INTRODUCTION

- Transmission is the tool of choice of clinicians and researchers studying phonological development and disorder.
- However, problems with transmission include:
  1. Listener judgments are influenced by their expectations.
  2. Children do not always progress directly from clear substitutions to correct productions.
  3. Non-categorical nature of development:
     - Circuit (measurable subphonemic differences that are not perceptible to adults)
     - Intermediate productions (productions that are in between two phoneme categories)

RESEARCH QUESTIONS

1. How do adults perceive children’s correct productions of /s/ and /θ/, clear substitutions (a) for /s/ and (b), intermediate productions (between /s/ and /θ/)?
2. Do expectations about a child’s age and the presence (or absence) of a phonological disorder, as cued by a carrier phrase, influence listeners’ accuracy judgments?
3. Do listeners with clinical experience perceive those productions any differently than listeners without clinical experience?

EXPERIMENT 1

PURPOSE

- To select the carrier phrases for Experiment 2

PARTICIPANTS

- 20 young adult listeners (English-speaking females)

STIMULI

- Productions of the carrier phrase “I really like” were elicited from a 5-year-old boy who was a native speaker of American English.

PROCEDURE

- Carrier Phrase-CV pairs were randomly presented on a laptop computer through headphones.
- Listeners were told:
  1. Each sentence would begin with the phrase “I really like,” followed by a consonant-vowel sequence beginning with “s.”
  2. Sometimes the “s” sound would be produced correctly and sometimes it would be produced incorrectly.
- Listeners were asked to judge whether the “s” sound was produced correctly.
- Listeners responded by pressing buttons on a serial response box.

RESULTS

MEAN RATINGS FOR THE DISORDER-RATING TASK PLOTTED AGAINST THE MEAN RATINGS FOR THE AGE-RATING TASK

- There was no significant difference between the mean ratings for the two different orders, so data from both orders was combined.
- When judging the age of the child, listeners were influenced both by the F0 and formant values of the carrier phrase and by the presence or absence of phonological errors within the phrase.
- When judging how adult-like the child’s speech sounded, listeners were influenced only by the presence or absence of phonological errors.
- Listeners on the mean age of and the presence/absence of a phonological disorder were highly correlated.

DISCUSSION

- For the purposes of Experiment 2, two carrier phrase conditions were created:
  - “younger-disordered” and “older-typical”

EXPERIMENT 2

PARTICIPANTS

- 30 young-adult, female listeners
- All were native English speakers and students in the Communicative Disorders Dept. at UW-Madison
- 15 were undergraduate students with limited or no clinical experience.
- 15 were graduate students who had completed at least one graduate level clinical experience

STIMULI

- 200 word-initial consonant-vowel (CV) syllables beginning with /s/ and /θ/ were elicited from single word productions elicited from 2- to 5-year-old children using a word repetition task as part of a larger study (Edwards & Beckman, 2008).
- All CV sequences were transcribed by the first author.
- Each CV sequence was paired with two different carrier phrases: one “younger-disordered” carrier phrase and one “older-typical” carrier phrase.

PROCEDURE

- Each CV sequence paired with two different carrier phrases: one “younger-disordered” carrier phrase and one “older-typical” carrier phrase.
- Listeners heard each of the 200 consonant-vowel syllables presented in Experiment 2.
- Listeners were asked to rate the consonant in each syllable using the visual analog scale shown below.

RESULTS: LISTENER RESPONSES

- The mean “% correct” responses was significantly different for each of the 6 transcription categories.
- There was no significant main effect of listener group (Undergraduate vs. Graduate students)

DISCUSSION AND CONCLUSIONS

1. Native listeners’ responses to each of these five transcription categories differed to a significant degree.
2. Validated our original transcription categories.
3. Significant difference between correct productions and clear substitutions.
4. Suggests that “intermediate” is a valid transcription category.
5. Significant difference between “intermediate” and all other transcription categories.

EXPERIMENT 3

PURPOSE

- To elicit judgments from individual listeners (i.e. to determine whether native listeners reliably categorize productions as intermediate between /s/ and /θ/)

PARTICIPANTS

- 20 adult, native English-speaking listeners in Minneapolis, MN

STIMULI AND PROCEDURE

- Listeners heard each of the 200 consonant-vowel syllables presented in Experiment 2.
- Listeners were asked to rate the consonant in each syllable using the visual analog scale shown below.
- Listeners were explicitly instructed to click on the location along the scale that corresponded with the perception of “proximity” to “s” or “θ.”

RESULTS: LISTENER RESPONSES

- There was a significant difference between each pair of transcription categories.
- Native listeners were able to identify intermediate productions as intermediate.
- Native listeners could distinguish between correct target productions of /s/ and /θ/ and both (a) for /θ/ and (b) for /s/ substitutions.

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