

# The first hearing aid proven to help the brain organize sounds

New groundbreaking EEG research



# Having hearing loss makes it **difficult to hear and organize sounds**

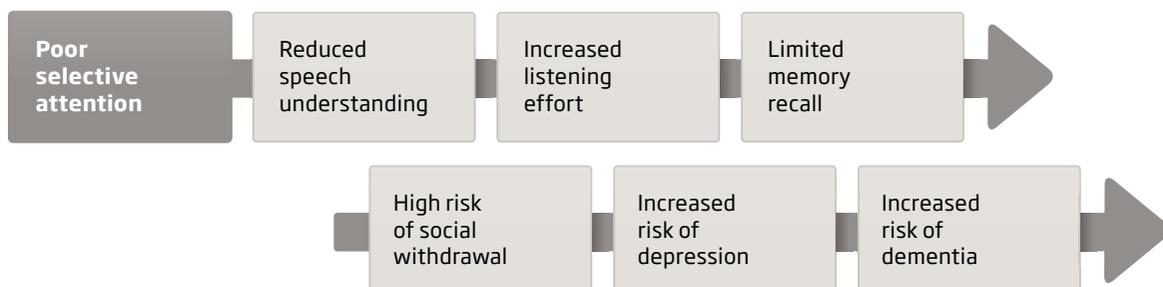


Hearing loss makes it difficult to understand speech in noisy environments. Speech becomes blurry and organizing the sound environment becomes challenging. Walking into a lively social situation can feel like being hit by a wall of sound. It takes effort to understand what people are saying and if several people are talking at once the challenges grow.

Luckily our brains possess a natural ability to organize and prioritize our sound environments, which is called selective attention. As we focus on the person with whom we are speaking with, selective attention, enables us to monitor the sounds around us and switch our attention as needed.

Having a hearing loss degrades the brain's selective attention ability. This can trigger a **negative chain reaction of events** which ultimately can affect a person's quality of life.

## Untreated hearing loss



# Oticon Opn S™ is the only hearing aid proven to **support the brain's natural way of organizing sounds**



## **Traditional hearing aids in noisy environments:**

- Apply directionality to focus on the person in front but suppress all other sounds
- Provide inconsistent amplification due to gain reductions designed to prevent feedback
- Use slow-reacting, imprecise noise reduction that compromises sound quality and speech understanding

In noisy environments, traditional hearing aids only help the wearer to understand the person they are facing.

This makes it **impossible for the brain to organize all sounds** and switch attention when having a conversation with several people.

## **Oticon Opn S with BrainHearing™ technology:**

- Gives access to 360° of sound and relevant speech, even in noisy environments, using OpenSound Navigator™
- Ensures optimal gain with no risk of feedback thanks to OpenSound Optimizer™
- Applies fast, precise and effective noise reduction that allows speech to stand out powered by Velox S™

**Proven to outperform** traditional technologies by improving speech understanding from multiple speakers.\*

**Opn S supports the brain's natural way of organizing sounds** and creates ideal conditions for following conversations with multiple speakers.\*

