Richards (2010, in press) argues that these are two strategies for forming WH questions:

Japanese (Situation):

What did Naoya drink at the bar?

Richards (2010, in press) argues that these are two strategies for achieving contiguity:

(a) English: linear adjacency of C (+Q) and WH

(b) Japanese: phonetic compression on the WH element and lack of prosodic boundaries between WH and +Q in sentences like (1) compared with (2) where we compare bolded objects, and italicized minor phrases.

Table 1. Non-native pitch contours in the WH domain.

<table>
<thead>
<tr>
<th>Subject #</th>
<th>nani-o</th>
<th>nomiya-de</th>
<th>nomiya</th>
<th>no</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>141 Hz</td>
<td>103 Hz</td>
<td>108 Hz</td>
<td>140 Hz</td>
</tr>
<tr>
<td>S3</td>
<td>313 Hz</td>
<td>229 Hz</td>
<td>234 Hz</td>
<td>289 Hz</td>
</tr>
</tbody>
</table>

Promodic Structure

Note the level pitch between WH and C (+Q). For these speakers, we posit the following structures (from Richards, 2010):

\[
\text{[DP \ WH \ [DP \ [VP] \ C]} \quad \text{(MinP)} \quad \text{[MinP]} \quad \text{[wh] \ [+Q]} \quad \text{Wh domain}
\]

The WH and C are not separated by prosodic boundaries.

The advanced subjects clearly show a nativelike pattern:

High pitch WH \rightarrow no phrase boundaries \rightarrow high pitch +Q

Pitch Compression

1. Naoya ga nani o nomiya de nonda.

2. Naoya ga nani o nomiya de nonda. Naoya drank something at the bar.

3. Naoya ga nani o nomiya de nonda no? Naoya is, would he drink at the bar?

Table 2. Non-native pitch averages: DP vs. WH Objects (#17 & #19).

<table>
<thead>
<tr>
<th>Sentence #</th>
<th>DP Direct Object</th>
<th>WH Direct Object</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sentence #17</td>
<td>287 Hz Average (all subjects)</td>
<td>287 Hz Average (all subjects)</td>
</tr>
<tr>
<td>Sentence #19</td>
<td>278 Hz Average (all subjects)</td>
<td>278 Hz Average (all subjects)</td>
</tr>
</tbody>
</table>

Table 3. DP vs. WH object average pitch; all subjects, all sentences.

| All Subjects DP Direct Objects Average | 250 Hz |
| All Subjects WH Objects Average | 244 Hz |

Note the modest pitch compression on the WH Direct Object

Multiple WH Questions and Promodic Structure

8. Dare ga nani o kaimashita ka?

9. 誰が何を買いましたか？

Who bought what?

Table 4. Pitch contour of multiple WH question; averaged across all subjects.

<table>
<thead>
<tr>
<th>Subject</th>
<th>[wh][[VP][C]]</th>
<th>pro</th>
<th>non-pro</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>279 Hz</td>
<td>250 Hz</td>
<td></td>
</tr>
<tr>
<td>S3</td>
<td>197 Hz</td>
<td>236 Hz</td>
<td></td>
</tr>
</tbody>
</table>

Effects of Instruction & Proficiency

Pitch compression is not taught in class, but rising intonation is. Perhaps the pitch plateau is merely a consequence of rising intonation. Difficult to tell but it does seem to be connected to proficiency level.

Intermediate subjects (n=2): falling contour on Q's and less obvious pitch compression. Advanced subjects (n=3): rising contour and more nativelike performance.

Conclusion

The advanced L2 learners (n=3; multiple L1s) show evidence of (a) modest pitch compression in the WH domain, and (b) no prosodic boundaries in the Minor Phonological Phrases internally. Consistent with Richards (2010), these learners appear to have acquired the appropriate Spell-Out strategy for ensuring contiguity in Japanese WH Questions, though the evidence for (b) seems to be stronger than the evidence for (a). More subjects at both proficiency levels are needed to pursue the research question further.

References


Thanks to Dr. Tim Iles for his help in recruiting these fine subjects, and to Akitsugu Nogita for native speaker advice on Japanese.

Dr. John Archibald, Department of Linguistics

Table 1. Non-native pitch contours in the WH domain.