
Use of Speech in Noise Tests for evaluation of hearing-assistive technology: An overview of state-of-the-art, challenges and opportunities

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Abstract

It is noted in various literature that there is a gap between clinical performance and real life situations with the common problem experienced by hearing aid users not being the level of amplification but the understanding of speech in noise. Even though an audiogram will cover a full range of frequencies, is known to be highly accurate and widely used by audiologists/clinicians. It does not reflect a realistic representation of how people manage in the noisy real world nor does an audiometry test determine the speech intelligibility. There is a variety of tests that are currently available for the estimate perception of speech in noise presences. Speech in noise measures are gaining more relevance in the recent years as there has been a better understanding of the advantages of using these outcome measures, which demonstrate the need for and benefit from amplification. The variety of speech in noise tests such as hearing in noise test, quick speech in noise test, bamford-kowal-bench speech in noise test, listening in spatialized noise sentences, words in noise and digits in noise can all be used by clinicians/researchers as outcome measures. Each of these tests are available but come with their differences/limitations such as; target age, measure, procedure, speech material, noise and normative data.

This systematic review is to determine which of these speech in noise tests would be most beneficial in audiology clinic dependent upon the ease of use, there measurement models, normative, reliability, validity, responsiveness, item/instrument bias, respondent and administrative burden. This systematic review would be the first of its kind where evaluation of current testing and present usage clinically and in academic research and limitations of using various types of speech in noise tests are critically reviewed.

As well as the systematic review it will be reviewed to indentify the gap between audio only and audio visual testing currently available. As this is another factor known to vary results with speech in noise. Once these challenges have been identified it will highlight opportunities for development of required new future audio visual based speech in noise tests for next generation multimodal hearing aids.

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