# New EEG test method objectively measures how the brain organizes sounds

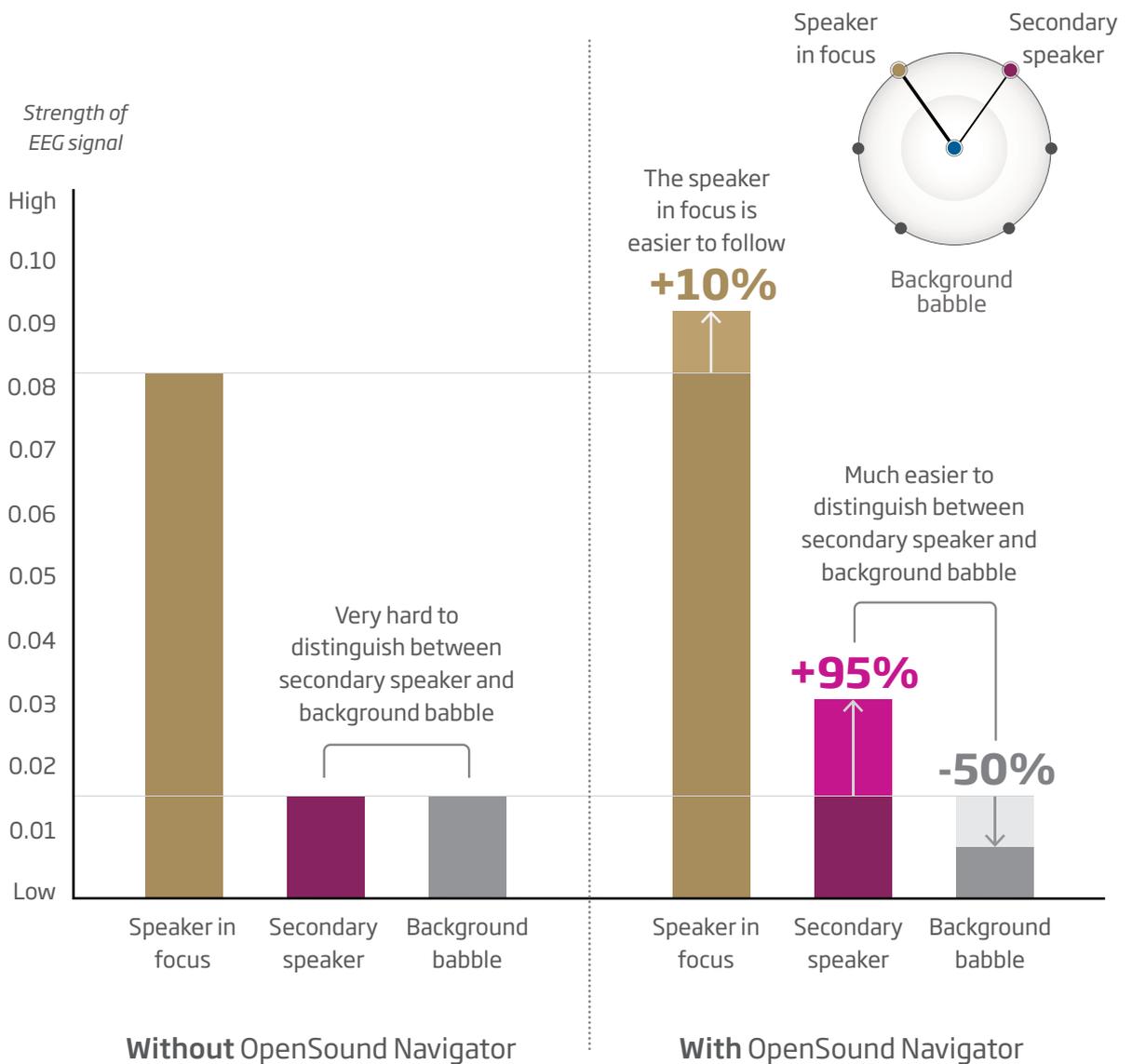
Thanks to a breakthrough in research methods, independent hearing scientists were able to measure a person's selective attention ability inside the brain while wearing Oticon Opn S:

- The test was carried out using a new EEG method developed with leading independent hearing researchers.\* Electrodes were placed on the subject's head to measure the level of brain activity in response to speech and noise
- The electrodes measured how well sounds were represented and organized in the brain while wearing Opn S with OpenSound Navigator switched both ON and OFF
- The test protocol was designed to mimic a real-life conversation in a noisy environment (+3 dB SNR): one primary speaker to focus on, a secondary speaker to ignore, and babble noise in the background that needed to be suppressed

\*For more information read: "A Tutorial on Auditory Attention Identification Methods" Frontiers in Neuroscience, March 2019 - Emina Alickovic, Thomas Lunner, Fredrik Gustafsson, Lennart Ljung



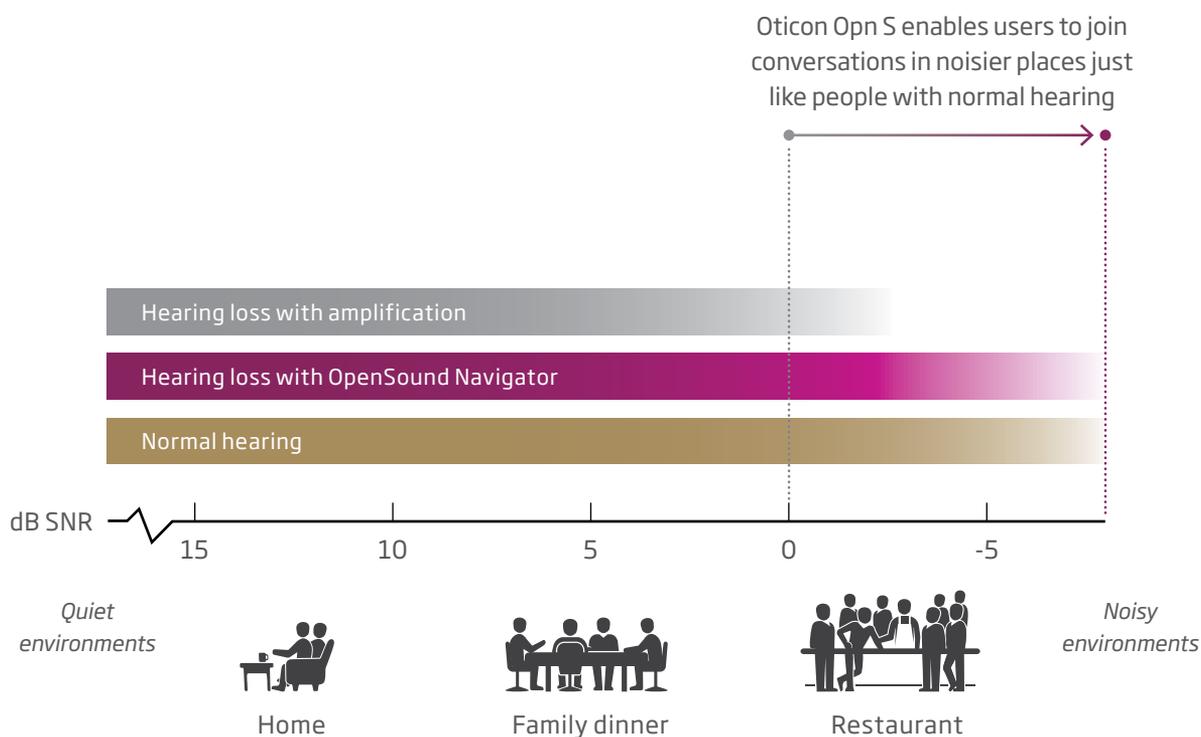
# Oticon Opn S is the first hearing aid **proven to enhance selective attention ...**



