Entropic bases for artificial grammar learning and infant mispronounciation studies

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Human participants in Artificial Grammar Learning experiments exhibit preferential learning of some phonological patterns over others (even in cases where the rules are equally formally complex). The reasons for such results have remained unclear. In particular, little is known about the space where the stimuli live in the participants' perceptual and memory systems and how faithfully this space mirrors the distinctions intended by the experimenter. In this talk, I present different ways to quantify how well the acoustics of the presented stimuli specify the (experimenter-)intended phonemic sequences and as a consequence the intended phonological rules. Carrying this task out requires access to the response variability of independent responses to the same stimulus. The variability of these responses serves as an index of the amount of information that flows from the source of the stimulus (the experimenter) to the perceiver. Quantifying information flow in this way, it is shown that under conditions where participants learn a 'natural' but not an 'unnatural' rule or where infants show sensitivity to phonemic change only in one direction, there are asymmetries in entropic quantities under the different conditions.