Research Proposal

Testing the link between velar fronting and gag reflex

Tommy Liu[1]

In this short squib, I roughly mention some methods and concerns for testing the link between velar fronting and gag reflex.

Individual differences on gag reflex

Individuals may differ in 1) where in the mouth may trigger gag reflex, and 2) how strong it is. For 1), we can do a speaker tongue shape normalization, then use a small stick to move around the tongue, and note down where one starts to gag. Some people may have a larger "gag area", and others a smaller one. Testing the strength of the gag reflex is much for complicated, and we should use neuroimaging. Also, interestingly, most adults do not gag when the tongue dorsum touches the palate (during speech), but gag when the tongue dorsum touches a foreign object like a tongue depressor.

Tongue dorsum perturber

To perturb the tongue dorsum, one can use a lollipop-like object that has a very long stick. When we eat a lollipop, it rests around our tongue dorsum, and we bite the stick with our teeth, so our tongue tip is not disturbed. This would be a natural and inexpensive method to perturb the tongue dorsum only.

"Velar" fronting vs "dorsal" fronting

If the true cause of velar fronting is tongue dorsum sensitivity, then we should attest fronting in all dorsal occlusives: dorsal-palatal occlusives such as [ɲ] in French, dorsal-velar occlusives such as [ŋ] and [k] in English, and dorsal-uvular occlusives such as [q] in Arabic. By the way, children should especially avoid dorsal-uvular occlusives, since the tongue dorsum and the uvula are independent triggers of the gag reflex.

---

[1] tommy.liu@mail.mcgill.ca

Ideas mentioned in this proposal are mine, unless otherwise attributed or cited.

English only has dorsal-velar occlusives, so it is hard to know whether an English-speaking child would front all dorsal sounds, thus hard to know whether tongue dorsum sensitivity is the true cause. However, if we test French or Arabic-speaking children, we would get a better picture.

Context-specific velar fronting

Some children only front [k] in syllable codas, and some children only front [k] in syllable onsets. The former case is likely due to speech misperception, since plosives have extremely poor acoustic cues for place of articulation, when not followed by a vowel. The latter case seems to be way more complicated, probably due to phonotactics. Optimality Theory may offer an interesting account: an English-speaking child knows that [ŋ] is not a legal onset, and may generalize it to all velar occlusives, including [k] and [g].