Research Endeavors Beyond the Audiology Clinic

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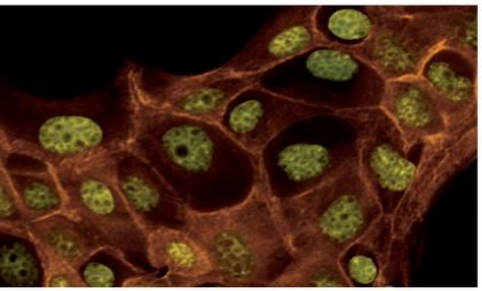
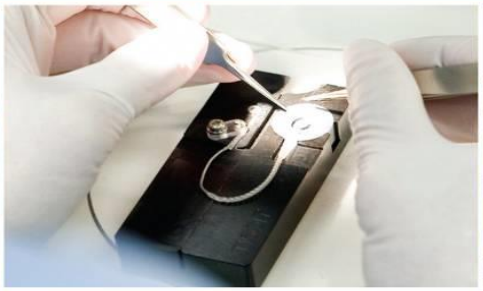
NCRAR, September 2013, Portland






Australia

- 7.7million square kilometres
- Driest inhabited continent
- Largest island
- 6th largest country in area (Brazil and USA are bigger)
- 53rd largest in population
- Plenty of room to party!!

XXXII World Congress of Audiology

Brisbane Australia

3–7 May 2014

www.wca2014.com

THE INTERNATIONAL SOCIETY OF Audiology

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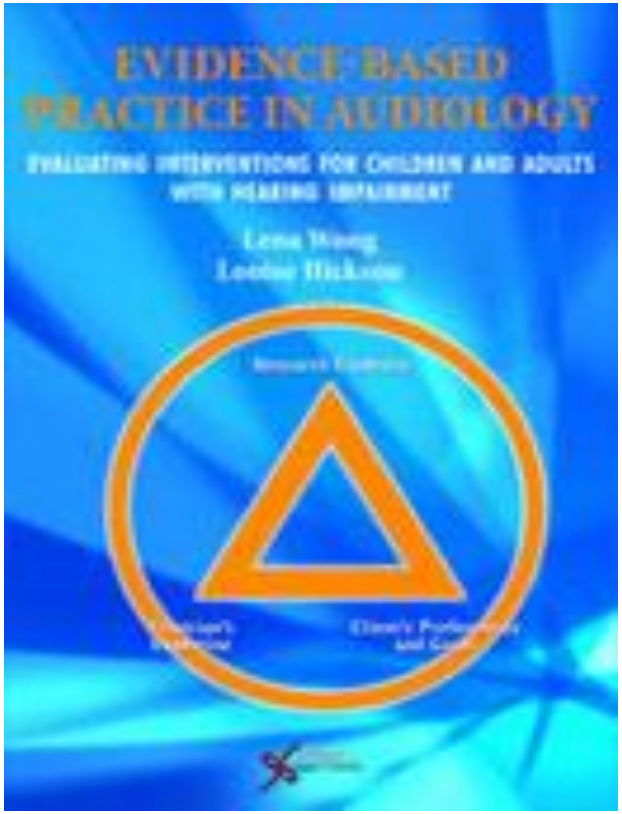
AUDIOLOGY AUSTRALIA

My cocktail party story….

"There are lots of great treatments for people with hearing loss ….but so many people who could really benefit don't ….sometimes they can't get access to the treatment or sometimes when they get the treatment they don't do as well as they should…our research is all about improving the uptake and outcomes of these treatments."

What have we been doing beyond the clinic?

1. Developing and evaluating instructions for older adults provided with a self-fitting hearing aid
2. Evaluating remote cochlear implant mapping for children
3. Investigating actions taken by people who fail a telephone hearing screening test



Main Message

Patient-centred communication is the key in the clinic and beyond....

Self-Fitting Hearing Aid Project

1. Health literacy
2. Study on hearing aid user guides
3. Study on health literacy, user guides, and hearing aid management
4. Study on self-fitting hearing aid instructions

PhD student: Andrea Caposecco
Supervisors: Louise Hickson and Carly Meyer

Topic 1: Health Literacy

Health literacy = “the degree to which individuals have the capacity to obtain, process, and understand basic health information and services to make appropriate health decisions” (Ratzan and Parker, 2000).

Limited health literacy consistently associated with **poorer health outcomes & poorer use of health-care services**. For example: more hospitalization; poorer ability to manage chronic health conditions & to take medications appropriately; and among older people, poorer overall health status & higher mortality rates (Berkman et al., 2011).

Edmonton Literacy Coalition

Prevalence of Low Health Literacy

National Assessment of Adult Literacy (2003) – measured health literacy in 19,000 American adults.

- 12% Proficient
- 53% Intermediate
- 22% Basic
- 14% Below Basic (29% of adults ≥65 years of age)

Other studies have found that between 33% and 89% of older adults have low health literacy.

At least 30% of older people have low health literacy

Health Literacy Interventions

- In the past the focus was on patients' deficits and their lack of knowledge and skills to obtain, process, and understand health information (Koh et al., 2013)

- But the growing complexity of modern day health care challenges virtually all patients (Brach et al., 2012; Koh et al., 2012)

- "We need research that investigates how health care organizations can make health information and services less complex and more adaptable for everyone" (U.S. Department of Health and Human Services, 2010a).

Topic 2: Hearing Aid User Guides

Page from the Sonotone 700 HA user guide (1945)

Journal : International Journal of Audiology
Title: Hearing Aid User Guides: Suitability for Older Adults (Caposecco, Hickson, & Meyer, in press)

Aim

To analyse the content, design, and readability of printed hearing aid (HA) user guides to determine their suitability for older adults.

Background

•All hearing aids come with a printed user guide.

•Should play an integral role on transfer of information about aid management, use, and trouble shooting.

•Only useful if read and understood by the client.

Must be a match between the content, design, and readability of the user guide and the literacy and cognitive requirements of target audience.

Missing the Target

More than 300 studies show that written health care materials often far exceed the the average reading ability of the target target audience (Griffin et al., 2006)

Audiology Research

- **Nair & Cienkowski, 2010**: The mean language level of audiology patients was <3rd grade and the mean reading level of their user guides was 8th grade.

- **Brooke et al., 2012**: 40 out of 40 participants experienced problems in completing HA tasks while following instructions provided by Danalogic and Unitron user guides.

Method

36 User Guides *(9 manufacturers)*

For each manufacturer:

•2 behind-the-ear (low and mid price)

•2 in-the-canal (low and mid price)

Assessment Tools

1. Content and Design

Suitability Assessment of Materials (SAM)

(Doak et al., 1996).

1. Content
2. Literacy Demand
3. Graphics
4. Layout and typography
5. Learning stimulation, motivation
6. Cultural Appropriateness

70 to 100% Superior Material
40 to 69% Adequate Material
0 to 39% Not Suitable Material

2. Readability

Results – Overall Suitability

- Average SAM rating: 52% (range = 40 to 68%)
- None were rated “superior”
- 50% of content/design areas consistently rated “not suitable”.
- 69% were rated “not suitable” because the readability level was ≥9th grade.

Results - Literacy Demand

- The mean reading level was grade 9.6 (range = 6.6 to 12.7). For example:

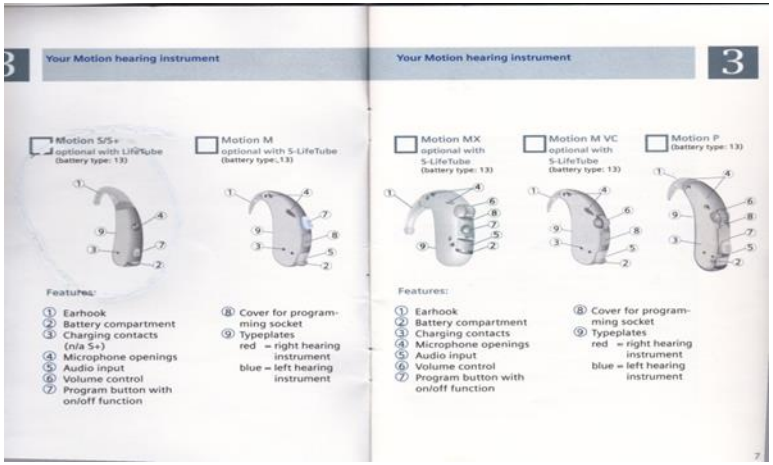
"As long as the DAI adaptor is connected to the instrument two programs will automatically be added after the standard programs, which have been programmed in to your hearing instrument by your hearing care professional." *(reading level = >grade 12)*

- Uncommon words, technical words, and jargon were often used in lieu of common words.
  For example: remedied for fix; desiccator for dry-aid kit.

Results - Content

Scope was expanded beyond the purpose or far out of proportion of the purpose in 94% of user guides

- Multiple aids
- Multiple mould types
- Features majority of adults are unlikely to use
- Features not available on the aid
- Warnings and information for HA dispensers
- Battery disposal information relevant to Europe/USA only



Results – Other Common Issues

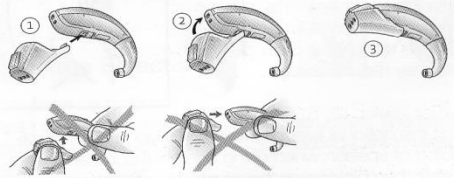
- Aid details page poorly set out and difficult to read
- No quick guide
- Use of gloss or semi gloss paper
- Low contrast between text and paper
- Small font size
- Inclusion of extensive technical information
- Graphics often difficult to see and without captions

Direct Audio Input (DAI)

Using the Direct Audio Input socket enables direct, undisturbed connection to facilities such as: Television - Radio - Remote microphone.

How to connect the audio boot to the hearing instrument:
Pay close attention to the illustrations on how to connect and disconnect the audio boot below.

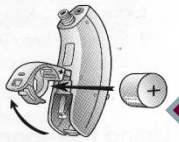
1. Make sure the tip of the audio boot is placed firstly in the HIAI (Hearing Instrument Accessories Interface).
2. Click the audio boot on to the hearing instrument.
3. The audio boot is now connected.



Low Battery Warning

Your hearing care professional can activate a Low Battery Warning function in your hearing instruments. When the battery voltage/power decreases to a certain level, the instrument will emit five soft "beeping" signals. This sequence will continue every five minutes until the instrument automatically switches off. The occurrence of the sequence can differ by using rechargeable batteries and also between different battery brands. It is recommended that you keep a spare battery on hand.

Changing the Battery



1. Gently push the battery compartment to open.
2. Use a magnet pin to remove the battery, if at hand.
3. After removing the old battery, insert the new one. It is important to insert the battery with the positive side in the correct position. The battery door has a + marking to help determine correct insertion.
4. Always use Zinc-Air or rechargeable batteries size 312 (61 model) and #13 for (71& 81 models)

Tip

Removing the battery when you are not wearing the instrument for a longer period will help prevent corrosion of the battery contacts.

