

Introduction

During clinical audiological assessment and follow-up appointments, patients often complete a self-report questionnaire to evaluate hearing difficulties. There are many questionnaires available that use a similar format; patients rate their listening difficulty based on a written-description of a listening situation.

Development
Based on the principle that "a picture is worth a thousand words", we developed an image-based questionnaire (IBQ) that uses photographs instead of written descriptions of listening situations to assess self-reported hearing. The IBQ includes 14 questions/scenarios based on the Common Sound Scenarios (CoSS) framework [1].

Aim
The aim of this study was to obtain data regarding preference and face-validity of the IBQ relative to its text-based version (TBQ), the Glasgow Hearing Aid Benefit Profile (GHABP; [2]), and an antiphase Digits in Noise (DiN) test [3].

Methods

Questionnaires

IBQ

TBQ

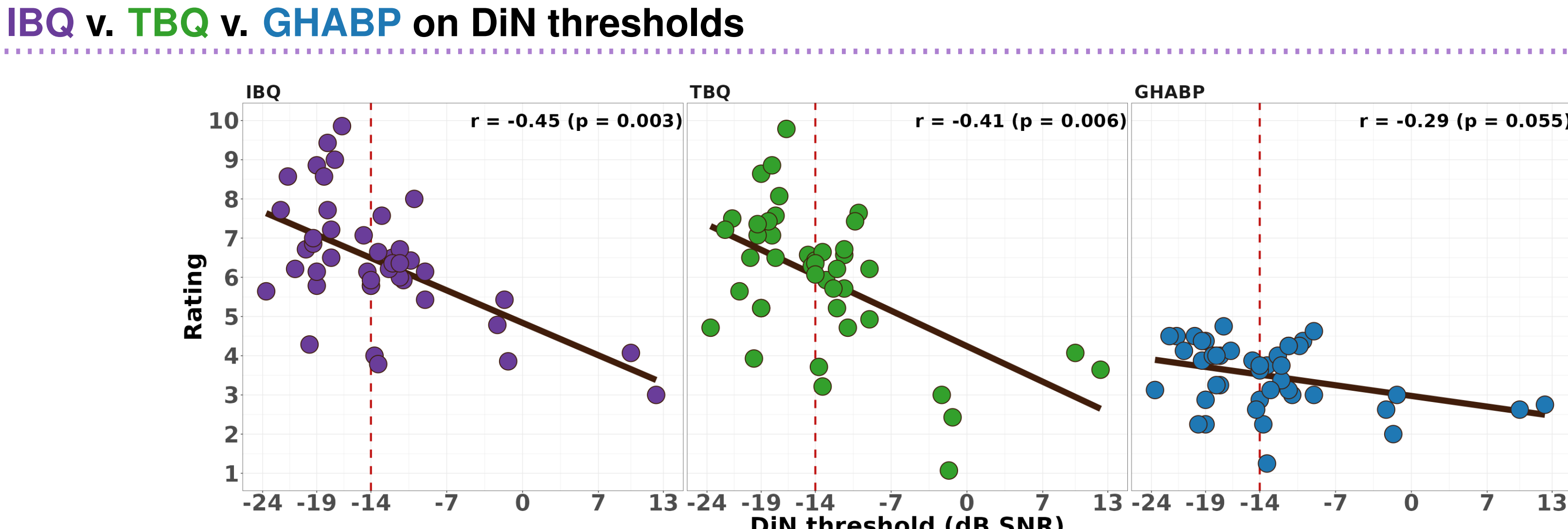
GHABP

Participants
Fifty-five adults (28F) aged between 20 and 85 (median = 39) years participated, 51% reported having a hearing loss, and 35% reported using hearing assistive technology (hearing aids, cochlear implant, etc.).

