Phonak Field Study News.

Clinical benchmarking of remote microphone performance in adults with hearing loss

Behavioral findings confirm Phonak Audéo Infinio with Roger On™ improves far-field speech in noise performance compared to without Roger On, and provides superior far-field speech in noise performance when compared to two other remote microphone technologies.

Stewart E., Keller M., Roh M., Galster J. July, 2026

Introduction

Roger has quickly become one of the most peer-reviewed, evidence-supported remote microphone (RM) systems in the industry (Huang & Guan, 2025). Roger technology consistently shows benefits for far-field speech in noise performance compared to hearing aids (HA) alone (Zanin et al. , 2024), to other RM technologies (Thibodeau, 2014; Wolfe et al., 2015) and even to people with normal hearing sensitivity (Thibodeau., 2014).

Beyond speech intelligibility, Roger technology has been shown to have more comprehensive benefits, including ease of listening and social well-being. Recent findings suggest psychosocial improvements for adults in the working population when using Roger technology (Roh et al., 2026).

Roger achieves these advantages by leveraging adaptive gain behavior, which analyses the surrounding noise and adapts its gain in response, allowing the signal to remain above the noise floor (Figure 1).

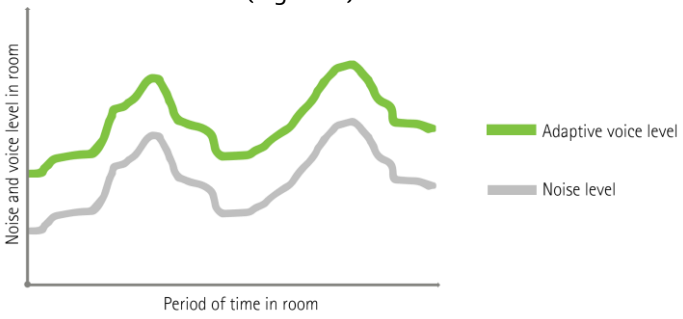

Figure 1. The adaptive gain behavior of Roger ensures that the adaptive voice level remains above the noise floor.

However, not all RMs offer the same features. Technical benchmarking assessing transfer latency, predicted speech intelligibility in noise, and estimated audio quality ratings showed that Roger offered the highest metrics in all three categories, when compared to RMs from three other brands (Roh et al., 2025).

The most recent behavioral results for speech in noise performance come from a pediatric study using the Roger Touchscreen Microphone, compared to Phonak HAs alone (Neumann et al., 2025). However, prior to the present study, similar and more recent data in adults were lacking.

Thus, the purpose of this study was to assess the benefit of the Roger On device for far-field speech understanding in noise in adults with hearing loss, compared to Phonak HAs alone. An additional aim was to investigate what alternative HA technologies and their respective RM systems can offer for far-field speech in noise, compared to Roger technology.

Methodology

Participants

Nineteen adults (11 male, 8 female) aged 40-85 years (M=74.6, SD=10.4) with bilateral hearing loss were recruited from the research participant database at Phonak Audiology Research Center (PARC). All participants were experienced hearing aid wearers with varying degree/configuration of hearing losses shown in Figure 2.

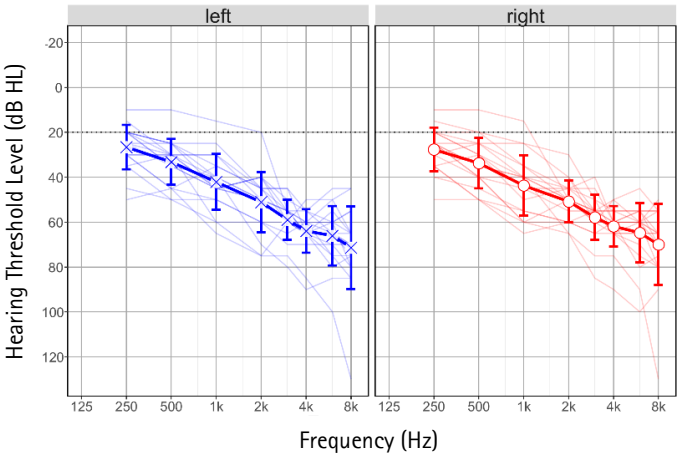

Figure 2. Grand average audiogram of the 19 participants from the study.

