NSW Speech Pathology
Evidence Based Practice Interest Group

Critically Appraised Paper (CAP)

CLINICAL BOTTOM LINE: For children with moderate - severe phonological impairment, early intervention for phonology and metaphonology can result in normalization of speech development and acquisition of literacy skills in the medium term. It may not be necessary to directly treat metaphonological skills during phonological intervention for all children but metaphonological awareness should be assessed as part of a phonological assessment.

Clinical Question [patient/problem, intervention, (comparison), outcome]: In a child with phonological impairment of unknown origin, is a Metaphon approach effective in improving speech accuracy (e.g., as measured by PCC, error analysis, or consonant probe) over time?

Citation: Bernhardt, B. & Major, E. (2005). Speech, language and literacy skills 3 years later: A follow-up study of early phonological and metaphonological intervention. *International Journal of Language and Communication Disorders*, *40*(1), 1-27.

Design/Method: Descriptive, multiple subject case study design.

Participants: 12 participants, aged 6;1 to 8;5 (4 girls, 8 boys), mean age 7.2 from an original group of 19 subjects were re-evaluated 3 years later. No statistical difference between the 12 who participated and the 7 who did not in terms of phonology or metaphonology scores at end of original study. Prior to intervention, children had normal hearing, oral motor function & language comprehension. All but 1 had delayed expressive language. In previous study, subjects received 16 weeks non-linear phonological intervention & 4 weeks metaphonology (specifically rhyme, alliteration, segmentation and word restructuring). Testing at end of 16 weeks showed significant gains on all measures.

Experimental Group: Participants tested in own homes by 2nd author over 2 - 3 x 1.5hr sessions. Assessment covered phonology, word discrimination, metaphonology, language comprehension, language production, verbal memory, non-verbal skills, reading, spelling & arithmetic. Standardised tests provided norm references as there was no control group for comparison.

Control Group: No

Results: The majority of subjects were wnl's in areas of phonology, metaphonology and literacy. Only 2/12 children had below average reading skills; although 5/12 children had below average spelling skills. No statistical significance between phonology and academic skills.
- for phonology, post intervention severity was more reliable indicator of ongoing problems than pre-intervention severity.
- post-intervention metaphonology was the only variable that significantly correlated with later reading and spelling skills (specifically alliteration production & final consonant deletion). Authors suggest that, for metaphonology skills, the rate of change in phonology and metaphonology intervention may be predictive of future skills in that area.
- phonological working memory appeared related to performance on a number of verbal tasks but statistical significance occurred only on various sub-tasks rather than a collection of tasks. Further investigation is required into role of verbal memory for both phonology and metaphonology.

Comments – Strengths/weaknesses of paper
Strength – being a follow-up of original participants adds to strength of original data as well as adding to body of growing data on phonological & metaphonological outcomes.
Weaknesses – small numbers means effects occurred in only 1-2 subjects at times; all but 3 participants received further speech pathology intervention between the 2 studies (no details given).

Level of Evidence (NH&MRC): IV

Appraised By: Members of the EBP paediatric speech group
Clinical Group: Paediatric Speech Group

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