

FM ADVANTAGE?

An evaluation of the effect of recent adaptive FM advantage technology in enabling access to speech in challenging listening conditions: a pupil centred approach.

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May 2009

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This dissertation is submitted in partial fulfilment of the requirements governing the award of Master of Science in Educational Audiology

ABSTRACT

Recent developments in FM technology, leading to the launch in Spring 2008 of the Phonak Inspiro with 'dynamic' FM advantage, have meant that a choice is now available between this innovation and traditional FM systems for deaf children.

An initial clinical trial carried out in the USA (Thibodeau nd, cited by Phonak 2007, 2008), suggested that the adaptive FM technology could result in up to 50% better speech discrimination in high levels of background noise. This potential additional benefit now requires investigation in the "real-life" classroom acoustic environment. As a result, the hypothesis tested in this small-scale research project is that the adaptive FM advantage of the Phonak Inspiro / MLxi system results in clearer speech perception and better speech discrimination scores for deaf children (particularly in high background noise levels) than the traditional Campus Sx / MicroMLxS system.

This present study is based on ten 9-14 year old children with a bilateral mild-moderate sensorineural hearing loss. This convenience sample was selected from a Local Authority database itemising all children who use bilateral hearing aids consistently and routinely wear traditional FM systems to support them in the classroom. The children took part in an experiment (in which they acted as their own controls) and a semi-structured interview, which generated both quantitative and qualitative data for analysis.

Key results suggested that listening in 'normal' classroom noise conditions (60 dB(A) and 0 dB SNR) dramatically reduces speech discrimination and that both the FM systems tested improved the speech discrimination scores to near listening in quiet levels in these conditions. However, in higher levels of noise (70 dB(A) and -10 dB SNR), the mean speech discrimination scores were 23% higher for the FM system with the adaptive FM advantage (Inspiro / MLxi), than for the traditional FM (Campus Sx / MicroMLxS). The interview data supported these findings. Nine, out of the ten children, reported that the 'dynamic' FM system made speech clearer and background noise less intrusive and that, overall, listening was easier.

The findings seem to suggest that the children, who currently benefit from wearing FM systems, could potentially gain even more benefit from using the new technology of the Inspiro / MLxi system, particularly if they are regularly exposed to levels of background noise greater than 60 dB(A). Extending the study to gain sufficient data to achieve external validity, would be an aim for future studies in order to gain valid evidence regarding the most effective FM systems and enable appropriate selection and funding of this equipment by Local Authorities.