Teaching the expression of emotion in English to native speakers of tone languages: a gamified approach

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Background

Tone:
Tonal languages employ **tonal melodies** (i.e. specific intonation patterns such as mid, high, low tone or a combination of these) for each spoken syllable. In tonal languages such as Mandarin Chinese a single syllable can have multiple meanings depending on the specific melody used.

Stress:
English is a stress timed language (i.e. it employs **stress**, signaled by an excursion, typically an increase in *pitch*, *intensity*, and/or *duration* to mark syllable prominence inside a word.)

Consequences for ESL Learners who speak a tonal language natively:
➤ Paralinguistic differences often make native speakers of tonal languages difficult to understand while they are speaking a stress timed language.

➤ Native speakers of tonal languages' emotional undertones often go unnoticed due to a restricted F0 range (Annoli et al. 2008, Chong et al. 2015).

Participants & Procedure

Participants:
20 students living in Beijing China between the ages of 12-13 who are ESL speakers of Mandarin Chinese and speak English on either a beginner or intermediate level. 10 participants were given an exaggerated stimuli to react to while the other 10 were given a non-exaggerated version.
Procedure:
The experiment was conducted online by having the participants first watch an instructional guide video before being tested by a 1 on 1 collaborator in Beijing. Participants each went through the 4 testing stages, each recording their reactions in a quiet area.
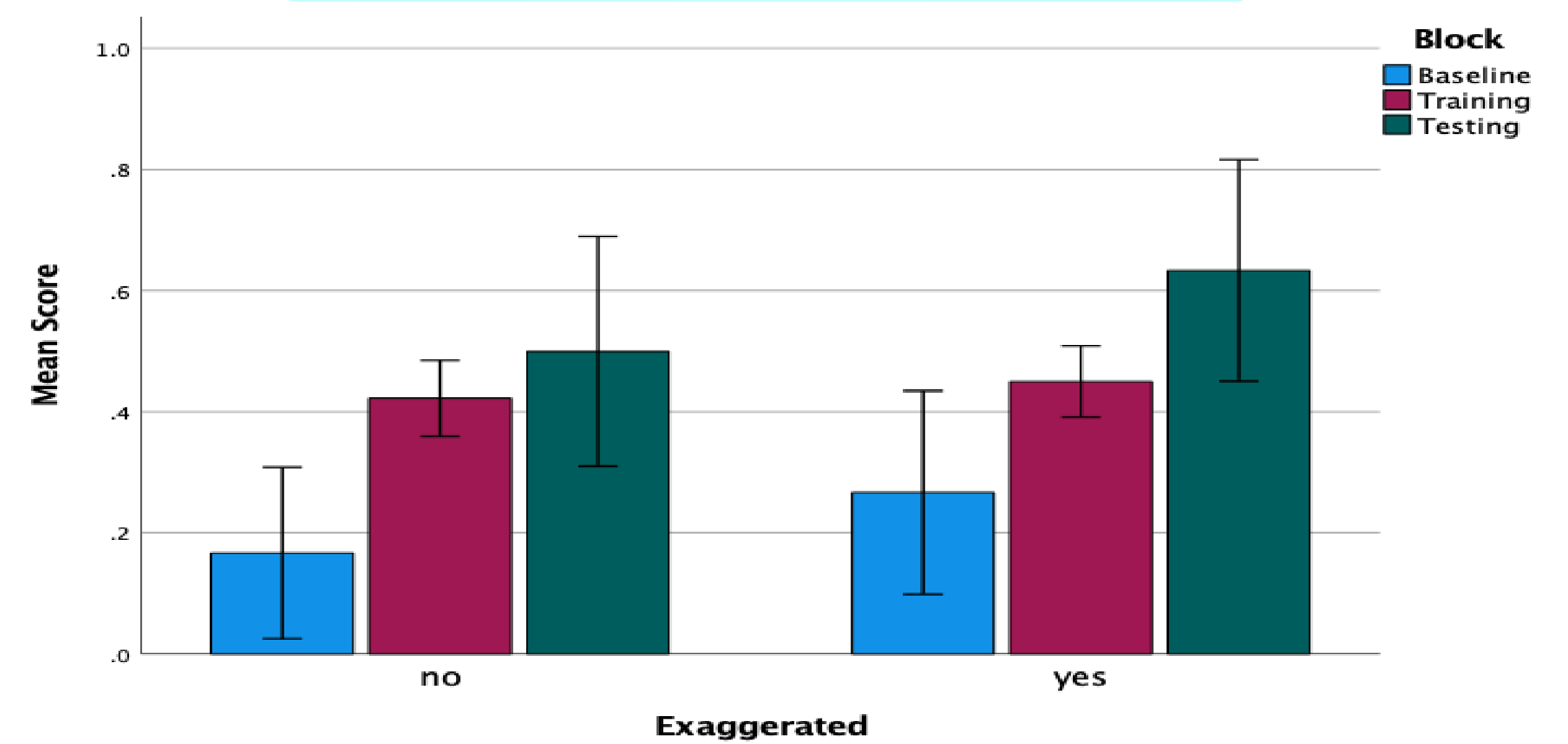
Results

