



NSW Speech Pathology Evidence Based Practice Interest Group

Critically Appraised Paper (CAP)

CLINICAL BOTTOM LINE: Although more research is needed, this study provides some emerging evidence that some improvements in functional communication can occur for children over 12 years with severe childhood apraxia of speech and mild-moderate intellectual disability.

Clinical Question [patient/problem, intervention, (comparison), outcome]: *In children with CAS does intervention (e.g., DTTC, Integrated Phonological Awareness Approach, AAC, Combined Melodic Intonation Therapy + Multimodal approach, +/- PML principles) improve speech (+/- literacy, overall communication skill) when compared to no intervention?*

Citation: Baas, B et al (2008). Treatment of Severe Childhood Apraxia in a 12 –Year-Old Male with CHARGE Association. *Journal of Medical Speech-Language Pathology* Vol 16 (4), 181-190

Design/Method: Single subject Multiple Base line design

Participants: A non verbal male, D, with CHARGE Association. The study follows D from 12;8 to 14;11 years. He had a moderate intellectual disability and childhood apraxia of speech (CAS). At the beginning of the study, he was non verbal and communicated mainly through his Vantage (multilevel dynamic display communication device) and also used some gestures and signs as well as some communicative vocalisations that drew negative attention.

Experimental Group: D received treatment in 3 phases over 25 months. Dynamic Temporal and Tactile cueing (DTTC) was used to target some goals. DTTC uses auditory, visual and tactile cueing and uses a hierarchy of temporal delay. A number of principles of motor learning were also included in the therapy. Probes were conducted to monitor progress every 5th session for phases 1 and 2.

- 1) Age 12;8-12;10: Specific goals were targeted using DTTC to establish a small functional vocabulary e.g. 'no', 'home', 'mum', 'dad', 'off'. Treatment was everyday for the first 6 weeks. Daily home practise was done.
- 2) Age 12;11-13;10: Consisted of 4 sessions per week (total 98 sessions). DTTC targeted specific goals which included increasing the accuracy for production of specific vowels and improving production of syllable shapes using functional words. Eliminating negative vocal behaviours through the use of visual/verbal cues and generalising of the core vocabulary was another goal.
- 3) Age 13;10-15;0: Rx Weekly therapy for 32 sessions. The goals were to reduce speech rate and increase comprehensibility when using verbal communication. Implemented through a home and school program.

Control Group: N/A

Results: 1) Treatment phase 1: Effects measured through a single subject multiple baseline design across behaviours. It took one week of therapy to see an initial shift in performance and by the fourth week response to treatment was more easily observed. Maintenance data taken one month following the completion of Rx and every week for the next five weeks show 100% accuracy on the maintenance of 5 of the 6 treatment words.
2) Treatment phase 2: A multiple baseline across behaviours design was used to measure change. In addition to targeted words, a set of untrained utterances was also probed during each probe testing session. For 3 of the 5 treated stimuli accuracy improved over time, achieving close to correct productions. There was no change in performance for 2 of the stimuli words and for any of the untrained stimuli. Descriptive data show a reduction in negative vocal behaviours from 7 per 5 minute sample in the baseline to 0 or 1 during each of the last 10 probes with no cueing.
3) Treatment phase 3: Four pre and four post Rx measures taken. D's speech rate reduced from 94 to 71 syllables per minute, comprehensibility for a familiar listener increased from 0 to 58%.

Comments – Strengths/weaknesses of paper Strengths: By using comprehensibility the study follows WHO recommendations and captures functional communicative change.

Weaknesses: Authors state limitations: Many measures were obtained by treating clinicians, single subject multiple design is low level evidence and that longer term follow up of communication efficiency is needed.

Level of Evidence (NH&MRC): Level IV

Appraised By: SCH
Clinical Group: Paediatric Speech

Date: November 2012

May 2002

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