NSW Speech Pathology
Evidence Based Practice Interest Group

Critically Appraised Paper (CAP)

CLINICAL BOTTOM LINE: This paper indicates that a treatment approach maximising the principles of motor learning may facilitate the treatment of severe developmental apraxia of speech. The study examined an integral stimulation approach that maximised the use of principles of motor learning. Improvement was attributed to distributed practice (i.e. increasing sessions to 4 x week), the use of functional phrases, keeping the stimuli to 5 to allow enough mass practice to maximise movement accuracy but enough distributed practice to facilitate motor learning as well as constantly varying the temporal relationship between the stimulus and response as indicated by each previous response of the child, allowing the child to take increasing responsibility for motor planning and execution.

Clinical Question: *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: Strand, E., and Debertine, A. (2000) The Efficacy of Integral Stimulation Intervention with Developmental Apraxia of Speech. Journal of medical Speech-language Pathology, Vol 8, No.4, 295-300.

Design/Method: Single subject Multiple Base line design

Participants: One 5 year old girl, born prematurely at 31 weeks, one of twins, with normal receptive language and pragmatics. Her cognitive skills were not formally assessed but judged to be normal. She was diagnosed with developmental apraxia of speech (DAS), with intelligibility level estimated at 10%. She demonstrated severe motor planning problems but no dysarthria.

Experimental Group: Distributed practice of 4x half-hour sessions per week, with number of stimuli limited to 5 initially, in order to promote movement accuracy. Stimuli were chosen to develop a functional core vocabulary and to be phonetically simple. Attention was paid to maximising the number of practice trials per session. Data was collected each session for target stimuli and 2x week for control stimuli, at the end of a session after a rest break. Data probes collected through imitation of phrases. The degree of time delay between model and imitation varied according to success of child's previous response. Utterances were scored according to whether they were right/wrong (binary scoring) and on a scale of 0-2 according to whether errors were present (scaled scoring). Interjudge reliability was best for scaled scoring so this was used for analysis. "Specific cumulative criteria" (Deal & Florence 1978) were used to determine when to introduce new training items. No further explanation was given on stimuli or progression of stimuli. No information given on parental involvement.

Control Group: Nil

Results: Mean performance over all control probe utterances showed improving intelligibility but the probe data never reached the score of "1" (i.e. intelligibility responses with some errors). Target stimuli reached a score of 2 with varying time required. Generalisation was considered to be occurring but slower for the non-target utterances. Generalisation data was not available due to the preliminary nature of the study.

Comments – Strengths/weaknesses of paper Strengths: Clear information provided about the participant and the principles of motor learning that were being evaluated. Weaknesses: The authors note that generalisation data was not yet available as it was a preliminary report on the data.

Level of Evidence (NH&MRC): Level IV

Appraised By:
Clinical Group: EBP Paediatric Speech Group

Date: February 2012