NSW Speech Pathology
Evidence Based Practice Interest Group

Critically Appraised Paper (CAP)

CLINICAL BOTTOM LINE: Findings suggest that biofeedback training should be considered for clients who demonstrate poor stimulability. However, biofeedback may be no more effective in establishing new motor behaviours than verbal feedback for clients who show fair to good stimulability. For those with excellent stimulability it appears that biofeedback may actually interfere with their development of skills. However, these are preliminary conclusions based on brief training intervals, a relatively simple nonspeech task and normal subjects. None of the above results or trends reached statistical significance on data analysis.

Clinical Question: In patients with acquired dysarthria, does the use of biofeedback treatment improve intelligibility?

Citation: Volin, Robert A. (1998) A Relationship Between Stimulability and the Efficacy of Visual Biofeedback in the Training of a Respiratory Control Task. *American Journal of Speech-Language Pathology* Vol. 7 pg. 81

Design/Method: The study is an attempt to determine whether pretraining ability, or stimulability, can be used to distinguish those individuals who would best benefit from biofeedback from those likely to succeed with nonbiofeedback training. (nb. Normal population). Experimental respiratory task involved learning to control the rate of abdominal-diaphragmatic quiet respiration. Procedures included: orientation (phase 1), initial training (phase 2 - verbal feedback, post-response knowledge of performance), baseline probe (phase 3 – verbal feedback, post-response knowledge of results), random selection of subjects for biofeedback practice (phase 4a – verbal feedback post-response knowledge of performance, or phase 4b biofeedback practice – visual feedback), and retention probe (phase 5 – verbal feedback, knowledge of results).

Participants: 36 young healthy undergraduate students. 11 male, 25 female. Aged above 18 years. No prior formal voice training. No obvious or self-reported difficulties with physical coordination, speech, respiration or hearing.

Experimental Group: In phase 4 this group received 4b biofeedback. Randomisation to experimental or control group not described.

Control Group: In phase 4 received 4a – verbal feedback post-response knowledge of performance.

Results: The authors suggest that the data supports the hypothesis that the level of stimulability is related to the probable benefit of biofeedback treatment for this task. Individuals whose stimulability levels are in the low to middle ranges are likely to benefit from biofeedback. Particularly those with low stimulability ratings, as these subjects seemed to experience a negative practice increment with verbal knowledge of performance feedback. In contrast those in the middle stimulability range appeared to be equally likely to benefit from biofeedback and nonbiofeedback training. High-stimulability subjects experienced a large decrement in performance after receiving biofeedback training.
However, none of the above results or trends reached statistical significance on data analysis. All results reflect the acquisition phase and do not refer to long-term learning or generalisation.

Comments – Strengths/weaknesses of paper : Data presented in graphs. Clearly written method, although randomisation not described and age of subjects not specified (except all over 18 years). Clearly written discussion, which acknowledged limitations of study.

Level of Evidence (NH&MRC): III-3

Appraised By: Adult speech group
Clinical Group:

Date: 4/12/07

Form based on Worrall & Bennett, Evidence based Practice: Barriers & Facilitators for Speech-Language Pathologists, *Journal of Medical Speech-Language Pathology* 2:9, xi – xvi
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