

Teleaudiology: Are patients and clinicians ready for it?

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PHONAK
life is on

“I do tech support for a HA manufacturer. I have fit patients over a telephone/internet connection several provinces away. I have been able to sort out their issues in less than 30 min without travelling. Weird at first but wonderful!”

Audiologist with 28 years of experience

“I am located in Northern Ontario. Many of my patients see telehealth and telemedicine as very advanced and a regular part of life. Access to video conferencing and remote diagnostics is very welcome and accepted.”

Audiologist with 22 years of experience

“I believe testing and fitting aids via [the] internet will reduce [the] position of audiology to that of a technician.”

Audiologist with 15 years of experience

“I think that the whole concept of teleaudiology is horrible! Why not just invent robots to take over the profession???”

Audiologist with 7 years of experience

Introducing the various prototypes currently in development...





Why study teleaudiology?

Why study teleaudiology? A number of possible benefits...

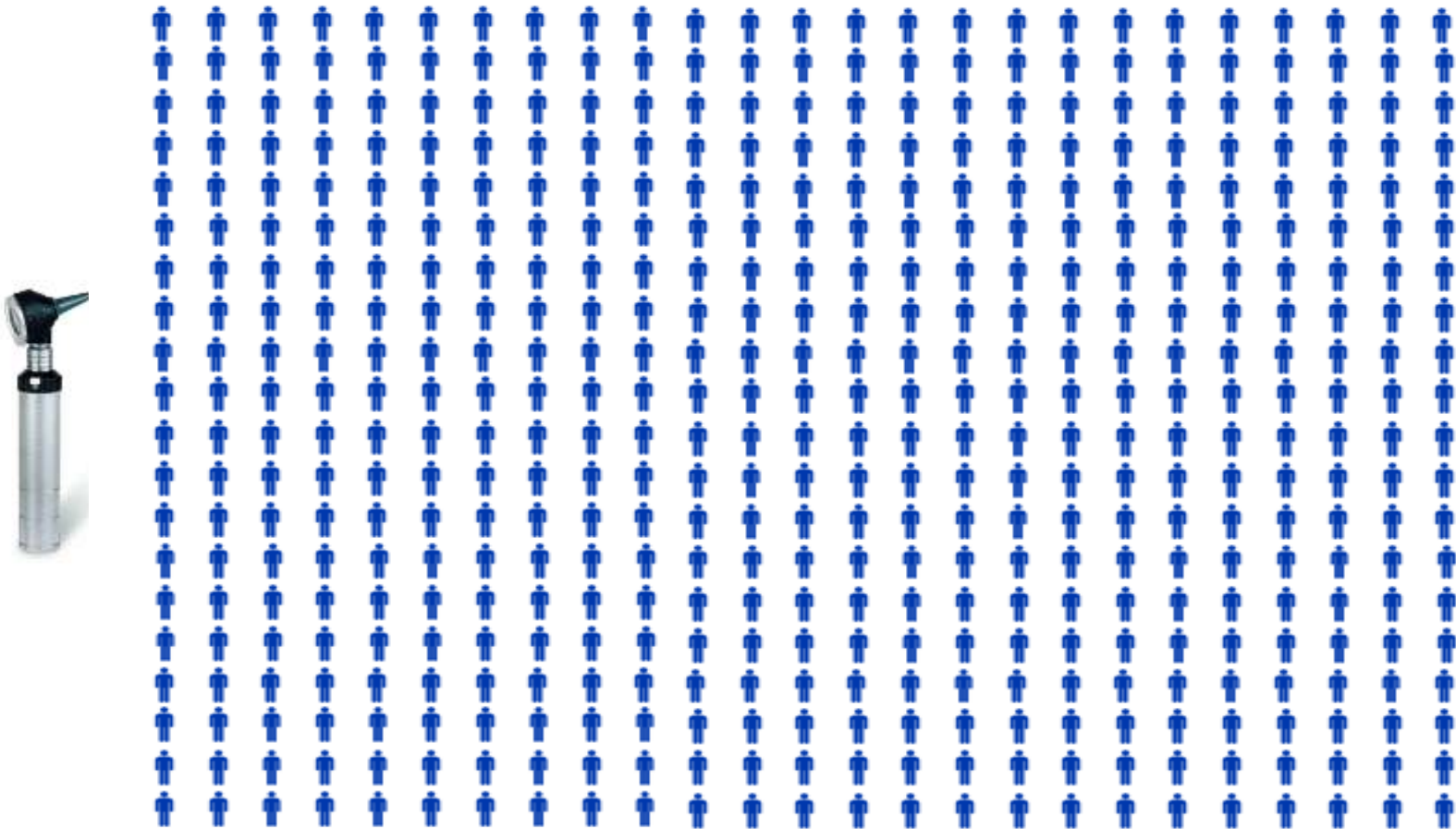
- Increasing access to healthcare
- Reducing wait times
- Reducing medical travel
- Minimizing caregiver stress/time off paid work
- Facilitating a rapid response
- Reducing CO₂ emissions
- Reducing costs of delivering healthcare
- More comfort when discussing stigmatizing issues
- Improved adherence to treatment

