Evidence for Pitch Context Effects on M100 Latency

Ariane Rhone\textsuperscript{1,2}, So-One Hwang\textsuperscript{1,2}, Rachel McGuire\textsuperscript{1}, Victoria Kronz\textsuperscript{1}, Ben Lane\textsuperscript{1}, Margaret Morey\textsuperscript{1}, Slade Healy\textsuperscript{1}, William J. Iadsardi\textsuperscript{1,2}

\textsuperscript{1}University of Maryland College Park, Department of Linguistics \textsuperscript{2}Cognitive Neuroscience of Language Laboratory, Department of Linguistics, University of Maryland College Park

\section*{BACKGROUND}

\textbf{M100:} Evoked auditory magnetic field
Latency modulated by various stimulus attributes
- Acoustic properties
  - Pure tone frequency\textsuperscript{[1]}
  - Formant structure/vowel quality\textsuperscript{[2,3]}
- Context
  - Phonological prediction\textsuperscript{[4]}

\textbf{Pitch:}
Perceptual correlate of sound frequency
- Fundamental Frequency (F0) temporal pitch cue
Linguistically relevant
- Stress, prosody, tonal languages

\section*{STIMULI}

\textbf{Acoustic properties:} Latency modulated by various stimulus attributes
- F0 values changed perceived gender of talker
- F0 values harmonically related

\section*{PRESENT STUDY}

\textbf{Investigating acoustic effects:}
Does F0 modulate M100 response?
- Previous studies inconclusive\textsuperscript{[2,3]}
- Possible stimulus confounds
  - F0 values changed perceived gender of talker
  - F0 values harmonically related

\textbf{Investigating context effects:}
Does local pitch context modulate M100 response?

\section*{EXPERIMENT DESIGN}

\textbf{Present vowel pairs:}
\begin{itemize}
  \item [a]-[a] or [u]-[u]
\end{itemize}
- with same, rising, or falling pitch across vowel pair

\textbf{Acoustic effects:}
Compare M100 latency to first vowel (V1)
- 145Hz vs. 245Hz

\textbf{Context effects:}
Compare M100 latency to same token in V1 vs V2 position
Compare M100 latency to acoustically matched second vowel (V2) varying in pitch context

\section*{RESULTS}

\begin{itemize}
  \item \textbf{F0: V1 only}
  \item \textbf{Pitch Context: V1 & V2}
  \item \textbf{Position: V1 vs V2}
  \item \textbf{Vowel Pairing: [a] vs. [u]}
  \item \textbf{F0 Values: 145Hz vs. 245Hz}
\end{itemize}

\section*{CONCLUSIONS & OPEN QUESTIONS}

\textbf{Acoustic/First Vowel Conclusions:}
- Shorter M100 latency to 245Hz \([a]\) than 125Hz \([a]\)
  \begin{itemize}
    \item Why not \([u]\)?
  \end{itemize}
- Low F1 for \([u]\) overlaps with both F0 values tested

\textbf{Context/Second Vowel Conclusions:}
- No overall effect of position (V1 vs. V2)
- Effect of pitch context
  - M100 to V2 in falling context shorter than V2 in same \([a]\) and \([u]\)
  - M100 to V2 in rising context shorter than V2 same - \([a]\) only

\section*{SELECTED REFERENCES}


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