Voice perception in the visually deprived brain: Behavioral and electrophysiological insights

ABSTRACT:

Background
The ability to infer emotion and identity information from the voice is a relevant social skill. Although blind listeners need to rely more strongly on vocal cues alone to successfully interact with their social environment, the mechanisms of voice perception and its neural underpinnings remain poorly understood.

Aims
This Project investigated: 1) whether blindness modulated the perception of vocal emotion and identity information; 2) whether the age of blindness onset affected vocal emotion and identity perception mechanisms.

Method
Behavioral and event-related potentials (ERP) measures of voice emotion and identity perception were collected in the context of 8 distinct experiments.

Results
The findings of Study 1 revealed how affective and social traits of laughter and crying are inferred by a typical sample of sighted college students. Study 2 showed that temporary visual deprivation (through blindfolding) impacted the neural responses to emotional authenticity at early and late processing stages. Study 3 revealed facilitated neural processing of emotional authenticity at early sensory and late cognitive stages in early-blind listeners. Study 4 showed that affective and social information of vocal emotions is inferred in a similar way by early-, late-blind, and sighted listeners. Study 5 provided evidence for similar effects of stimulus type and late recall on voice identity recognition in early-, late-blind and sighted participants. The findings of Studies 6, 7, and 8 demonstrated facilitated neural processing of identity and emotion information in early-blind listeners at early sensory and late cognitive stages.

Conclusions
Together, these studies suggest that neural mechanisms of voice perception develop differently in cases of early blindness.

Keywords
Voice emotion, Emotional authenticity, Voice identity, Blindness, Neuroplasticity

Published Work:

Conde, T., Correia, A. I., Roberto, M. S., Scott, S. K., Lima, C. F., & Pinheiro, A. P. (2022). The time course of emotional authenticity detection in nonverbal vocalizations. *Cortex, 151*, 116-132. doi: 10.1016/j.cortex.2022.02.016

Pinheiro, A. P., Anikin, A., Conde, T., Sarzedas, J., Chen, S., Scott, S. K., & Lima, C. F. (2021). Emotional authenticity modulates affective and social trait inferences from voices. *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences*, *376*(1840), 20200402. doi: 10.1098/rstb.2020.0402

Researcher's Contacts:

Tatiana Conde,
Faculdade de Psicologia, Universidade de Lisboa
Alameda da Universidade
1649-013 Lisboa
Portugal.

Phone: +351 217 943 898
Email: tatianamagro@psicologia.ulisboa.pt ; tatianacondemagro@gmail.com