

Insight into dynamics of speech perception in English and Japanese native speakers using a mouse-tracking paradigm

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Abstract: In American English, the qualitative vowel contrasts /I/-/E/ and /E/-/æ/ are distinguished primarily by spectral and duration cues, respectively. Japanese uses duration cues for quantitative, but not qualitative contrasts. We measured arm movements with a mouse-tracking task while native English and Japanese speakers living in the United States distinguished spectral and duration contrasts in the word pairs "pin/pen" and "pen/pan." While both groups identified the words correctly, when distinguishing pan from pen, the English but not Japanese speakers' mouse-trajectories lean towards 'pen' earlier in the trial, when the information accumulated to that point is more consistent with the shorter of the two words. This suggests that while English speakers act rapidly on incoming acoustic information as it unfolds, Japanese speakers wait for more information before responding. These results may reflect Japanese speakers' expertise with duration cues from extensive experience with native quantity contrasts.