Phonak Field Study News.

Hearing confidently in wind: WindBlock 2.0 delivers comfort, natural sound quality and clearer speech

Results of a study examining sound quality comparisons between WindBlock 2.0 and its predecessor revealed that the update is preferred across audio target, wind speed, and wind angle.

Vaisberg, J. M., Brunner, J., & Ulloa Sanchez, D. August, 2026.

Introduction

Wind noise is a common concern reported by hearing aid wearers while spending time outdoors. Wind noise is unique compared to other sounds because it is generated directly at the hearing aid microphones. As wind flows past the hearing aid, turbulent air movement creates mechanical air pressure fluctuations at the microphone ports. In contrast to environmental noise, fluctuations caused by wind are typically uncorrelated between the front and back microphones on a hearing aid. These fluctuations are amplified by the hearing aid and are perceived as bothersome low-frequency noise. The presence of wind noise can negatively impact both speech intelligibility and listening comfort.

Phonak introduced WindBlock 1.0 almost 20 years ago. This feature works by detecting wind and subsequently attenuating low-frequency sounds by up to 23 dB. This feature detects wind by measuring front-back microphone correlation and low-frequency energy. Wind is detected when there is low front-back microphone correlation and strong low frequency dominance. This feature has been received positively by hearing aid wearers. Following at-home field trials (Latzel & Appleton, 2013), participants reported better experiences in windy situations when using the WindBlock 1.0 feature compared to not using it. In lab-based tasks, participants were instructed to repeat and rate their subjective experiences of sentences recorded in windy environments with and without WindBlock enabled. Participants repeated more words correctly, reported improved subjective speech perception, reduced listening effort, and better overall preference when WindBlock was enabled compared to when it was not.

Despite the WindBlock 1.0 feature's established success in improving listener outcomes, its primary focus is to provide hearing comfort. WindBlock 1.0 does so by attenuating low-frequency sounds when wind is detected. As a result, desirable sounds (including speech) may lack low-frequency content, which listeners may want to hear.

The launch of Phonak EON introduces WindBlock 2.0, with the goal of better preserving the fidelity of target sounds while continuing to effectively attenuate low-frequency wind noise. WindBlock 2.0 works by putting more emphasis on the back microphone which is typically more protected from wind compared to the front one. A time-varying gain is applied to give good transparency while still attenuating wind noise. If the back microphone signal contains more wind noise, emphasis is put on the front microphone.

PARC study with experienced hearing aid users

To confirm the benefits of the WindBlock 2.0, a study was conducted at the Phonak Audiology Research Center (PARC) in Canada in 2026. The objective of this study was to confirm the benefits of WindBlock 2.0 with regards to subjective feedback from participants on various sound quality attributes, including overall impression, listening comfort, listening effort, naturalness, and speech clarity.

Methodology

Participants

Nineteen English-speaking adult participants (8 male, 11 female) aged 56 to 87 years (m=71.8±7.5) took part in the study. All participants were experienced hearing aid users with bilateral sensorineural hearing loss ranging in severity from mild to moderately-severe (Figure 1).

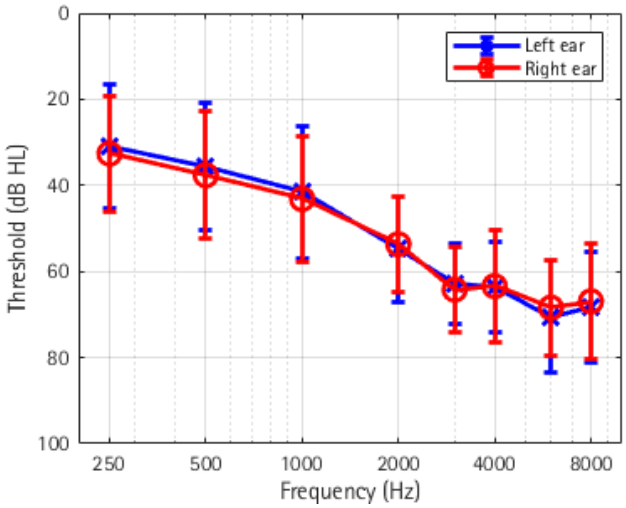

Figure 1: Mean air conduction thresholds for participants' left (blue) and red (right) ears. Error bars represent one standard deviation.