Ratio of Audiologists to General Population: **Developed World**



 = 1000 people

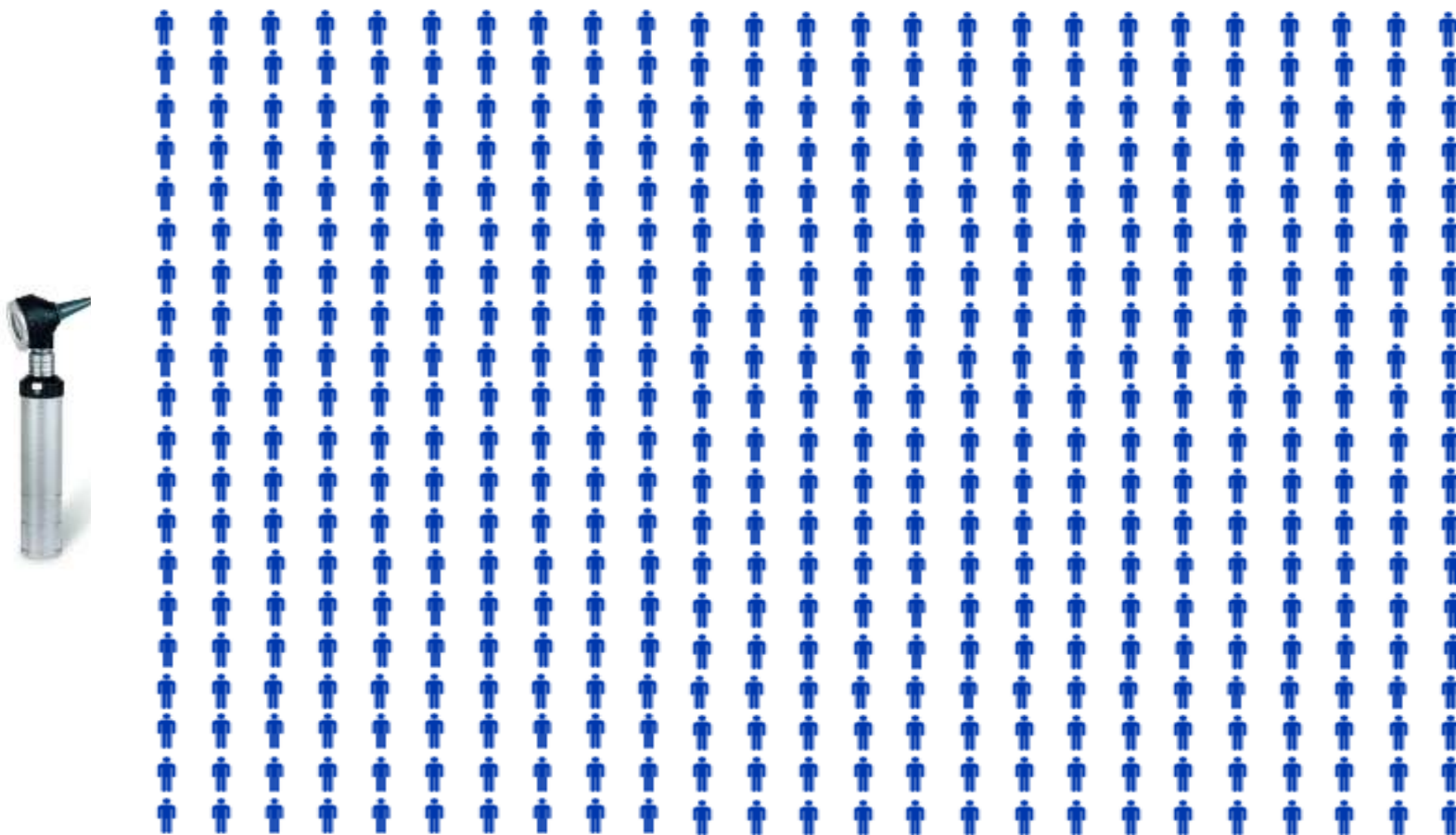
Ratio of Audiologists to General Population: Developing World



