



NSW Speech Pathology Evidence Based Practice Interest Group

Critically Appraised Paper (CAP)

CLINICAL BOTTOM LINE: Clinicians should consider 'teaching stimulability' in children with phonological impairment, ie prioritising non-stimulable phonemes over stimulable phonemes. A 3.4 year old girl with a small phonetic inventory and few stimulable sounds increased the number of stimulable sounds following a multimodal approach aimed at teaching stimulability

Clinical Question [patient/problem, intervention, (comparison), outcome]: In children with a phonological impairment of unknown origin, are intervention gains more widespread and efficient if stimulable or non-stimulable phonemes are targeted during phonologically based intervention?

Search Terms:

Search Systems: article suggested by an academic specialising in speech sound disorders in children.

Citation: Miccio, A. & Elbert, M. (1996) Enhancing Stimulability: A Treatment Program. *Journal of Communication Disorders*, 29, 335 – 351.

Design: Within subject multiple baseline design across two behaviours.

Participant: Girl aged 3 years 4 months with phonological impairment of unknown origin, positive family history. She presented with normal hearing, oral musculature, and language (PPVT 45th %ile, TELD, 98th %ile). Limited phonetic inventory, multiple phonemes (fricatives, affricates, velar stops, liquids) were non-stimulable. GFTA <1%ile.

Experimental Group: Treatment program design to increase size of participant's phonetic inventory by teaching most major consonants at once (exceptions: /l/, /r/ which were controls). All target consonants taught in isolation or CV context. Each consonant associated with a coloured 'character' depicted on 5x8 inch card (e.g. /s/ = 'silly snake') and gesture (e.g., /s/ = "slinkily move finger up arm"). During each session, a series of 6 tasks were administered; (TASK 1) Collect stimulability probe data, (TASK 2) Review characters and sounds, (TASKS 3-5) Stimulability activities within game format (see pg 341), where child is encouraged to imitate each target phoneme using auditory-visual-tactile cues, (TASK 6) Collect generalisation data. Note: Stimulable *and* non-stimulable phonemes were incorporated to ensure motivation (ie: child experienced success and frustration limited.) Treatment 2 x weekly, for 45 minutes. Total 12 sessions. Probe every session. **Control Group:** NIL

Results: The results showed a gradual increase in the number of stimulable sounds in the subject's phonetic inventory. The growth in stimulable sounds was nonlinear (ie inconsistent productions elicited over probes). By final stimulability probe, Stacy had added fricatives, 'f, v, th, s, z, sh', none of which were stimulable prior to treatment. Generalisation probe (consisting 104 words) revealed that /v/ and velar nasal 'ng' had been added to phonetic inventory. One instance of /k/ and 'j' ('j'ump) also present. The main goal of the treatment approach, to enhance stimulability, was achieved. Affricates were inconsistently stimulable and velar stops were resistant to treatment. Controls /l/ and /r/ did not become stimulable.

Comments on Design: Usual limitations of single casestudy exist. However, efforts to build in controls were present, eg use of /l/ and /r/ as controls, presence of 3 baseline probes prior to treatment.

Level of Evidence (NH&MRC): IV

Appraised By: EBP Paediatric Speech Group

Date: April 2004

Guidelines for completion of the CAP

Clinical Bottom Line

The consensus of the reviewers on implications of the paper on clinical practice. Whilst this may be somewhat subjective, it is hoped that robust discussion, the Level of Evidence and your comments on the design will enable you to produce a practical/realistic 'bottom line'. Many of the papers in Speech Pathology may have limitations, but the Clinical Bottom line should be aimed to help clinicians apply what evidence there is.

Clinical Question

This should ideally include four components:

- the patient or problem
- the intervention (or diagnostic test or prognostic factor)
- the comparison intervention or test (*optional*)
- the outcome

Design

Refer to pages 12 to 15 of the EBPIG Resource Package for guidance in reviewing the design used.

Comments on Design

Pages 12 to 15 of the Resource Manual should again assist here. You may also find it useful to refer to the forms 'Evaluating case studies/case series' and 'Critical appraisal sheet' adapted from Dr Lil Mikuletic's (see 'Critiquing/Appraising the Evidence').

Level of Evidence

It is recommended that the paper you are reviewing be rated against the NH&MRC Levels of Evidence, as reproduced here. The levels may be updated from time to time by the NH&MRC, but use of the ratings listed here will ensure consistency across CATs and groups. These levels are listed with comments on pages 15 and 16 of the Resource Package.

LEVEL

- I.** Evidence obtained from a systematic review of all relevant controlled trials
- II.** Evidence obtained from at least one properly designed randomised controlled trial
- III.**
 - 1** Evidence obtained from well-designed pseudo-randomised controlled trials (alternate allocation or some other method)
 - 2** Evidence obtained from comparative studies with concurrent controls and allocation not randomised (cohort studies), case-control studies, or interrupted time series with a control group
 - 3** Evidence obtained from comparative studies with historical control, two or more single-arm studies or interrupted time series without a parallel control group
- IV.** Evidence obtained from case series, either post-test or pre-test and post-test