Factors associated with successful self-fitting and the need for personalised support

Elizabeth Convery¹,²,³, Gitte Keidser¹,²,³, Louise Hickson¹,³, Carly Meyer¹,³

¹HEARing Cooperative Research Centre  
²National Acoustic Laboratories  
³School of Health and Rehabilitation Sciences, University of Queensland

23rd Audiology Australia National Conference, May 2018
What is a self-fitting hearing aid?

Physical fit
• Ear tip size
• Tube length

Hearing test
• User-directed
• In situ

Fitting formula
• Automatic
• First fit

Fine-tuning
• User-directed
• Real world

Hearing aids that are set up for the user, by the user
Why offer self-fitting hearing aids?

User control
Ability to make permanent adjustments to the hearing aid settings in real time and in real-world listening environments

Accessibility
For rural and remotely located people in developed countries; for parts of the developing world that lack an audiological infrastructure

Holistic rehabilitation
Address clients’ social and emotional needs; spend more time with high-need and complex clients
Background and study aims

What we already know

**Non-audiologic factors** are associated with the successful performance of **individual self-fitting steps**

- e.g. better cognitive function predicts successful customisation of physical fit and performance of **in situ** audiometry (Convery et al. 2011, 2015)

Similar factors are important for successful use and management of **conventional hearing aids**

People are likely to **require support** with some aspect of the self-fitting task, but an **untrained layperson**, such as the spouse of a hearing aid user, is not a useful source of support (Convery et al. 2016)

What we don’t know

What factors are associated with successful performance of **the entire self-fitting procedure** with a pair of **commercially available** self-fitting hearing aids?

Can a **trained non-clinician** provide self-fitting support?

What factors are associated with the need for support?
Participants and procedure

**Test device** ‘Companion’ RIC hearing aid from SoundWorld Solutions, which is self-fit in conjunction with a smartphone app

**Participants** 60 adults (51-85 years), half with previous hearing aid experience and half without

**Assessments** Cognitive function, hearing aid self-efficacy, health locus of control, problem-solving skills, demographic and audiometric information

**Main task** Self-fit the hearing aids using the available resources

- PowerPoint instructions with captioned videos embedded in the slide deck
- A trained clinical assistant to provide personalised support on request
Successful vs unsuccessful self-fitting

41 Successful
Accurately performed all steps in the self-fitting procedure independently
OR
Sought help from the clinical assistant in order to accurately perform all steps in the self-fitting procedure

19 Unsuccessful
Made at least one unresolved error that prevented completion of the self-fitting procedure (e.g. could not execute the app-based audiometry procedure)

N = 60

Successful self-fitters were more likely to have had previous conventional hearing aid experience and to own a mobile device (i.e. smartphone, tablet)

Logistic regression model correctly classified 80% of the participants ($\chi^2 = 28.90, p < 0.0001$)
Independent vs supported self-fitting

15 Independent
Accurately performed all steps in the self-fitting procedure independently

26 Supported
Sought help from the clinical assistant in order to accurately perform all steps in the self-fitting procedure

N = 41 successful self-fitters

Successful self-fitters who sought help from the clinical assistant were more likely to believe that health care professionals are the ones who are ultimately responsible for their health and wellbeing

Logistic regression model correctly classified 66% of the participants ($\chi^2 = 6.58$, $p = 0.04$)
Discussion

Non-audiologic factors played a role in who was able to self-fit and the means by which they did so

The majority of people required support with self-fitting

Support can be successfully provided by an appropriately trained non-clinician

Implications for service delivery

Go beyond the audiogram: assess relevant non-audiologic factors

Provide access to trained personnel for on-demand support
Acknowledgements

NAL’s dedicated team of research volunteers, who make our work possible

SoundWorld Solutions, for providing the hearing aids and app used in this study