Hearing Aid Fitting/Programming

Phonak Audéo EON receiver-in-canal (RIC) hearing aids were programmed to participants' most recent audiograms (no more than 1 year prior to study enrollment) according to experienced user gain settings prescribed using the Adaptive Phonak Digital gain prescription. WindBlock 1.0 and WindBlock 2.0 were programmed using two instances of the Comfort in Noise program on a single device. Both WindBlock features were set to 16, Phonak Target's default strength, and the hearing aid microphone was set to Real Ear Sound. All remaining features were disabled. To compare features under identical conditions, the hearing aids were placed on a KEMAR mannequin to produce recordings that participants would listen to.

Stimuli and Acoustic Set-Up

Stimuli were prepared by positioning the KEMAR mannequin inside a wind tunnel located at Sonova's global headquarters in Stäfa, Switzerland. The acoustic set up was designed to best represent realistic outdoor communication situation, where wind and speech can often occur off- axis. Wind was presented inside the wind tunnel while audio targets were presented from a speaker positioned at 60° degrees relative to the air inlet. Wind was presented at 4m/s (slow) or 7m/s (fast). Audio targets consisted of a male-spoken speech passage or a scene recorded from a busy street. Recordings were produced in two spatial configurations: KEMAR facing the air inlet such that wind was at 0° and the audio target was at 60° (Figure 2, left), or KEMAR slightly rotated such that wind was -30° degrees and the audio was target at +30° (Figure 2, right). Overall, there were a total of eight conditions (two audio targets x two wind speeds x two spatial configurations). Once completed, recordings were sent back to Canada for participant testing.

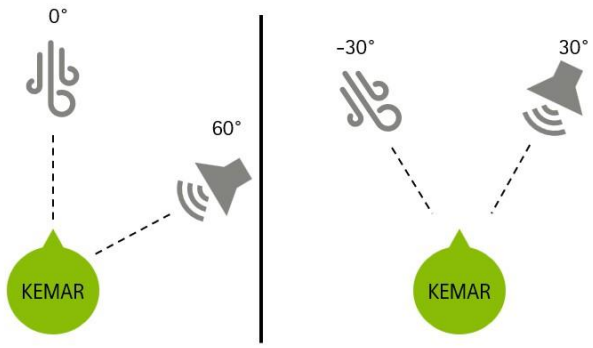

Figure 2: Spatial configurations used to record hearing aid samples.

Procedure

Participants were instructed to complete A-B paired comparisons between WindBlock 1.0 and WindBlock 2.0 for each of the eight conditions. Participants completed separate A-B paired comparisons for five different sound quality attributes: overall preference, listening comfort,

listening effort, naturalness, and speech clarity. Participants completed six repetitions of each condition for each sound quality attribute. For the speech clarity attribute, participants only completed A-B paired comparisons for the speech target – not the busy street scene. Participants were instructed to set the volume to a comfortable listening level at the start of testing and to maintain that level for the duration of testing.

Results

In terms of overall preference, most respondents preferred WindBlock 2.0 over WindBlock 1.0, regardless of auditory target, wind speed, or spatial configuration (Figure 3). WindBlock 2.0 was significantly preferred 96.4% ($p < 0.001$) and 39.5% ($p < 0.001$) points more frequently than WindBlock 1.0 for 0° and 30° wind, respectively.

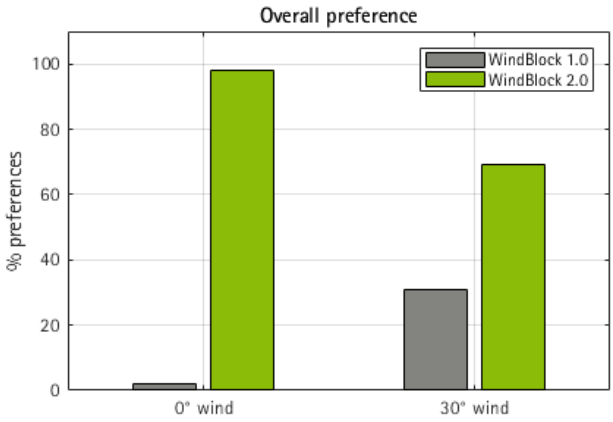

Figure 3: Percentage of preferences for WindBlock 2 for the overall preference sound quality attribute across auditory targets and wind speeds.

In terms of listening comfort, most respondents preferred WindBlock 2.0 over WindBlock 1.0, regardless of auditory target, wind speed, or spatial configuration (Figure 4). WindBlock 2.0 was significantly preferred 94.8% ($p < 0.001$) and 39.4% ($p < 0.001$) points more frequently than WindBlock 1.0 for 0° and 30° wind, respectively.

