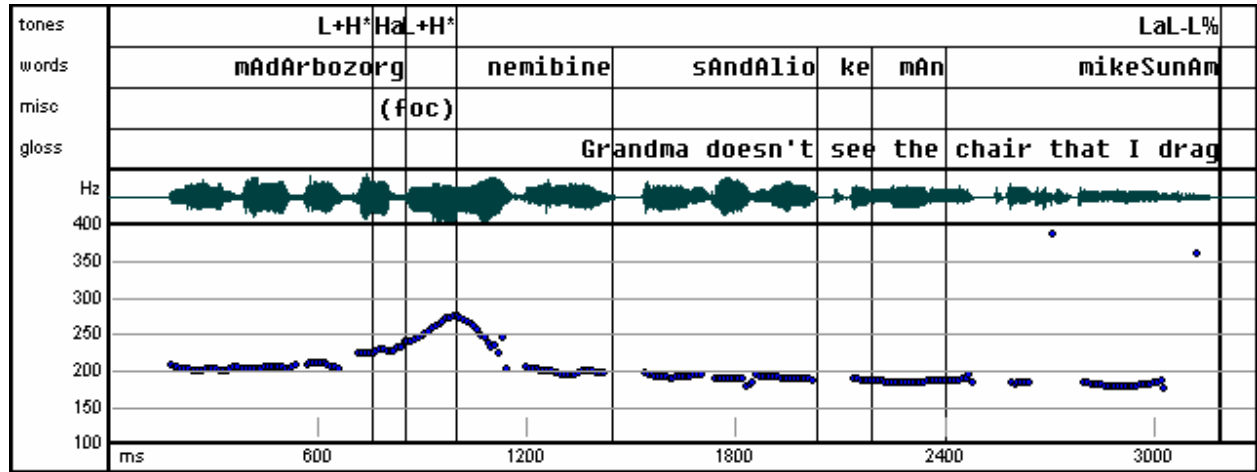
There is a group of verb + complementizer pairs that trigger deaccenting. For example, in Pitchtrack 26, the verb *midune* ('know') in *midune ke* ('know that') is marked with an L+H\* and following deaccenting to the end of the IP. This looks like focus on *midune*, though both speakers produce this intonation for the default reading of this sentence. Interestingly, there are other similar verb + complementizer pairs, such as *mige ke* ('say that'), that do not have this intonational property, as shown in Pitchtrack 27. The focus (or focus-like phenomenon) might therefore be analyzed as a sort of obligatory semantic focus triggered by a particular lexical item (or some item in a particular semantic class of verbs). Unfortunately, the current data are insufficient to clearly define this semantic class.



### 4.4 Negation

Negation is marked morphologically by a verbal prefix *ne-*. Intonationally, *ne* always attracts the L+H\* pitch accent which would normally appear on the first syllable of the verb. (Of course, it is still on the first syllable of the inflected verb. The notable thing about the appearance of the pitch accent on the prefix is simply that pitch accents on inflected nouns typically occur on the final syllable of the noun *root* and avoid suffixes.) The F0 of the L+H\* on *ne-* is quite high, making it look like a focus pitch accent. Furthermore, this pitch accent on negation triggers deaccenting. Pitchtrack 28 shows a sentence with a negated verb in the less common non-final position so that the following deaccenting can be seen. This intonational pattern suggests another possible case of semantically-conditioned focus in Farsi.

