

ReSound LiNX 3D: More of the surrounding sounds and better speech recognition

ReSound LiNX 3D™ is up to 50%[†] better than other premium hearing aids* at identifying speech in various environments. Your patients can hear up to 80%^{††} more of the sounds around you and understand up to 40%^{††} more speech in noise**.

50%:

Modern hearing aids adapt their settings to the listener's environment. Therefore, it is critical that they can recognize different environments accurately. ReSound LiNX 3D hearing aids recognize speech-in-noise with greater accuracy than premium hearing aids from other brands.

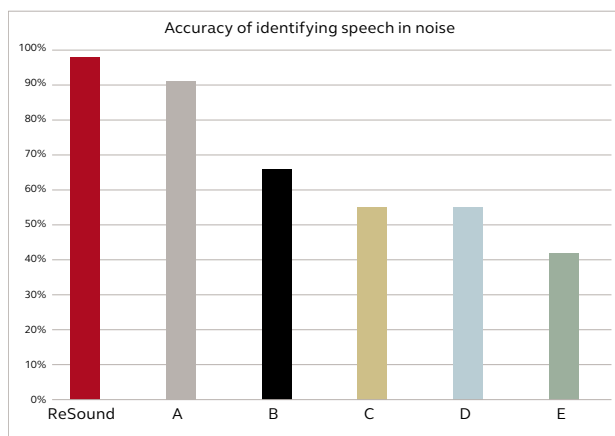


Figure 1. ReSound was 98% accurate in identifying speech-in-noise in varying noise backgrounds. No other system was as accurate, and noise backgrounds with music or highly modulated noises posed the greatest difficulty for these systems. Accurate identification of speech in noise and other environments is important in adjusting environmentally dependent parameters accurately.

ReSound LiNX 3D and premium hearing aids from 5 other manufacturers were exposed to a conversation between a male and a female speaker in 4 different kinds of noisy environments. The hearing aids were subsequently connected to their respective fitting software and the data logging was read from the hearing aids. All

manufacturers have classification environments that include speech-in-noise. The percentage of hours that was classified as speech-in-noise for each hearing aid varied greatly. ReSound LiNX 3D showed the greatest accuracy at 98%. The least accurate hearing aid classified only 42% of hours as speech-in-noise.

80%:

Compared to other premium hearing aids, ReSound LiNX 3D lets your patients hear up to 80% more of the surrounding sounds while still providing superior speech recognition in noise.

The ReSound strategy for applying directional technology, Binaural Directionality III, provides directional benefit for speech in front of the user without restricting access to speech and sounds from other directions. Audibility for off-axis sounds compared to two other premium hearing aids with state-of-the-art binaural beamforming technology was tested by measuring the signal-to-noise ratio for speech presented from the side and from back of the listener. This test was extremely challenging for the listeners because the competing noises also were single talkers presented from two other directions in addition to masking noise from 3 directions. The listeners had to correctly identify and pay attention to only the target speech, and did not know in advance of the presentation which direction it would come from.

[†] Compared to other premium hearing aids with datalogging of environment classification.
^{††} Compared to other premium hearing aids with binaural beamforming.

Depending on the direction of the speech, listeners performed at SNRs up to 19 dB better with ReSound than the other hearing aids (Figures 3 and 4). Considering sounds originating from anywhere but in front, this translates up to 80% more audibility and awareness with ReSound LiNX 3D. With the other hearing aids, speech and other sounds which may be of interest to the hearing aid users but are not in front are not audible, and users will not be able to shift their attention to them.

40%:

And with ReSound LiNX 3D, your patients' abilities to recognize speech coming from any direction in noisy backgrounds is up to 40% greater than other premium hearing aids.

The test described above also included a condition where the target speech was in front of the listener. In this condition, a directional benefit was demonstrated for ReSound LiNX 3D that was not significantly different from Hearing Aid B, but slightly less than Hearing Aid A. However, when the data from all presentation directions are collapsed, ReSound LiNX 3D has an overall advantage of 8.9 dB. Because of the difficulty of the speech test used, a conservative estimate of speech understanding improvement of 5% per dB suggests an advantage of 40 to 45% of speech understanding regardless of direction.

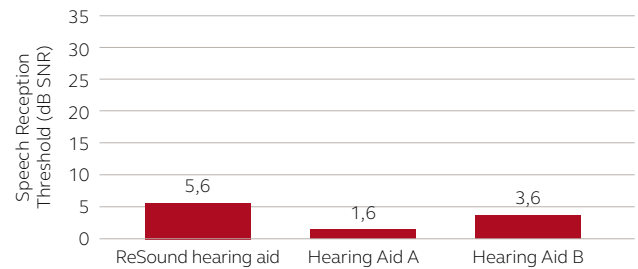


Figure 2. Mean SRTs for 3 pairs of test instruments with target talker in front. Lower values are better.

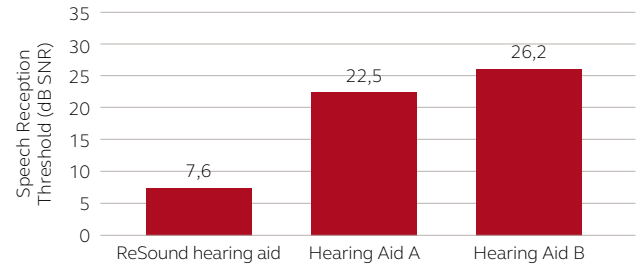


Figure 3. Mean SRTs for the 3 pairs of test instruments with target talker to the left. Lower values are better.

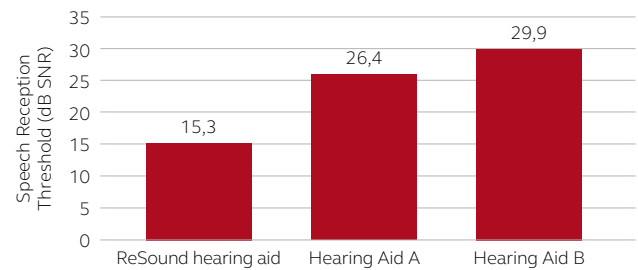


Figure 4. Mean SRTs for the 3 pairs of test instruments with target talker from the behind. Lower values are better.

References

*Groth. Binaural Directionality III: Directionality that supports natural auditory processing. ReSound white paper, 2016.

Groth, Cui. How accurate are environmental classifiers in hearing aids? Audiology Online. 2017; in press.

**Jespersen, Kirkwood, Groth. Effect of directional strategy on audibility of sounds in the environment. ReSound white paper, 2016.

