

English timing phenomena at the start of the lifespan

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The pronunciation of any language is a system with complex interdependencies. A speaker uses it to meet multiple communicative and expressive goals, and uses multiple sub-systems of production in doing so. It seems universal that an acceptable form of the mature system lies within the capacities of speakers from the second year of life onwards, but the degree of similarity between the child form at a given age and the adult form differs across languages; for example, across English and French (Konopczynski 1991).

(1) During childhood, the production sub-system that changes most dramatically is that responsible for the generation of airflow and sub-glottal pressure. The physiological backdrop to speech breathing in children under 6 years of age, demands that sub-glottal pressure be actively generated during speech. After 8 or 9 years of age, the chest wall is less compliant (thus more adult-like), meaning that the generation of sub-glottal pressure for speech is largely passive: the result of elastic recoil following the stretching of chest wall tissue during inhalation.

(2) English uses 'stress accent' as a prominence mechanism. In the past, many phoneticians characterised such stressed syllables as the result of a speaker applying greater respiratory system effort (Jensen 2004:3-17). Research conducted within speech science (e.g. Hixon 1987, Finnegan et al. 2000) has supported these intuitions. Nevertheless, some researchers write as if they suppose that a child acquires stress in production by first identifying various acoustic cues for stressed syllables and then learning to use these cues to mark stress in his own speech. However, the acoustic cues of stress accent taken collectively signal greater effort being made by speakers. So to create syllabic prominence, the child learner may—more simply and plausibly—retrieve this single percept from the speech he hears and reproduce such effort in his own production of stressed syllables. This would then create appropriate cues to stress for his listeners.

The natural implication of notions (1) and (2), is that a child's speech breathing for English is pulsatile. It would be surprising if such pulsatility had no downstream consequences and, indeed, it provides straightforward accounts of the emergence of various 'timing' phenomena in West Germanic languages. These have defied explanation or successful modelling when viewed as expressions of time-based rules.

I will explain why this hypothesis has been overlooked, and how it accounts for a variety of phonetic phenomena, including compression effects at the syllable and foot level.

References

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