

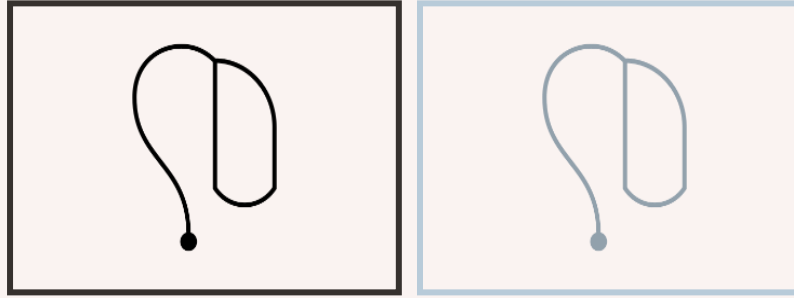
Investigating Sound Preference as a Clinical Tool

Filip Marchman Rønne, Frédéric Marmel, Dina Lelic, Laura Winther Balling

ORCA Labs, WSA

Different hearing aids have different sound designs

But how do we empower clients to choose the right one for them?



- Sample rate
- Analysis filter banks
- Compression speed and ratios
- Noise reduction and beamforming
- ...



Preference and hearing aids

- Up to 50% drop out of the hearing journey before purchase.
- Many hearing aid owners do not use their hearing aids regularly.
- Rejection often driven by discomfort and lack of perceived benefit, not by lack of audibility.
- Lack of guidance on how to select the right hearing aid sound profile (brand).
- Most clients do not feel empowered to make the choice for which brand to purchase.

Is it possible that exploring people's sound preference could lead to higher satisfaction, more empowered clients, more perceived benefits, and more hearing use?

Research questions

Sound preference (conclusive data)

When people are given the opportunity to explore their preference between different hearing aid sound designs:

- Do people have a preference for one sound design over another?
- Does the preference vary between listeners?

Sound preference as a clinical tool (ongoing data collection)

When people are given the opportunity to explore and discuss their sound preference in the clinic:

- Does clinical preference translate to real world preference?
- Does patient satisfaction and benefit increase?
- Do more patients acquire and use hearing aids?

Five studies

... hang on

People can be grouped by hearing aid sound preference

Online listening study (hearing aid recordings, N3 hearing loss)

Study 1

- N = 248 participants
- 10 audio scenes
 - Speech in noise
 - Ambience with speech
 - Speech in quiet
 - Non-speech
- Rendered in an ambisonics lab, recorded on a mannequin
- Signia IX and Widex Allure hearing aids

People can be grouped by hearing aid sound preference

Online listening study (hearing aid recordings, N3 hearing loss)

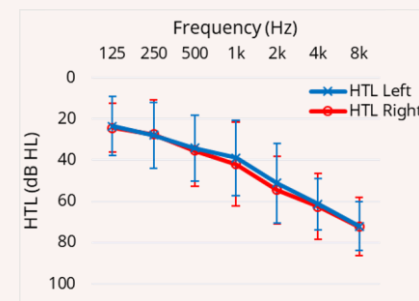
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Guided walk study (real devices)