Devices

Participants were fit with Phonak Audéo Infinio Ultra 90 as well as premium level HAs from two other brands (Brand A and Brand B) that were available as of late March 2026, using the manufacturer's default settings with no fine tuning. In-situ Real-Ear Measures were completed prior to testing.

RMs used in this study were the Phonak Roger On 3 and the respective premium RMs from the same two other brands that were available as of late March 2026. All three RMs used proprietary broadcasting methods.

Procedure

Speech understanding in noise was measured using AzBio sentences presented at 60 dBA in a background noise of 63 or 70 dBA, resulting in a low noise condition (-3 dB SNR) and a high noise condition (-10 dB SNR) at the ear level of the participant. Performance was quantified as the number of words correctly repeated out of the total number of words for all 20 sentences in each list of AzBio sentences.

At each SNR, speech understanding was assessed in each of the following conditions:

- Phonak HAs alone ("HA alone")
- Phonak HAs paired w/Roger ("HA+Roger")
- Brand A HAs paired with Brand A RM ("Brand A")
- Brand B HAs paired with Brand B RM ("Brand B")

Order of conditions and SNRs were counterbalanced across participants.

Testing took place in a research space within PARC (dimensions 7.25m x 5.25m) Loft (see Figure 3). The participant was seated in the calibrated (reference) position 3 meters from a loudspeaker at 0° azimuth, which was used to present the sentences. For the Roger, Brand A, and Brand B conditions, the RM was placed on a lanyard 20cm below the loudspeaker. Multi-talker babble was presented from four loudspeakers positioned in the corners of the testing space and turned away from the center of the array to produce diffuse noise.

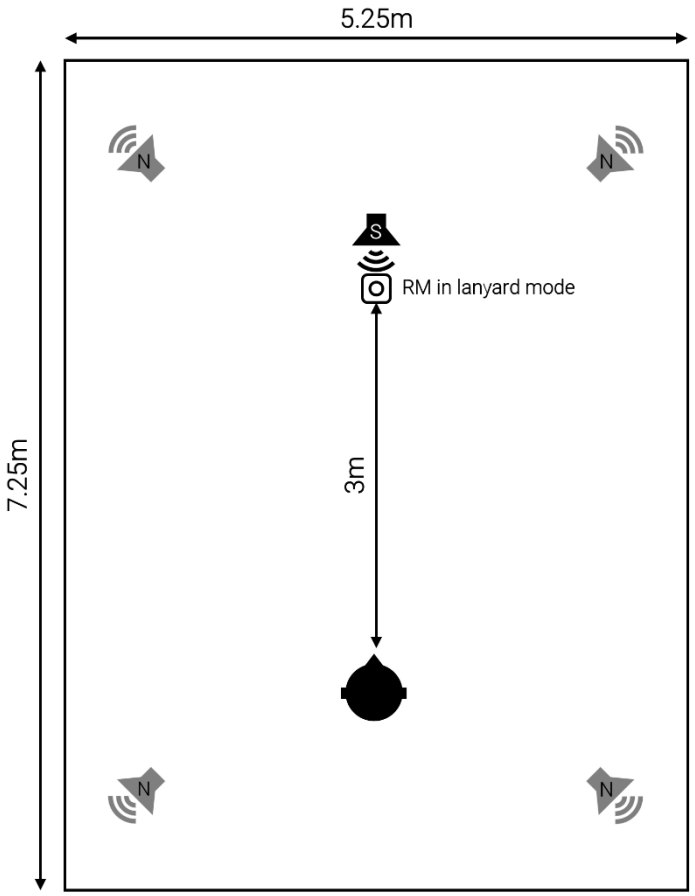

Figure 3. Experimental setup. SNR was measured at the participant's ear-level.

Statistical Analyses

The data was analyzed using a generalized linear mixed model to evaluate the effects of device type and signal-to-noise ratio (SNR), as well as their interactions. Device (HA alone, Roger, Brand A, Brand B) and SNR (Low noise, High noise) were treated as fixed effects, allowing assessment of both their independent and combined influence on outcomes.

Planned pairwise contrasts were used to compare Roger performance versus HA alone, as well as competing devices (Brand A, Brand B) at each SNR. To control for the risk of type I error due to multiple comparisons, a Bonferroni correction was applied.