Maintenance

Daily Maintenance

It is important to keep your hearing instrument clean and dry every day. To clean the instrument, use a soft cloth. If the instrument has been exposed to high humidity or perspiration, use a drying kit that is available from your hearing care professional.

To avoid the need for repairs:

1. Never immerse the instrument in water or other liquids since this may cause permanent damage to the hearing instrument.
2. Protect your hearing instrument from rough handling, and avoid dropping it on hard surfaces or floors.
3. Do not leave the instrument in or near direct heat or sunlight since excessive heat can damage the instrument or deform the casing.

Cleaning the Earmould

The earmould should be cleaned regularly:

1. Remove the earmould and the tubing from the hearing instrument before you clean it.
2. To clean the earmould, rinse with lukewarm water.
3. If ear wax is stuck in the sound canal of the earmould, the cleaning loop or a syringe with lukewarm water can be used to "push" the wax out.
4. Blow gently through the tubing to remove moisture trapped inside.
5. Be sure to thoroughly dry the earmould and its tubing before reconnecting it to the hearing instrument.

The tubing connecting the earmould to the hearing instrument should be changed if it becomes stiff or brittle. Contact your hearing care professional to change the tubing when needed.

Batteries

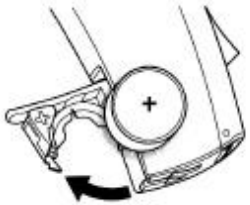
Your hearing aid takes a size **13** battery

Changing the battery:

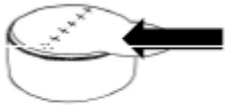
1. Find the battery door. It is at the bottom of the aid.

battery door

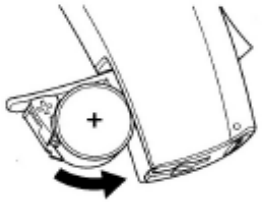
2. Open the battery door. To do this pull up on the ridge at the bottom of the aid. Remove the old battery.



3. Take the sticker off the new battery. Note: the sticker is on the positive (+) side of the battery.



4. Put the battery into the battery door. Make sure the + side of the battery faces upwards. Close the battery door.



Low battery warnings:

Low power: You will hear 2 beeps when the battery power is low. The beeps will start when the battery has a few hours left. The 2 beeps will repeat every 15 minutes. If you hear the 2 beeps, change the battery.

Flat battery: When the battery is flat, the aid will turn off. You will hear 4 beeps to indicate this.

Summary

- Majority of hearing aid user guides are not optimal for older adults and there is significant scope for improvement

- The next step is to test if the ability to manage hearing aids will be improved by better designed materials.

Health Literacy, Hearing Aid User Guides, and Hearing Aid Management

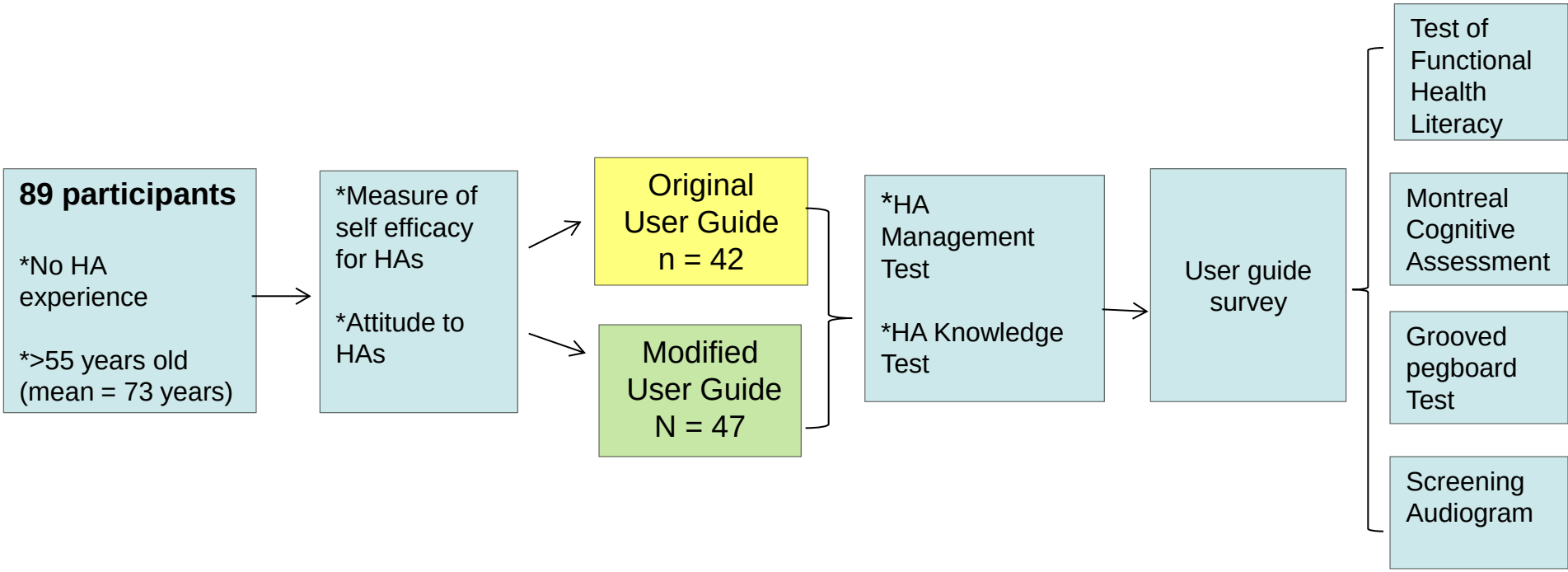
Aims

1. Does a HA user guide revised using best practice guidelines result in a) superior ability to perform HA management tasks, and b) greater knowledge about HAs; compared to the user guide in its original form?

2. Is there a relationship between health literacy and the ability of older adults to a) perform HA management tasks, and b) acquire knowledge on HAs; using a HA user guide?

3. Do older adults prefer a HA user guide revised according to best practice guidelines?

Method


89 participants
*No HA experience
*>55 years old (mean = 73 years)
*Measure of self efficacy for HAs
*Attitude to HAs
Original User Guide n = 42
Modified User Guide N = 47
*HA Management Test
*HA Knowledge Test
User guide survey
Test of Functional Health Literacy
Montreal Cognitive Assessment
Grooved pegboard Test
Screening Audiogram

The User Guides

Original User Guide

Modified User Guide

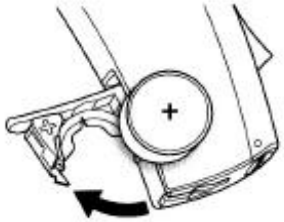
Examples of Best Practice Design

- Focus on behaviour (“how-to” information)
- Emphasize small, practical steps
- Present the most important or useful information first
- Use 12 to 14 point font
- Write in 3rd to 6th grade reading level
- Use active voice and common words
- Use dark letters on a light background
- Use simple line drawings
- Include lots of white space

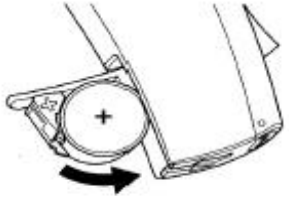
Quick Guide

1.Changing batteries

1. Find battery door.

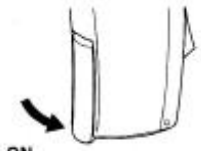


2. Open battery door — pull up on ridge.

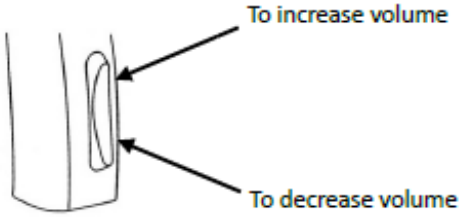


3. Put battery in battery door. Make sure + side faces up.

2. On / Off



3. Volume control



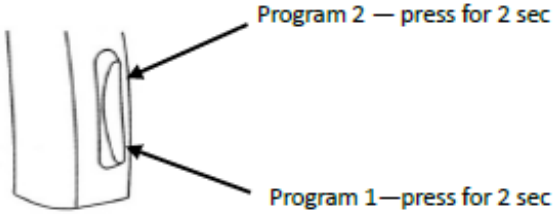
To increase volume:

Press upper part of button for 1 sec. Repeat as necessary.

To decrease volume:

Press lower part of button for 1 sec. Repeat as necessary.

4. Changing the sound program



Program 1 ♫

Press lower part of button for 2 sec.

Program 2 ♫♫

Press upper part of button for 2 sec.

Participants

- 89 participants
- 61 females and 28 males
- Average age = 73 years (range= 55 to 95 years)
- 9 with low health literacy (10%)
- 54 (61%) with hearing loss (4FAHL in better ear >25dBHL)
- 36 low/mid and 53 high socio-economic status

Hearing Aid Management Test

Hearing Aid Management Test – Score Sheet (Original User Guide)

Participant Name: _____ DOB: _____ Study Number: _____ Handedness (circle): Left Right

