



NSW Speech Pathology Evidence Based Practice Network

Critically Appraised Topic (CAT)

This document summarises information gained from several Critically Appraised Papers (CAPs) on one topic. The relevant CAPs should be attached to this document

CLINICAL BOTTOM LINE: When selecting intervention targets for children with a phonological impairment of unknown origin – specifically, selecting phonemes that are stimuable versus non-stimuable, the evidence suggests that it is more efficient to select non-stimuable phonemes. In doing so, children may not only acquire the targeted non-stimuable phonemes, but the stimuable non-target phonemes during intervention– hence greater efficiency in terms of outcomes. Phonological generalisation data should be gathered to monitor progress.

Background and Objectives: Stimulability can be defined as a child's ability to produce a sound on repetition or with phonetic instruction, that they may not be able to produce in spontaneous speech. Traditionally, stimuable phonemes have been selected for intervention from the outset, when managing phonological impairments in children. Why? It was assumed that working with children on something relatively 'easy' would promote progress. Over the past 20 years researchers have challenged this assumption. The objective of this CAT was to evaluate the evidence from research comparing outcomes achieved by targeting stimuable versus non-stimuable phonemes during intervention for a phonological impairment of unknown origin in children.

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

Selection Criteria: Publications were selected using the following criteria: (a) published in an internationally referred journal, (b) participants were children with a phonological impairment of unknown origin – concomitant language impairment was allowed, (c) phonologically-based intervention (e.g., minimal pairs, cycles) study, and most importantly, (d) clear focus on the issue of target selection – specifically comparing the outcomes achieved with stimuable versus non-stimuable phonemes. Review papers on this topic were also considered. A total of 6 papers were identified – 5 intervention studies and 1 review paper.

Results: (1) Miccio, Elbert and Forrest (1999) reported that non-stimuable phonemes should be prioritised over stimuable phonemes – as the children in their study not only acquire the targeted non-stimuable phonemes but untreated stimuable phonemes. (2) Powell (1991) reported that stimuable phonemes were acquired in the phonetic inventory of children with phonological impairment more easily than non-stimuable phonemes, regardless of the treatment target selected. (3) Powell, Elbert & Dinnsen (1991, p. 1326) reported that in an intervention study of 6 children, 'the number of correct responses on generalisation probes can be maximised by teaching non-stimuable sounds because stimuable sounds are likely to improve without direct treatment'. (4) Rvachew, Rafaat & Martin (1999) reported that in a study of 23 children, stimulability and speech perception training of target sounds prior to cycles intervention, leads to greater progress in the production of the target sounds, including those that were non-stimuable before treatment, compared with only targeting speech production. (5) In a case study, Miccio and Elbert (1996) reported that a treatment program targeting non-stimuable phonemes can increase stimulability. This would then have implications for intervention gains – given previous research findings. In a review of the literature on stimulability and treatment target selection (Powell 2003) commented that: 'to maximise treatment effects speech pathologists should consider addressing sounds that are not stimuable early in their treatment program' (p, 5).

Appraised By: Members of the Paediatric Speech Clinical Group
Clinical Group: Paediatric Speech

Date: 2007



References

CAPS have been completed on each of the following published intervention studies focused on 'stimulability' as a factor to consider when selecting intervention targets:

- Miccio, A. W., & Elbert, M. (1996). Enhancing stimulability: A treatment program. *Journal of Communication Disorders, 29*, 335-351.
- Miccio, A. W., Elbert, M., & Forrest, K. (1999). The relationship between stimulability and phonological acquisition in children with normally developing and disordered phonologies. *American Journal of Speech-Language Pathology, 8*, 347-363.
- Powell, T. W. (1993a). Phonetic inventory constraints in young children: Factors affecting acquisition patterns during treatment. *Clinical Linguistics and Phonetics, 7*, 45-57.
- Powell, T. W., Elbert, M., & Dinnsen, D. A. (1991). Stimulability as a factor in the phonological generalisation of misarticulating preschool children. *Journal of Speech and Hearing Research, 34*, 1318-1328.
- Rvachew, S., Rafaat, S., & Martin, M. (1999). Stimulability, speech perception skills, and treatment of phonological disorders. *American Journal of Speech-Language Pathology, 8*(33-43).

Review paper

- Powell, T. W. (2003). Stimulability and treatment outcomes. *Perspectives on Language Learning and Education, 10*(1), 3-6.

Other papers on stimulability that may be of interest

- Powell, T. W. (1996). Stimulability considerations in the phonological treatment of a child with a persistent disorder of speech-sound production. *Journal of Communications Disorders, 29*, 315-333.
- Powell, T. W., & Miccio, A. W. (1996). Stimulability: A useful clinical tool. *Journal of Communication Disorders, 29*, 237-253.

Guidelines for completion of the CAT

It is anticipated that the CAT will be completed on the basis of several CAPs (Critically Appraised Papers), and these should be attached to the CAT.

Clinical Bottom Line

The consensus of the reviewers on implications of the CAT on clinical practice. Whilst this may be somewhat subjective, it is hoped that robust discussion, the Levels of Evidence and your comments on the designs 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.

Background

This section should contain a brief summary of why this CAT was undertaken. This is your *reason* for asking the Clinical Question.

Objectives

Should outline what you were trying to determine through this process.

Clinical Question

This should outline the question posed when reviewing your collection of CAPs, and 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

Search Terms/Systems

A summary of the search terms and search systems used for the CAPs should be included here.

Selection Criteria

You should comment on which CAPs you included in your Topic review, and why. For example, you may select only certain CAPs, where the study design was considered to be of a robust nature, or the findings most relevant to clinical practice.

Main Results

This section should briefly comment on the findings from the CAPs conducted, and the levels of evidence found.

References

Please add a list of articles reviewed here. These will also be referenced on the attached CAPs, but should be added here for ease of review.

You may find it useful to look at reviews contained in the Cochrane Library, for examples of how to complete a CAT.