EVALUATION OF FM FITTINGS

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ABSTRACT

Only very limited research has examined the issue of how well FM systems are decreasing the speech perception difficulties of hearing impaired children. A comprehensive study of the effectiveness of FM fittings and factors associated with benefit was therefore undertaken using 4 different measures. Tracking of continuous discourse in classroom settings (12 subjects) showed significant improvement when FM aids were used compared to hearing aids alone. Also, significantly greater gains in tracking rate were made over 4 sessions for the FM condition compared to the hearing aid only listening condition. In order to investigate the subjective response of listeners to various features of FM processed signals, another experiment was conducted using a paired comparison procedure in noise with 21 moderately to profoundly deaf children and using two different types of FM systems. Overall results showed significant preferences for combined mode above both VOX/SOX settings and FM microphone alone settings. There were no significant preferences for microphone style, and a significant volume control setting preference (for a 5 dB higher than recommended s(.ng) was shown for one of the two types of FM systems evaluated. The most interesting result was that, overall, listeners did not significantly prefer any FM settings to their hearing aids alone and, in fact, most listeners actually significantly preferred the aid alone to the FM alone or VOX/SOX settings. These results occurred despite the fact that a large FM advantage was shown in terms of improved S/N ratio on all these settings. However, judgements tended to be different for experienced users of at least one of the types of FM being evaluated, who significantly preferred the FM on any mode compared to their hearing aid

alone. These results are discussed with regard to clinical practices and the need for demonstration to, and training and encouragement of, new users to ensure the available FM advantage is realised. A third study evaluated the clinical usefulness and accuracy of an adaptive speech test (NU-CHIPS) in noise to verify and measure degree of FM advantage. Results from 31 mildly to profoundly hearing impaired children showed that significant signal-to-noise ratio advantage was obtained overall, and that the advantage was greater on the FM alone than the C setting. Over all listening conditions through the FM, there were 28 out of a possible 51 occurrences of hearing impaired listeners performing equal to or significantly better than 11 normal hearing children also tested using this procedure. The predictive accuracy and clinical feasibility of this approach are discussed. The way in which these FM advantages are moderated by interactions with users in practical situations are described by the results from questionnaires or interviews of 75 teachers, 52 children and 14 parents regarding use, perceived benefits and problems associated with FM systems. Factors which seemed to affect perceptions and use included feelings of self-consciousness about the FM as age of users increased, lack of confidence in the systems due to frequent breakages and faults in combination with lack of knowledge about how to check the systems effectively and efficiently, problems with being able to securely attach the systems to the body, and lack of knowledge about how to make the best use of the units in a variety of situations. On the basis of all of these findings, some suggestions on how to improve FM acceptance and use are offered.

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