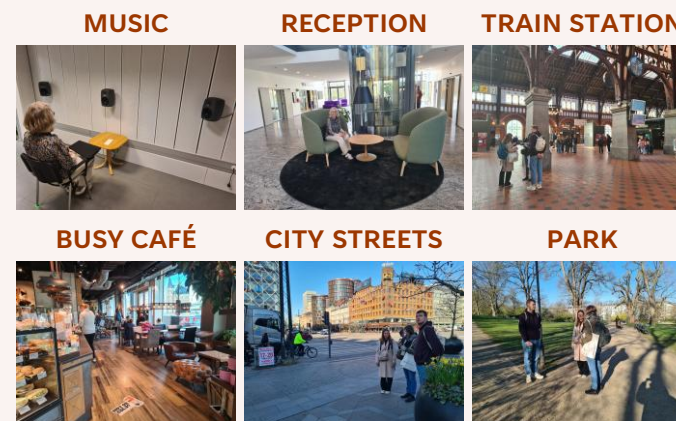
Study 2

→ n = 28 participants



Regular hearing aid users, but not of the hearing aids included in the study

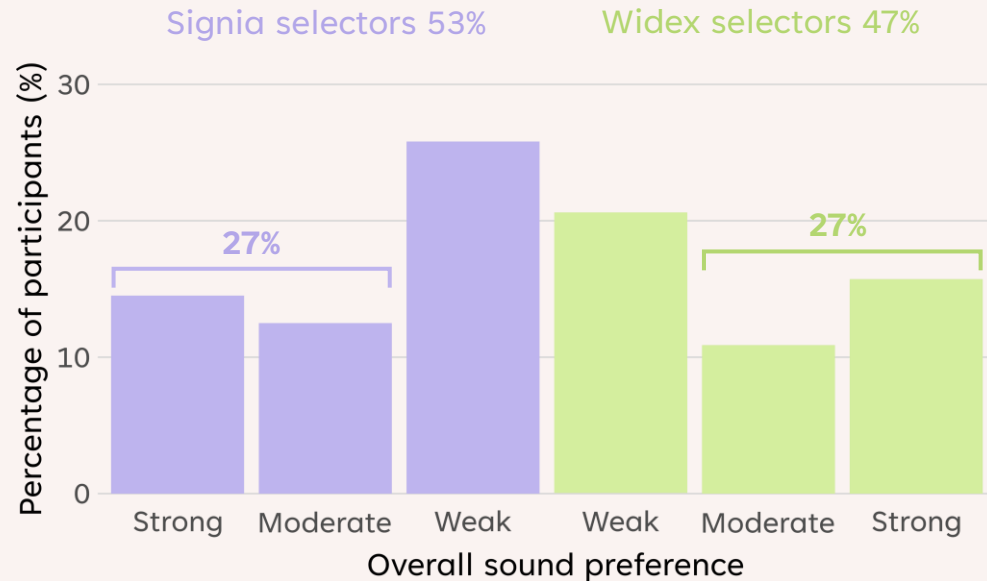
→ 6 stops on a guided walk, comparing the same hearing aids as study 1.



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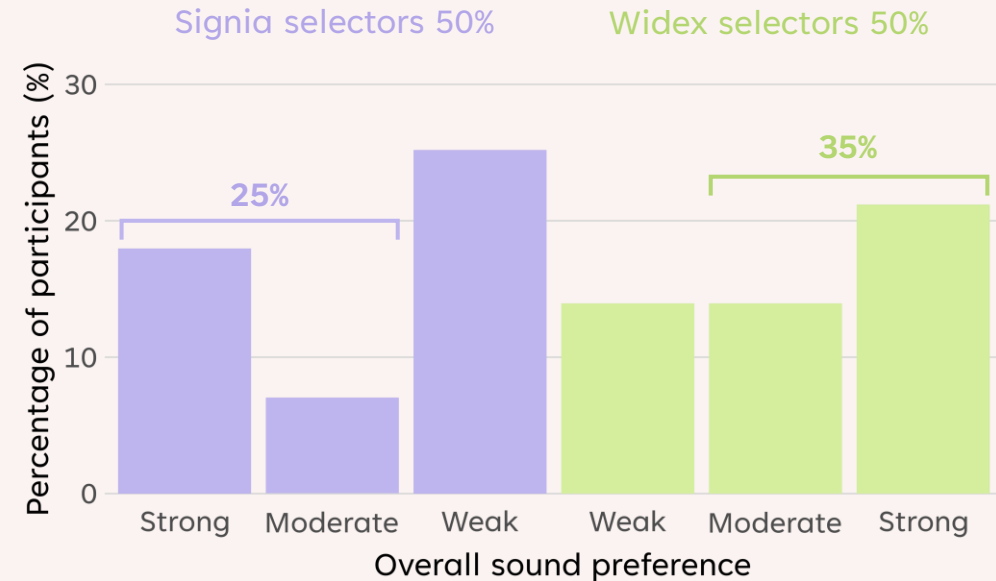
Online listening study (hearing aid recordings, N3 hearing loss)

Study 1



Guided walk study (real devices)

Study 2



- Weak preferences are hard to interpret because of the forced preference choice.
- Over 25% moderate-to-strong preferences for each sound design, in both studies.
- Guided walk: both devices are wellfitted highend HAs.
-> remarkable how many people have a preference for one sound over the other.

