Central Approximants in Disordered Speech in Children

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Approximants

- Approximants are usually divided into two main groups: lateral and central.
- Central approximants in turn are classified in terms of whether or not they are prolongable (Catford, 1977):
  - semi-vowels are non-prolongable,
  - whereas frictionless continuants (non-turbulent equivalents of lenis fricatives) are prolongable.
  - This latter group also includes sounds that are often classed together with certain trills, taps and fricatives as rhotic sounds.
- Traditional phonological terminology classifies semi-vowels as glides and frictionless continuants and lateral approximants as liquids.
- Phonetic symbols are provided by the IPA for many semi-vowels, but for few frictionless continuants (diacritics have to be added to lenis fricative symbols).
- Ball and Rahilly (in press) have suggested new symbols to get round this problem – see Table 1.
<table>
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<th></th>
<th>bilabial</th>
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<th>dental</th>
<th>alveolar</th>
<th>post-alveolar (laminal)</th>
<th>post-alveolar (apical)</th>
<th>retroflex</th>
<th>palatal</th>
<th>velar</th>
<th>uvular</th>
<th>pharyngeal</th>
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<tbody>
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<td>β</td>
<td>v</td>
<td>ð</td>
<td>z</td>
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<td>j̺</td>
<td>j̺</td>
<td>γ̺</td>
<td>k̺</td>
<td>s̺</td>
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<td>u</td>
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<td>j̺</td>
<td>j̺</td>
<td>ρ̺</td>
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<td>Β, Ъ</td>
<td>Δ, Ī</td>
<td>z̺, z̺</td>
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<td>--</td>
<td>γ̺</td>
<td>γ̺</td>
<td>ρ̺</td>
<td>ι̺</td>
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<td>η</td>
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<td>ι̺</td>
<td>j̺</td>
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</table>

Table 1: IPA Symbols for Lenis Fricatives, Frictionless Continuants, Semi-Vowels and Vowels

**Phonological process analysis**

- Phonological process analysis (e.g., Grunwell, 1987) uses the label ‘liquid gliding’ to refer to realizations of target /l/ and /ɹ/ as, for example, [j] and [w].
• However, for target /ɹ/ at least, a range of central approximants may be used including both semi-vowel types and frictionless continuants.
• For example, in one instance a client used [ɨ, ɨ̞, w, ʋ, u̞] (see Ball et al, 2006 and Müller et al, 2008).
• This means target liquid /ɹ/ was realized as glides ([w, u̞]) but also as other liquids ([ʋ, ɨ̞])
• Examples such as these, together with evidence of semi-vowel gemination (Ladefoged & Maddieson, 1996) suggest that the traditional distinction between liquids and glides (at least as far as central approximants go) may not be well-founded, and thus ‘liquid gliding’ an inappropriate term.
• Arguably, ‘liquid gliding’ results in phonetically simpler gestures for either /l/ and/or /ɹ/, so ‘approximant simplification’ would seem to be a better term for this process
/ɹ/ in English

- English continuant-r can be produced in two different ways (Laver, 1994; Ball and Müller, 2005)
- While the two forms both have similar acoustic percepts, the tongue positions adopted in their articulation differ.
- The two forms may be termed ‘apical-r’ and ‘bunched-r’
- Apical-r is a postalveolar approximant with possibly some tongue tip retroflexion
- Bunched-r is a prevelar approximant with tongue tip retraction
- Bunched-r is a common realization in western American English
- We recommend the transcription [ɹ] (the apical diacritic) for apical-r and [ɻ] (the centralizing diacritic) for bunched-r
Which variant of /ɹ/ to use in therapy?

There are several considerations here.

1. The therapist’s normal variant. Assuming the therapist knows which variant she or he uses, it can be argued that it makes sense for the therapist to teach this variant. This is because the therapist can use her or his introspection on how /ɹ/ is produced to aid in teaching the sound.

2. The variant that is easiest to describe to a client. As /ɹ/ therapy seems to be often only undertaken with somewhat older children (e.g. 4;6 or 5;0 on), it is usually possible to describe articulatory positions in a little more detail than one could with younger clients. We would argue that an apical tongue position is considerably easier to describe than a bunched tongue position.
3. The variant that’s easiest to demonstrate instrumentally. There are few studies on /ɹ/ errors that have utilized phonetic instrumentation. However, Bernhardt et al (2003), and Bacsfalvi (2010), working with cochlear implant clients note that the apical /ɹ/ shape was the easiest for clients to identify on ultrasound, and that the clients chose this variant to work with. Indeed, we would argue that any imaging technique is likely to favour the apical shape.

4. Facility in acquisition in therapy. If one variant proves easier to produce under guidance than the other, this would argue in favour of that variant. Anecdotal evidence from colleagues suggests that clients are usually able to follow instructions like the following comparatively easily: ‘Produce a long aaah sound, and then, while still making it, raise the tip of your tongue up slightly into the flow of the air making the sound’. We would suspect that instructions for a bunched tongue shape would be much more difficult to follow (which would account for the velar approximants reported in our papers and by clinicians).
5. Generalisability. A final consideration would be how well a newly learnt tongue shape generalizes from therapy into spontaneous speech. As far as we aware, no research has been done into this (any information on such studies is welcome). A member of Caroline Bowen’s Phonological Therapy Yahoo group did recently post that she thought that bunched-r generalized better that apical-r: (http://health.groups.yahoo.com/group/phonologicaltherapy/message/19681). It would be interesting to know whether this anecdotal information was based on comparing her approach with that of colleagues, or just her own therapy.

Conclusion

Clearly, this area of English approximants (especially /ɹ/) in disordered speech still has a lot of questions. We hope to undertake further research in this area, and so welcome any insights or links to any published material on this topic.
References


Ball, M J. & Rahilly, J. (in press) The symbolization of the central approximants in the IPA. Journal of the IPA.