Date of testing: _____ Location: _____ Tester: _____

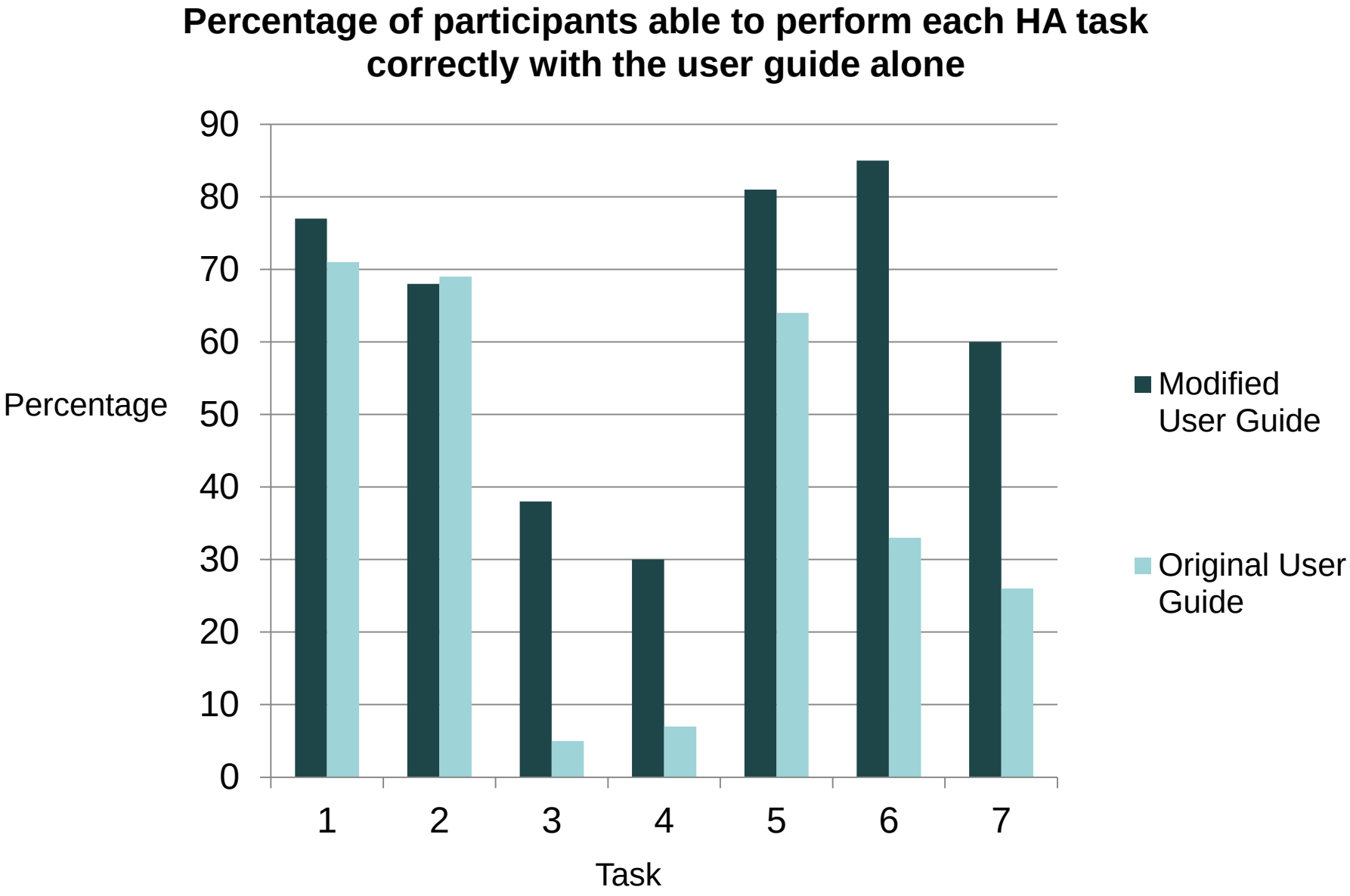
	Part A Move to prompts after 2 minutes has elapsed, participant scores 1 or 0, or gives up						**Part B: Prompts** Move to next step after 2 minutes has elapsed, participant scores 1 or 0, or gives up							
Question Number	Nil	Quick Guide	User Guide	Correct section located in user guide	Task Performance	Time (if score is 2)	1. Hand Booklet to participant if they have not used booklet			2. Point to section in Quick Guide	3. Open to section in User Guide	4. Model with verbal instructions	Final task performance	Time (from start to finish)
Start each command with "Please show me how you would....."					2 = correct 1 = errors or incomplete 0 = could not perform		Quick Guide	User Guide	Correct section located in user guide				2 = correct 1 = errors or incomplete 0 = could not perform	
1 Change the HA battery					2 1 0						Pg 7		2 1 0	
2 Turn the HA on and off					2 1 0						Pg 9		2 1 0	
3 Put the HA in your ear					2 1 0					na	Pg 12		2 1 0	
4 Hold the phone with the HA					2 1 0					na	Pg 41		2 1 0	
5 Turn up the volume of HA					2 1 0						Pg 17		2 1 0	
6 Switch the HA to program 2 – noise sound prog					2 1 0						Pg 15		2 1 0	
7 Clean wax from tube					2 1 0					na	Pg 34		2 1 0	

Preliminary Results

- No significant differences in task performance between the groups for the two simple tasks.
- Participants with the modified guide performed significantly better for all five complex tasks.
  - More likely to perform each task correctly with no prompts.
  - Required less prompts overall
  - More likely to take less time to complete tasks.

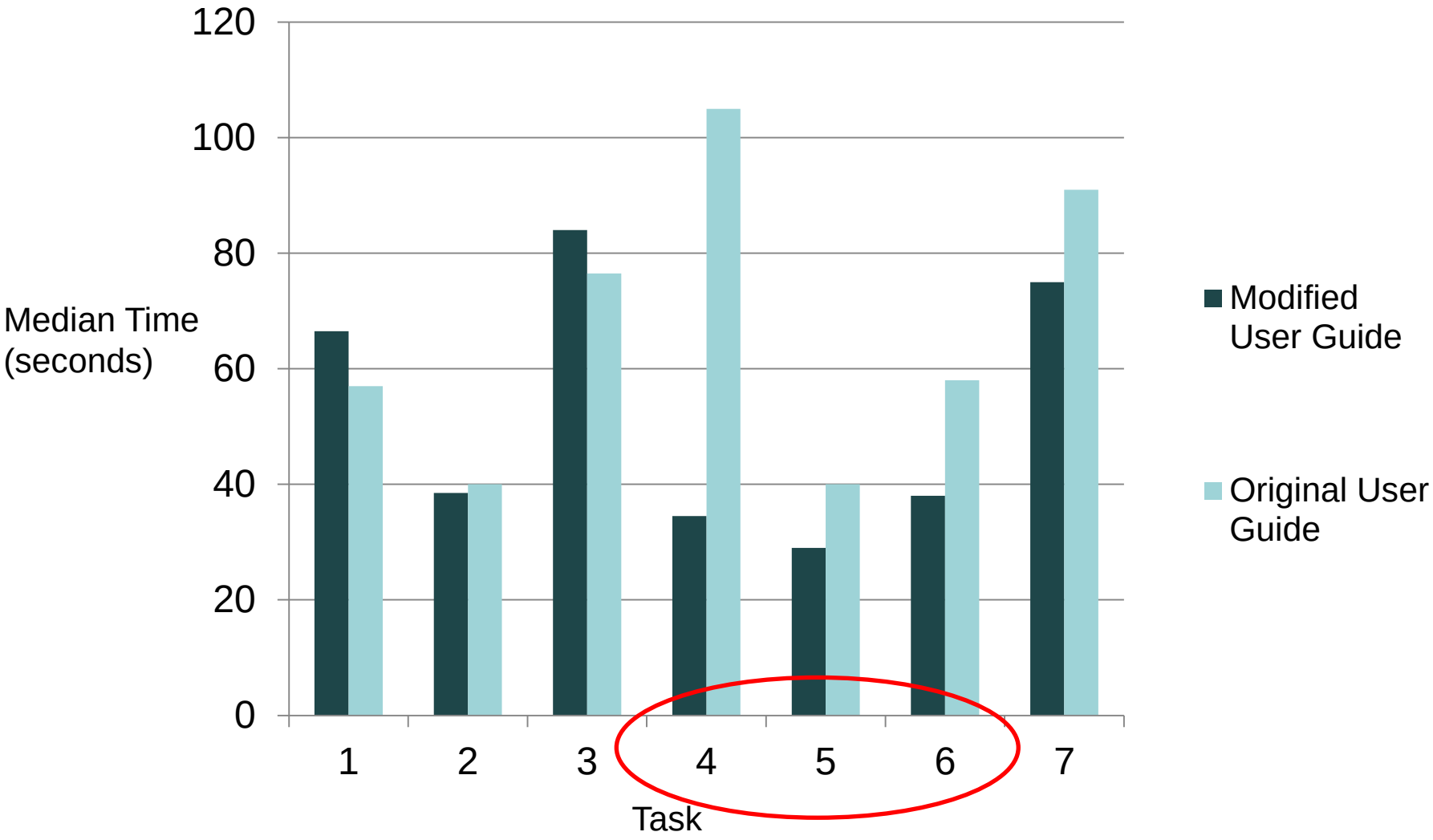
- Participants with the modified guide performed significantly better on a HA knowledge test.

Preliminary Results

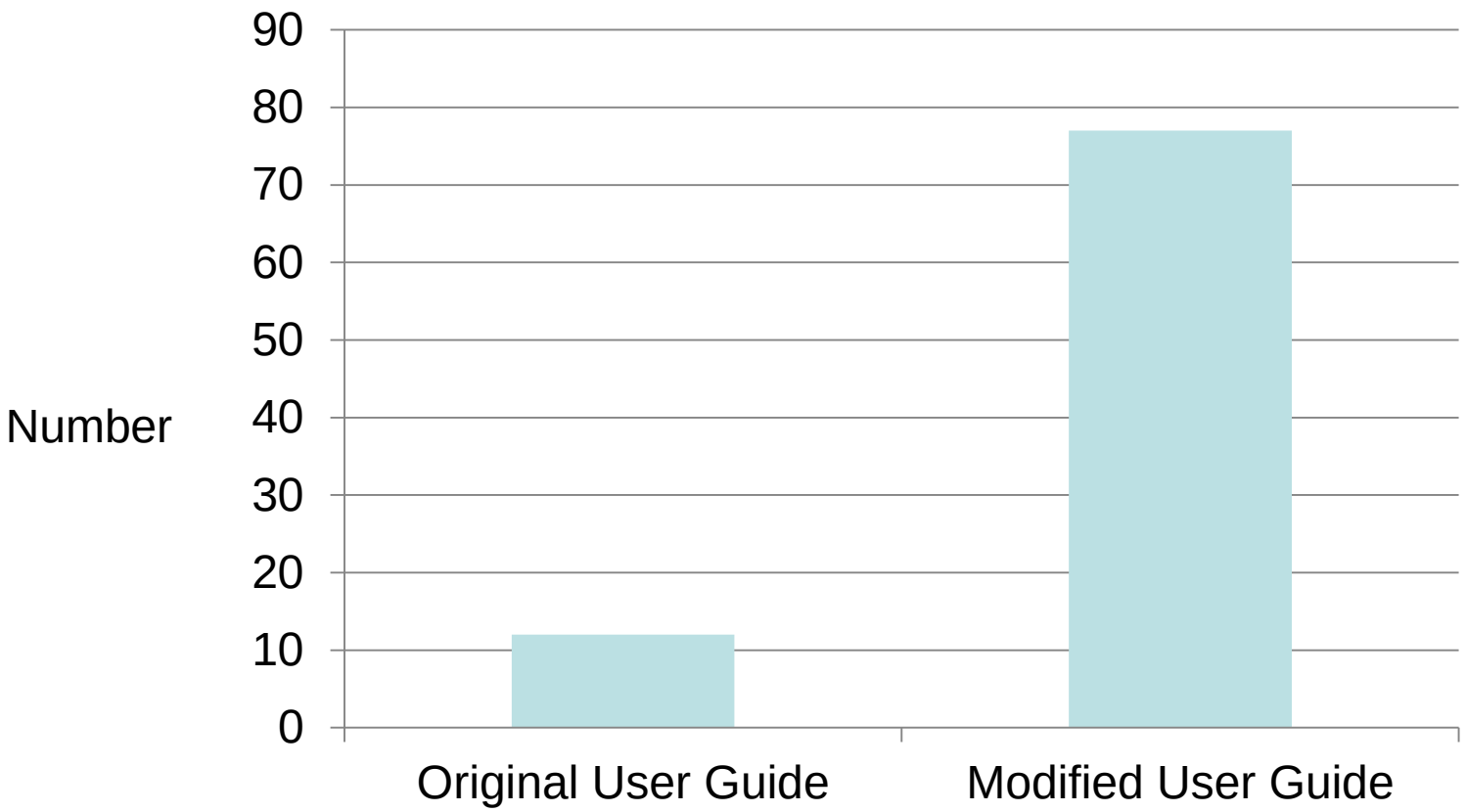


Preliminary Results

Median time taken for participants who were able to perform the task correctly with the user guide alone