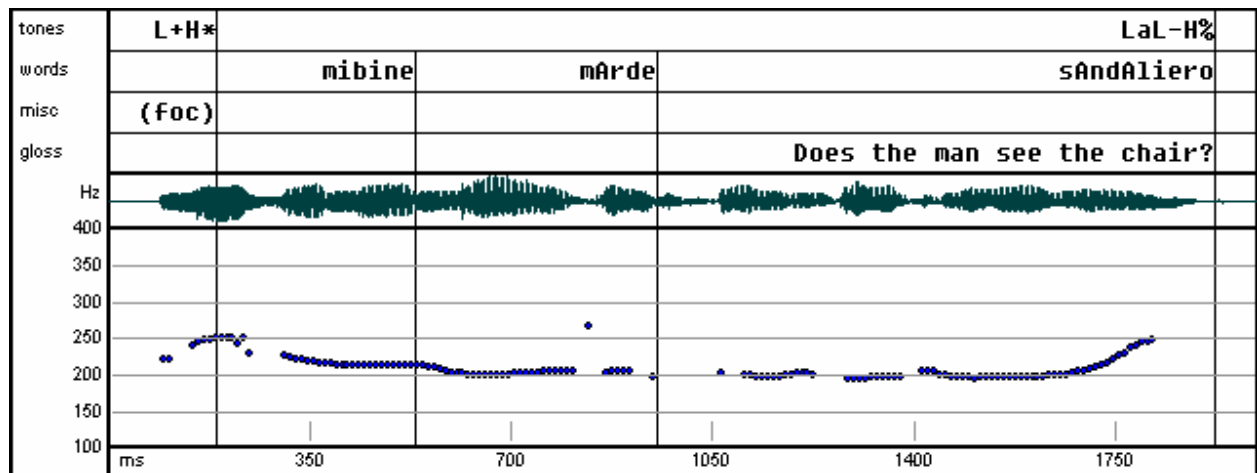
**Pitchtrack 28 Negation**



**4.5 Verb-initial yes/no questions**

Though Henry cannot do so, Sharon produces yes/no questions with the verb in initial position sometimes. When the verb is initial, it receives a L+H\*, and post-verbal material is deaccented, as shown in Pitchtrack 29. Intonationally, these yes/no questions resemble the wh-questions that Sharon produces with an L-H% boundary. And like wh- questions, they also look like focus on the question word (in this case, the verb).

**Pitchtrack 29 Verb-initial yes/no question**



**5 Focus pitch accent type**

As shown in section 3, focus is characterized by a sharp rise from low to a high pitch accent and then an immediate fall back to a low that extends to the end of the IP (effecting deaccenting and dephrasing). There is more than one way, though, that this intonational pattern might be accounted for. And each analysis has implications for the inventory of tones in the Farsi grammar, introducing either a new pitch accent or a new boundary tone.

## 5.1 Accounting for low

The rise can be accounted for with an L+H\* pitch accent (like the rise in normal, non-focus pitch accents). The fall, however, might be accounted for in either of at least two different ways. It might be due to an La boundary tone that spreads leftward back to the H\*, as assumed in the labeling of the pitchtracks shown in this paper, or it might be due to an L component of the pitch accent itself that comes after H\* (L+H\*L). These two options are illustrated schematically in Figure 2. In the main difference between the two analyses is the mechanism that accounts for deaccenting. In the L+H\* case, the low plateau results from La spreading; in the L+H\*L, it results from F0 interpolation between the final L of the L+H\*L and the low La. In the vast majority of cases, these two approaches make identical predictions, and there is no way to distinguish between the two.

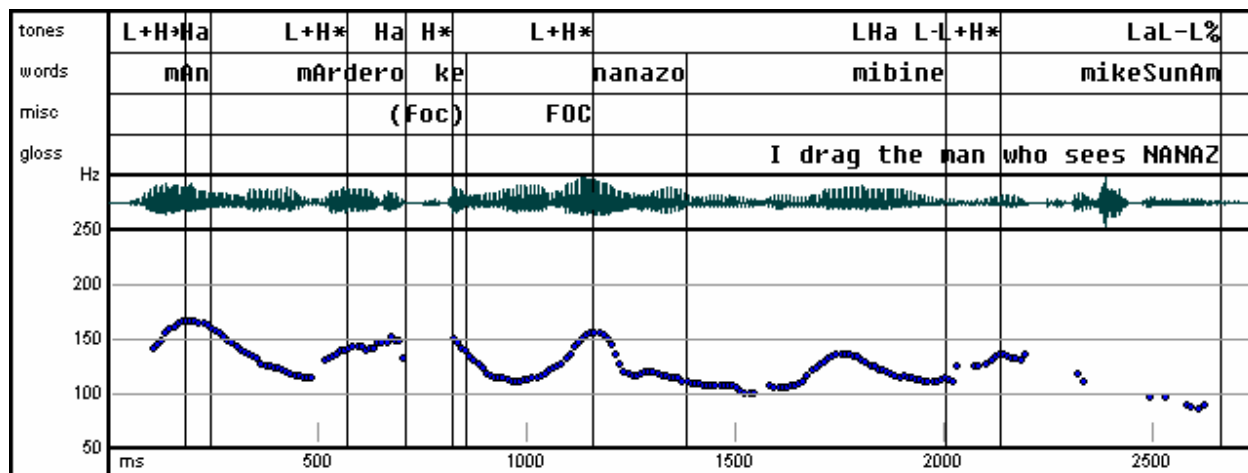
**Figure 2** Two approaches to describing focus: L+H\* and L+H\*L