Fig 1.
Imitation shown an improvement without a difference between the exaggerated and non exaggerated portions. There is the most improvement in both testing portions
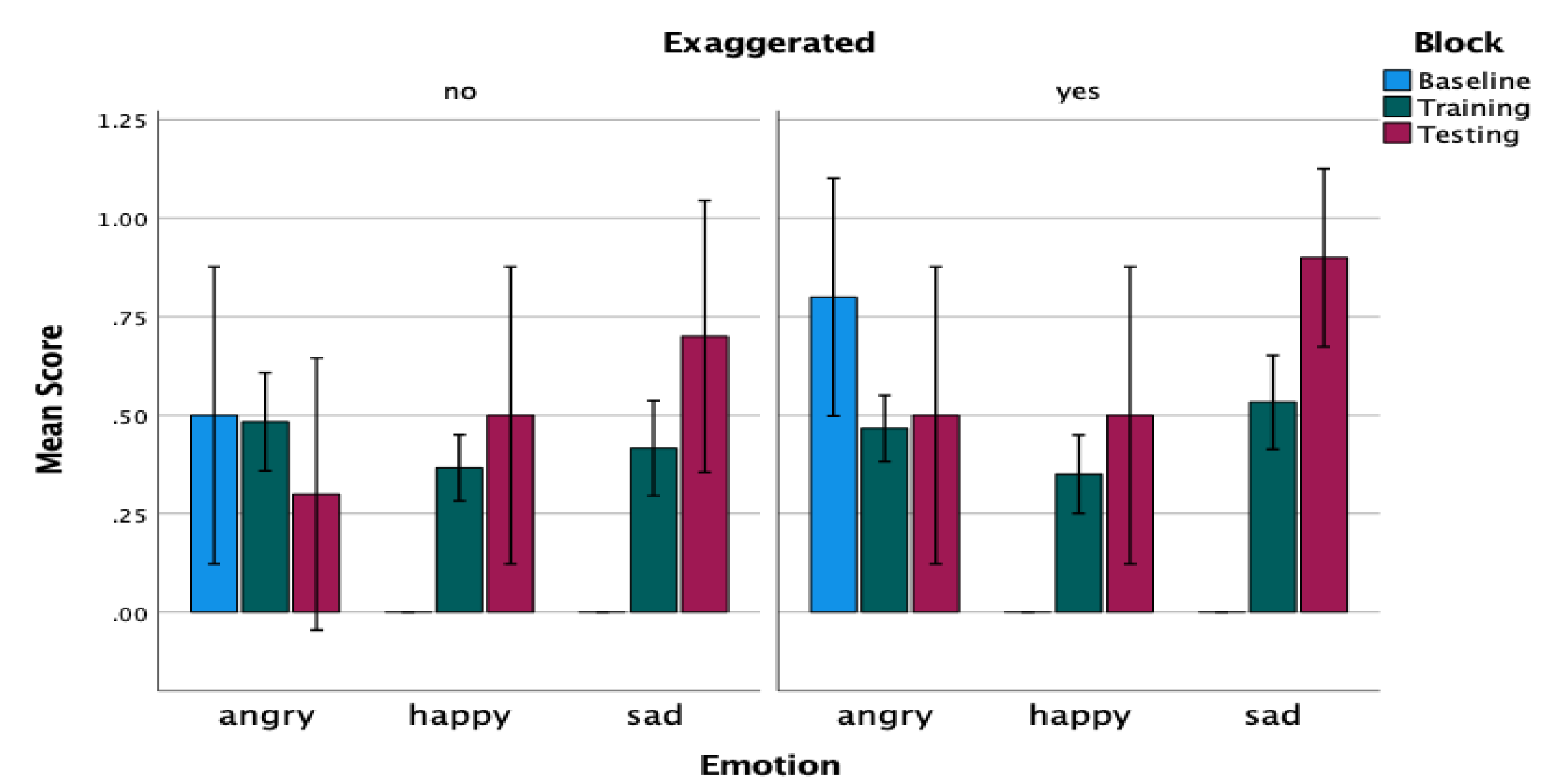