Preferred User Guide



Take Home Messages

Message #1

Older adults are better able to perform hearing aid management tasks with a user guide designed using best-practice guidelines

Message #2

...and the majority of older adults prefer this type of user guide

Topic 4: Self-Fitting Hearing Aid

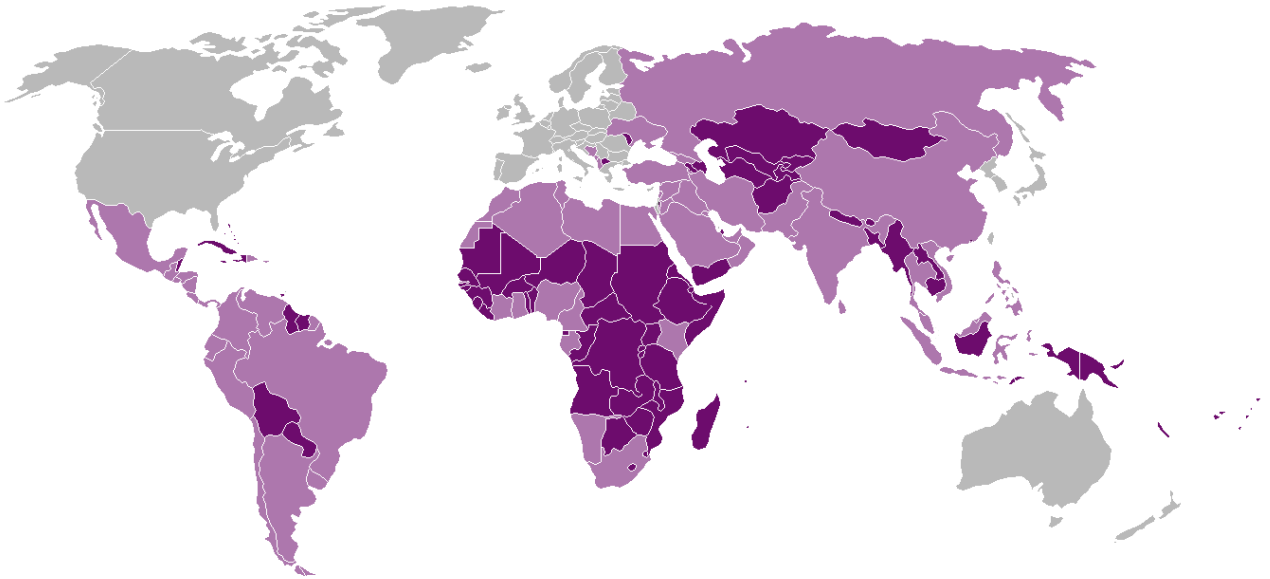
Management of a self-fitting hearing aid in developing and developed countries

Elizabeth Convery[1,2], Lisa Hartley[1,2], Andrea Caposecco[2,3], Gitte Keidser[1,2], De Wet Swanepoel[4], and Lena Wong[5,] Louise Hickson [23,] Carly Meyer [23], Eed Shen [5]

[1]National Acoustic Laboratories
[2]HEARing Cooperative Research Centre
[3]University of Queensland
[4]University of Pretoria
[5]University of Hong Kong

International Journal of Audiology, 2013, 52 (6) , pp. 385-393
Also see special issue of Trends in Amplification (2011) on Self-Fitting Hearing Aid

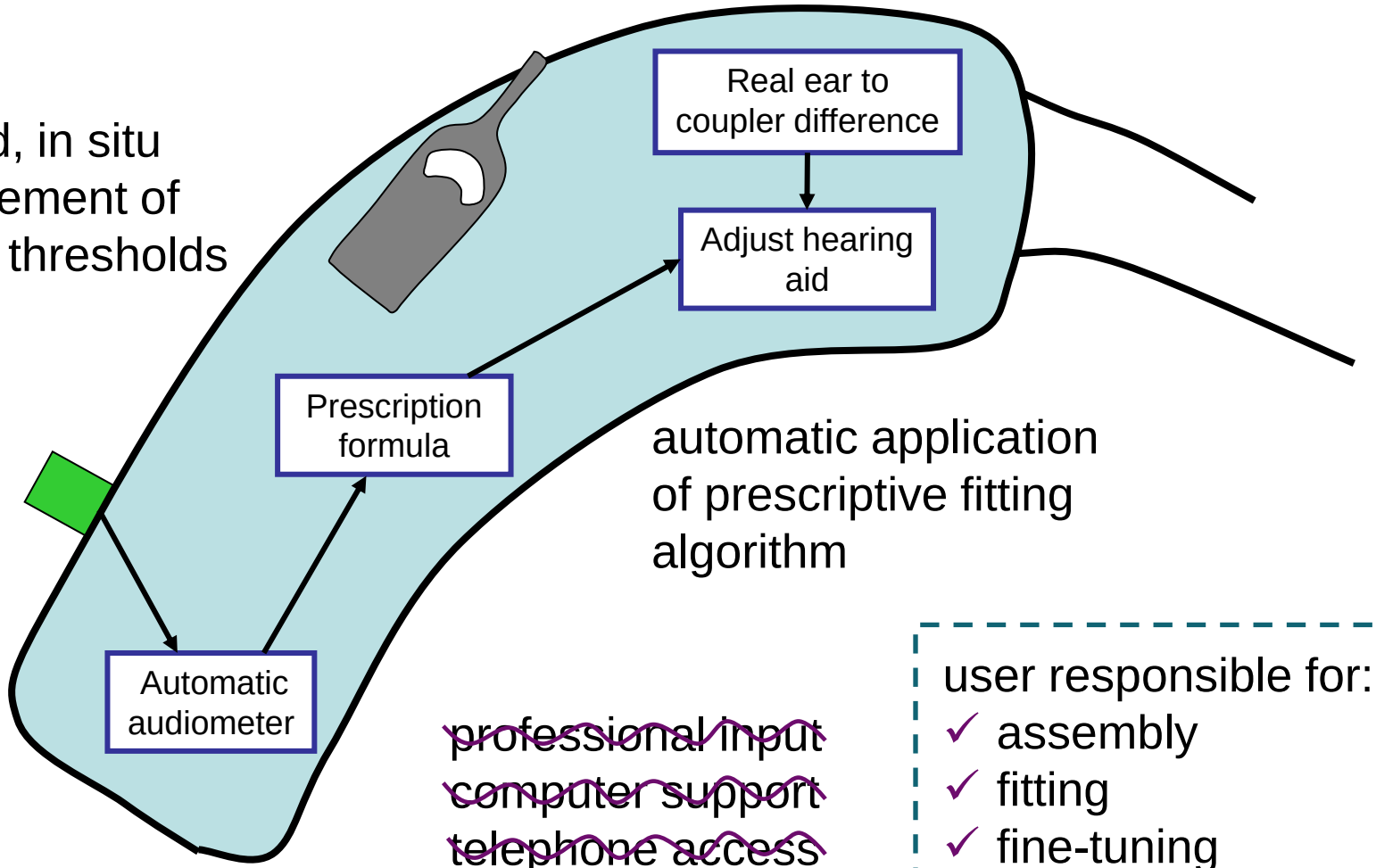
Rationale & Need



- 2/3 of 278 million people in the world with significant permanent hearing loss live in developing countries
- < 3% of them have access to hearing rehabilitation services
- other barriers
  - cost of hearing aids re: household income
  - few or no audiologists
  - sporadic/short-term visits from aid organisations

The Self-Fitting Hearing Aid

onboard, in situ measurement of hearing thresholds



automatic application of prescriptive fitting algorithm

~~professional input~~
~~computer support~~
~~telephone access~~
~~ear impressions~~

user responsible for:
- ✓ assembly
- ✓ fitting
- ✓ fine-tuning
- ✓ management

Aim

- to investigate management of the **assembly** component of the self-fitting process among hearing-impaired people in developing and developed countries
- can participants (and their partners, if requested) follow a set of illustrated, written instructions to do the following:

  - select and assemble an instant-fit tip, tube, and BTE hearing aid
  - insert a battery
  - insert the device into the ear
  - troubleshoot the physical fit
  - press a button to activate the device

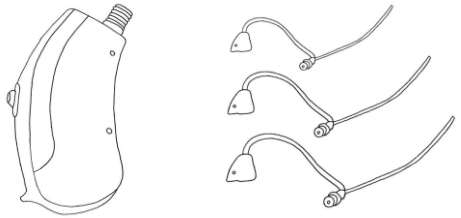
Assembly Instructions

- designed in accordance with best practice health literacy principles *("ability to obtain and understand the basic health information needed to make appropriate health decisions")*

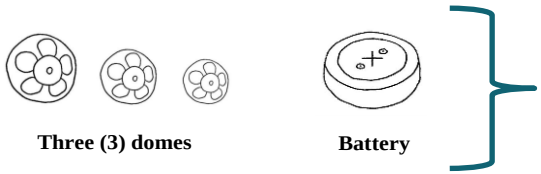
third grade reading level

Parts of the hearing aid

1. The parts for the right hearing aid are in the red bag. The parts for the left hearing aid are in the blue bag.
2. Open the blue bag and take out the parts.
3. Check you have all the parts:



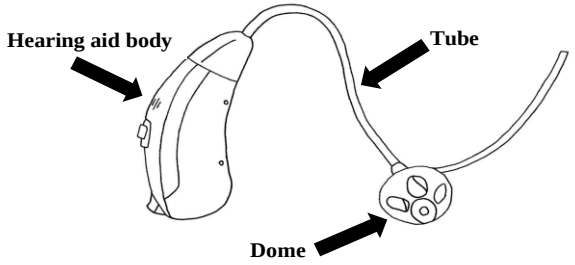
Hearing aid body **Three (3) tubes**



Three (3) domes **Battery**

2

4. Now you will put the parts together. Please follow the steps shown on the next few pages. This is how the hearing aid will look when you are finished.