 = 1000 people

Swanepoel et al., 2010

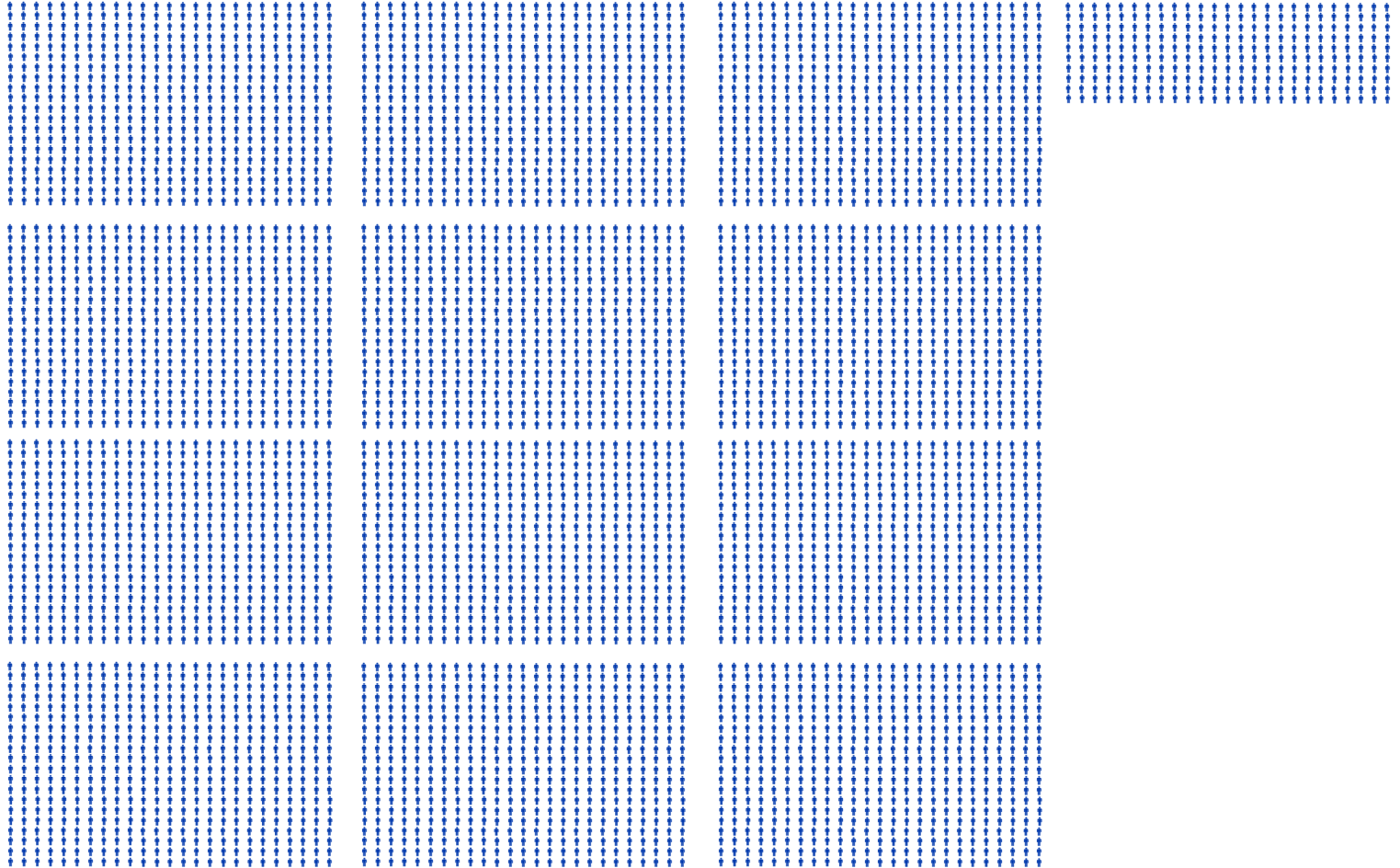
Ratio of Audiologists to General Population: Developing World (optimistic estimate)