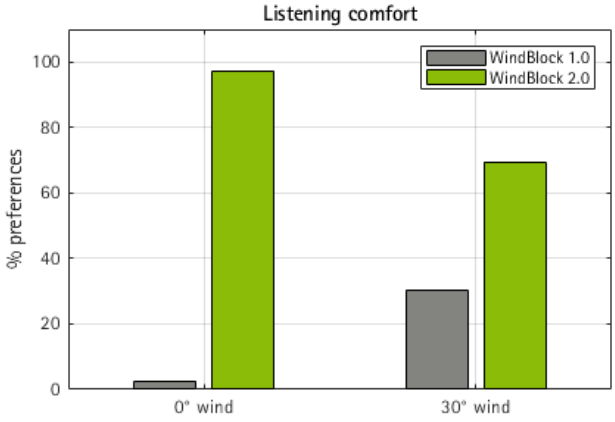

Figure 4: Percentage of preferences for WindBlock 2 for the listening comfort attribute across auditory targets and wind speeds.

In terms of perceived listening effort, most respondents preferred WindBlock 2.0 over WindBlock 1.0, regardless of auditory target, wind speed, or spatial configuration (Figure 5). WindBlock 2.0 was significantly preferred 94.8% ($p < 0.001$) and 45.8% ($p < 0.001$) points more frequently than WindBlock 1.0 for 0° and 30° wind, respectively.

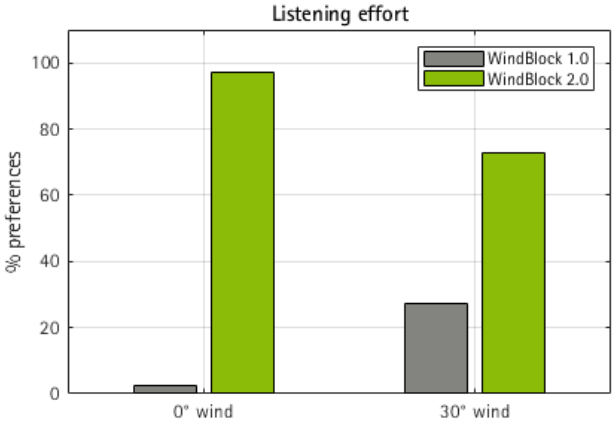

Figure 5: Percentage of preferences for WindBlock 2 for the listening effort sound quality attribute across auditory targets and wind speeds.

In terms of naturalness, most respondents preferred WindBlock 2.0 over WindBlock 1.0, regardless of auditory target, wind speed, or spatial configuration (Figure 6). WindBlock 2.0 was preferred 89.7% ($p < 0.001$) and 38.8% ($p < 0.001$) points more frequently than WindBlock 1.0 for 0° and 30° wind, respectively.

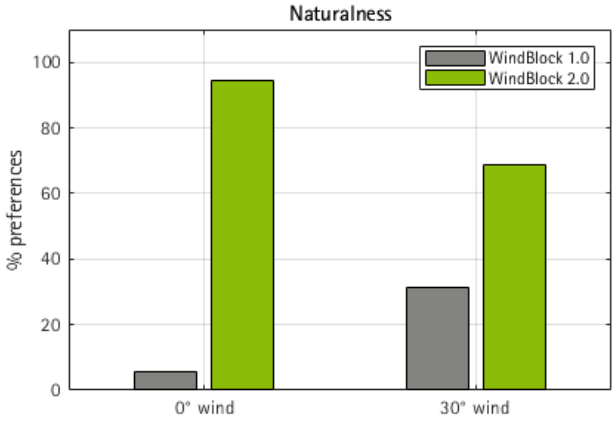

Figure 6: Percentage of preferences for WindBlock 2 for the naturalness sound quality attribute across auditory targets and wind speeds.

In terms of speech clarity, most respondents preferred WindBlock 2.0 over WindBlock 1.0, regardless of wind speed, or spatial configuration (Figure 7). WindBlock 2.0 was significantly preferred 96.6% ($p < 0.001$) and 42.4% ($p < 0.001$) points more frequently than WindBlock 1.0 for 0° and 30° wind, respectively.