line drawings paired with text to reinforce the message

3

Caposecco et al., 2011

Participant Characteristics

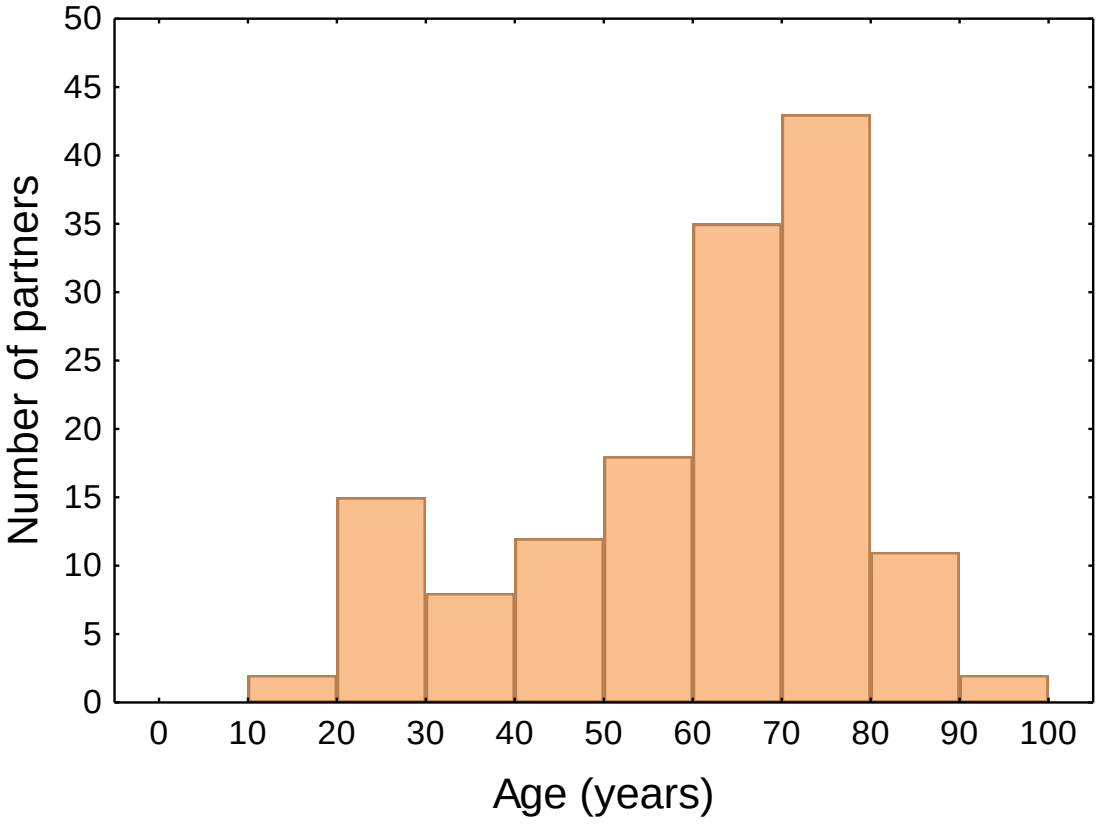
	Australia (N = 80)	South Africa (N = 40)	Hong Kong (N = 40)
Assembly instructions	v1.0 (English)	v2.0 (English)	v2.0 (Chinese)
Age	73	67	74
Gender	65% M, 35% F	45% M, 55% F	50% M, 50% F
Education	TAFE/trade qualification	high school	< high school
Occupation	manager	unemployed	labourer/driver
Vision (self-assessed)	excellent/good	good	good
Reading (self-assessed)	excellent	good	moderate
Hearing (self-assessed)	fair	poor	fair
Hearing aid experience	11.0 years	3.8 years	2.4 months
Cognitive function (MoCA)	26/30	22/30	22/30*
Manual dexterity (GPT)	101 seconds	116 seconds	108 seconds
Health literacy (S-TOFHLA)	34/36	27/36	26/36**

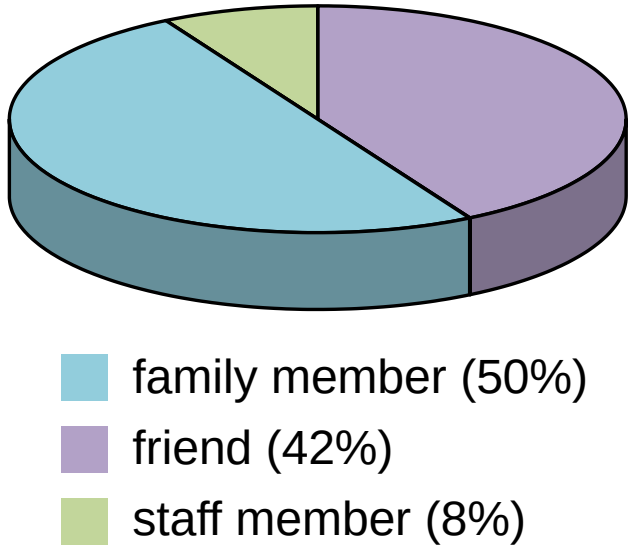
*Hong Kong version (Nasreddine et al., 2010) **Chinese version (Tang et al., 2008)

Participant Characteristics

Australia (N = 80)	South Africa (N = 40)	Hong Kong (N = 40)
Instructions v1.0 (English)	Instructions v2.0 (English)	Instructions v2.0 (Chinese)
mean age = 73 years (range = 45 – 90)	mean age = 67 years (range = 32 – 88)	mean age = 74 years (range = 60 – 92)
↑ education	↓ education	↓ education
++ hearing aid use	+ hearing aid use	– hearing aid use
↑ cognitive function	↓ cognitive function	↓ cognitive function
↑ manual dexterity	↓ manual dexterity	↑ manual dexterity
↑ health literacy	↓ health literacy	↓ health literacy

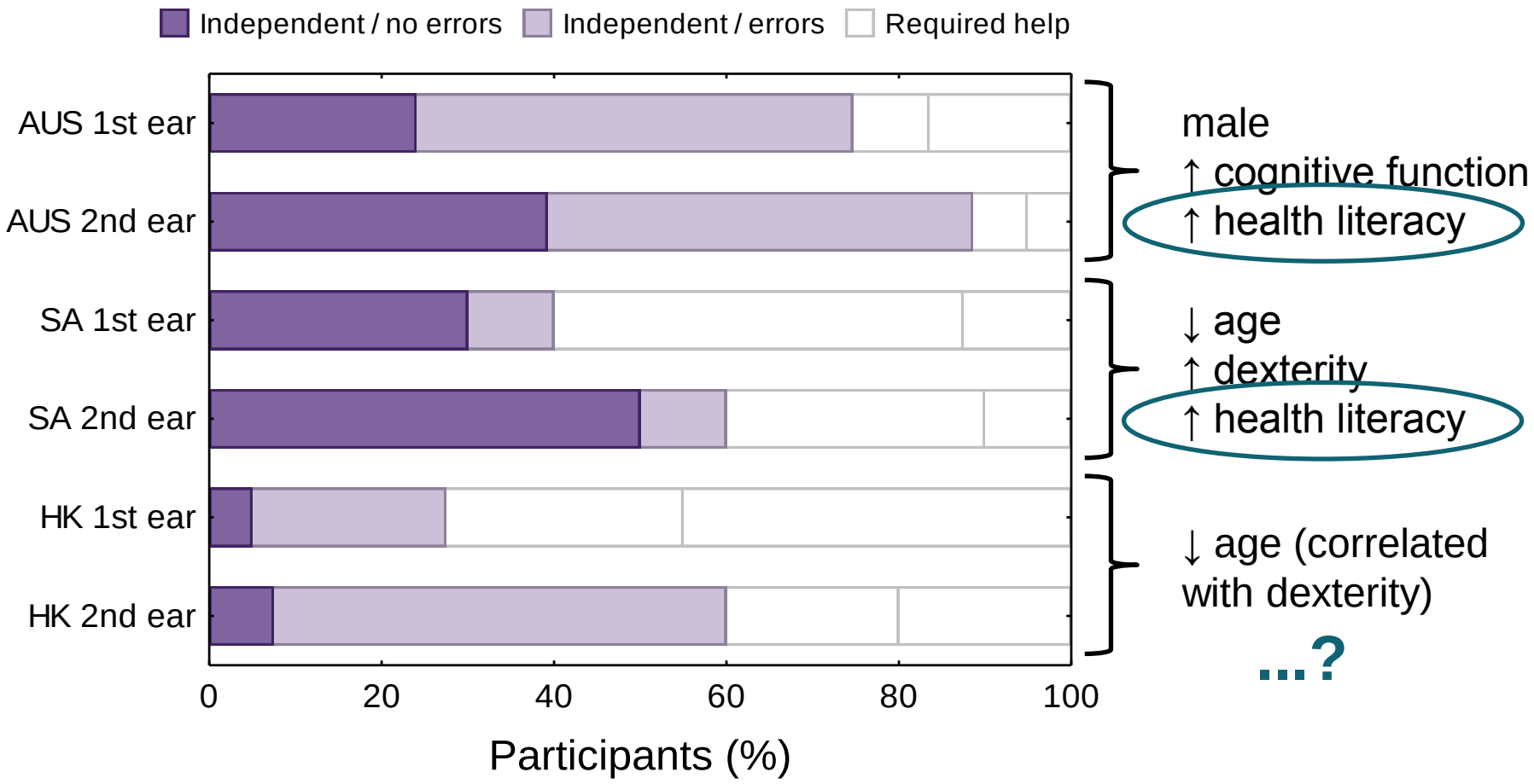
Partner Characteristics





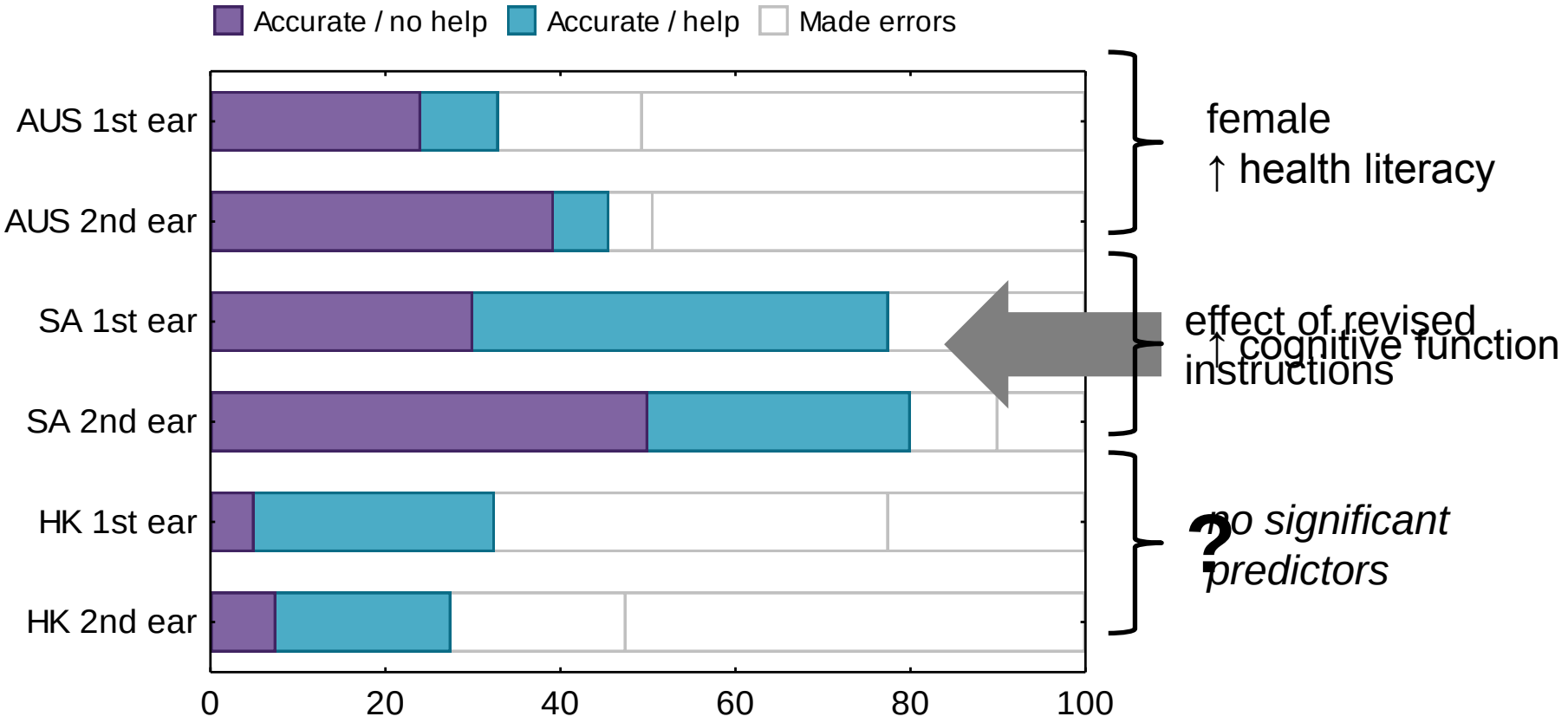
Across all sites: Median = 67 years (s.d. = 18.9)
Range = 13 – 92 years