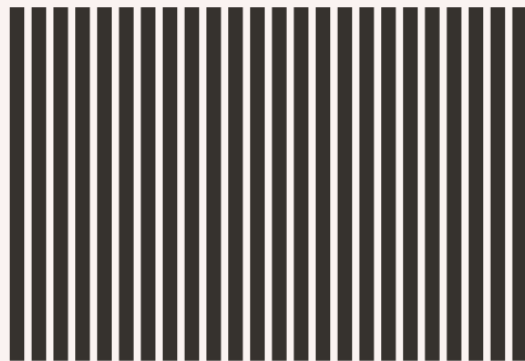
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Two different sound designs stemming from opposite signal processing choices

Frequency-domain filter bank

- Relatively narrow, uniformly spaced filters enable high-resolution parallel spectral analysis
- Efficient processing provides extra processing power

Amplitude (dBFS)

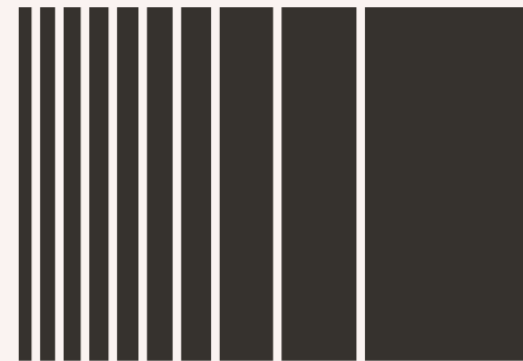


500 1000 1500 2000 2500 3000 3500+ Frequency (Hz)

Time-domain filter bank

- Variable-width filters mimic the logarithmic nature of the filters in the human cochlea
- Keeps signal processing delay low

