Introduction:
As a member of the human race, children are born as what those in the speech and language world refer to as ‘universal listeners.’ As children in language environments grow and learn they narrow their focus to the sounds that they hear on a regular basis. But how does that early narrowing or focusing affect perception of tone and tone based languages later in life? Do people who play instruments or perform vocally and therefore have pitch training perceive tone differences better? Might this affect their ability to learn tonal languages in the future?

Methodology:
Participants:
• 20 Native English speakers. 18 – 28 years of age participated in two discrimination tasks. None had experience with tonal languages.
• 10 had no musical training/experience
• 10 had musical 6 or more years of training/experience
Lexical Task:
• Stimuli was 120 bi-syllabic Shona words
• Design was a same-difference discrimination task. 60 pairs were same-same, 60 were same-different. Ex: /hara/-/hara/ = HH-HH or /hara/-/hara/ = HL-LL
Hum Task:
• Stimuli was 120 low-pass filtered bi-tone hums that corresponded with lexical words
• Same-different discrimination task. 60 same-same. 60 same-different.
Procedure:
• Participants were tested one at a time in a quiet room.
• The stimuli were presented through headphones.
• Each task had 2 sections
  1. 16 practice trials
  2. 120 test trials
• For each pair of stimuli heard, participants had to indicate whether they were the same or different by clicking on the corresponding box.

Hypothesis:
The prediction was that those participants who have musical training will be more accurate in perceiving tone differences.
• The language Shona contains 2 tones, High (H), and Low (L).
• English is not a tonal language, but English speakers use pitch to differentiate a speaker’s meaning at the sentence level.
• Many participants have musical training.
• This portion of study is investigating how tone perception in English speakers affected by linguistic experience and musical training.

Results & Discussion:
The average accuracy, range of scores, and upper and lower quartiles the participants are represented in the box plots below. They are separated by musical training and lack there of and by Lexical versus Hum task.

<table>
<thead>
<tr>
<th>Description</th>
<th>Music Training</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lexical</td>
<td>With_Music</td>
<td>.89600</td>
<td>.034586</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Without_Music</td>
<td>.81410</td>
<td>.085792</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>.85505</td>
<td>.076278</td>
<td>20</td>
</tr>
<tr>
<td>Hum</td>
<td>With_Music</td>
<td>.89420</td>
<td>.020848</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Without_Music</td>
<td>.82670</td>
<td>.065485</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>.86045</td>
<td>.058619</td>
<td>20</td>
</tr>
</tbody>
</table>

- p-value with a 95% Confidence Interval = .005, there is a statistical significance between the groups’ (With Music Training & Without Music Training) accuracy rates.
- Sphericity Assumed between the Hum and Lexical Tasks with a 95% Confidence Interval = .618, there is not a significant difference between the accuracy in the tasks.
- F (1, 18) = 10.126, p = .005
- Significant statistical difference is shown between the scores of the two groups.
- The hypothesis that those Native English Speakers with musical training will be more accurate in perceiving tone differences was proven correct.
- This means that there is a correlation between musical training and better perception of lexical tones. People with musical training will most likely be more efficient in learning a tonal language than those who do not.