Independent Task Completion



- more participants completed the task independently the second time (and they did so significantly faster)
- health literacy a factor in AUS and SA, but not in HK... why?

Accurate Task Completion



- revised instructions helped more participants do the task correctly
- but this did not happen in HK... again, why?

58% of HK subjects did not read the instruction booklet fully, ***or at all!***

Conclusions

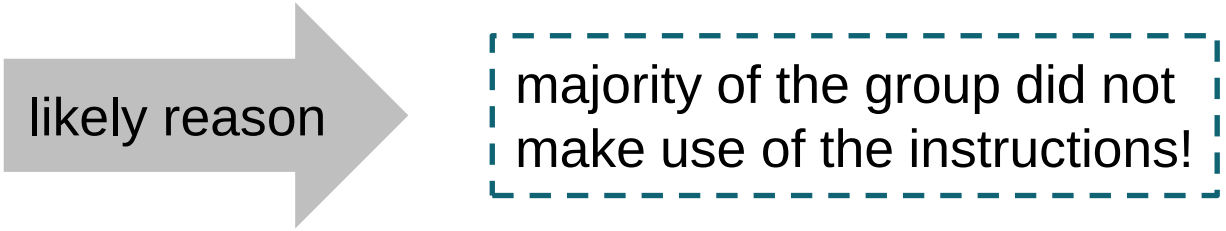
- health literacy played a major role in whether or not the AU and SA groups were able to assemble the hearing aid **independently**
- SA participants had lower health literacy levels overall re: the AU group, yet with an improved version of the instructions they were far more **accurate** at the assembly task (63% vs 25%)
- health literacy had a significant effect on accuracy only among the AU participants, not the SA participants

good news

with the right instructions, a low level of health literacy is not a barrier to assembling a self-fitting hearing aid

Conclusions

- despite having many characteristics in common with the SA group, the HK participants had a significantly higher error rate than the other two test sites
- HK was the only site recording a large number of omissions (skipped steps)
- health literacy did not have an effect on **independent** or **accurate** task completion



Take Home Messages

Message #1

People of diverse linguistic, cultural, and socioeconomic backgrounds can accomplish the self-fitting hearing aid assembly task...

Message #2

...but the instructions are critical to success!

What have we been doing beyond the clinic?

1. Developing and evaluating instructions for older adults provided with a self-fitting hearing aid
2. Evaluating remote cochlear implant mapping for children
3. Investigating actions taken by people who fail a telephone hearing screening test

Remote CI Mapping Project

• CI audiology is a specialized field and usually only available in larger cities or via “outreach” services

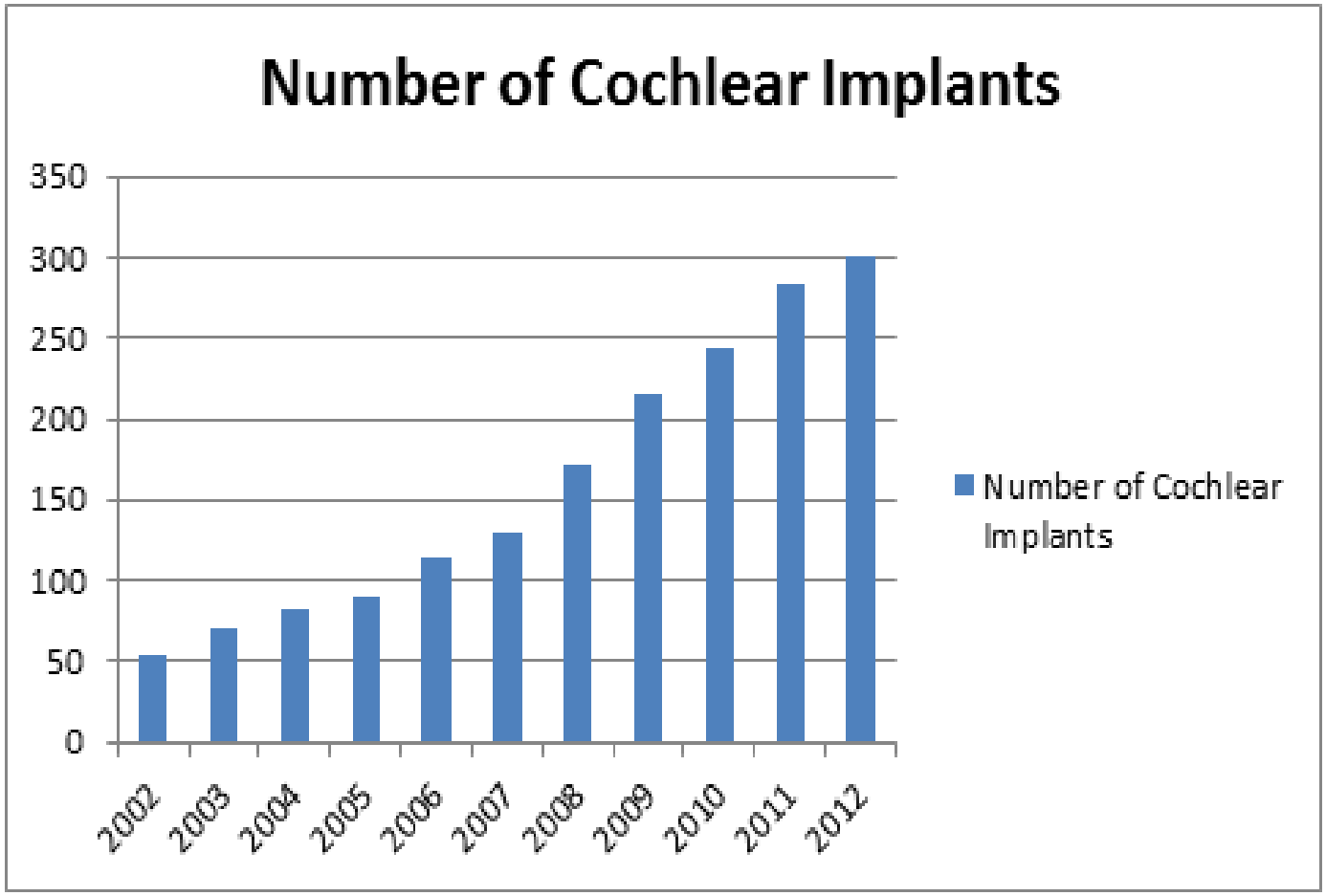
• Outreach service visits may not be time or cost effective for the hospital or clinic providing the service

•Remote MAPping offers an alternative solution and may allow more equitable access to MAPping services for these families

• Small number of anecdotal and proof of concept reports on remote MAPping (Franck et al 2006; Polovoy, 2008; Ricks, 2008)

Background

Hear and Say Cochlear Implant Program – Queensland, Australia



Aims of the Validation Study

1) Investigate the criterion validity of CI MAPs created using remote MAPping by comparing them to MAPs created in the conventional manner (FTF)

2) Assess satisfaction of children, parents and professionals with remote MAPping of CIs

3) Develop procedures for remote MAPping

4) Assess the eHAB telerehabilitation system

Emma Rushbrooke's Masters project
emma@hearaandsay.com.au

Project Sub Groups

Study Group	Test Condition	N	Mean Age	Gender
Group1 (>10yrs)	Remote vs FTF	**20**	**16.40**	6 (M) 14 (F)
Group 2 (5-10yrs)	Remote vs FTF	**20**	**7.9yrs**	10 (M) 10 (F)
Group 3 (3-5yrs)	Remote vs FTF	**10**	**4.25yrs**	6(M) 4 (F)
Group 4 (>5yrs)	Remote only "implementation trial"	**5**	**13.43yrs**	2 (M) 3 (F)

Note. FTF = face to face environment; Remote = audiologist in another room or offsite location;(M)=male; (F)=female