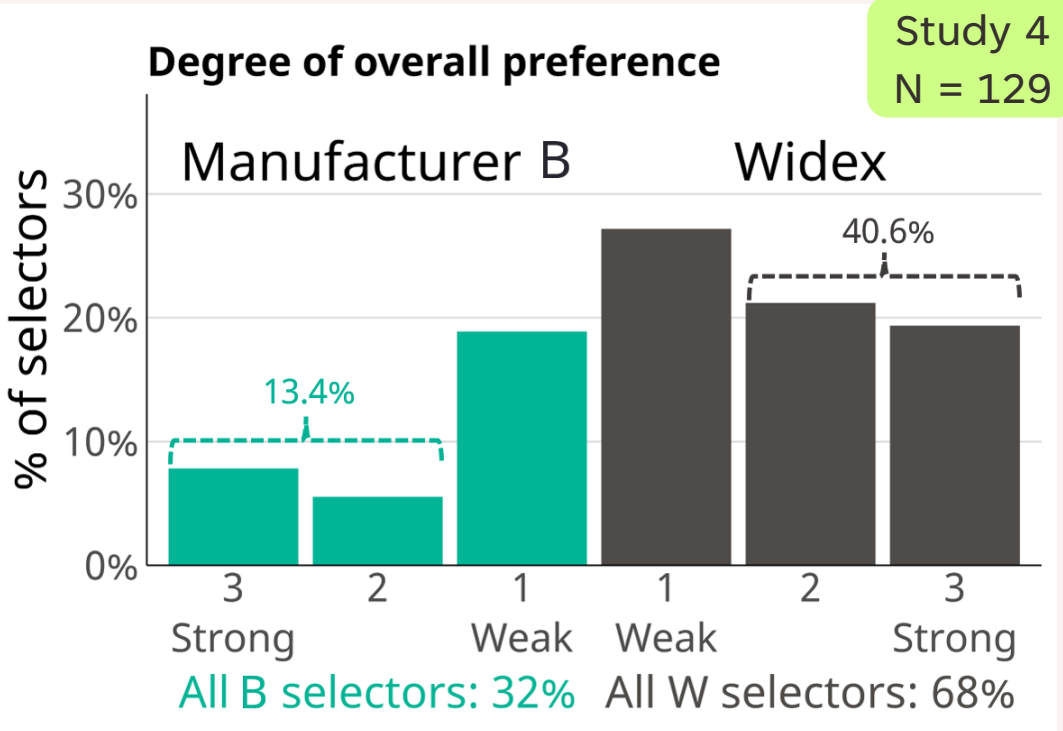
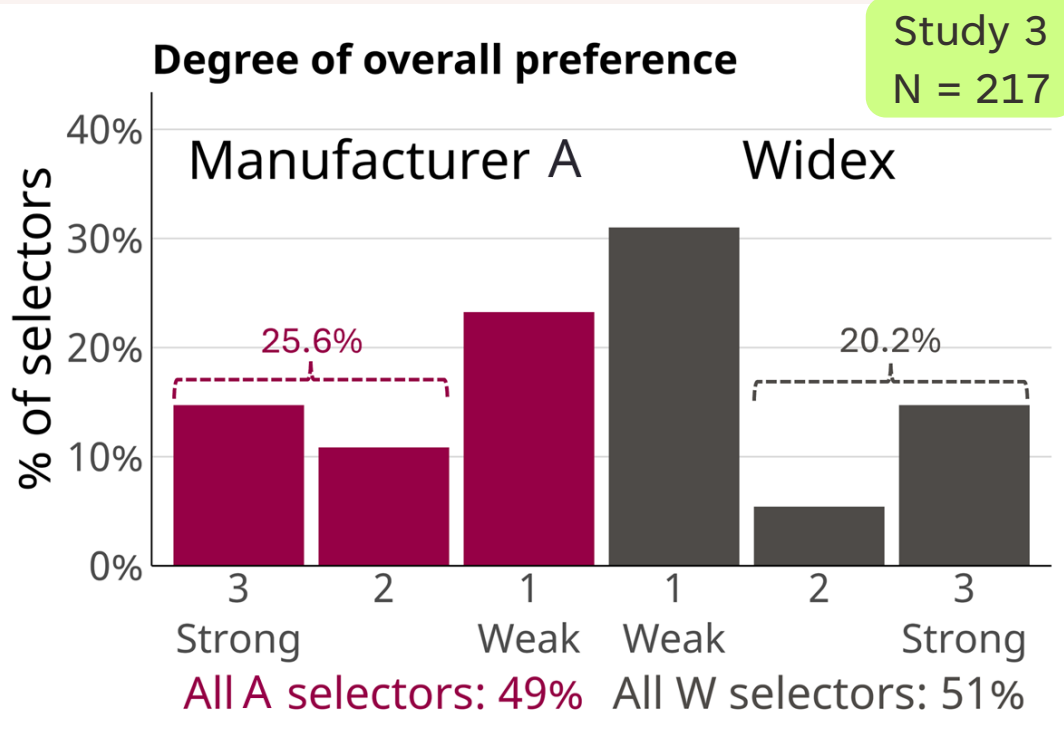
Amplitude (dBFS)



500 1000 1500 2000 2500 3000 3500+ Frequency (Hz)

People can be grouped by hearing aid sound preference

Redoing online experiment (Study 1) swapping Signia for two other frequency-domain based hearing aids.



- Fitted to a N3 hearing loss using manufacturers proprietary fitting rationale. The overall sound level was equalized.
- Similar pattern observed: 40-50% moderate-to-strong preferences for a distinct sound design

Online Sound Preference exploration tool

→ 5 audio scenes presented with idealized renderings for the two sound designs:

→ Limitation: renderings tailored for N3 hearing loss (Bisgaard et al., 2010)



Going for a Drive



A Walk in the Park



Cooking in the Kitchen



Enjoying a Night Out



Solo Piano

Sound Preference Tool

Scene 2/5

A Walk in the Park

You walk through a park as two women stroll past you, chatting. Birds sing, and the ambient sounds of the park form the background.

Use the toggle to switch between the two Sound Profiles

00 SOUND A > SOUND B

Playing sound A

Which sound do you prefer?

☒ Sound A ☐ Sound B ☐ No preference

How strong is your preference?

