Context Effects on Auditory Category Knowledge

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The authors made the following contributions. Shannon Heald: Conceptualization, Writing - Original Draft Preparation, Writing - Review & Editing; Stephen Van Hedger: Writing - Review & Editing, Supervision; Lauren Kingsly: Writing - Review & Editing, Supervision.

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Abstract

Given the rise of AI speech to text and voice to text machines (Amazon Alexa, Siri, etc.), we believe examining how acoustics effect speech is imperative to understanding the lack of invariance problem within contexts effects of speech.

Two to three sentences of **more detailed background**, comprehensible to scientists in related disciplines.

One sentence clearly stating the **general problem** being addressed by this particular study.

One sentence summarizing the main result (with the words "**here we show**" or their equivalent).

Two or three sentences explaining what the **main result** reveals in direct comparison to what was thought to be the case previously, or how the main result adds to previous knowledge.

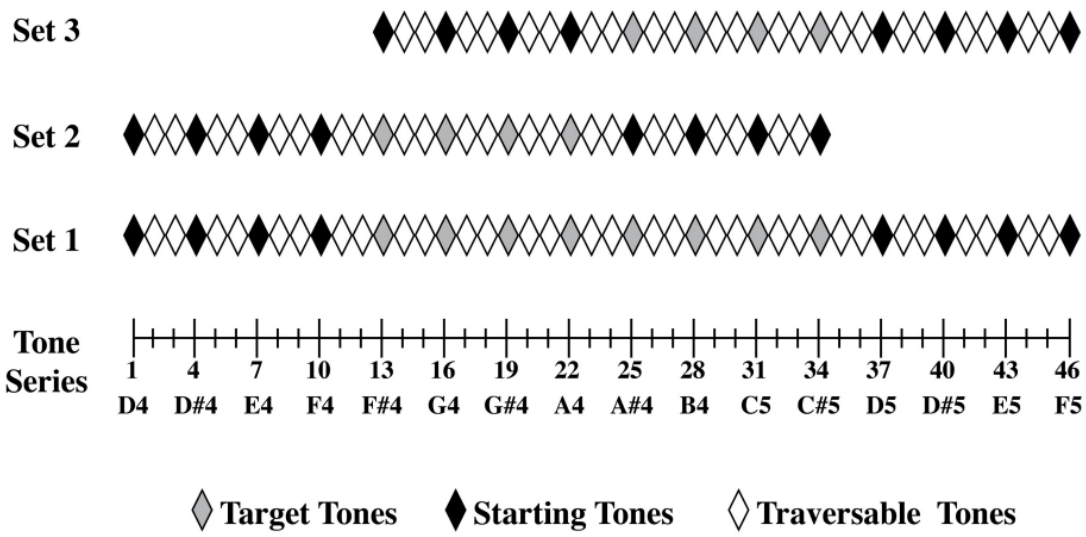
One or two sentences to put the results into a more **general context**.

Two or three sentences to provide a **broader perspective**, readily comprehensible to a scientist in any discipline.

Keywords: auditory perception, speech perception, lack of invariance

Word count: X

Context Effects on Auditory Category Knowledge



As referenced in Table 1 each subject was counterbalanced such that they received a mean trial tone position across all trials of 9.5 (which correlates to x note)

In Figure 1 we can see that the there was a difference in bias between participants identification of vowels versus words when given a high tone compared to a lower tone.

Whereas, we can see in Figure 2 that a word or vowel (embedded versus non-embedded) effects the overall bias for the tones in a different way. For example, high probe tones for vowels embedded within a word have a higher bias than vowels themselves.

The Figure **??** represents the range of tones used in the experiment and the starting tones indicate the probe tones.

Methods

We based our methodology from our previous paper that examined auditory category knowledge within experts and novices. [1]

[1] Heald, S. L., Van Hedger, S. C., & Nusbaum, H. C. (2014). Auditory category knowledge in experts and novices. Frontiers in Neuroscience, 8, 260.

Table 1

Subject	mean.TTPosition
1	9.50
2	9.50
3	9.50
4	9.50
5	9.50
6	9.50
7	9.50
8	9.50
9	9.50
10	9.50
11	9.50
12	9.50
13	9.50
14	9.50
15	9.50
16	9.50
17	9.50
18	9.50
19	9.50
20	9.50

