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Representation and repair in phonetic processing

Theories of spoken language production often distinguish among (at least) two levels of representation: a typically discrete “phonological” level that encodes lexical contrast and a typically high-dimensional “phonetic” level that encodes articulatory detail. Many recent articulatory studies of speech errors – produced by neurologically intact and neurologically impaired individuals – have revealed that on-line processing errors often involve mistiming adjacent articulatory gestures or co-production of different gestures, with little evidence supporting a level of discrete representation.

This talk explores the distinction between these two levels of representation by examining complexity-driven sound structure repair. I will present articulatory and acoustic evidence for a level of processing which permits the insertion of a discrete unit – schwa. The data come from an aphasic speaker, VBR, with impaired spoken production. One critical pattern among VBR’s production errors is her difficulty producing onset consonant clusters, which are typically ‘repaired’ by inserting a neutral vowel between the two consonants (e.g., *bleed* → [bəlɪd]). Addressing this pattern, we ask whether this repair reflects schwa epenthesis (a discrete repair) or whether the apparent insertion is the result of mistiming articulatory gestures (a repair along a continuous dimension). Articulatory and acoustic comparisons of the inserted vowel (as in [bəlɪd]) with lexical vowels (as in *believe*) suggest that there is an articulatory target for the vowel in both cases. Thus, this result constitutes evidence for discrete repairs in online speech production.

Additional patterns in VBR’s spoken productions will be examined which suggest that these errors arise at a level of processing that encodes differences in linguistic structure. This result is taken as evidence that the repairs are instituted to reduce complexity, and that the notion of linguistic complexity is dependent on the nature of the representations that are active at the level where the repair occurs.