☐ Weak ☐ Moderate ☒ Strong

NEXT SCENE >

soundpreference.net

Online Sound Preference exploration tool

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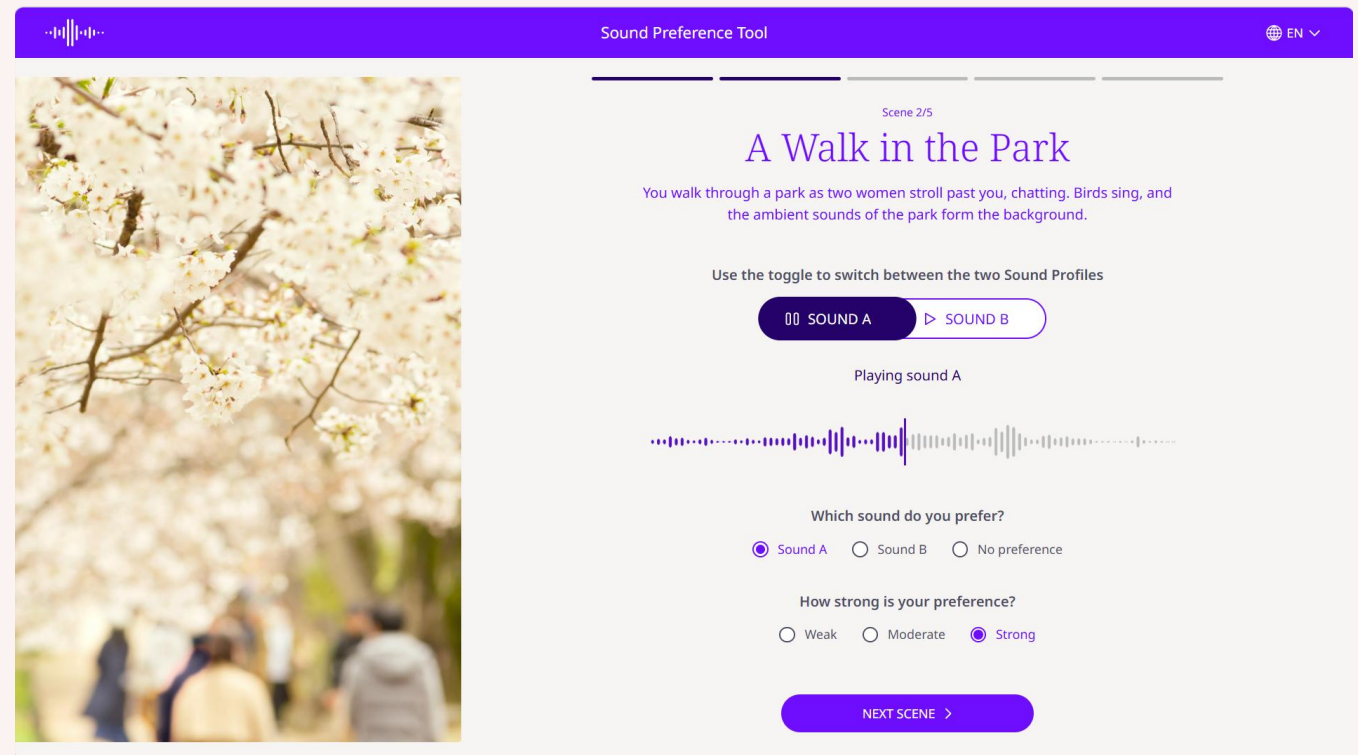
→ Limitation: renderings tailored for N3 hearing loss (Bisgaard et al., 2010)

→ Part of a wider approach aiming to:

→ Identify preference

→ Enable conversations

→ Empower HCPs and users



soundpreference.net

People can be grouped by hearing aid sound preference

→ 43 clinicians @ 28 clinics (Spain), 512 experienced and 501 new hearing aid users

→ Objectives:

