Analysis of the Effects on Pronunciation of Training by Using Song or Native Speech
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What we did
• This research is an investigation of whether Japanese speakers’ English pronunciation improves more after training on sung or spoken speech.
• We made pre- and post-training recordings of 30 Japanese learners of English who trained on sung or spoken speech. Then, 108 native or near-native listeners evaluated those audio samples.

Introduction
Intelligibility of sung passages has been found to be seven times less than spoken counterparts. [1]
Sung lyrics are often unintelligible for listeners because listeners have significant difficulty in discriminating different sung vowels. [2]
Music changes pitch and rhythmic patterns of phrase. It makes understanding more difficult for the listeners. [3]
Recently, many Japanese junior high schools use English songs as a resource for learning English pronunciation. To investigate whether practicing English music affects English pronunciation or not might be helpful for future planning of Japanese English education.

Method

Participants:

<table>
<thead>
<tr>
<th>Type</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment group (15)</td>
<td>Use sung speech</td>
</tr>
<tr>
<td>Control group (15)</td>
<td>Use spoken speech</td>
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<tr>
<td>Japanese participants from University of Aizu</td>
<td>10 native or near-native English learners from Rosai-Human Institute of Technology</td>
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<td>English listeners from Amazon Mechanical Turk</td>
<td>96 native English listeners from Amazon Mechanical Turk</td>
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</tbody>
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Stimuli:
- Used song lyrics: Meet me under shining lights, I’ve been waiting right here all my life (From Alive by Krewella)

Judgement Criteria:
1. Phrase pronunciation:
   - (i) lights
   - (ii) I’ve been
   - (iii) right here
   - (iv) all my life
2. Foreign accent
3. Intonation

Data Collection & Analysis:
- We used R to analyze 108 data samples
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Results
Training by using sung speech resulted in generally worse listener judgements than training by regular speech. Results for each of the criteria can be seen to the right in Figs. 1–6.

- The two criteria, “right here” (Fig. 3) and intonation (Fig. 6) had significant interactions relative to the default “all my life”.
- The criteria “right here” (Fig. 3) shows that the phrase “right here” got negatively affected by training on sung speech. The number of “Bad” ratings decreased after spoken training, but increased after music training.
- The criteria intonation (Fig. 6) shows, perhaps surprisingly, that the intonation of the whole sentence was negatively affected by training on sung speech.

Discussion and Future Work
• The main effect was discovered where stimuli from the post-training condition received higher judgement scores than those pre-training condition (α = 0.177, z = 2.43, p < 0.05).
• The main effect where the musical training condition yielded overall higher scores. (independent of pre- or post-training) was also seen (α = 0.600, z = 2.89, p < 0.01). This may suggest that Experiment group (used sung speech) had higher Judgment ratings prior to any training effect.
• Training with the music stimuli had a significant effect on ratings in the post-training condition (α = -0.349, z = -3.39, p < 0.01). It shows training by using regular speech is more effective for English learners than training by using songs.
• Our results suggest that if Japanese learners of English want to improve their English pronunciation, it is reasonable for learners to use spoken speech rather than sung speech.
• Due to the relatively short stimulus phrase, in the future we would like to collect more data to get more varied, generalizable results.

References

Acknowledgments
• We would like to thank all participants who generously shared their time for this experiment.