A critical review of interventions targeting prosody
Hargrove P, Anderson A, Jones J

CRD summary
This review concluded that prosody in people with communication impairment can be changed as the result of treatment. The authors’ conclusion should be interpreted with caution due to the lack of reporting of the study selection and study quality, the possibility of publication and language biases, the small samples in the included studies, and the inconsistent results.

Authors' objectives
To identify and analyse existing research on prosodic interventions.

Searching
ComDisDome, CINAHL, Communication and Mass Media Complete, and electronic journals of the American Speech-Language-Hearing Association were searched for articles published between 1988 and 2008; search terms were provided. The reference lists of relevant articles were checked to identify additional studies. Only peer-reviewed studies published in English were eligible for inclusion.

Study selection
Studies which assessed interventions targeting prosody in participants who were communicatively impaired were eligible for inclusion. Studies were required to have a control group or control condition, and include outcomes which measured one or more prosodic elements. Studies of interventions for the hearing impaired were excluded.

In the included studies, most (91%) of the participants had communication problems described as dysarthric; other problems included expressive or motor aprosodia, apraxia, specific language impairment, and selective mutism. The aetiology of the prosody was predominately (97%) neurogenic (Parkinson's disease, traumatic brain injury, cerebral vascular accident, and myotonic dystrophy); other causes were delays in cognition of unknown origin. The majority of participants were adults (95%); four studies included children or adolescents (aged three to 18 years), and ten studies involved adults (aged 18 to 85 years). The gender mix varied, but overall appeared to be about equal. The treatments varied considerably; common procedures included visual feedback, verbal feedback, imitation, and metalinguistics or explanations. Details of the control groups or control conditions were not provided. Outcomes were associated with expressive prosody and included the appropriate use of affect, increased volume, appropriate use of stress or emphasis, pitch variety, and appropriate rate or speed. Limited details were provided about how these outcomes were measured.

The authors stated neither how the papers were selected for the review nor how many reviewers performed the selection.

Assessment of study quality
Study quality was assessed in terms of: similarity of participants at baseline; blinding of participants, therapists, and data analysts; randomisation or counterbalancing; and intra- and inter-observer reliability.

Three reviewers independently assessed the quality and disagreements were resolved by consensus.

Data extraction
Data on study characteristics and outcomes were extracted using a pre-designed data extraction form. For all studies, treatment success scores were based on clinical significance, effect size, and statistical significance. Clinical significance was a subjective rating given according to the reviewers’ perception of the success, or otherwise, of the treatment provided. For single participant studies, effect sizes were calculated using the percentage of non-overlapping data and z scores were extracted when given by the studies’ authors. For group studies, actual effect sizes were extracted.
The data were independently extracted by three reviewers and disagreements were resolved by consensus.

**Methods of synthesis**
The studies were combined in a narrative synthesis.

**Results of the review**
Fourteen studies were included in the review. The number of participants was unclear; in the text this was reported as 155, but in the table it was 157.

Four studies were group studies (n=139, range 16 to 45 participants), 10 were single participant studies (n=18, range one to three participants). Two group studies were randomised, one was counterbalanced, and one had limited matching. One single participant study was counterbalanced and one was randomised. Three group studies reported the similarity of participants at baseline. Blinding to intervention of participants and therapists did not occur in any of the studies; in four studies the data analysts were blinded.

All studies reported at least partial success. There were conflicting results, for the direction and/or extent of clinical significance and effect size, in many of the studies. Two research groups undertook a number of the studies. One research group, responsible for three group studies (n=123), found focused effort increased loudness (effect size not provided, p≤0.05). Another research group, responsible for two single participant studies (n=6), reported contradictory results.

**Authors’ conclusions**
Prosody in people with communication impairment can be changed as the result of treatment.

**CRD commentary**
The review question was supported by broad inclusion criteria for study design, participants, interventions, and outcomes. The authors appear to have chosen appropriate databases for searching, but including MEDLINE or EMBASE could have widened the search. The review was restricted to peer-reviewed studies published in English, which means that relevant studies may have been missed, and publication and language biases cannot be ruled out. Appropriate steps were taken to minimise bias and errors in the data extraction and validity assessment, but it was unclear whether such steps were also taken for the study selection. The criteria used to assess the study validity appeared to be relevant, but the results of the assessment were not fully reported. There was an absence of any substantial synthesis and this synthesis did not appear to take into account the wide variation in participant age, diagnosis, and intervention, nor was the quality of the primary studies considered.

The authors’ conclusion should be interpreted with caution due to the lack of reporting of the study selection and study quality, the possibility of publication and language biases, the small samples in the included studies, and the inconsistent results.

**Implications of the review for practice and research**

**Practice:** The authors did not state any implications for practice.

**Research:** The authors stated that future research could include: increasing the rigour of study designs, exploration of which prosodic elements yield the maximum efficiency, determination of the possible interaction between treatment procedures and disorder type, inclusion of more children in treatment studies, and exploration of functional and/or comprehension outcomes. They also stated that there was a need for a clearer picture of how prosodic productions map onto meanings and how speakers with impaired communication compensate for their prosodic problems.

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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.