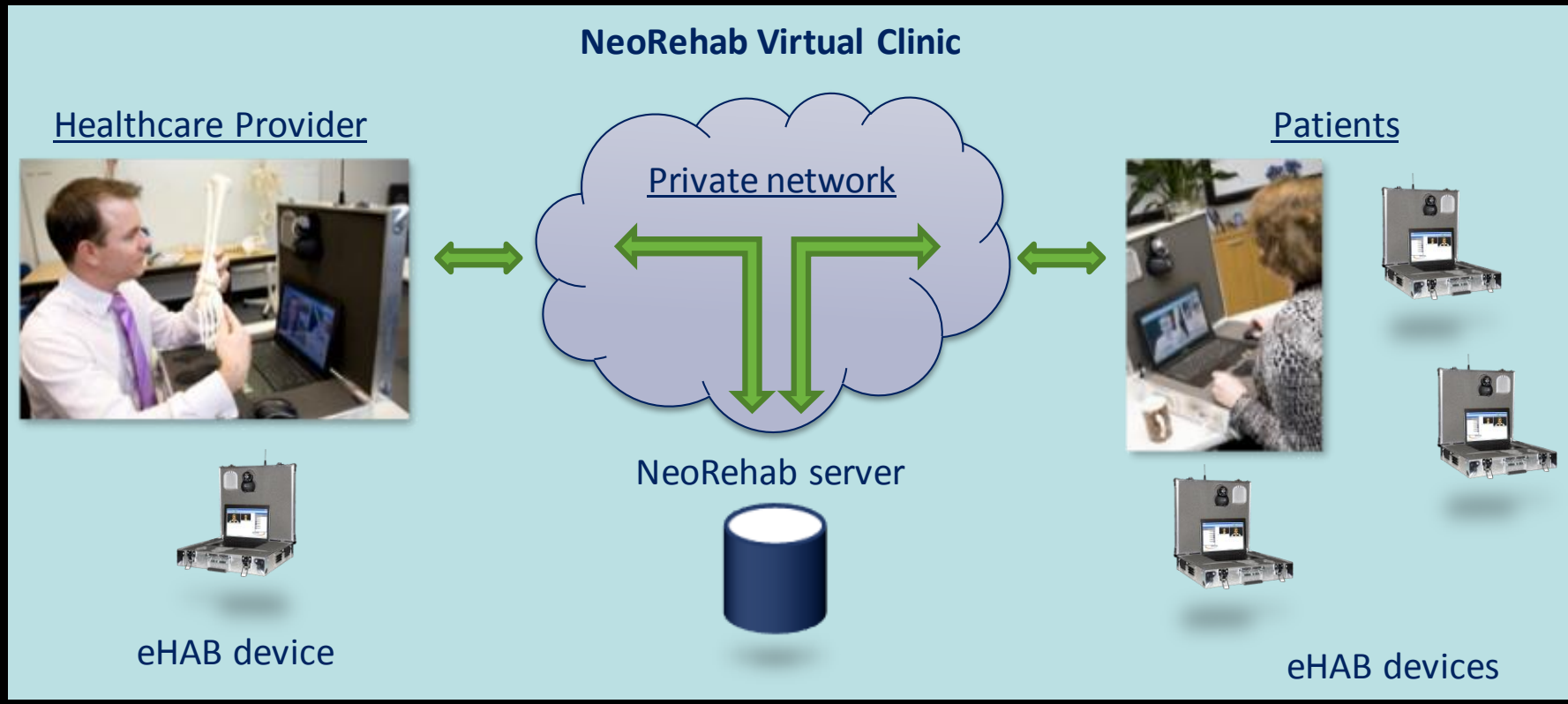
Method Groups 1,2,3

- Electrode comparisons - a subset of 8 electrodes MAPped alternately in face-to-face (FTF) and remote conditions
- Speech perception comparisons using the FTF MAP vs the remote MAP
- Satisfaction questionnaire

Equipment

Example of the eHAB® System
(NeoRehab Pty Ltd, Brisbane, Australia)
www.neorehab.com

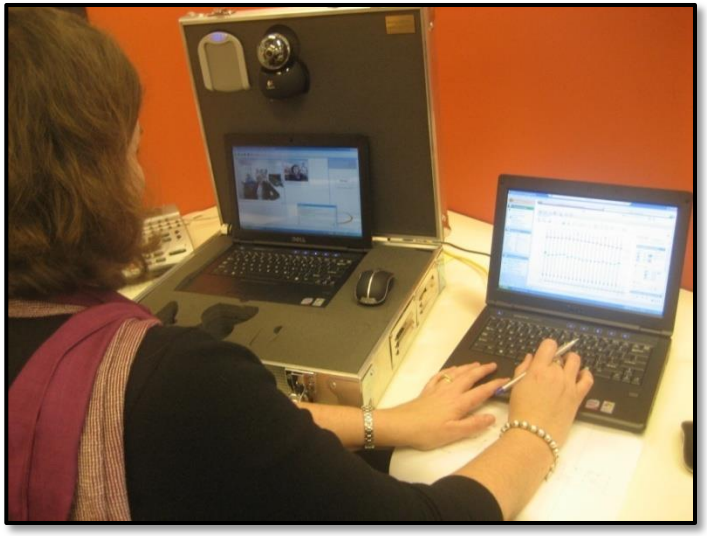
Homecare



THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

telerehabilitation
Research Unit

Room Set up



On-line audiologist

CI participant

FTF audiologist, CI participant and parent

Room Set up

Play audiometry

Results

- No significant difference between MAPping levels obtained remotely vs face-to -face for these groups
- Speech perception testing showed no significant difference between the two conditions for these two groups
- Overall, valid and acceptable for children >3yrs

Electrode Comparisons

Paired t- test of the electrode T and C current levels obtained in FTF and remote conditions in the 5 to10 years age group

Condition	N (electrodes)	Mean (SD)	t	df	*p*
T- level FTF	142	131.19 (24.31)	}-0.26		
T-level Remote	142	131.27 (24.10)		141	0.79*
C- level FTF	105	184.48 (27.15)	}-0.55		
C-level Remote	105	184.68 (27.40)		104	0.58*

Note. FTF = face to face; N= number of electrodes; CL= current level; SD= standard deviation; df = degrees of freedom; (* level of **no** significant difference = >0.05).

Speech Perception Tests

Wilcoxon Signed Ranks Test ; CNC Words & BKB Sentences for Group 2 (5 to10 yrs)

	FTF				*Remote*					
Name of Test	*N*	*Mean Score %*	*SD*	*Range*	*N*	*Mean Score %*	*SD*	*Range*	Wilcoxon z	*p*
CNC Words Recorded 65dBA (Quiet)										
Phoneme Score	13	**80.15**	12.58	53- 94	13	**81.38**	12.25	56- 93	-1.348	.178
Vowel Score	13	**85.38**	19.85	28- 100	13	**85.92**	18.24	28- 100	-.179	.858
Consonant Score	13	**76.38**	13.09	52- 96	13	**77.84**	14.65	50- 94	-1.101	.271
Word Score	13	**60.76**	22.08	24- 92	13	**61.38**	22.98	20- 92	-.238	.812
BKB Sentences Recorded 65dBA (Quiet)										
	13	**82.15**	14.24	52- 100	13	**84.46**	14.00	50- 100	-.940	.347

Satisfaction Questionnaire

Groups 1 and 2 children > 5 years

- Picture quality – 10% excellent; 80% good or v. good; 10% not so good
- Sound quality – 90% good or v. good; 10% not so good
- MAP created– 100 % very happy or completely happy
- Level of benefit— all felt that it would be of benefit to be able to offer remote MAPping
- Speed of session- 20% less than expected; 60% as expected; 10% more than expected
- Comments - liked the text chat function, occasional report of time lag between stimulus presentation

Parent Feedback

- Many of the parents noted that they found the remote MAPping procedure interesting
- One commented that it was “interactive” and another “engaging”.
- Some parents felt their child enjoyed using the VC technology
- Another noted that the procedure “maintained the personal touch”.
- Liked the instant messaging function
- Most felt the procedure would be useful and that they could see the potential.

Clinician Feedback

- All professionals thought the videoconferencing system was very good or excellent.
- 50% said visual quality was very good or excellent and 50% said it was good.
- In some sessions the picture was more pixilated than preferred but this did not affect the outcomes.
- 100% were very confident or completely confident with the results obtained and were very satisfied with the remote MAPping procedure.

Take Home Messages

Message #1

Remote mapping of CIs is a valid clinical approach with no difference to face-to-face mapping

Message #2

...maintenance of good communication was related to satisfaction with this approach

What have we been doing beyond the clinic?

1. Developing and evaluating instructions for older adults provided with a self-fitting hearing aid
2. Evaluating remote cochlear implant mapping for children
3. Investigating actions taken by people who fail a telephone hearing screening test

Telephone Hearing Screening Project

Background

- Telscreen is a telephone-based test of hearing developed by NAL and launched by Australian Hearing in 2007.

- www.hearing.com.au/telscreen

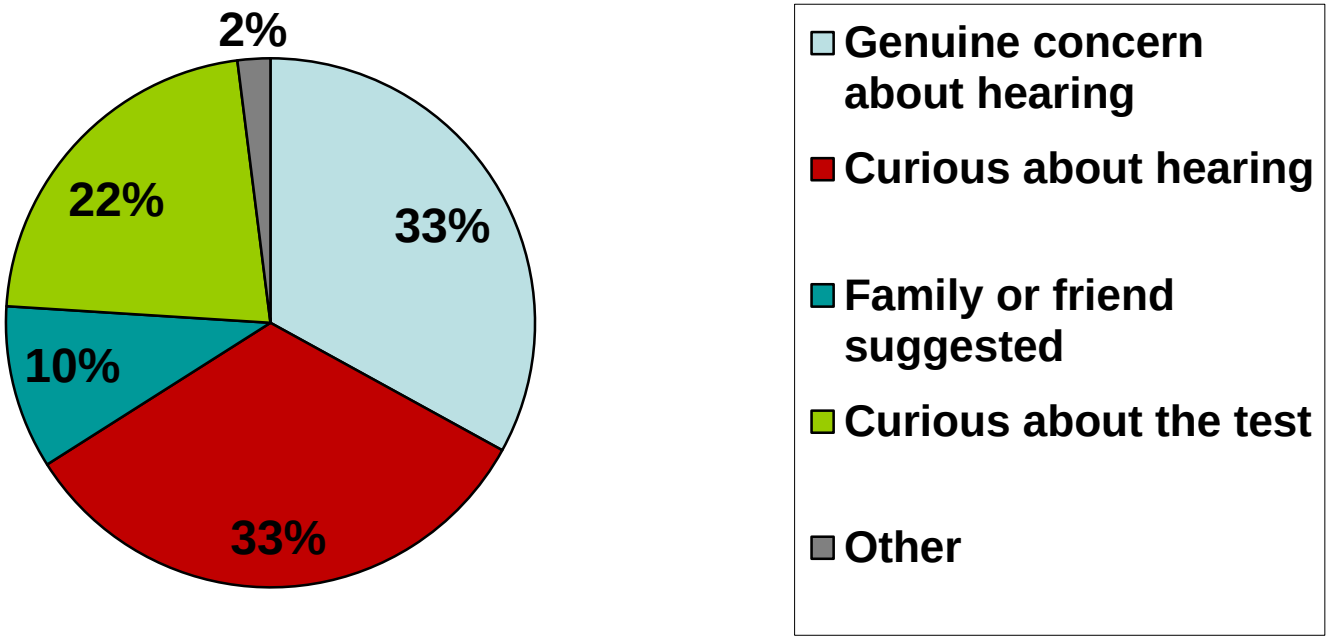
- Aim of this study = to investigate the actions taken by individuals 4-5 months after failing the Telscreen (n = 193)

Meyer, C., HICKSON, L., Khan, A., Hartley, D., Dillon, H., & Seymour, J. (2011). Investigation of the actions taken by older people who failed a telephone-based hearing screen. *Ear & Hearing, 32*(6), 720-731.

What is Telscreen?