The output of the statistical modelling provides an estimate for the probability of giving a correct response. Here, for easier explanation of the data, we report descriptive statistics for the average differences in percent correct across conditions. The probability estimation of a correct response showed good agreement with these descriptive scores.

Results

Roger with HA vs HA alone

Across both Low and High noise conditions, Roger with HA outperformed HA alone (Low noise: $\beta = 2.328$, SE = 0.114, $p < 0.001$, High noise: $\beta = 3.618$, SE = 0.081, $p < 0.001$), with the difference being more apparent in the high noise condition (Figure 4).

In the high noise condition, the difference in performance with Roger was, on average, 71% points compared to HA alone ($p<0.001$).

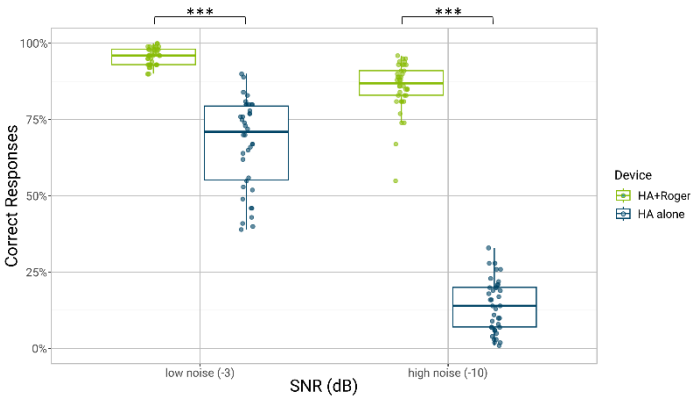

Figure 4. Percentage correct response for AzBio sentences in low noise and high noise conditions with Roger and HA alone.

Roger vs other RM systems

Compared to the two other RM systems tested (Figure 5), performance with Roger was significantly higher than both Brand A (Low noise: $\beta = 2.323$, SE = 0.114, $p < 0.001$, High noise: $\beta = 1.372$, SE = 0.120, $p < 0.001$) and Brand B (Low noise: $\beta = 3.641$, SE = 0.081, $p < 0.001$, High noise: $\beta = 2.146$, SE = 0.074, $p < 0.001$) across both the low noise and high noise conditions.

In the high noise condition, this difference in performance was, on average, 41% points compared to Brand A, and 70% points compared to Brand B.

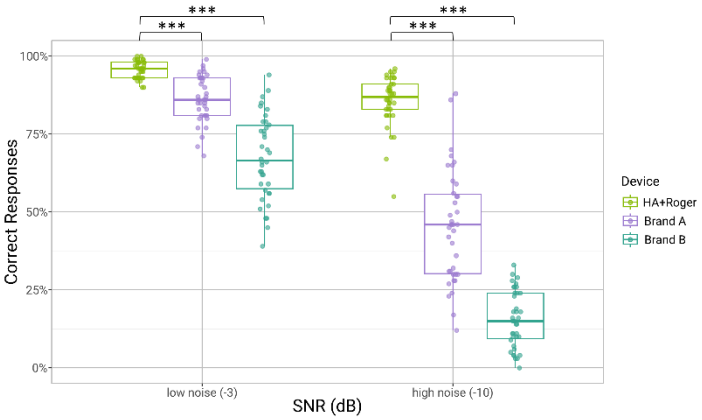

Figure 5. Percentage correct response for AzBio sentences in low noise and high noise conditions with Roger and two other brands.

Discussion

Compared to hearing aids alone, use of the Roger On device yielded superior far-field speech in noise performance for both low and high noise conditions, with the difference being more apparent in the more challenging listening condition.

The results of this study can be compared to similar Roger RM studies, as these investigations also examined far-field speech recognition in noise with SNRs measured at the participant's ear level, though the tested population and test material differed across studies.

In the present study, the magnitude of Roger benefit in the low noise condition compared to hearing aids alone is less than what has been previously reported (Table 1). This may be due to the fact that newer hearing aids were used in our study (contributing to the better HA alone performance), as well as ceiling effects preventing higher scores in the Roger condition.

