Speech Perception and Deception Linked to Neural Representations of Prediction Error

Submission ID   3000123

Submission Type Poster

Topic   Cognitive Science

Status   Submitted

Submitter   Helen Blank

Affiliation   University Medical Center Hamburg-Eppendorf

SUBMISSION DETAILS

Presentation Type Either Poster or Oral Presentation

Presentation Abstract Summary Perception depends on combining sensory input with prior knowledge. When sensory signals are degraded, informative priors can improve perception but may also lead to misidentification (deception). Here we contrast two functionally-distinct computational mechanisms by which prior expectations can influence sensory representation of degraded speech. Expected features of the speech input can be enhanced or sharpened (Sharpened Signals), or in Predictive Coding accounts, expected features are suppressed and unexpected signals (Prediction Errors) are represented and processed further. The present work aimed at distinguishing between these two accounts. In two fMRI experiments we explore how prior knowledge (written text) influences perception of degraded speech. By combining behavioural, univariate and multivariate fMRI measures of how prior expectations lead to speech perception or speech deception, we provide evidence uniquely consistent with Prediction Error computations.

Paper Upload (PDF) CCN2017paper_HelenBlank.pdf

Co-author Information

* Presenting Author

First Name	Last Name	Affiliation	E-mail
Helen *	Blank *	University Medical Center Hamburg-Eppendorf	h.blank@uke.de
Marlene	Spangenberg	University of Oxford	marlene.spangenberg@psy.ox.ac.uk
Matthew	Davis	MRC Cognition and Brain Sciences Unit Cambridge	matt.davis@mrc-cbu.cam.ac.uk

Keywords

Keywords
speech perception
predictive coding
representational similarity analysis
Functional MRI
behavior