

The benefit of the doubt?

The surprising importance of uncertainty and surprise in speech learning

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Statistical models have become some of the most popular models of language processing and representation. However, despite a wealth of evidence that humans are highly sensitive to statistical patterns, the mechanism underlying speech learning may not be simply statistical tracking. In previous work, I have investigated and found evidence for the hypothesis that speech learning is instead driven by prediction and prediction error – and thus may *deviate* from statistical patterns of the input. In this talk, I will present a model of early infant speech learning that takes this as its starting point. According to this model, infants learn by using the acoustic speech signal to predict upcoming speech. What they learn are expectations about how speech unfolds over time. Although the model contains no *a priori* units, such as phonemes or distinctive features, it is able to predict behaviour in infant speech perception studies. The results suggest this may be a viable alternative approach to modelling early infant speech acquisition.