
Evaluating adaptive directionality using the Spatial Speech in Noise Test

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Abstract

Background: A Spatial Speech in Noise test (SSiN) was developed by Bizley et al (2015) and offers the potential to assess both spatial discrimination and the ability to use spatial information for unmasking in clinical populations. The dual nature of the SSiN task has the potential to increase cognitive load, therefore reflecting more challenging listening scenarios. **Objective:** To determine whether the SSiN can be used to assess adaptive directionality in hearing aids.

Design: A double blind study. Experienced hearing aid users completed the SSiN with and without adaptive directionality activated. Technical hearing aid measurements were carried using a KEMAR head and torso manikin to explore hearing aid processing differences in response to the SSiN stimuli. A focus group was carried out involving the SSiN participants to evaluate the usability of the SSiN.

Study Sample: 6 adult, experienced hearing aid users took part in the behavioural study and an online focus group

Results: Adaptive directionality resulted in reduced reaction times to SSiN stimuli compared to the omnidirectional setting. There was no significant difference in word identification between conditions. Relative localisation was significantly worse in the adaptive directionality condition. During qualitative review, participants reported improvement indicators to enhance usability.

Conclusion: SSiN findings include a listener's spatial acuity, word identification and spatial release from masking and the use of speech stimuli and multisource babble allows for an engaging task that replicates the challenges of real-world listening. Here, the SSiN has been used to assess adaptive directionality and findings are consistent with previous literature that suggests adaptive directionality reduces listening effort, even when there is no noticeable enhancement of speech perception. We have also presented some indicators to improve future applications of the SSiN.

Reference: Bizley JK, Elliott N, Wood KC, Vickers DA. Simultaneous Assessment of Speech Identification and Spatial Discrimination: A Potential Testing Approach for Bilateral Cochlear Implant Users? *Trends in Hearing*. December 2015. doi:10.1177/2331216515619573

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