

If segments are real, what are they?

In this paper, we argue that segments could be real in any of three ways, but are not. First, they could be physically real, i.e. identifiable chunks of motor production or *segments* of the acoustic speech signal. Although this was taken as a serious possibility long ago, it has also been a long time since it was set aside as incorrect (e.g. Scripture 1902 p. 446). There is no verifiable acoustic or articulatory content to a claim that, for instance, the English affricate [tʃ] is one “phonetic segment” rather than two.

A second sense in which segments could be real is as functioning elements in a successful phonological theory; segments would be real in whatever sense theoretical “objects” are real. But we argue that the theoretical work segments try to do can be done better by independently needed primitives of the theory, namely features and syllables, the latter comprised of onset, nucleus and coda. Golston & Kerhein (2004) show, for instance, that languages have one set of laryngeal features per onset/nucleus/coda, not one set per segment; this approach aligns with the fact that, while laryngeal features can switch abruptly from one syllable to the next (e.g. *Aztec*), they can never do so from one “segment” to the next within an onset/nucleus/coda. Highlighting this among other facts, we show on the one hand that there is no work for segments to do in phonetics, phonology, or anything else, while on the other hand, relying on segments as theoretical primitives without referring to syllables and their parts does not allow the theory to align with all the facts. We conclude that segments have no place in the best phonological and phonetic theories.

A third possibility is that segments are cognitively real in spite of the above considerations. Analysis of the published literature, however, reveals that evidence against the cognitive reality of segments has been steadily mounting for at least 20 years. Jusczyk (1992) summarizes the earlier literature on infant speech perception; numerous cited studies found little evidence that infants organize speech into segments. More recently, Cheung et al. (2001) cited research which found that deleting an entire onset was easier for children than deleting part of an onset “even though the target unit was always one phoneme in size.” Significantly, when literature can be found to argue for the cognitive reality of segments, closer analysis generally reveals that the evidence for segments is equivocal at best. Werker and Pegg (1992), for example, misinterpret some results as providing evidence in favor of segments in infant perception, when these findings are also compatible with the stance that it is syllables (and their parts) rather than segments that are cognitively real. Widely cited results from speech errors (e.g., Shattuck-Hufnagel & Klatt 1979) are vulnerable to this same criticism (cf. Brown 2004). An example of the kind of “smoking gun” that is absent in published findings would be speech errors in which two segments were exchanged in violation of onset or coda phonotactics, e.g. pronouncing [lsprt] instead of [splrt]. It is noteworthy that, while many authors have found unimpeachable evidence for the cognitive reality of syllables in children’s acquisition of English (e.g. Jusczyk op. cit.), unequivocal evidence for the cognitive reality of segments remains elusive in both developmental and speech error studies.

It has been a long time since Twaddell (1935) argued forcefully that phonemes must be regarded as purely fictitious—perhaps helpful to the linguist, but not real in any clear sense. We here argue that essentially the same must be concluded about *phones*, the purported “segments” of speech itself. We do not advocate discarding the IPA as a transcription tool, but we suggest that a phonetic transcription should not be taken seriously as a theoretical device, and should be afforded no sense of reality.

References

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