Summary: Language acquisition

We've talked a good bit about the mature language system, but how could such a system be built up in the first place? A good deal of evidence suggests that such a system begins to develop *in utero*. During this period, the fetus is exposed to speech that has been **low-pass filtered** – as a result, a fetus will not get exposure to the fine-grained acoustic information that is necessary for discriminating phonemes, but they will get information about the **prosody** of the speech. Evidence for early sensitivity to this prosodic information comes from fetal heart rate studies as well as non-nutritive sucking studies conducted with very young babies; at both stages of development, responses differ as a function of familiarity with prosody.

Sensitivity to prosody allows the infant to discriminate between syllables, as syllables carry prosodic information. In turn, being able to discriminate between syllables may ultimately help the young child learn to segment the acoustic stream into words. In particular, babies appear to be sensitive to the **transitional probabilities** between syllables (i.e., how likely a particular syllable is given that a particular syllable came before it). This may help with word segmentation because in general, transitional probabilities are high within a word (e.g., if "pret" is the first syllable you hear, the probability of "ty" being the next syllable is high), whereas transitional probabilities tend to be low between words.

Once we've figured out what the words are, our next challenge is to figure out what they mean. Infants have a number of biases that help them attach meaning to words. For instance, they generally assume that words refer to **whole objects** (not parts of objects). If they hear a novel word when they see a new object and a familiar object, they assume the novel word refers to the new object (the **mutual exclusivity** bias). And if they aren't quite able to figure out which of two things a word refers to the first time they hear the word, they seem able to remember both possibilities so that if they come across the word in some other situation, they might be able to figure out what the word refers to by comparing across situations.

In this way, children are able to learn words relatively quickly, being able to comprehend an average of about 100 words by the end of their first year of life.