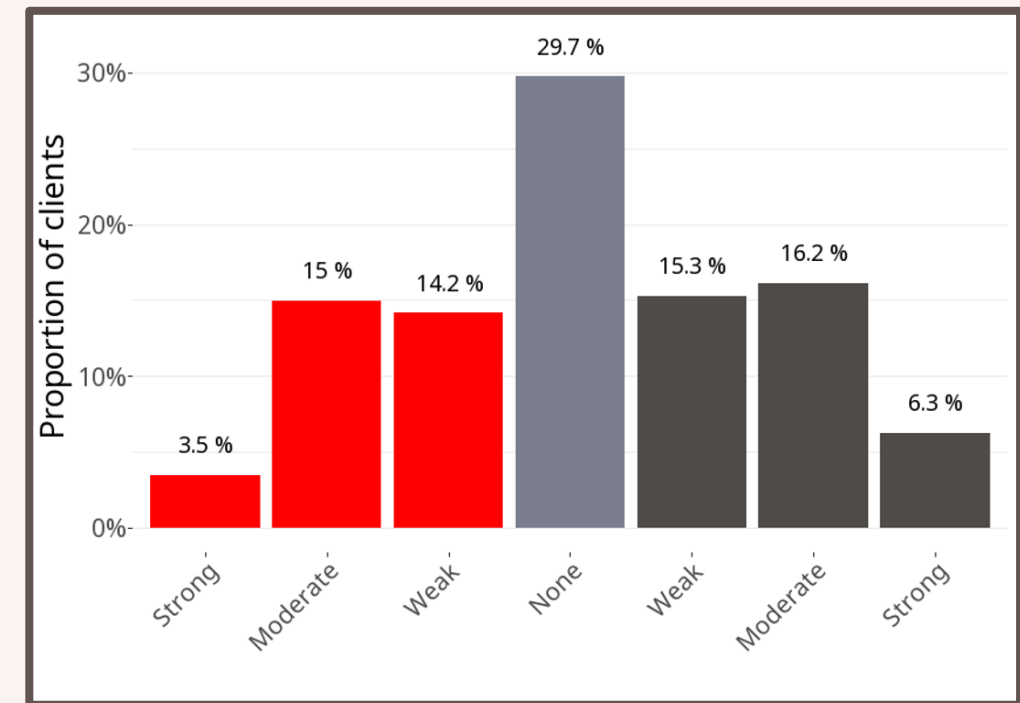
→ Implement soundpreference.net in the clinical workflow

→ Choose which of the 2 hearing aids to fit, according to sound preference

→ Evaluate potential clinical benefits

→ Differences with previous distributions to be expected because “no preference” is now an option

→ Still ~20% strong and moderate preference for each sound design



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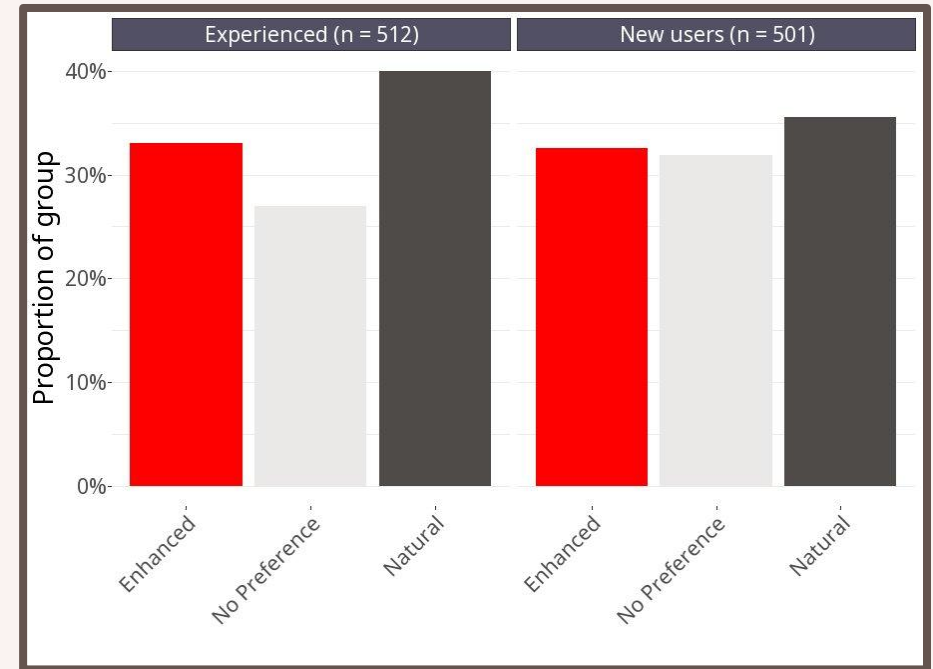
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Ongoing work – relevance for clinical use

Does clinical preference translate to real world preference?

