**Expectation and Lexical Retrieval in Naturalistic and Experimental Misperception**

**Background**: Naturalistic mishearings 'slips of the ear' provide data about lexical retrieval, as they instantiate cases where instead of the intended word, a listener accesses an incorrect — but often similar word. Data of this sort are rich in terms of their contributions to the language sciences, and have been explored in previous work such as Bond (1999), Tang & Nevins (2014) and Tang (2015). Here, we examine the relationship between the *token frequency* of the intended word and the actually-perceived word.

**Corpora**: To assess the pattern of lexical retrieval errors, we conducted analyses on two naturalistic corpora of English mishearings – one of conversational speech and one of sung speech (Mondegreens). The conversational corpus contained ~ 3200 instances of word misperception of *conversational* speech. The mondegreen corpus contained ~ 17700 instances of word misperception of *sung* speech. To compare whether patterns found in the lab agree with those in the wild, we further examined an experimental corpus of English mishearings (Felty et al. 2013) based on auditory word identification of single-word presentation embedded in noise, with ~ 23,000 instances of word misperception.

**Analyses:** Two types of analyses were performed. First, whether the token frequency of the perceived word is *higher* than that of the intended word. Analyses on the conversational data showed no consistent trend for the perceived word to be more frequent than the intended word. The Mondegreen data showed an unexpected trend with the perceived word being *less* frequent than the intended word. The experimental data showed a strong trend for a more frequent perceived word, and this trend was stronger as the amount of noise increases. Second, whether the token frequency of the perceived word is *similar* to that of the intended word. Both naturalistic corpora showed a strong correlation ($R^2$ up to 0.9); however no correlation was found with the experimental data.

**Conclusions**: Overall, there is no general trend towards replacing the intended word with a blanket more frequent word in either naturalistic corpus. To explain the curious case of mondegreens showing that *less* frequent words are perceived, we examined their respective frequency distributions, and found that lyrics have a skewed distribution containing more high frequency words than used in conversational speech. Listeners, however, impose expectations based on conversational distributions, and hence often guess a word much less frequent than the skewed repertoire of lyrics. Furthermore, there is the consistent finding that listeners tend to replace the intended word with a word from a *similar* frequency class – but only with the naturalistic corpora. Such results seem at first paradoxical: in order to replace the misheard word with a word of a similar frequency, you'd need to have heard and processed the frequency of the word you missed. However, we propose that listeners estimate the frequency class of the word they misheard based on durational and sentence-level inferences, thereby demonstrating "graceful degradation" (Vitevitch 2002). This proposal is supported by the lack of correlation in the experimental data, because single word presentations do not contain durational and sentence-level inferences.