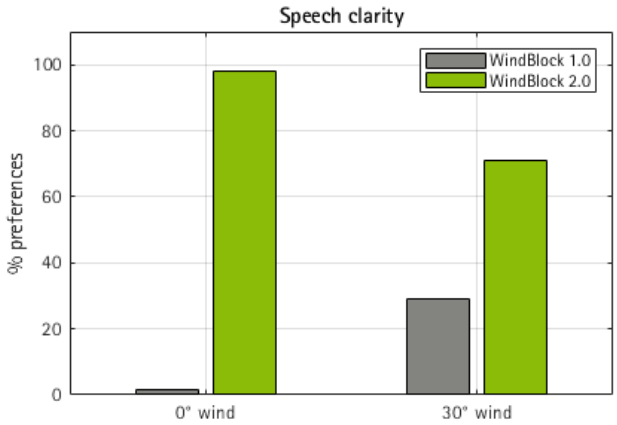

Figure 7: Percentage of preferences for WindBlock 2 for the speech clarity sound quality attribute across auditory targets and wind speeds.

The magnitude of preference was strongest for wind that originated from the front of the listener, regardless of sound quality attribute.

Conclusion

In conclusion, the results of this study suggest that Phonak EON's new wind noise canceller, WindBlock 2.0 makes speech clearer, and makes listening less effortful, sound more comfortable, more natural, and is overall preferred over its predecessor. These benefits can be expected for different sounds, wind speeds and for wind that originates from different locations, although the greatest benefits are to be realised when wind originates from in front of the listener. These findings support Phonak's improvement to its wind noise management strategy, and that WindBlock 2.0's intended enhancements of reducing wind noise and improving signal fidelity have been achieved.

One limitation in this study is that when listeners perceive a large overall benefit between listening conditions, that advantage can influence ratings across multiple sound quality attributes. Preminger and Tasell (1995) found that when speech intelligibility differs between listening conditions, ratings of other attributes such as pleasantness, listening effort, and overall impression are typically driven by intelligibility. When intelligibility is held constant, subtle differences between other attributes can emerge. The strong overall preference observed here for WindBlock 2.0 may therefore have contributed to more favorable ratings of listening comfort, effort, naturalness, and speech clarity. As a result, subtle differences between individual attributes may have been more difficult to detect, suggesting that future studies could further explore these specific perceptual dimensions under conditions where overall preference differences are smaller.

References

Latzel, M., & Appleton, J. (2013). Evaluation of a binaural speech in wind feature, Part 2: Validation and real-life benefit. *The Hearing Review, 20*(9), 32–35.

Preminger, J. E., & Tasell, D. J. V. (1995). Quantifying the Relation Between Speech Quality and Speech Intelligibility. *Journal of Speech, Language, and Hearing Research*, *38*(3), 714–725. https://doi.org/10.1044/jshr.3803.71

Authors and investigators

Lead Investigator and Author

Jonathan M. Vaisberg, PhD, is Senior Research Scientist and Manager, Clinical Research at Sonova, where he leads clinical research including concept exploration, product validation and post-market studies. His doctoral work, focused on optimising hearing aid signal processing for music-listening, sparked his interest to develop innovative hearing solutions with high-impact outcomes. A licensed audiologist, Jonathan completed concurrent clinical and research training in Audiology and hearing science at Western University's National Centre for Audiology (London, Canada).

Technical Expert/Author

Jan Brunner is a Hearing Performance Engineer with focus on beamforming and other sound processing topics. He has a PhD in Nanosciences from the University of Basel, has worked in the field of applied optics and taught physics to students of applied sciences. He has been employed by Sonova since 2019.

Technical Expert/Author

Diego Ulloa Sanchez is a Hearing Performance Engineer with current focus on the development and benchmarking of acoustical product performance in hearing aids. He earned both his B.Sc. and M.Sc. in Health, Science, and Technology from ETH Zurich, where he completed his Master's thesis at Sonova in 2020. Prior to his current role, Diego served as a Clinical & Technical Specialist in the field of cochlear implants.

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Phonak Field Study News.

One-page summary

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Key highlights

- WindBlock 2.0 offers better management of wind noise and sound quality when wind is present.
- Sound quality comparisons between WindBlock 2.0 and WindBlock 1.0 were carried out across different audio targets, wind speeds, and wind angles in terms of overall preference, listening comfort, listening effort, naturalness, and speech clarity.
- WindBlock 2.0 was overwhelmingly preferred to WindBlock 1.0 across all conditions.

Considerations for practice

- Based on the findings of the present study, it is expected that clients fit with Phonak EON across all performance levels will experience improved handling in wind outdoors using WindBlock 2.0.
- Clients can expect the best improvements for wind that originates from in front of them, while still enjoying performance improvements for wind noise originating from other directions.