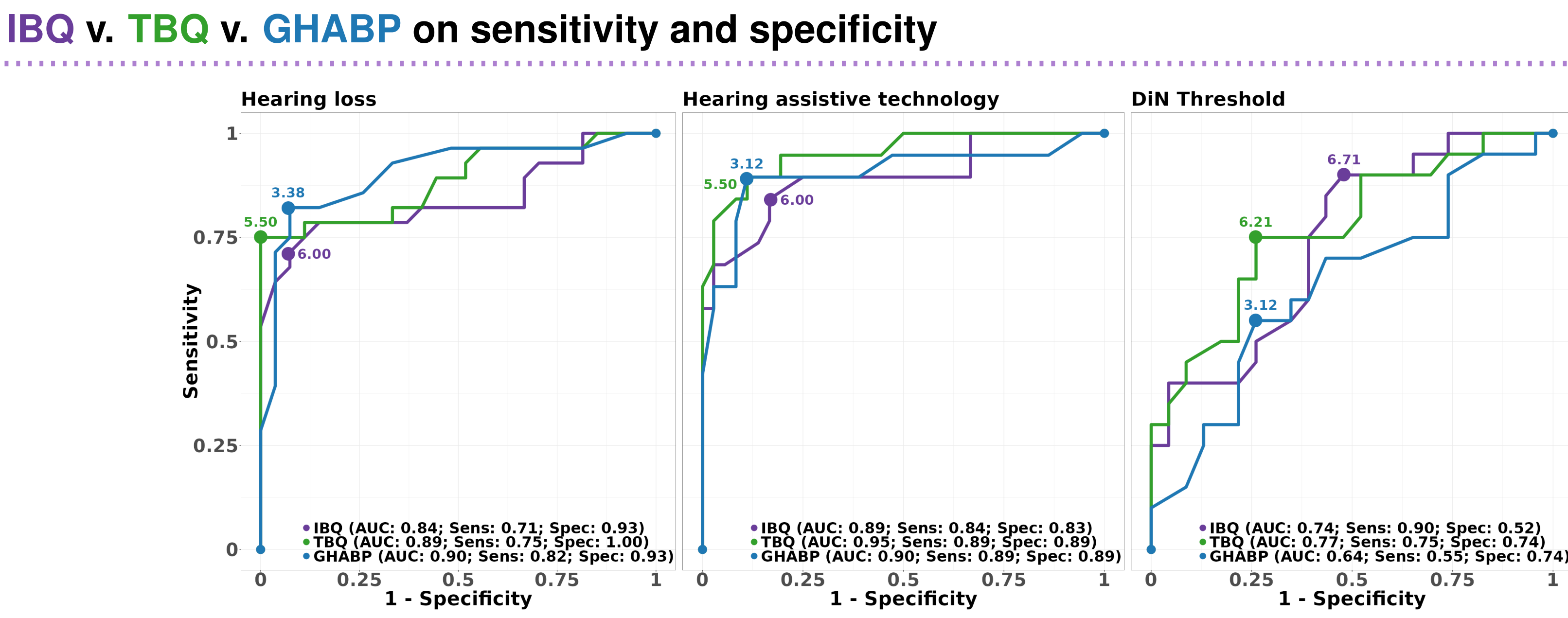
The IBQ & 14 CoSS

- 1: Talking with one other person in a quiet place.
- 2: Talking with one other person in a noisy place.
- 3: Talking with a group of people in a quiet place.
- 4: Talking with a group of people in a noisy place.
- 5: Having a telephone conversation in a quiet place.
- 6: Having a telephone conversation in a noisy place.
- 7: Listening to a talk or a play.
- 8: Listening to live music.
- 9: Watching television.
- 10: Listening to music.
- 11: Being called or alerted in a quiet place.
- 12: Being called or alerted in a noisy place.
- 13: Noticing sounds around you in a quiet place.
- 14: Noticing sounds around you in a noisy place.