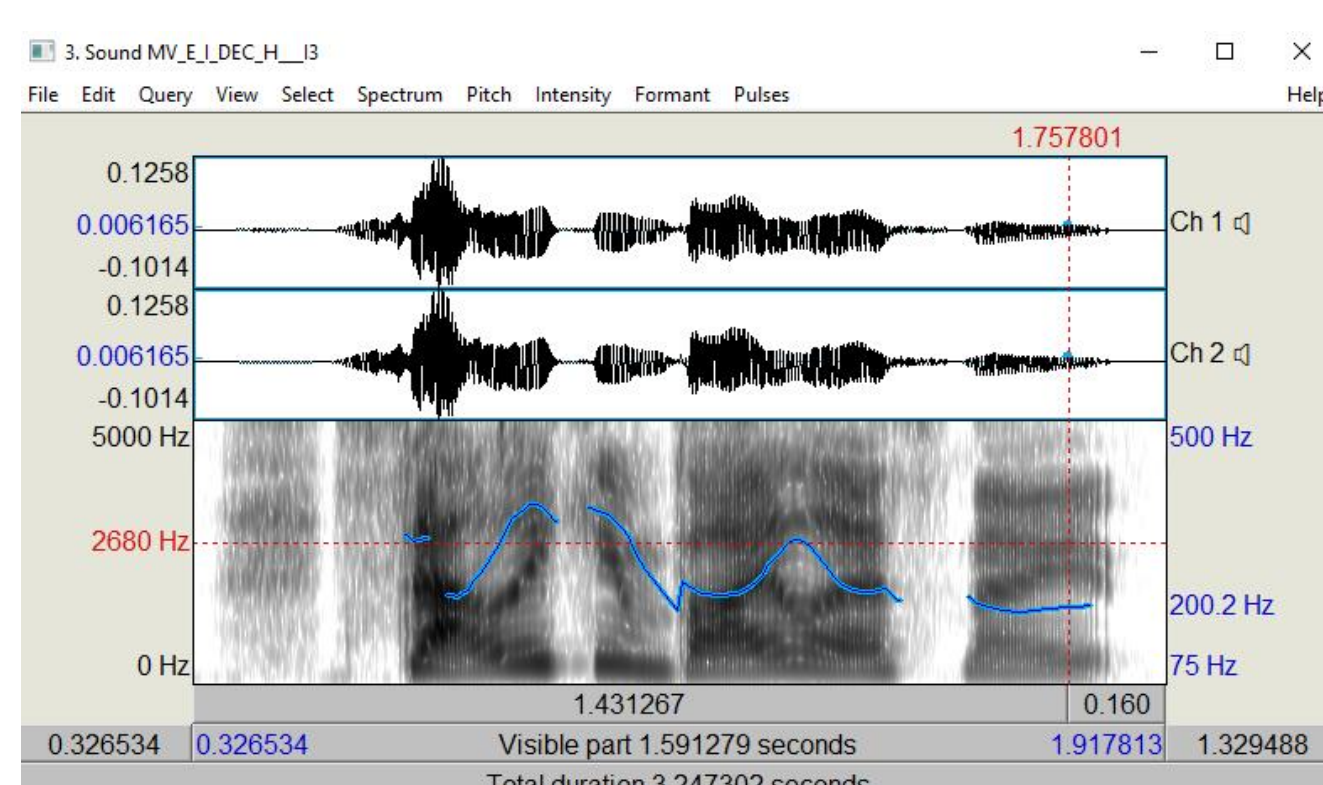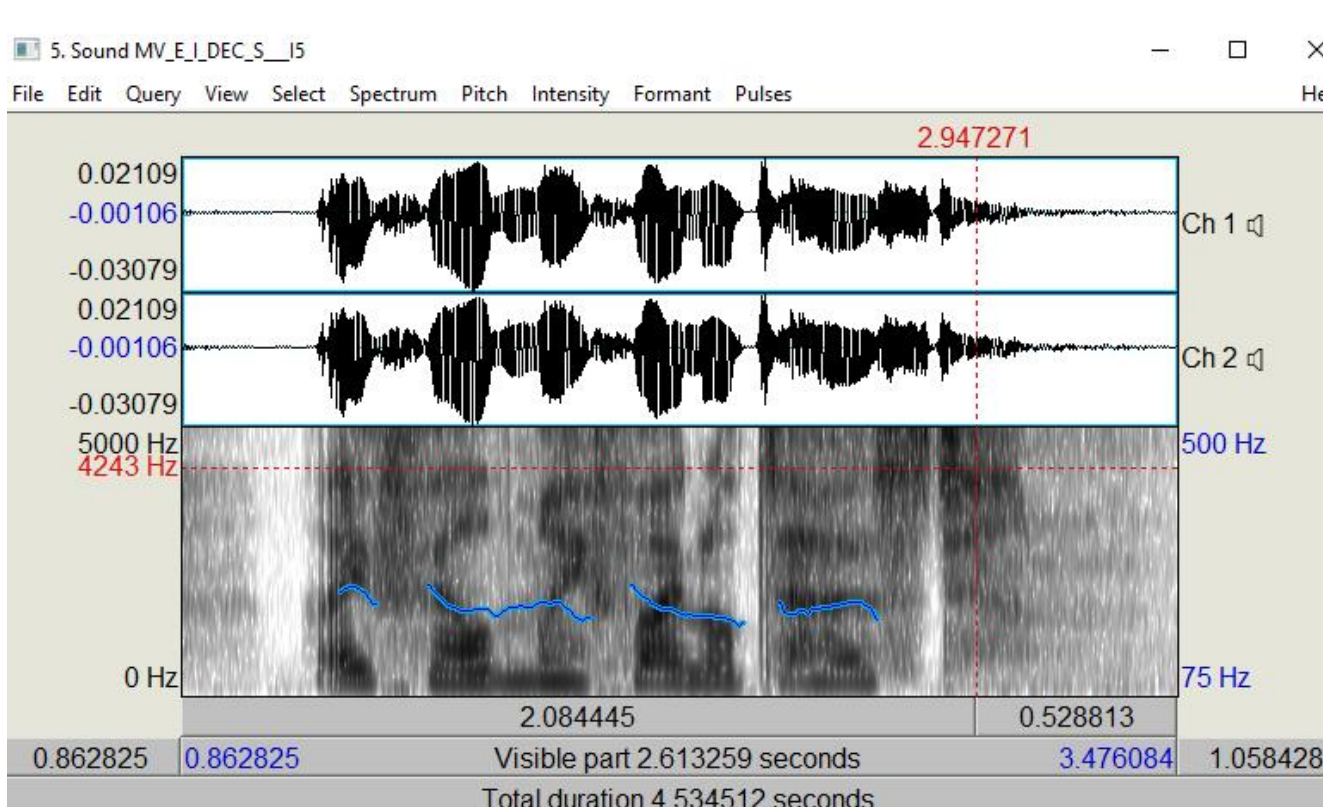

