Phonological Awareness & Speech Production Accuracy in Children with SSDs
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Abstract

This study investigates the relationship between speech sound production accuracy and phonological awareness in children with speech sound disorders (SSDs). In particular, it asks if children with SSDs perform more poorly on phonological awareness items that include their error sounds. Preliminary results from two related studies do not show a clear relationship between production errors and performance on selected PA tasks. Implications for further research on this question are discussed.

Introduction

- Children with speech sound disorders (SSDs) may have difficulty developing phonological awareness (PA) skills and thus may be at risk for future problems in literacy development (Bird, Bishop & Freeman, 1995; Lewis & Freeman, 1988; Rvachew, 2006a, 2006b; Senechal et al., 2004).

- No verbal responses required
- Age-appropriate
- Used with preschoolers with SSD (Bird et al, 1995; Rvachew, 2006; Rvachew & Graubew, 2006).

- Few words have looked at the relationship between children's specific speech sound errors and their PA skills. Senechal et al. (2004) reported that 4-5 year-old typically developing children who did not articulate /r/ accurately tended to have more difficulty with PA tasks containing the /r/ phoneme than with tasks containing the control phoneme /l/.

- The present study further investigates the relationship between specific speech sound production skills and PA in children with SSD by addressing the following questions:
  1) Do children with SSDs perform more poorly on PA tasks that contain their error sound(s) than on comparable items that do not contain those sounds?
  2) Are children who produce a sound correctly more likely to correctly match the sound on a PA task than children who do not produce the sound?

Participants

- 26 preschoolers, ages 3.10 – 5.8 (18M and 8F); most part of a larger study.
- All previously diagnosed with speech sound disorders of unknown origin.
- No moderate or severe receptive language impairments.
- Nonverbal intelligence within normal limits
- No known neurological, cognitive or developmental disabilities that might cause a SSD (e.g., cleft palate, autism).
- No gross structural or functional problems, as determined by an informal oral mechanism screening.
- From monolingual English-speaking families; native speakers of MAE.

Study 1 (n=8):

- /b/, /g/, /t/ - rarely in error for 3-5 year-old children with SSDs
- /l/, /r/, /h/ - more likely to be in error (Shriberg, 1993).
  - Each assessed 3 times in word-initial position (GFTA-2, plus 13 additional words)
    - Digitally recorded, phonetically transcribed, and coded as correct or incorrect.
    - "Error sounds" produced incorrectly on any of the 3 attempts.
    - "Non-error sounds" produced correctly on all three attempts.

Study 2 (n=18):

- /p/, /t/, /s/, /t/ - rarely in error in 3-5-year-old children with SSDs
- /l/, /r/ - more likely to be in error
  - Each assessed in initial position by naming the PA pictures (5 for /p/, /t/; 8 for /l/, /r/).
  - "Error sounds" produced correctly on 1 time in naming the PA pictures.
  - "Non-error sounds" produced correctly in at least 80% of the relevant PA words.

Phonological Awareness Tasks

- No verbal responses required
- Used with preschoolers with SSD (Bird et al, 1995; Rvachew, 2006; Rvachew & Graubew, 2006).
- Shown to be related to later literacy development

Study 1:

- Puppets were used in presenting stimuli.
- All tasks included familiar CVC words.
- In each set of 3 words, 1 began with a target sound.
- "Distractor words" or "folls" were carefully selected:
  - One began with a common error sound; e.g., for target /g/, one began with /d/ or /k/.
  - One contained the same vowel as the target word
  - One contained the same final consonant.
- Example: gas (target /g/), cat (same vowel), and dice (same final consonant).

Blending (BL)

- Children are told that the puppet "says things in a funny way; he says things very slowly."
- A page with 3 pictures is presented (e.g., gas, cat, dice).
- The examiner says, "My puppet says g — a — s. Which picture is that? g — a — s."
- The child has to point to the correct picture of the 3 presented.

Onset Matching (OM)

- Children are told that the puppet "likes things that start with the "s" sound (or /b, r, g, t/)."
- A page with 3 pictures is presented (e.g., suit [target /s/], tool [same vowel] thin [common error]).
- The child has to point to the correct picture.

Study 2:

- Used recorded audio stimuli and clip art pictures.
- Pictures were presented on a laptop, using PowerPoint.
- "Distractor words" or "folls" were carefully selected:
  - One began with a frequent substitute for the target (e.g., /f/ was a foil for /h/ and /d/ was a foil for /l/).
  - The other 2 distracters began with less similar phonemes (e.g., /d/ differs from /p/ in place and manner).

Onset Matching (OM)

- 5 items beginning with /p/ and 5 with /t/.
- Field of 4 pictures presented on a computer screen.
- Children are given the sound to listen for and are asked to point to the picture whose name begins with that sound.

Study 1:

- Performance on PA items did not depend on whether children could or could not produce the sound tested in the PA recognition task.

Study 2:

- Performance on PA items did not depend on whether children could or could not produce the sound tested in the PA recognition task.

Results

Study 1:

- 8 children
- Target sounds* /b/, /g/, /t/, /l/,
- PA Tasks Percent Correct on PA Tasks
- Across children
  - BL, OM
  - Error sounds
  - Non-error sounds
  - (range) (43% - 93%) (30% - 90%)

*Each sound was classified as an error sound or a non-error sound for each child, based on that child's production data. The number of error sounds varied from 2-5.

Summary of Study 1:

- Overall, children in Study 1 tended to perform similarly on the PA items that began with their error sounds as on those that began with their non-error sounds.
- No child exhibited superior performance on the PA items that began with his/her non-error sound.
- One child in Study 1 performed better on the items that began with her error sounds (70% vs. 36%).

Study 2:

- 18 children

Summary of Study 2:

- Performance on PA items did not depend on whether children could or could not produce the sound tested in the PA recognition task.

Summary and Conclusions

- This research investigated the relationship between speech sound production and phonological awareness in preschoolers with SSDs. Children's performance on PA items containing their error sounds was compared to their performance on similar items containing non-error sounds.
- Results from two related studies did not show a clear relationship between production of specific speech sounds and performance on PA tasks containing those sounds in onset position (cf. Senechal et al., 2004). This supports the notion that PA is a global skill, rather than a sound-specific skill.

References

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