Children's production of /ʃ/ in trochaic and nontrochaic contexts

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General Research Question

Are emerging sounds more difficult for children in some unstressed syllables than others?

Strong vs. Weak Syllables

- *Strong (stressed) syllables have greater prominence than weak (unstressed) syllables because they can be:*
  - **longer in duration**
  - **louder**
  - **Sources of pitch changes (high or low)**
- *Weak (unstressed) syllables can have reduced vowels (e.g., /ə/) and are less prominent than strong syllables*

Trochaic and nontrochaic contexts

- ***The dominant rhythmic pattern for English is the trochee, composed of a strong and (optional) weak syllable.***
- ***In trochaic contexts, a weak syllable directly follows a strong syllable (e.g., TIger)***
- ***In nontrochaic contexts, a weak syllable does not directly follow a strong syllable (e.g., giRAFFE)***

Syllable Prominence

Syllable prominence = stress X position

- *HIGH PROMINENCE:*
  - *Stressed syllables*
  - *Word-final syllables*
- *LOW PROMINENCE:*
  - *Unstressed, nonfinal syllables*

Source: Snow, D. (1998). A prominence account of syllable reduction in early speech development: The child's prosodic phonology of tiger and giraffe. *JSLHR, 41(5),* 1171-1184.

Implications of syllable prominence

- *LOW PROMINENCE:*
  - *syllable prone to omission:*
    banana→ [ˈnænə]
  - *Segments in syllable prone to "weakening" (i.e., gliding or glottal replacement):*
    table → [ˈteju]

Weak syllables in trochaic and nontrochaic contexts

- *Is an unstressed syllable in a **trochaic** context **more prominent** than an unstressed syllable in a **nontrochaic** context?*
- *More prominent → more accurately produced*
- *Use nonsense words to control for differences in segmental & semantic difficulty*

Predicted pattern of accuracy of newly emerging sound (/ʃ/)

/ʃ/ in stressed syllables (tə.ˈʃom.kə)

/ʃ/ in unstressed syllable in trochaic context (ˈko:.ʃə.tə)

/ʃ/ unstressed syllable in nontrochaic context (kə.ʃə.ˈtom)

Method

- ***Participants:***
  - *6 typically-developing children, 28-32 months*
  - *variability on /ʃ/ (25%-75% accuracy) on probe*
  - *sometimes shortened words to reflect a S(W) pattern (e.g.,* toMAto → TAto*)*

Stimuli

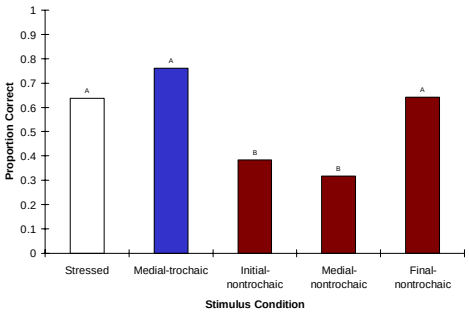
5 syllable contexts for /ʃ/:

Context	Example
Stressed (S):	tə.ˈʃom.kə
Medial trochaic (MT):	ˈko:.ʃə.tə
Initial-nontrochaic (IN):	ʃə.ˈtom.kə
Medial-nontrochaic (MN):	kə.ʃə.ˈtom
Final-nontrochaic (FN):	ˈtom.kə.ʃə

Protocol: Elicited imitation

- *Child saw fantasy creature on computer*
- *Child heard recorded stimulus and live-voice stimulus, then was asked to repeat the "funny name" of the creature*
- *Once child repeated the stimulus, the creature "danced" to a sound effect and dissolved into the next stimulus*
- *80 tokens/child*

Accuracy of /ʃ/ by syllable context



Conclusions

- ***Except for weak final syllables, /ʃ/ was more accurate in weak trochaic contexts than in nontrochaic contexts***
- ***It is possible that some "inconsistencies" observed in new sounds actually are production in weak, non-trochaic, non-final contexts***

- ***Many weak, non-troachic contexts occur across word boundaries.***
  - ***'JOHN should EAT' (trochaic)***
  - ***'He should EAT' or 'JOHNny should EAT' (non-trochaic)***
- ***Before they attain mastery, some children may need practice in these challenging contexts.***