The L+H\* ... La analysis can account for most cases. As long as focus triggers deaccenting and dephrasing to the end of the IP, the La can always account for the low plateau. (Any IP-final rise or fall can be accounted for by ip and IP boundary tones.) This analysis is appealing analysis because it is simple and straightforward, and it doesn't require the positing of a new pitch accent type (and especially not a tri-tonal pitch accent, which would be quite unusual typologically).

Why, then, would the L+H\*L analysis even be considered? There is one type of construction, namely focus within a relative clause, for which different predictions are made by the different focus analyses. Pitchtrack 30 shows an utterance with such a construction, spoken by Henry. The fact that we see focus inside a relative clause at all indicates that focus takes precedence over the usual deaccenting of a relative clause. However, it looks like there is relative clause deaccenting before and after the focused word. If the rise at the end of a relative clause is due to an Ha (as has been assumed for relative clauses; see Arbisi-Kelm), the deaccenting following the focus cannot be accounted for by the spreading of an La. This suggests that there must be an L following the pitch accent that spreads rightward to the end of the AP.

### Pitchtrack 30 Focus within a relative clause



The L+H\* analysis of focus could be salvaged if a new AP boundary tone were introduced: LHa. In this case, the low before the focused item would be due to the initial L of the pitch accent and the low after would be due to leftward spreading of the L part of the AP boundary. This account has the additional feature of attributing the deaccenting in Pitchtrack 30 to the relative clause, rather than to the focus, which seems both intuitive and formally advantageous. If the deaccenting were due to focus, it would have to be explained why the deaccenting extended only to the end of the relative clause and not to the end of the IP, as focus deaccenting does in all other cases. Unfortunately, there is not much data to examine in choosing between these analyses; only two utterances with focus inside a relative clause were collected.

## 5.2 Accounting for high

A further issue in determining the pitch accent type for focus involves how to account for the raised F0. As mentioned earlier, in many languages, the extra high F0 on focal pitch accents is simply part of the phonetic realization of focus. In order for the raising of F0 to be relegated to the phonetics, however, there must be an independent marker of focus (usually a special pitch accent type). If the focus pitch accent in Farsi is, in fact, L+H\*L, the high F0 can be explained as a result of phonetic implementation since the tri-tone would be the phonological marker of focus. If, on the other hand, the focus pitch accent has no final L, then the pitch accent for focus is identical to the pitch accent, and the difference in meaning between focus and non-focus cannot be accounted for within the tonal representation. This suggests that the higher F0 on focal pitch accents may be phonological in Farsi. The focus pitch accent type, then, would be L+^H\*. Note that upstepped H\* is not upstepped relative to a preceding high pitch accent, as focus can be the first pitch accent in an utterance. Rather, ^H\* indicates any phonologically extra-high pitch accent.

## 6 Summary and Preliminary Conclusions

This paper provides a description of focus (and, in particular, contrastive focus) in Farsi. A few possible analyses of the data were considered, each of which depended on a different representation of the focus pitch accent: L+H\*, L+H\*L, L+^H\*. The data do not provide

enough evidence to strongly support one analysis over another. However, the L+<sup>H</sup>\* analysis seems especially promising. It captures phonologically the raised F0 of focus, since this is the only marker of focus in a limited number of double focus cases. And it avoids the need for a tri-tonal pitch accent, which would be cross-linguistically quite unusual and would also greatly increase the number of logically possible but unused pitch accent types. (The need for a bi-tonal LHa boundary tone under this analysis seems less theoretically problematic than the tri-tonal pitch accent.)

Furthermore, this paper demonstrates the feasibility of a unified analysis of deaccenting phenomena in Farsi. Since focus, wh- questions, relative clauses, ‘know that’ constructions, negation, and verb-initial yes/no questions all involve deaccenting, it is appealing to be able to account for them all with a single phonological mechanism. We can consider them all types of focus, broadly construed. This generalizability of the analysis of focus to other related phenomena contributes to the strength of the analysis, and as further data make the choice between the different possibilities more principled, retaining this unified analysis should be an important consideration.