(preliminary results)

Participants

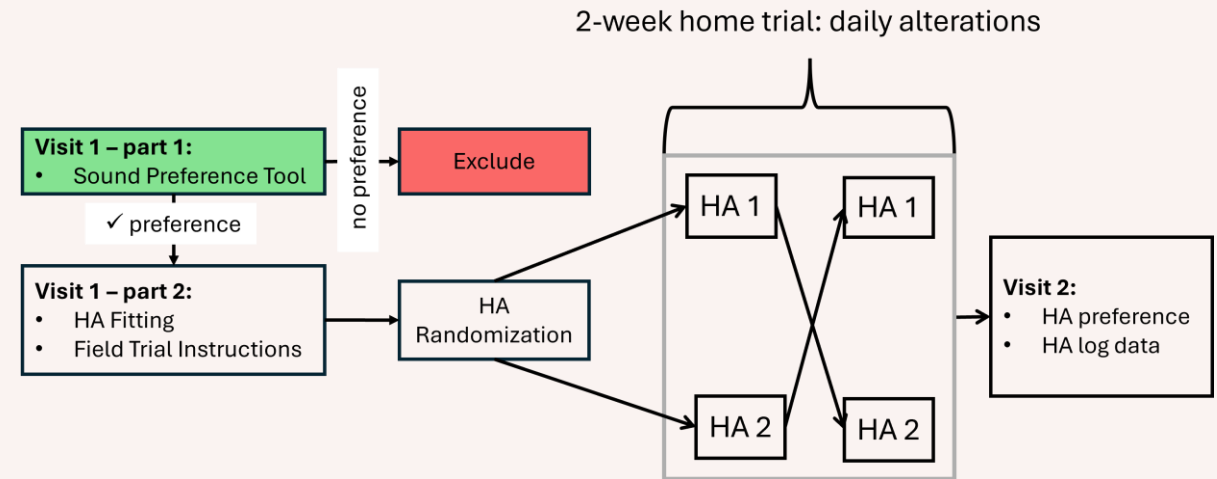
- N = 16 hearing aid candidates

Hearing Aids

- Signia IX
- Widex Allure

Participants were fitted binaurally with both sets of hearing aids

- The hearing care professional informed participants which devices matched their SPT-based preference.
- though they were given the opportunity to trial both sound designs.