Fig 2.
Angry is the only emotion that was properly perceived during the baseline. The is the most improvement in the testing portion for both emotions. Sad is the most successfully learned emotion overall.
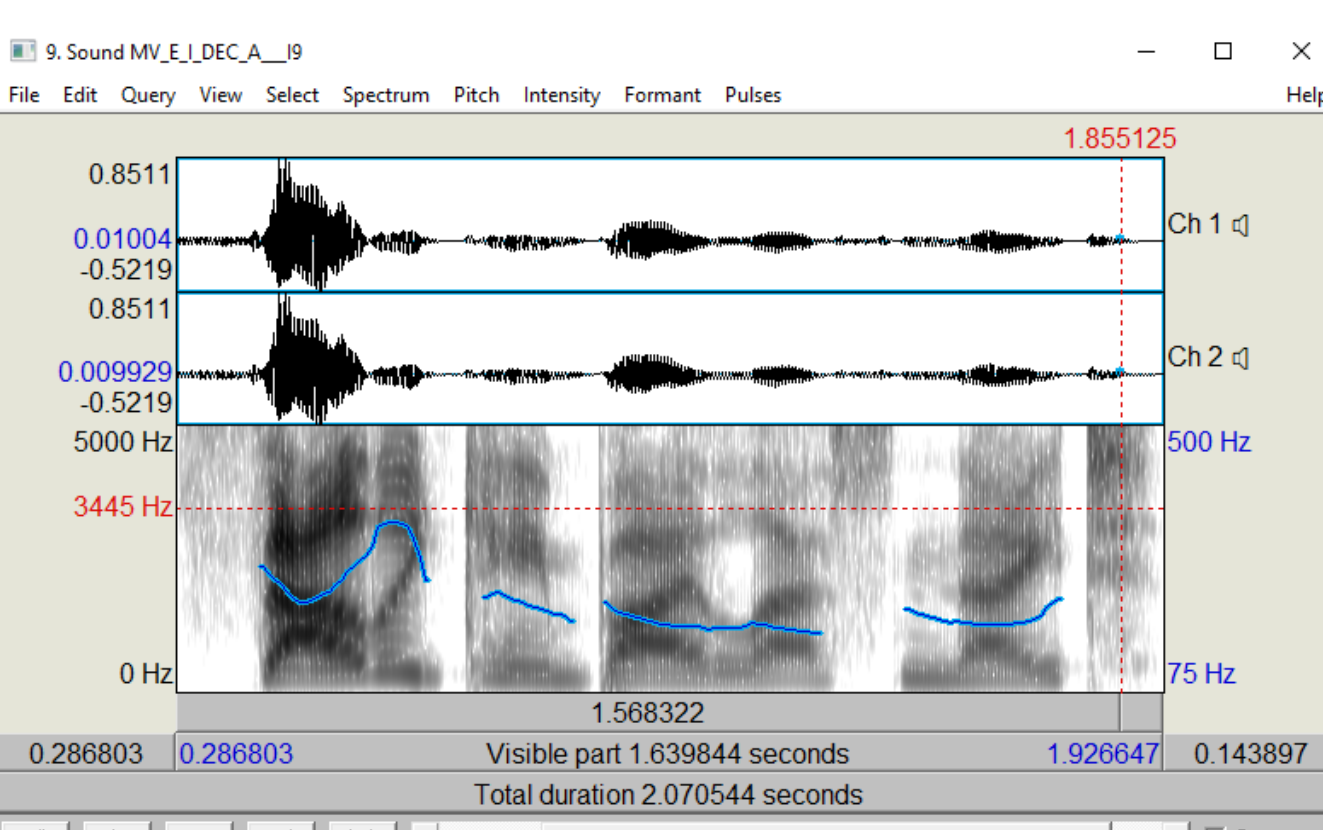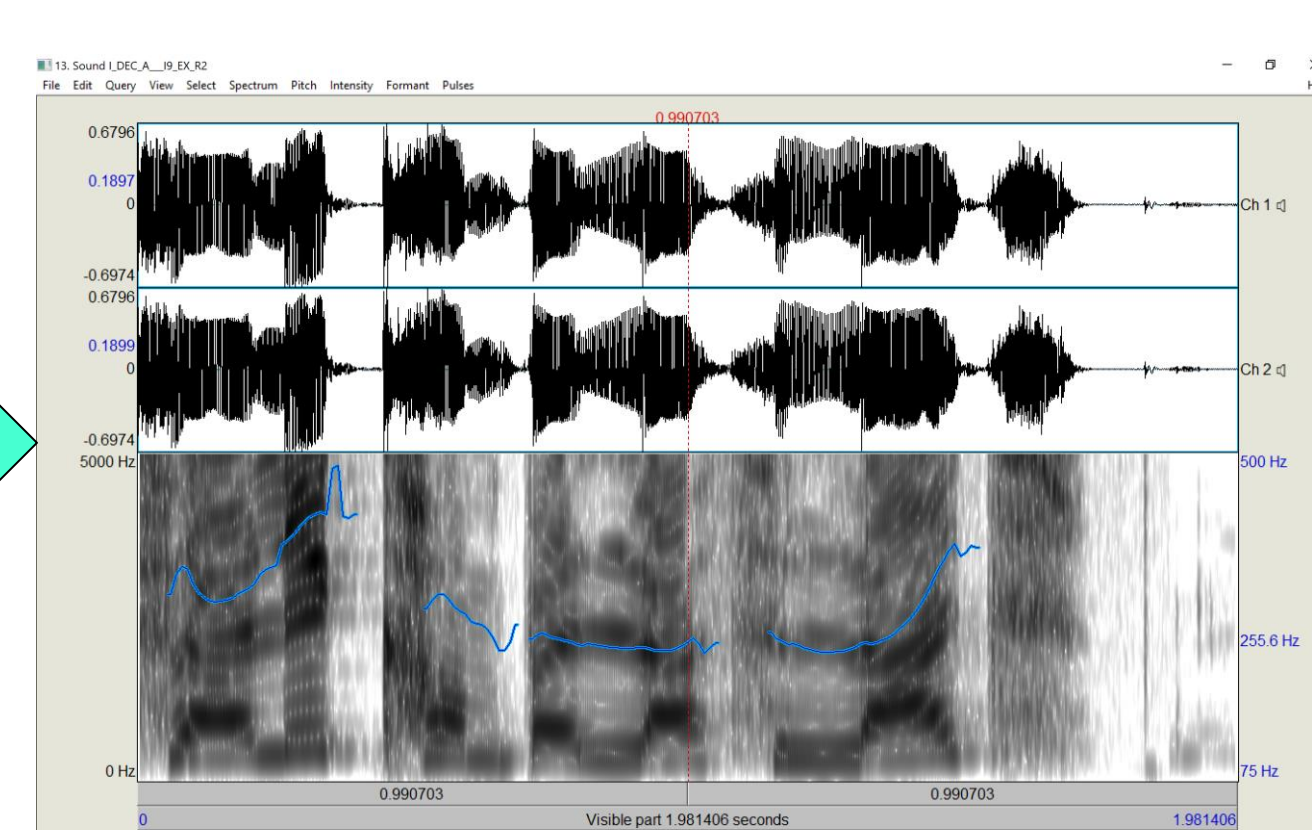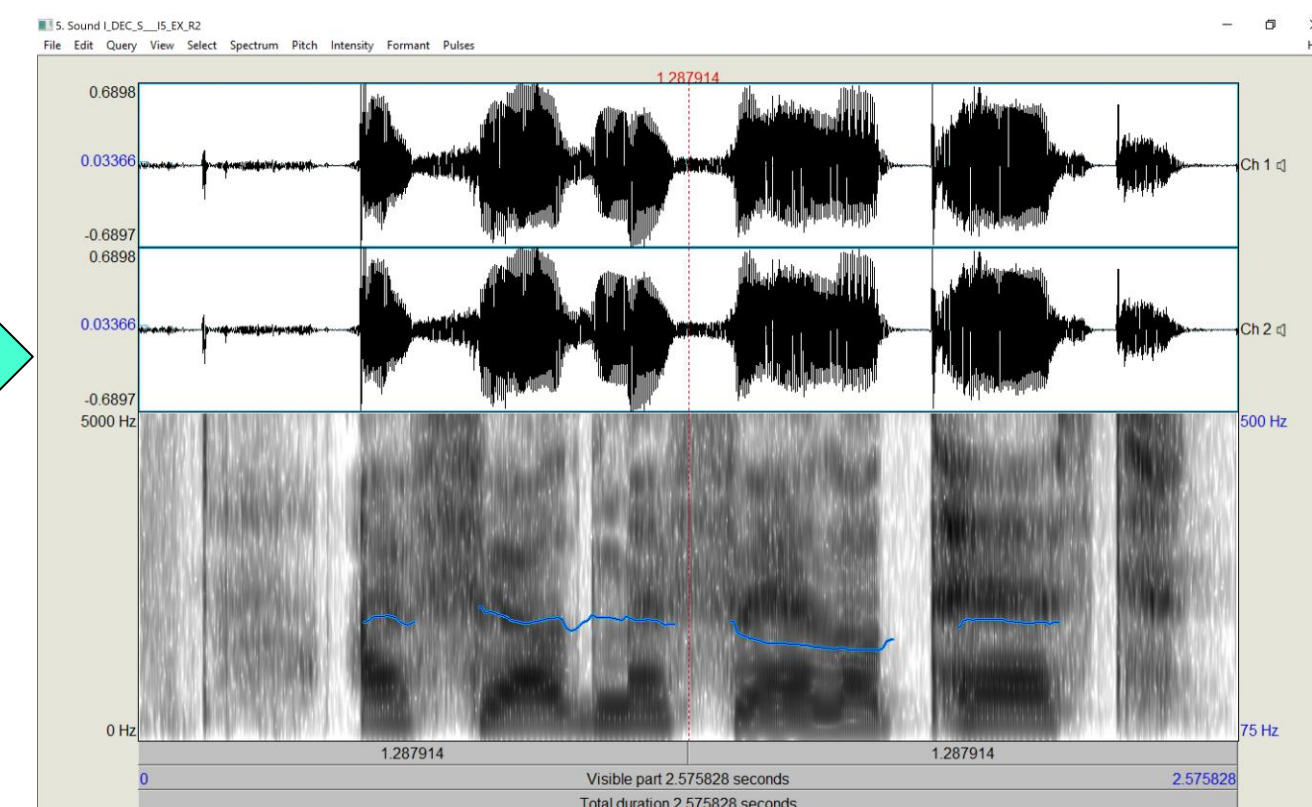
Methodology (Testing)

4 Distinct Stages:
1. **Warmup:** participants read sentences to get used to the format of the experiment
2. **Baseline:** Participants read sentences as they normally would
3. **Training:** Participants listened to and imitated pre-recorded stimuli produced by a professionally trained speaker with both exaggerated and non-exaggerated intonation patterns (i.e. sad, happy, and angry)
4. **Testing/learning:** Participants read again the sentences from baseline, this time without the emoticons or emotion labels.

Methodology (Scoring)

Perceptual Scoring:
2 monolingual speakers of English were used as scorers. Both listened to the participants' recordings and indicated the emotion they perceived, either *Happy, Sad, Angry* or *none of the above.*

Scorers were instructed to focus only on the subjects' tone of voice rather than the words they were speaking.

Visual Scoring:
Participants' performance visually assessed using the Praat software.

The pitch contours were compared directly to the ones of the model.

Discussion & Conclusion

Training ESL speakers of tonal languages through imitation seems to be an effective teaching method

The exaggerated testing results scored the highest in emotional accuracy

Sad is the most successfully learned emotion overall, scoring the highest in the exaggerated portion

Model Pitch Tracks

Participant Pitch Tracks

Happy (Score-1)

Sad (Score-2)

Angry (Score-1)