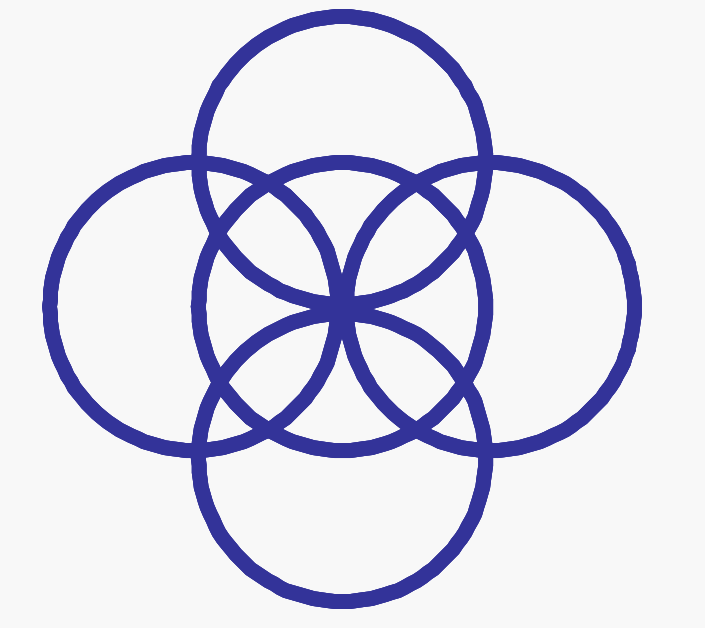




Training Perception in Speech-Delayed Children: When is it indicated?



Meghan Riehle, B. S. Kayla Hjerstedt, B. S. Joan Kwiatkowski, M. A.
Department of Communicative Disorders, University of Wisconsin – Madison

WAISMAN CENTER

Background

- Perception training has included
 - auditory bombardment [1]
 - auditory discrimination between correct and the replacement sound in another's production [2]
 - auditory discrimination between correct and the replacement sound in one's own production [3]
 - focusing only on production to simultaneously train production and discrimination [3]
- Most frequently, training has focused on auditory discrimination in another's production, with perception
 - preceding production training [4]
 - both prior to and concurrent with production [5]
 - simultaneous with production training [2]
- Perception training may not always be indicated
 - Locke [6] suggested perception training only for children who have difficulty discriminating
 - Rvachew [2] demonstrated that perception training is beneficial for some children, but identifying these children prior to treatment is not yet possible

Methods

Participant

- M, a female, was 3;8 when she began treatment for two semesters at a university clinic
- Cognition, language comprehension/production and motor skills were within normal limits
- Speech delay included deletions, substitutions, and distortions, and frequent imprecise production of correctly produced consonants during connected speech
- Evidence for fluctuations in hearing included history of wax build-up between 5 months of age and 3 years; episodes (some silent) of bilateral otitis since 7 months of age; parent report of problems hearing during episodes

Speech Targets

- Included s-clusters, /v/, 'clear talking' (i.e., *talking slow and saying all parts of words*), and shaping 'sh;' M discriminated between correct and replacements for all targets in another's production; stimulative for all targets except 'sh.' This report focuses only on 'sh.'

Procedures and Results

Shaping Strategies for 'sh'

- During first semester of treatment, strategies included
 - providing auditory models for imitation
 - shaping from /s/ by extending duration and adding lip rounding
 - using phonetic context of rounded high-back vowel (e.g., 'woosh') [added in 5th session]
 - attempting to shape voiced cognate 'zh' [added in 16th session]
- During second semester of treatment, strategies included
 - shaping from /s/ as during first semester
 - shaping from correct production of 'ch' at word level, final position, by attempting to get extended duration of 'ch'
 - using perception-production shaping approach at keyword level [see Appendix], initial position [added in 5th session]

Outcomes

- During the first semester, repeated use of production-based shaping strategies never elicited production of 'sh.'
- During the second semester, production-based shaping from /s/ and 'ch' was unsuccessful through the 8th session when these strategies were discontinued. In contrast, the perception-production shaping approach was *immediately* promising when introduced in the 5th session, with production of 'sh' slightly lateralized and infrequent for each keyword.
- Production of 'sh' (initial position) at the keyword level was correct 33% of the time in the 10th session, increased to 50% in the 13th session, and 94% in the 14th session.
- Beginning with the 15th session, work shifted to production-only at higher linguistic levels; progress was rapid, with consistent production at the word/carrier-phrase level in the 15th session, and the script level in the 16th session; production was consistent in the final position at the script level when introduced in the 17th session, in all positions at the script level in the 18th session and in spontaneous connected speech in the 19th session