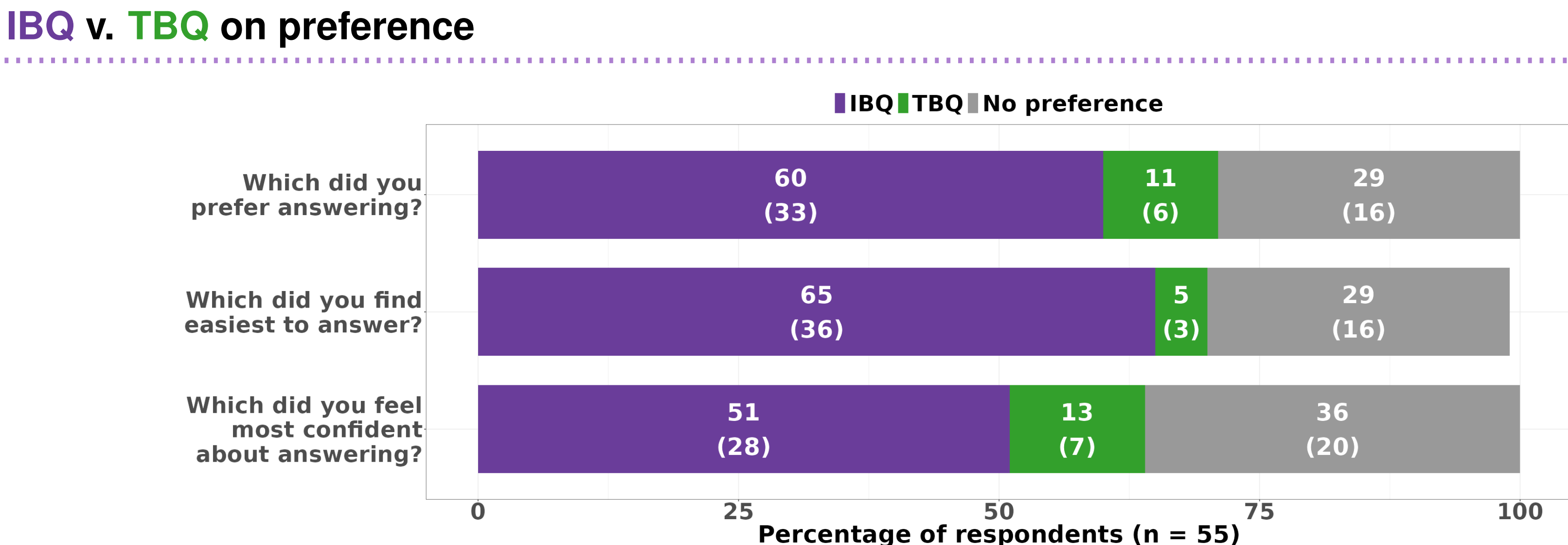
Results



- **IBQ** and **TBQ** were significantly correlated with the DiN thresholds.
- **GHABP** was not significantly correlated with the DiN thresholds.
- The magnitude of the correlations between the questionnaires were not significantly different.
- **IBQ assessed hearing difficulties via DiN as well as the other two questionnaires.**



- **IBQ** had slightly lower specificity and sensitivity than the **TBQ** and **GHABP** for identifying self-reported HL and use of hearing assistive technology.
- **IBQ** had higher sensitivity for identifying HL via DiN thresholds.
- **GHABP** was no better than chance at characterising HL via DiN threshold.
- **Work is underway to assess sensitivity and specificity for PTA thresholds.**



- Participants significantly preferred, found easier, and were more confident completing the **IBQ** than the **TBQ**.
- **Participants might engage better with the IBQ, which might lead to more reliable assessments.**

The IBQ could be an effective and more accessible clinical self-report outcome measure

[1] Wolters, F., Smeds, K., Schmidt, E., Christensen, E. K., & Norup, C. (2016). Common Sound Scenarios: A Context-Driven Categorization of Everyday Sound Environments for Application in Hearing-Device Research. *J Am Acad Audiol*, 27(7), 527–540.
 [2] Gatehouse, S. (1999). Glasgow Hearing Aid Benefit Profile: Derivation and Validation of a Client-centered Outcome Measure for Hearing Aid Services. *J Am Acad Audiol*, 10(02), 80–103.
 [3] De Sousa, K. C., Swanepoel, D. W., Moore, D. R., Myburgh, H. C., & Smits, C. (2020). Improving Sensitivity of the Digits-In-Noise Test Using Antiphase Stimuli. *Ear Hear*, 41(2), 442–450.

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