Meerwaarde van een super-directioneel hoortoestel voor het verstaan in rumoer.

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Background: The Varibel is a strongly directional hearing aid applying an array of four micro-phones attached to each leg of a pair of glasses. The effectiveness of various modes of application has not been documented yet.
Purpose: To compare speech understanding in noise using all four microphones (4-Mic Glasses), two anterior microphones at the temple (2-Mic Glasses) or two posterior microphones above the pinna (2-Mic BTE) per side of the device. In addition, an omnidirectional condition was added (Omni BTE) and an asymmetric fit (4-Mic Glasses on the better ear and omni on the poorer ear).
Research Design: Experimental within subject design.
Study sample: Fifteen subjects with a significant speech discrimination loss were included. The Speech Reception Threshold in noise (SRTn) was measured in a sound treated room with uncorrelated noise from 45, 135, 225 and 315$_{o}$.
Results: The directional benefit (re Omni) was 6.3 dB for 4-Mic Glasses, in line with earlier studies on similar devices. The asymmetric fit showed a directional benefit of 5.3 dB, not significantly different from the bilateral 4-Mic mode, and significantly better than the 2-Mic Glasses (4 dB) and 2-Mic BTE (1.4 dB) mode. The advantage of a 2-Mic array at the temple compared to a position behind the ear (2.6 dB) was significant.
Conclusions: It was concluded that the multi-microphone array enable improved understanding in noise compared to most conventional directional devices. The asymmetric fit resulted in the same directional benefit as the 4-Mic Glasses mode and possibly leads to an improved awareness of off-axis sounds in everyday situations. Anterior microphones seem to profit more from the head shadow than posterior microphones by better suppressing noise from behind.