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Development of French speech materials for the assessment of speech intelligibility in noise

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Background: There is a high need for standardised French speech materials. No well-documented tests measurement of speech reception thresholds are available in French. Within the European HearCom project three types of speech materials are being developed for different languages including French. The digit triplet test is suited for hearing screening via the internet or the telephone. A closed-set sentence test, wherein 50 words are combined to semantically unpredictable sentences with a fixed syntactical structure, as well as an open-set sentence test consisting of predictable everyday sentences, are developed.

Methods: The speech materials are developed in three phases: selection, recording and evaluation. The evaluation phase consists of several steps. First, the speech materials need to be optimized in a way that each item and each list results in a similar score. Normative data need to be collected for a large group of normal-hearing subjects. A comparison is made between the scores for Francophone listeners of Belgium and France.

Results: The speech materials for the three types of tests are being optimized based on speech intelligibility tests with normal-hearing subjects. The development of the open-set sentence test is finished and mainly described in this report. The FIST (French Intelligibility Sentence Test) consists of 14 lists of 10 sentences. For adaptive speech audiometry in noise the SRT (Speech Reception Threshold) is -7.8dB and -7.1dB for French and Belgian listeners respectively. The average slope of the psychometric curve at the SRT is 20%/dB. The test-retest reliability is 1.1dB.

Conclusions: This study provides the first well-documented standardised French speech materials for speech intelligibility tests. Our results agree well with the normative values obtained for similar existing tests for other European languages. This will allow better across-language European comparison of speech understanding outcomes.