Discussion

- **What is the evidence for the effectiveness of perception-production shaping of 'sh' for M, compared to production-based shaping?**
 - Occasional, lateralized production of 'sh' at keyword level when perception-production approach was introduced in 5th session; continued occasional production through 8th session, in contrast to no production of 'sh' when using shaping from /s/ or 'ch'

Discussion, continued

- **What factors suggested that perception-production shaping might have been indicated for M?**
 - M's history/current status indicated fluctuations in hearing; included were
 - frequent episodes of wax and otitis, plus parent report of reduced hearing during episodes; hearing fluctuations may have resulted in weak underlying representation for 'sh'
 - evidence of a backing-error pattern [7]; in the 12th session, M's production of 'sh' regressed to consistent backed distortion, in the form of significant lateralization. This prompted medical evaluation which led to identification of bilateral otitis media; lateralization resolved following treatment with antibiotics
 - frequent imprecise production of correctly produced consonants during connected speech [8] which negatively affected speech intelligibility
- **What elements in the perception-production shaping approach may have facilitated M's learning?**
 - inclusion of perception training may have addressed weak underlying representation for 'sh'
 - putting equal value on success during perception and production task, and immediately returning to perception training when production was challenging, avoided repeated failure and frustration
 - having parent provide daily auditory bombardment on a single 'sh' word and a variety of 'sh' words
- **What are the clinical implications of the findings for M?**
 - consider a perception-production shaping approach in presence of one or more indicants of fluctuant hearing

Appendix

Perception-Production Shaping Approach

- Practice Level: keyword, initial position, targeted repeatedly in the context of a meaningful activity; different keywords targeted in each session
- Practice sequence for each keyword (e.g., shape)
 - *Perception Task 1*: discrimination between target sound and replacement in clinician's production during first few practice trials (e.g., child colored small shape each time identified when clinician said *shape*, not *sape*)
 - *Production Task*: production during subsequent practice trials (e.g., child attempts to say *shape* each time clinician asks *What do you want to color?*). Return to *Perception Task 1* when child is not successful, after which have option of shifting, as judge appropriate, between production and perception, or completing the practice using perception only
 - *Perception Task 2*: auditory bombardment within *Memory* game, following completion of keyword level practice. Child turns over word card; clinician produces word three times, varying pause time between productions to encourage focused listening. Following the third production, the child turns over another word card to find a match. Initially use variety of words; after two sessions use a single word, with matches based on color (e.g., red shoe, blue shoe, etc.)
 - *Home Practice*: Parents provide daily auditory bombardment of single word and variety of words. Clinician provides cards for bombardment of single words, which can be combined for bombardment of variety of words.

References

1. Hodson, B., & Paden, E. (1991). *Targeting intelligible speech*. Austin: Pro-Ed.
2. Rvachew, S. (1994). Speech perception training can facilitate sound production learning. *JSHR*, 37, 347-357.
3. Williams, G.C., & McReynolds, L. V. (1975). The relationship between discrimination and articulation training in children with misarticulations. *JSHR*, 18, 401-412.
4. Van Riper, C., & Emerick, R. L. (1984). *Speech correction: An introduction to speech pathology and audiology*. Boston: Allyn & Bacon.
5. Winitz, H. (1984). Auditory considerations in articulation training. In H. Winitz (ED). *Treating articulation disorders for clinicians by clinicians*. Baltimore: University Park Press.
6. Locke, J. L. (1980). The inference of speech perception in the phonologically disordered child. Part I: A rationale, some criteria, the conventional tests. *JSHD*, 45, 431-444.
7. Shriberg, L. D., Kent, R.D., et al (2003). A diagnostic marker for speech delay associated with otitis media with effusion: backing of obstruents. *Clinical Linguistics and Phonetics*, 17, 529-547.
8. Shriberg, L. D., Flipsen, P., et al. (2003). A diagnostic marker for speech delay associated with otitis media with effusion: the intelligibility – speech gap. *Clinical Linguistics and Phonetics*, 17, 502-528.

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