

## Pitch of concurrent pure tone influences visual gender perception

**Eric L. Smith**

Northwestern University



**Marcia Grabowecky**

Northwestern University

**Satoru Suzuki**

Northwestern University

### Abstract

Hearing a concurrent high or low tone affects perception of gender. To dissociate the tone from the gender task, two response dimensions were used, with the tone serving as a task-switching cue. Observers were asked to categorize natural faces based on gender (male or female) and race (Asian or Caucasian). Each face was presented for 200 ms, accompanied by either a high or low pure auditory tone. The high tone was 240 Hz, a midrange fundamental speaking frequency for female voices, while the low tone was 120 Hz, a midrange frequency for male voices. Half of the Os were instructed to name the gender of the face if they heard a high tone, and the race if they heard a low tone. Half of the Os had the tone assignments reversed. Os who had the gender task paired with the high tone responded faster to female faces than those who had gender paired with the low tone, while there was no effect of tone for male faces. A possible reason for this asymmetry is that a female with a low voice would be highly improbable, whereas pre-pubescent males with high voices are commonplace. In order to determine if the tone would directly influence perceived gender, Os were shown digitally generated gender-morphed faces, which were determined to be androgynous in a pilot study. The results not only replicated previous RT findings, with the high tone leading to faster female responses and the low tone yielding faster male responses, but androgynous faces were also perceived as female more frequently when they were paired with the high tone than with the low tone. To determine that this effect was dependent on the tones being in male or female fundamental speaking frequency ranges, we used high and low tones outside of the human vocal range (3200 and 55 Hz), and tones that are both in the male speaking frequency range (100 and 140 Hz). The results suggest that the tone effect is tuned to speaking frequencies, providing additional support for cross-modal integration of gender cues.

Supported by a National Institutes of Health grant EY14110

### History

Received September 15, 2005; published September 23, 2005

### Citation

Smith, E. L., Grabowecky, M., & Suzuki, S. (2005). Pitch of concurrent pure tone influences visual gender perception [Abstract]. *Journal of Vision*, 5(8), 880a, <http://journalofvision.org/5/8/880/>, doi:10.1167/5.8.880.

### Keywords

None

### On-Line Presentation

None

Search PubMed

for related articles by these authors

Search Journal of Vision

for papers that cite this paper

Get citation

---Select Format---



Go

[Get help with this](#)

© 2005 ARVO

jov