	Our study	Zanin et al., 2024	Neumann et al., 2025
Population	**Adults**	Adults	Pediatrics
Signal/Noise	**60/63**	63/65	73/75
SNR	**-3dB**	-2dB	-2dB
HA alone	**70%**	50%	12%
Roger	**95%**	90%	73%
Benefit	**+25%**	+40%	+59%

Table 1. Comparison of outcomes with HA alone and Roger across three studies using a low noise condition.

For the high noise condition however, the results are more consistent with what has been shown in previous studies (Table 2). This suggests that the Infinio Ultra hearing aids tested in this study, may have been more effective at amplifying sound in the near field when compared to hearing aids tested in the earlier studies cited here.

	Our study	Zanin et al., 2024	
Population	**Adults**	Adults	Adults
Signal/Noise	**60/70**	63/70	63/75
SNR	**-10dB**	-7dB	-12dB
HA alone	**14%**	18%	5%
Roger	**86%**	83%	66%
Benefit	**+72%**	+65%	+61%

Tabe 2. Comparison of outcomes with HA alone and Roger across three studies using a high noise condition.

A similar trend was observed with Roger in the high noise condition of -10dB SNR, suggesting that the speech recognition benefit offered by Roger technology was larger when compared to the outcomes of earlier studies.

When looking at the results compared to other RM technologies, Roger On benefits are largely consistent with other clinical studies (Neumann et al., 2025; Wolfe et al., 2015), as well as the estimates of speech recognition in noise performance reported by Roh and colleagues (2025).

Future directions for research could include exploration of complex listening situations and the effects of Roger technology, such as rooms with longer reverberation times (e.g. Lewis et al., 2022), or situations in which Roger could be used within the near-field (< 3m). By contrast, extending the SNR to further negative values in an attempt to avoid ceiling effects would have limited audiologic insight, as the test conditions would extend far beyond levels of speech and noise that are considered to be ecologically valid.

Conclusion

Findings from this study add to the body of evidence showing Roger technology provides significant far-field speech in noise benefits when compared to hearing aids alone as well as compared to other RM systems in the market today.

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Authors and Investigators

Internal investigators

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Elizabeth joined the Phonak Audiology Research Center in Chicago (Sonova US) in 2017. Her educational background includes a Doctorate of Audiology from the University of Kansas Medical Center and a PhD in Speech and Hearing Science from Arizona State University. She manages internal clinical investigations as well as external research collaborations and supports various other science-focused initiatives across Sonova.

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Matthias joined Sonova in 2019 after earning a PhD in Psychology from the University of Zurich. He spent four years conducting research in Switzerland before relocating to the United States in 2023 to join the PARC team. In this role, he continues his research while contributing to the design and analysis of clinical studies.

Jason Galster, Vice President of the Sonova Audiology Research Centre Chicago

Dr. Galster is Vice President of Clinical Research Strategy for the Sonova Group. He works with a global network of teams on regulatory clinical affairs and clinical research of technology for the treatment of hearing loss. He is a recognized author and lecturer in audiology whose research interests include methods for characterizing individual variability in the treatment of hearing loss and the measurement of hearing outcomes during daily life.

Min Roh, Audiology Manager Roger, Phonak HQ

Min obtained his Masters of Audiology at The University of Auckland, New Zealand in 2017. He has held various roles in diagnostic and rehabilitative audiology, tertiary education, professional bodies, and in the Sales & Audiology team at Phonak NZ, before joining as the Global Audiology Manager for Roger at Phonak HQ in 2024.

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One-page summary

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Key highlights

- Roger remote microphone (RM) technology adds significant benefits in far-field speech in noise performance.
- Phonak Audéo I with Roger On provides significantly better far-field speech intelligibility in noise compared to without Roger On.
- Phonak Audéo I and Roger On provides better far-field speech intelligibility in noise compared to two other remote microphone and hearing aids.

Considerations for practice

- The Phonak hearing aid + Roger system allows the already excellent hearing aid features to be coupled with far-field situations for maximum coverage of benefit.
- For the best far-field speech in noise performance, HCPs are encouraged to consider recommending and trialing a Roger RM system.
- Trust the performance with Phonak Audéo I and Roger On, scientifically proven to have significantly better speech in noise performance when compared to two other hearing aids and remote microphones.