High pitch – Friendly face

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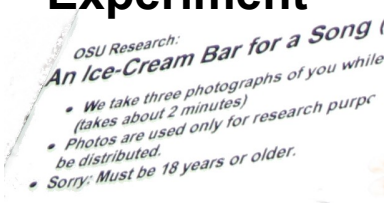
Visual and Acoustical Displays for Aggression and Appeasement

- Animals and humans display **aggression by low pitch** sounds whereas **appeasement** displays uses **high pitch**.
- In humans, **lowered eyebrows** are interpreted as displays of **aggression** (Keating *et al*., 1981)
- **Low pitch** sounds may **symbolize aggression** because of its **association with large size** (Morton, 1977).
- Melodic phrases sound **more aggressive and threatening** when transposed to a l**ower pitch** height (Huron *et al.,* 2006)
- The **smile** could have an **acoustic rather than visual origin** (Ohala, 1980). Smiling bares the teeth but also reduces the volume of the oral cavity, thereby **raising the pitch** and signaling appeasement rather than aggression.

Is there an inter-modal link between auditory and visual displays?

Experiment



44 participants (19 female, 25 male) passing by on campus volunteered to **sing high and low notes** while we took their picture.

Participants first sang a note and vowel of their choice and were then asked to sing both higher and lower than the first note. The order high/low was randomized

In a **forced choice** task four judges watched **picture pairs** displaying sung high and low notes and indicated the **friendlier looking face** (see Figure 1).

In a **second test** four other judges chose the friendlier looking face for picture pairs edited to **only show the eye region.**

Which face is the more friendlier looking?

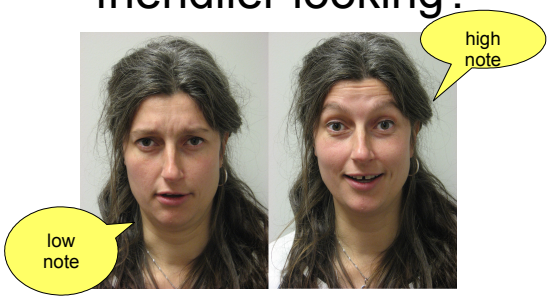


Figure 1: Mock example of a picutre pair similar to those used in the full face judgement task.

Results

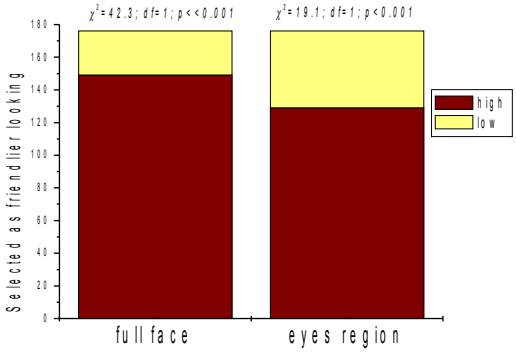


Figure 2: Number of high and low note pictures selected as friendlier. Each bar displays 176 (44 pairs x 4 judges) choices made for the full face (left) and the eye region (right) tests.

The average inter-agreement between judges was 77% and 67% for the full face and eye region task, respectively.

Faces singing **high notes** were **selected as the friendlier** looking face **significantly more often** than faces singing low notes ($p << 0.001$).

Excluding the parts around the mouth, the pictures of **high notes** were still considered as **friendlier** than those of low notes ($p<0.001$).

These findings suggest an **intermodal link between vocal and facial displays**.

Our results are consistent with the idea that the use of **low pitch to signal aggression** may be neurologically **linked to aggressive facial expression** and that the use of **high pitch to signal appeasement** is linked to appeasing and **friendly expressions**.

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