

## Asymmetric question-answer prominence in San Martín Peras Mixtec

**Introduction.** In many languages, answers to wh-questions are realized with prosodic prominence (e.g. Selkirk 1995). One way to account for this pattern is to assume that answers to wh-questions are marked with a formal feature (FEATURE HYPOTHESIS), which triggers prominence at PF (e.g. Féry & Samek-Lodovici 2006). Alternatively, some recent proposals have suggested that the relative prosodic prominence on answers to wh-questions is due to fact that everything else in the sentence is GIVEN, and thus deaccented (GIVENNESS HYPOTHESIS). Under this view, the prominence is a default phrasal prominence which is mapped onto constituents that are not GIVEN in the context (e.g. Kratzer & Selkirk 2018).

In this presentation, I explore the phonetic realization of answers to wh-questions in San Martín Peras Mixtec (SMPM) (ISO: JMX), a tonal language. I argue that answers to wh-questions are phonetically distinct from identical words elicited in a broad focus context. Unlike in some other tonal languages, however, the phonetic realization of this prominence is ASYMMETRIC: word final high tones are realized at a higher pitch when part of answers to wh-questions, while other tones remain unchanged. Furthermore, I argue that this pattern can not be plausibly reduced to a default phrasal level prominence which is mapped onto non-given constituents. Thus, I suggest that this pattern supports the hypothesis that answers to wh-questions are represented formally in the grammar as a type of focus (following Rooth 1992, *pace* Kratzer and Selkirk 2018).

**Background.** SMPM is an Oto-Manguean language spoken in Oaxaca, Mexico, and in diaspora communities throughout California. It is a tonal language with default VSO word order (Ostrove 2018) and has 5 distinct tones: low, mid, high, falling and rising (Peters 2017). Constituents are fronted to a preverbal position when they are the response to a wh-question. In response to the question *What did Maria give Juan?* the object must be fronted, as in (1). In response to a broad focus triggering question, such as *What happened today?*, either the subject or the object may be fronted to a preverbal position, as in (2).

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| (1) <span style="border: 1px solid black; padding: 0 2px;">Shi'i</span> tàshĩ=ñá    ntà'ǎ=rà<br>mushroom gave=3SG.F hand=3SG.M<br>'She gave him a MUSHROOM.' | (2) <span style="border: 1px solid black; padding: 0 2px;">Shi'i</span> tàshĩ Maria ntà'ǎ Juan<br>mushroom gave M.      hand J.<br>'Maria gave a mushroom to Juan.' |
|--|---|

The fact that SMPM permits constituent fronting in broad focus contexts allows for a direct comparison of identical words in different sentential constructions, without any confounding factors related to their position in the sentence, such as declination.

**The prominence of answers to wh-questions in SMPM.** In this presentation, I show that preverbal nouns that are the response to a wh-question can be distinguished prosodically from a fronted noun in a broad focus context. Recordings were made of one female speaker answering broad focus and wh-questions. 36 bisyllabic target words were recorded in each question context. This was repeated at 8 distinct elicitation sessions, resulting in 576 total target syllables. The mean pitch in ERB was taken at 10 points within each syllable nucleus and compared across sentence type.

Word final high tone syllables are realized with a higher  $F_0$  value ( $\approx 0.2$  ERB) when they are answers to wh-questions. This raising is equivalent to roughly half the distance between each level tone ( $\approx 0.4$  ERB) and is statistically significant. The phonetic effects of focus are not realized symmetrically across all tone levels or positions in SMPM. Low tones, mid tones, and rising tones<sup>1</sup> show no significant difference in pitch between sentence contexts (See figure on following page). Additionally, high tones in word initial position show no significant difference. Finally, there are no significant durational differences across contexts.

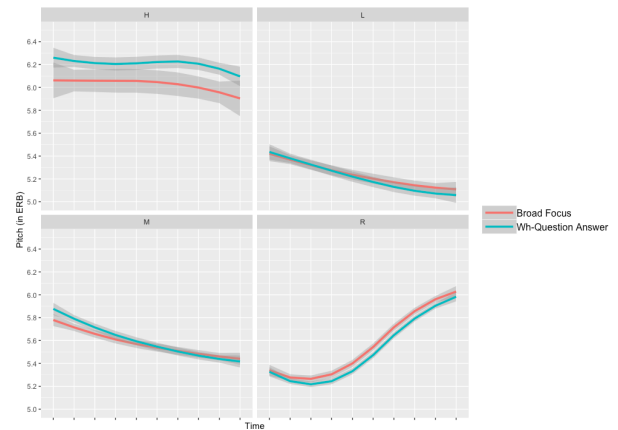
<sup>1</sup>Falling tones were excluded due to their relative infrequency in the language.

