

## The essential role of phonetic detail in the interpretation of non-native clusters

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A large number of studies have investigated how listeners perceive sound sequences—consonant clusters in particular—that do not occur in their native language. Many of these studies have argued that native phonotactic restrictions prevent listeners from accurately perceiving the non-native consonant sequence, and in particular lead to misinterpretation of the cluster as a CVC sequence. This phenomenon has been referred to as “perceptual epenthesis”, and has been shown for many language combinations: Japanese listening to French (Dupoux et al., 1999; Dupoux et al., 2011), Korean listening to English (Kabak & Idsardi, 2007), English, Catalan, Korean, Mandarin listening to Russian (Berent et al., 2008; Berent et al., 2007; Davidson, 2011; Zhao & Berent, 2015), and Korean listening to Telugu (Durvasula & Kahng, 2015, 2016), among others. The majority of these studies have manipulated phonological variables such as the linear combination of segments, syllable boundaries, sonority distance, prosodic domains, and phonological alternations in an effort to show that phonological structure is of paramount importance in accounting for the application of perceptual epenthesis.

More recently, a complementary line of research has begun to show that the interpretation of fine-grained, non-contrastive phonetic detail has a substantial effect on performance with non-native phonotactic structures (Davidson & Shaw, 2012; de Jong & Park, 2012; Dupoux, et al., 2011). The focus of this talk is to expand on these studies and to make the case that without carefully considering and controlling for how listeners interpret such low-level phonetic detail, the relative contribution of phonological structure to understanding perceptual illusions cannot be properly assessed. The main evidence for this argument comes from a series of studies in collaboration with Colin Wilson (Davidson et al., 2015; Davidson & Wilson, 2016; Wilson & Davidson, 2015), in which we show that small manipulations of non-contrastive phonetic detail, such as the duration and amplitude of stop bursts, and the presence or absence of phonation at the beginning of an obstruent constriction extensively affect how listeners perceive and produce non-native obstruent-obstruent and obstruent-nasal onset clusters. Converging evidence from phonetic manipulation of stimuli presented to Korean listeners will also be discussed (research in collaboration with Robert Daland and Mira Oh.) Another important point embedded in this series of studies is that changing task variables, such as presenting stimuli using multiple talkers or carrying out the study in a classroom instead of a soundbooth, also has a substantial effect on the types of modifications that participants perceive and produce even though the stimuli are the same across the conditions. Taken together, this research establishes perceptual and production of non-native clusters as a fruitful area for studying the effects and interaction of many phonetic and phonological factors.

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