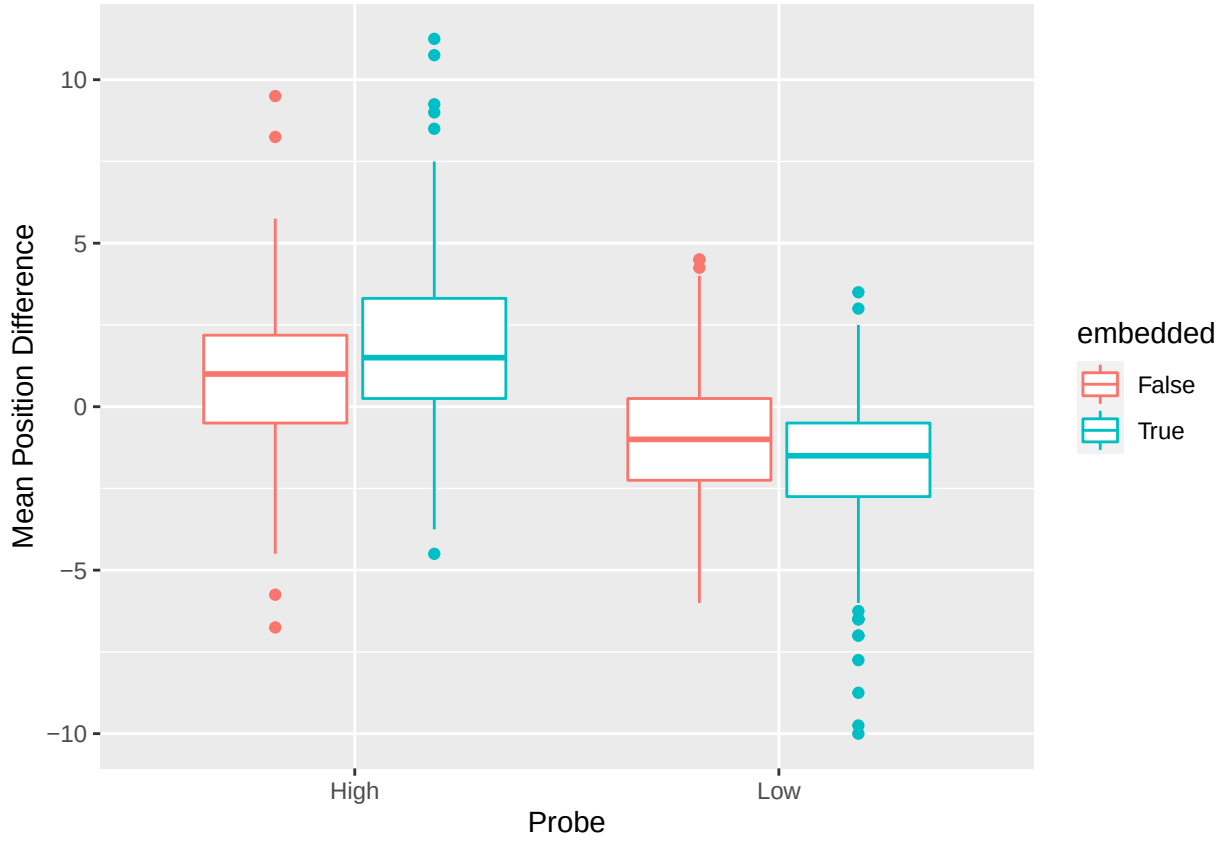


Figure 1. Boxplot of Speech Perception Differences Between Words and Vowels

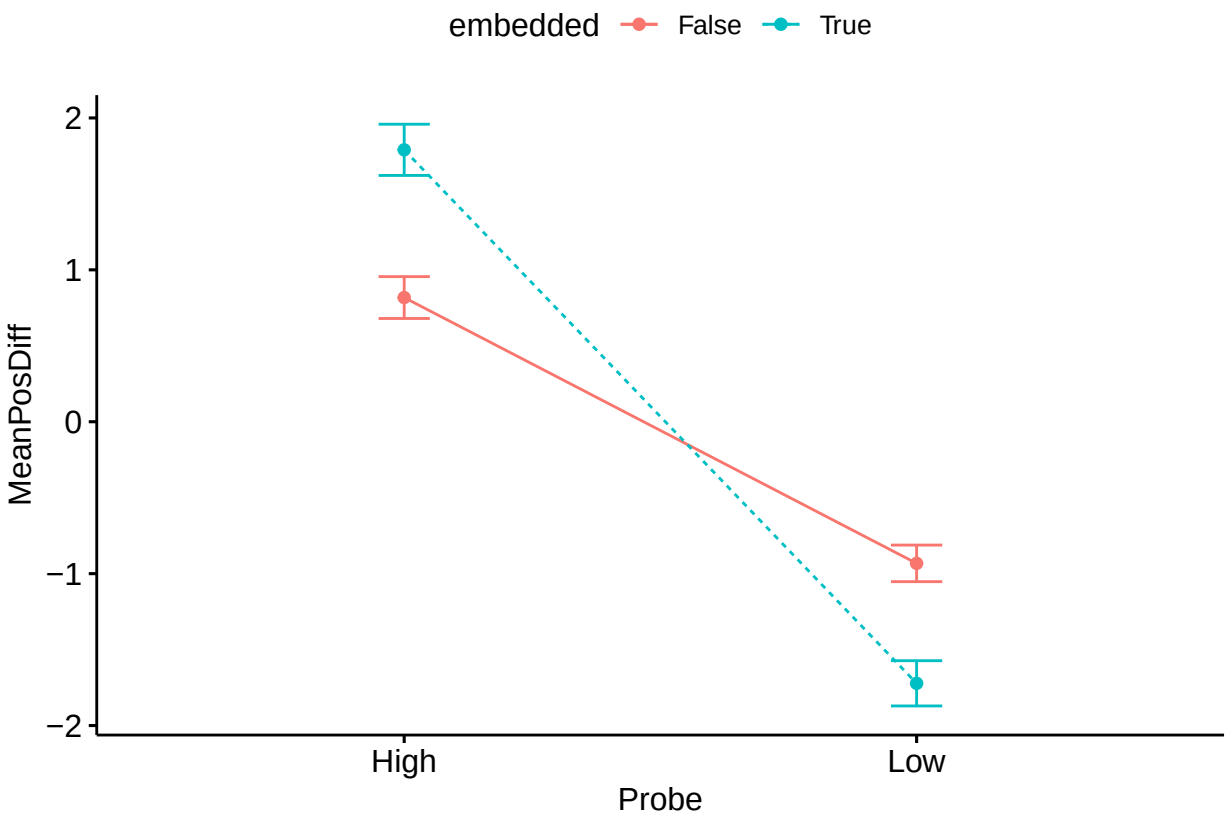


Figure 2. Difference in Context Effects for Words and Vowels