Some previous proposals try to account for similar patterns in English and German by saying that a default phrasal prominence is mapped to the non-given answer (GIVENNESS HYPOTHESIS). Crucially, this hypothesis relies on the idea that sentential level prominence is mapped onto the word with the highest phrasal level prominence within the non-given constituent (Hayes 1995).

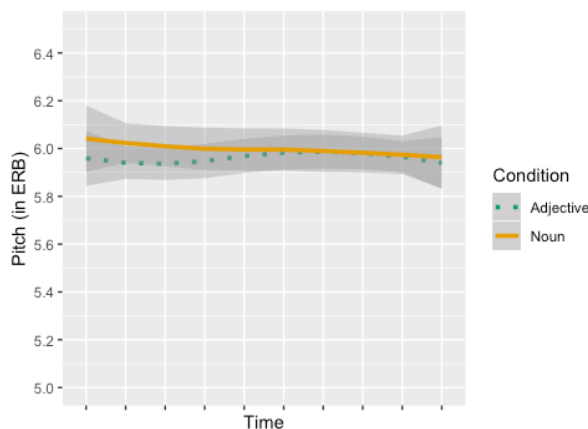
There is evidence that prominence in SMPM is aligned to the right edge of the answer of the wh-question. When the answer is a modified noun, the prominence is shifted from the noun to the modifying adjective (4). Thus, in order to predict the prominence pattern in (3-4), the GIVENNESS HYPOTHESIS predicts two things: (1) there is default prominence in SMPM; (2) adjectives are more prominent than the nouns that they modify (prominence is right-headed) in neutral contexts.

- (3)  $Tsyàká↑$  [ $nàkàbà$   $nùhũ$   $nũ'ũ$ ]<sub>GIVEN</sub>  
 fish fall.COMP face ground  
 “The fish fell onto the ground.”

- (4)  $Tsyàká$   $ndu'ú↑$  [ $nàkàbà$   $nùhũ$   $nũ'ũ$ ]<sub>GIVEN</sub>  
 fish fat fall.COMP face ground  
 “The fat fish fell onto the ground.”



While the first prediction remains an open question, I argue that adjectives are not more prominent than the nouns they modify in default contexts in SMPM. In order to test this prediction, I elicited VSO sentences (n=64) with a modified subject, and compared the production of final high tones of the nouns and the adjectives. This test shows no significant difference between the production of high tones in these words, which I argue suggests that adjectives are not more prominent by default in the language.



**Further implications.** There are several ways in which tonal languages realize prominence of answers to wh-questions. For instance, in Mandarin, the entire  $F_0$  space is expanded (Xu 1999). In Akan, the entire pitch register is shifted downward (Kügler and Genzel 2013). SMPM represents a different pattern—a highly targeted, asymmetric pitch raising. A similar effect is seen in Hausa, which has a process of local high raising (Leben et al 1989). This array of patterns suggests a wide variety of prominence strategies in tonal languages. Going forward, the asymmetric pattern displayed in SMPM may help adjudicate between differing theories of how answers to wh-questions receive their prominence—either directly via a feature or indirectly

via alignment to a prosodic boundary. Furthermore, these facts may force us to revisit theories which rely on “default” prominence, a notion which may have less relevance in tonal languages.

**Selected References.** Féry, C. and Samek-Lodovici, V. (2006). Focus projection and prosodic prominence in nested foci. • Kügler, F. and Genzel, S. (2011). On the prosodic expression of pragmatic prominence: The case of pitch register lowering in Akan. • Kratzer, A. and Selkirk, E. (2018). Deconstructing information structure. • Leben, W. R., Inkelas, S., and Cobler, M. (1989). Phrases and phrase tones in Hausa. • Ostrove, J. (2018). When  $\varphi$ -Agreement Targets Topics: The View from San Martín Peras Mixtec. PhD thesis, UCSC. • Peters, S. L. (2017). Inventario y distribución tonal en el mixteco de San Martín Peras. • Rooth, M. (1992). A theory of focus interpretation. • Schwarzschild, R. (1999). GIVENness, avoidF and other constraints on the placement of focus. • Selkirk, E. (1995). Sentence prosody: Intonation, stress and phrasing. • Xu, Y. (1999). Effects of tone and focus on the formation and alignment of  $F_0$  contours.