The unique OpenSound Navigator makes sound sources clearer and more distinct. As a result, sounds are better organized in the brain, making it possible to choose which voice to listen to and switch attention when needed:

- **Speech signals** from both speakers are improved: the speaker in focus is increased by 10% and the secondary speaker is increased by 95%. This makes it easier to understand the speaker in focus and switch attention to the secondary speaker whenever necessary
- **Background babble** is reduced by 50%, allowing the speech signals to stand out and making listening easier

# ... and enable users to take part in social situations like people with normal hearing



Even with good amplification it is often too exhausting to follow conversations when the noise level becomes higher than the speech signal. This often causes hearing aid users to withdraw. Thanks to increased speech understanding and reduced listening effort, Opn S enables users to join conversations in noisier environments. Oticon Opn S provides:

- **Increased speech understanding:** OpenSound Navigator provides speech understanding in noisy environments that is on par with normal hearing\*
- **Reduced listening effort:** with OpenSound Navigator, listening effort is significantly reduced making it easier to stay involved in the conversation\*\*
- **Better ability to participate:** thanks to increased speech understanding and reduced listening effort, Opn S users can embrace situations they used to avoid. Research shows that Opn S users can take part even in lively social situations where the noise is more prominent than the speech signal, just like people with normal hearing\*

# Oticon Opn S opens up the world of sound

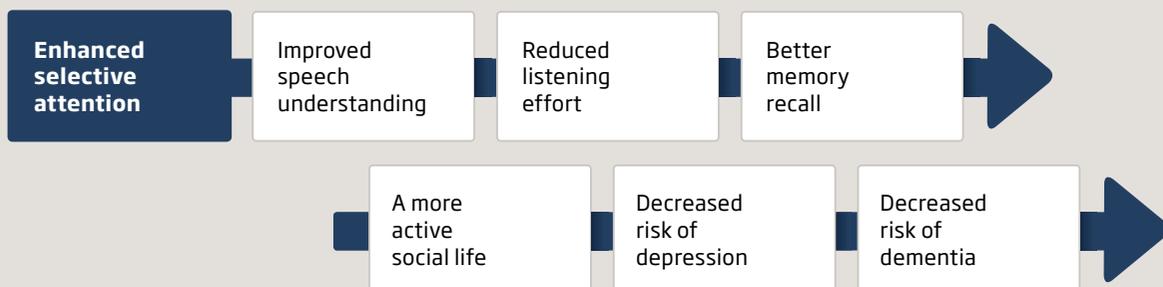


Unlike traditional hearing aids, Oticon Opn S with BrainHearing technology has been proven to increase speech understanding, reduce listening effort, and increase memory recall by opening up the world of sound.\*

Now, the latest research shows that Oticon Opn S is also proven to help the brain organize sounds. By providing better conditions for the brain to naturally select and suppress sounds, Opn S enhances your patients' selective attention. This adds a whole new groundbreaking dimension to how BrainHearing technology helps the brain make sense of sounds.

All of this helps break down the wall of sound that people with traditional hearing aids are faced with, turning a potential negative chain reaction into a positive one for Opn S users.

## Hearing loss treated with Oticon Opn S



\*Juul Jensen 2019, Oticon Whitepaper

Source: Ng & Man 2019, Oticon Whitepaper, Juul Jensen 2019, Oticon Whitepaper and Mahmoudi et al. 2019

For more information about Oticon Opn S research  
contact your Oticon Account Manager or go to:

**[www.oticon.com/opn-s-research](http://www.oticon.com/opn-s-research)**

