**How much do nonverbal cues really contribute to language understanding? (Co-supervisor: David Vinson)**

Speech is often accompanied by ‘nonverbal’ communicative cues. A long and rich history of behavioral research shows that we typically make use of those cues when they are available. For example, observable mouth movements, head movements, and co-speech gestures have all been individually shown to improve speech perception or language comprehension. What we do not know, however, is whether, when and how listeners use each of those cues when they are all simultaneously available (as they would be in natural face-to-face situations). To begin to address this question we will test the hypothesis that the contribution of nonverbal cues to understanding is a weighted function of the prior semantic informativeness of the speech signal and individual nonverbal cues themselves. For example, one could imagine that a co-speech gesture might contribute more to our momentary understanding than a speech-associated mouth movement when that gesture is iconic (versus a less semantically informative gesture) and when it begins well in advance of the word(s) described by that gesture (as in natural speech). In this project we will develop a new method to analyse video for the informativeness of different nonverbal cues. We might have participants verbally shadow a recorded television game show that contains natural dialogue and nonverbal cues. We can present the video intact or blur out individual nonverbal cues with the expectation that shadowing times should change as a function of the informativeness of each channel, allowing us to reconstruct the dynamic contribution of any one channel with respect to the intact video. Alternatively, we might develop metrics for measuring informativeness of nonverbal cues in video in a similar manner but with continuous ratings using a joystick.