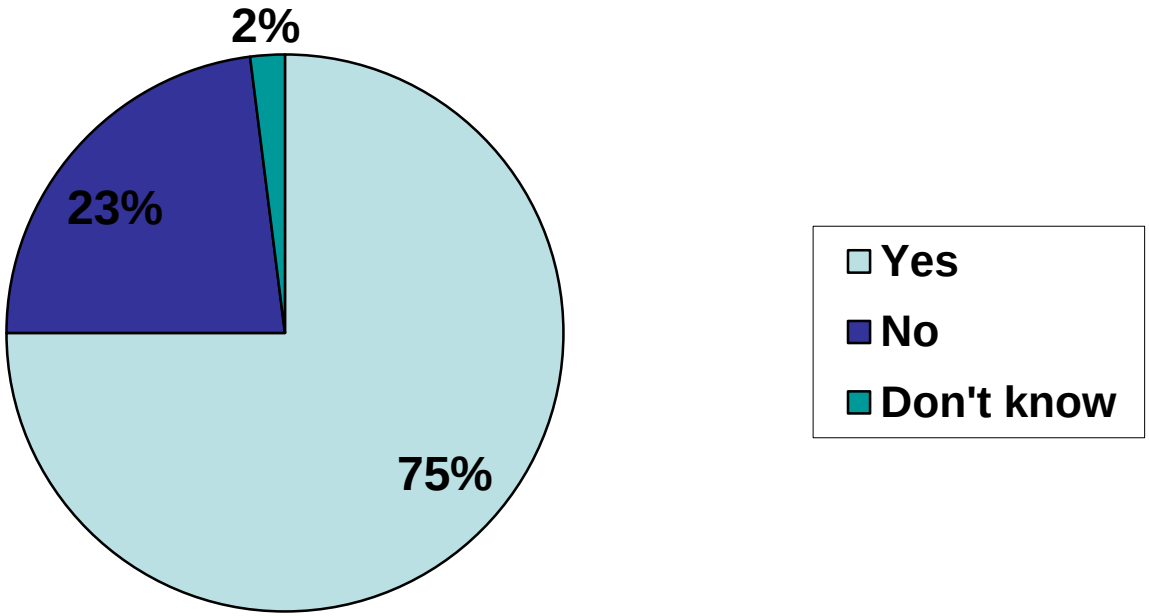
- Based on the method developed by Smits et al in the Netherlands
- System uses an interactive voice response platform to deliver a series of three tones presented in background noise with variable SNR.
- The idea = to allow people who suspect they have a hearing loss to test themselves without revealing their concerns to others
- Correlation between 4FAHL and Telscreen result is .77
- Callers are told if their result is “Within the normal range”, “outside the normal range” or “near the edge of the normal range”. After the test, callers are asked if they want to be put through to a health professional to discuss the results.

What was your main reason for calling Telscreen?

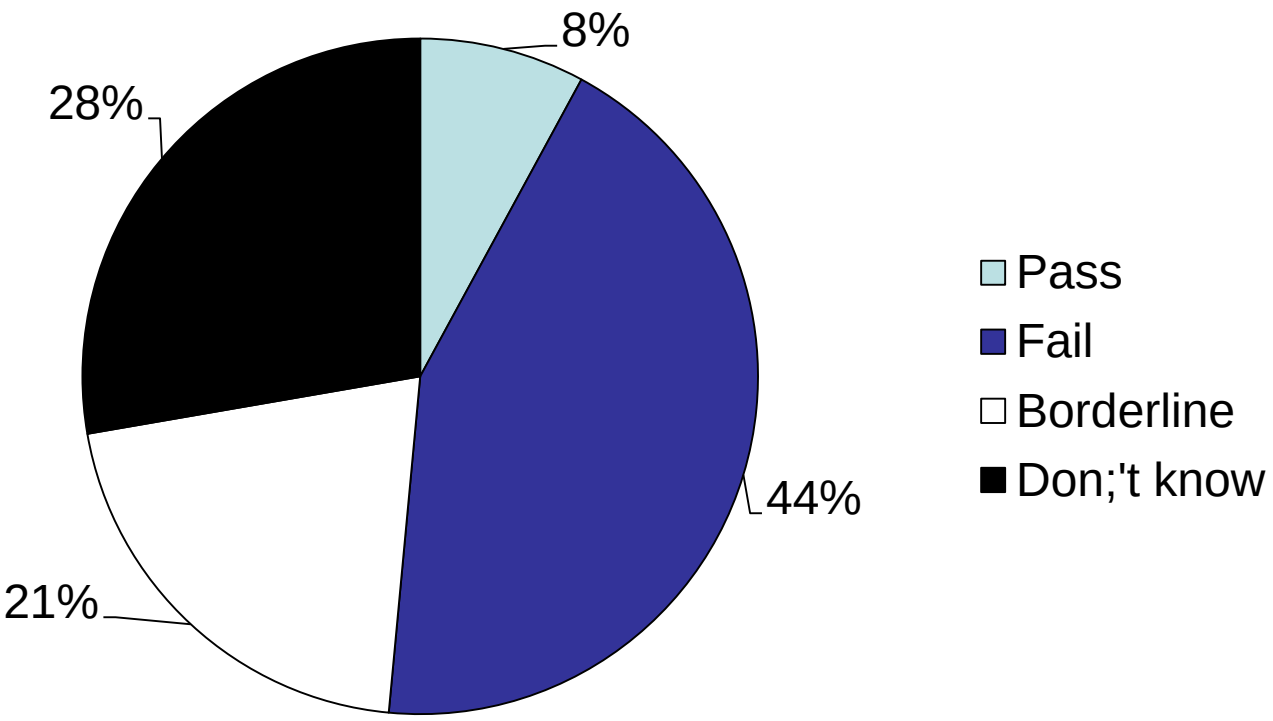


age 24 to 93 years; mean = 68; 58% female

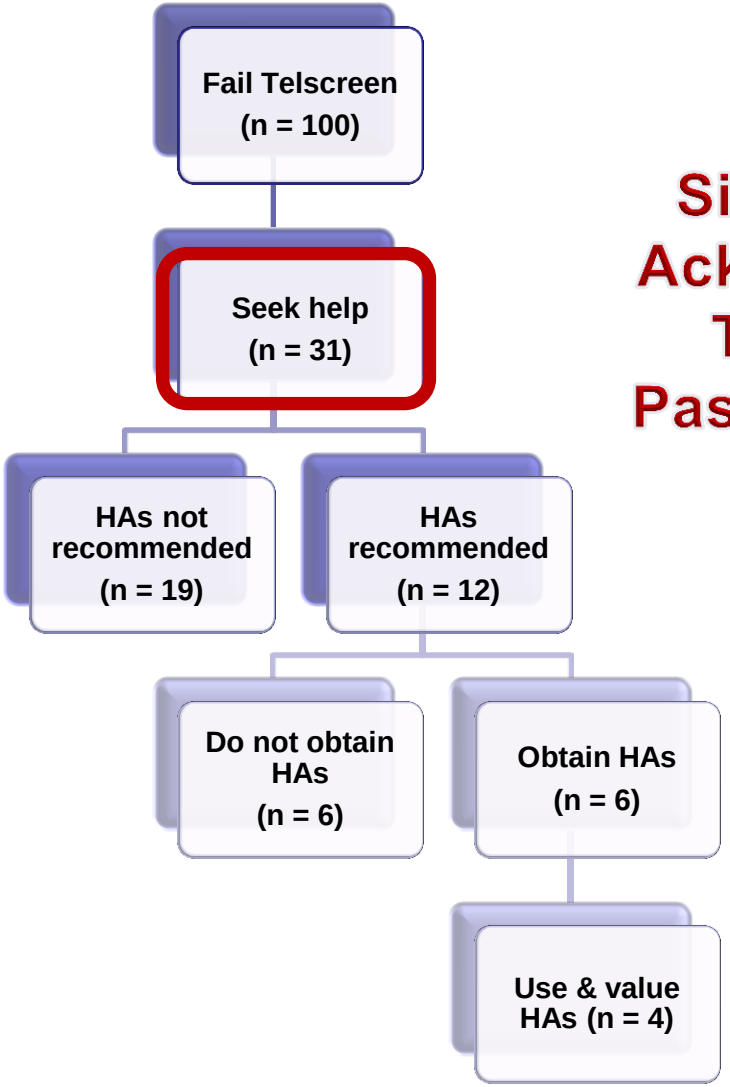
Before you called Telscreen did you feel you had a hearing loss?



What result did you get on the Telscreen test?



Actions taken by individuals who failed Telscreen 4 - 5 months later



Significant factors
Acknowledgement of Telscreen result
Past consideration of hearing aids

- Help-seeking rate of 31% lower than reported by Yueh et al (2010) for questionnaire screening (39%) and by Smits et al (2006) for telephone testing (~50%)
- Other studies show between 40 and 80% of medical info is forgotten immediately (Kessels, 2003)
- Was there a problem with how test results were communicated to the callers?? ‘Outside the normal range’

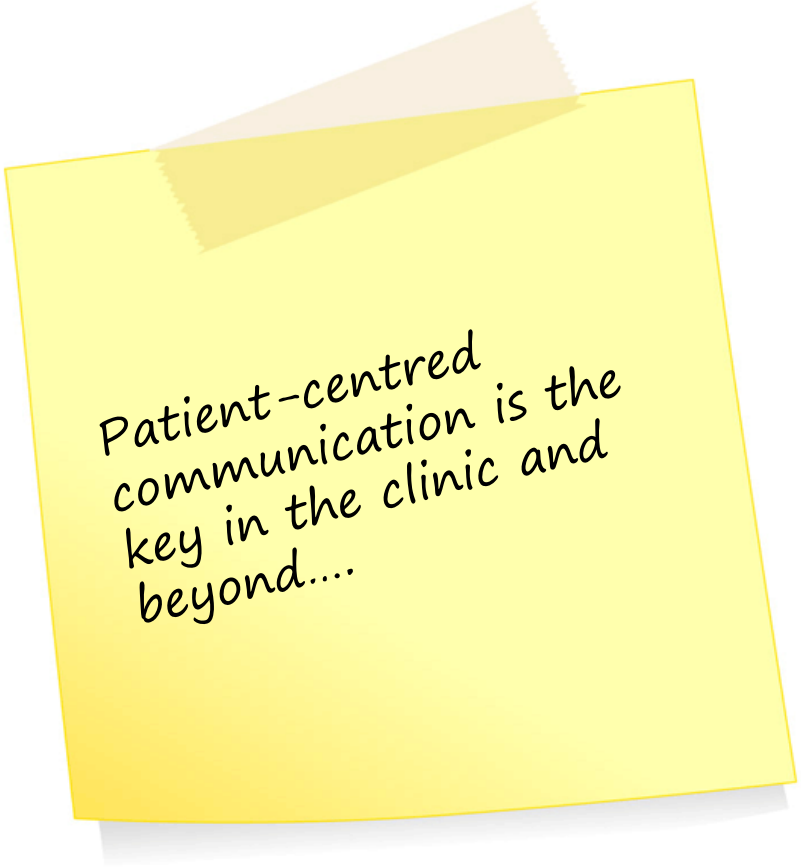
Take Home Messages

Message #1
Telephone hearing screening is a low cost hearing screening that prompts help-seeking for some adults.

Message #2

...but it might be improved with better communication of test results

Back to the Main Message



The Future…

Major research push into home and community–based hearing healthcare in Australia for children and adults

Acknowledgements

www.crregistry.org.au

Contact Information

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