NSW Speech Pathology Evidence Based Practice Interest Group

Critically Appraised Paper (CAP)

CLINICAL BOTTOM LINE: In preschoolers with a phonological impairment, children who received speech perception training and production therapy made greater speech improvements than children who received intervention targeting speech production only, particularly for non-stimulable sounds.

Clinical Question [patient/problem, intervention, (comparison), outcome]: In children with phonological impairment does the Speech Assessment and Interactive Learning System (SAILS) plus speech production training compared with speech production training alone lead to better speech production outcomes?

Citation: Rvachew,S. (1994) Speech perception training can facilitate sound production learning. *Journal of Speech and Hearing Research*, 37 (2), 347-357.

Design/Method: Randomised Control Trial.

Participants: 27 total; 21 boys, 6 girls. Ages between 42-66 months. Diagnosed by SLP with significant phonological delay requiring treatment (2 mild, 18 mod, 7 severe). Receptive & Expressive language WNL. All children had normal oro-motor structure & function. 14 had significant history of otitis media. All non-stimulable for target sound "sh" pre-testing.

Experimental Group:
Each participant attended a pre-test session, six treatment sessions and a post-test session of 45 minutes duration each. Sessions were completed over an average of 8.7 weeks.
Pre-test: Participants completed a) Reynell Developmental Language Scales, b) Computerised Analysis of Phonological Processes, c) Hearing screening and d) the Sheet-Xsheet Word identification test (where Xsheet indicated misarticulated versions of sheet). During the sheet-Xsheet test, participants listened to varied productions of the word sheet and were asked to point a picture of a sheet on the computer when they heard 'sheet' or point to the X if the word was not sheet or said 'wrong'. They completed 2 practise blocks where feedback was given, then one test block with no feedback about correctness of responses given. A short speech sample was also obtained where the child named 5 objects with a word initial 'sh' sound.
Treatment: Participants were randomly assigned to one of three groups and listened to pre-recorded sets of stimuli, featuring children with delayed phonological skills and normal speaking adults and children. During each treatment session 60 perception training trials were administered in blocks of 10 randomised stimuli.

- Group 1 (10 participants): experimental stimuli featured a variety of correctly and incorrectly produced versions of the word "Shoe"
- Group 2 (9 participants): experimental stimuli featured the words "Shoe" and "Moo"
- Group 3 (Control Group - 8 participants): experimental stimuli featured the words "Cat" and "Pete"

Children listened to the words presented via heaphones. They were instructed to point to the target picture if the target word was heard, or point to the 'X' if the word was not the target or it was said 'wrong'. Correct responses were rewarded via a computerised picture. Incorrect responses were recognised by the wrong word presented over the headphones. Each child also received 60 production training trials each treatment session following the perception training, using a traditional hierarchical approach and phonetic placement cues. Parents were asked to refrain from engaging in home practise, however some children completed independent practise.
Post-test: The sheet-Xsheet Word Identification test was repeated and the speech sample with object naming 'sh' initial words repeated. Each participant also produced a single isolated 'sh'.

Control Group: Nil, however, Group 3 did not receive any speech perception training for the target sound "sh". Instead they acted as a control to monitor for any possible beneficial effects of the computer game used during the study itself.

Results: Groups 1&2 demonstrated superior ability to articulate the target sound vs Group 3. Degree of success depended on the child's stimulability of the sound. Selection of contrasts for speech perception training should parallel the selection of contrasts for production training.
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Comments – Strengths/weaknesses of paper:
Strengths: could be replicated in a clinical setting (for Western Canadian English speakers only).
Weakness: the author commented that a number of other areas still need investigating (e.g. type of stimuli, amplification, timing of speech perception and speech production). The SAILS program could not be used by therapists working with children in Australia. An Australian adaptation of the SAILS program would be needed to apply the clinical bottom line to everyday practice in Australia.

Level of Evidence (NH&MRC): III (I)

Appraised By:
Clinical Group: Paediatric Speech Group

Date: September 2011

DISCLAIMER—THIS CAP WAS COMPLETED by PRACTISING SLPs. YOU ARE STRONGLY ENCOURAGE TO READ THE ARTICLE FOR YOURSELF BEFORE MAKING ANY CLINICAL DECISIONS ASSOCIATED WITH THE CLINICAL QUESTION.

ALSO —PLEASE NOTE THE DATE WHEN THIS CAP WAS COMPLETED. THE CLINICAL BOTTOMLINE MAY HAVE CHANGED IN LIGHT OF MORE RECENT RESEARCH.