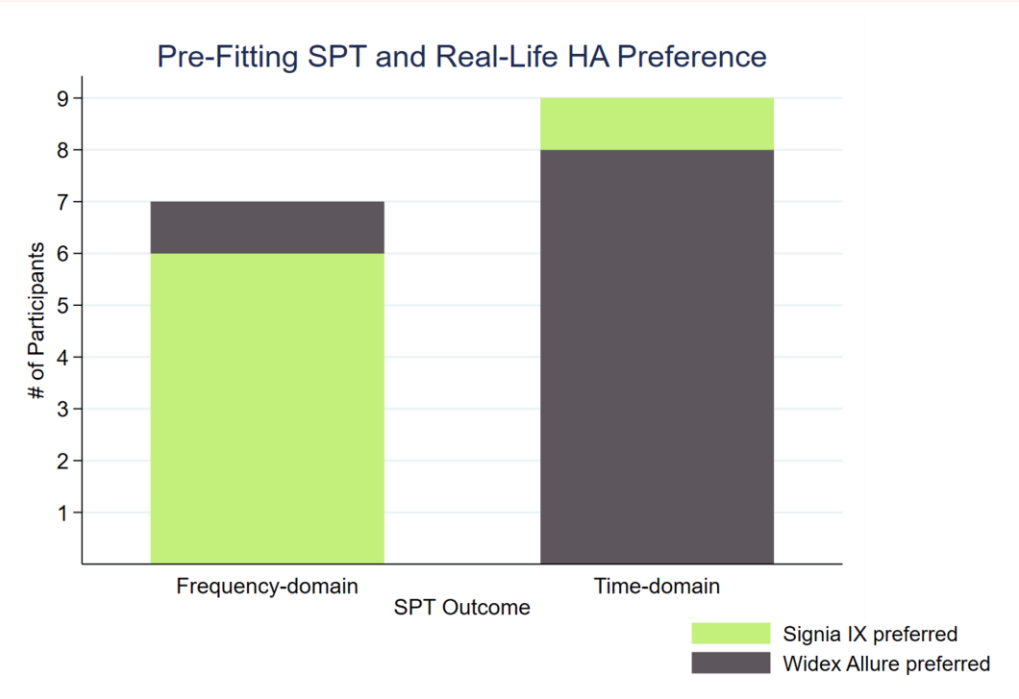


Does clinical preference translate to real world preference?

(preliminary results)

Results

Overall, 14 out of 16 participants demonstrated a real-world hearing aid preference that was consistent with their clinical sound profile preference.



Reasons for hearing aid preference varied.	
Signia IX	Widex Allure
• Wind noise was quieter • Better noise cancellation • Less noise from knives in the kitchen • Loud sounds were more pleasant • Softer in sound • Noise from the grandchildren was not as noticeable • Less noise for both large and small gatherings • Less wind noise when touching the hearing aid with [<i>unclear abbreviation</i>] • Better reverberation • Less metallic sound • Appropriate sound in noisy environments • Clearer • Feels less stuffy	• Own voice was better and spoke lower because of this • Heard noisy surroundings better • Speech understanding was better from further away • The sound seemed to help more • More depth, e.g. birds, soft sounds, the beach with the wind • It's a pleasant sound • More direct sound • It's a feeling that it's better • More natural • A slightly quieter sound

Does patient satisfaction and benefit increase?

- Large RCT study ongoing. Stay tuned.
- In the Spanish study (N=43 HCPs), we asked for their top-3 positive experiences with the Sound Preference Approach.
 - Clients value tool and tool supports professionalism and differentiation from other clinics: 16
 - Involvement/engagement/participation/empowerment of client: 11
 - Better/more comfortable adaptation: 8
 - Increased [HCP/client] confidence in choice/recommendation: 7
 - Personalized experience for clients: 7
 - Helping experienced users with bad experiences: 6
 - Motivate to try something new: 3
 - Giving patients a choice: 2

Do more patients acquire and use hearing aids?

- Very large n and long time needed to avoid confounds from monthly variation.
- A large variety of clinics and clients crucial. If only the “best clinics” with the most well-functioning clients are included, then there is only a small room for improvement.
- Indications from the Spanish study show some increase in ‘conversion rate’ = more people acquiring and keeping hearing aids.
- Data collection ongoing in Spain, Canada, and the US. Stay tuned.

Research questions

Sound preference (conclusive data)

When people are given the opportunity to explore their preference between different hearing aid sound designs:

- Do people have a preference for one sound design over another? **Yes**
- Does the preference vary between listeners? **Yes**

Sound preference as a clinical tool (ongoing data collection)

When people are given the opportunity to explore and discuss their sound preference in the clinic:

- Does clinical preference translate to real world preference? **Likely**
- Does patient satisfaction and benefit increase? **Under investigation**
- Do more patients acquire and use hearing aids? **Under investigation**

Investigating Sound Preference as a Clinical Tool

ORCA Labs Sound Preference Grant

- Funding Available: **Up to EUR 100,000**
- Application Deadline: **September 15, 2026**
- Grant Recipient Announced: **October 15, 2026**
- Eligibility: **Researchers, clinicians, universities, research institutions, and interdisciplinary teams.**
- Application Process: **Short proposal and project budget.**
- Committee: **Bec Bennett, Erin Picou, Gaby Saunders, Helen Henshaw.**

Grant information

Read more on

orca-labs.net/orca_labs_research_grant_2026

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