 = 1000 people

Swanepoel et al., 2010

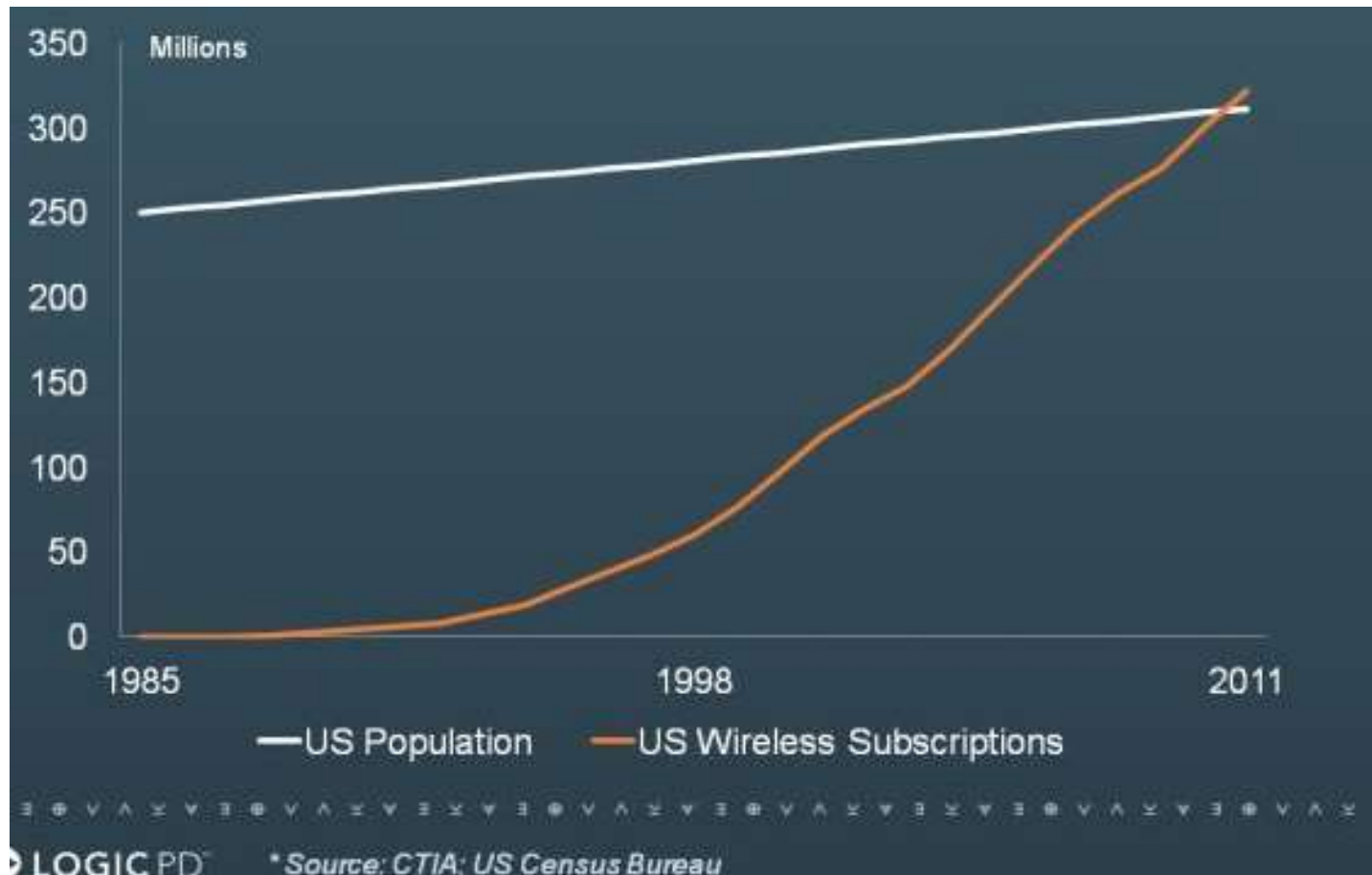
Ratio of Audiologists to General Population: Developing World (pessimistic estimate)



 = 1000 people

Swanepoel et al., 2010

Mobile Proliferation



The number of broadband wireless subscriptions in the US has exceeded the number of people in the US.

Today's research

Survey current attitudes toward teleaudiology

- Clinicians
- Pediatric clinicians
- Patients
- Parents of children with hearing loss

How attitudes shift with telemedicine experiences


- Patients

Why study attitudes?

Berg (1999) found that 75% of telemedicine interventions ultimately fail.

To understand why, Broens et al. (2007) and Hailey & Crowe (2000) conducted meta-analyses of telemedicine interventions:

- Reliable technological systems that support the intervention
- ***They also found that it is critical to understand attitudes of key stakeholders toward the intervention***



I initially assumed that the attitudes of patients toward teleaudiology mattered most.

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**Literature suggests
NOT**

The broader literature in telemedicine

Acceptance by clinicians is a key factor in determining success with telemedicine interventions

(Al-Qirim, 2007; May, 2006; Wootton & Herbert, 2001).

The practitioner is described as:

“the most important initial gatekeeper for success with telemedicine interventions”...

(Whitten & Mackert, 2005)

Study I

Study I: Qualitative Study

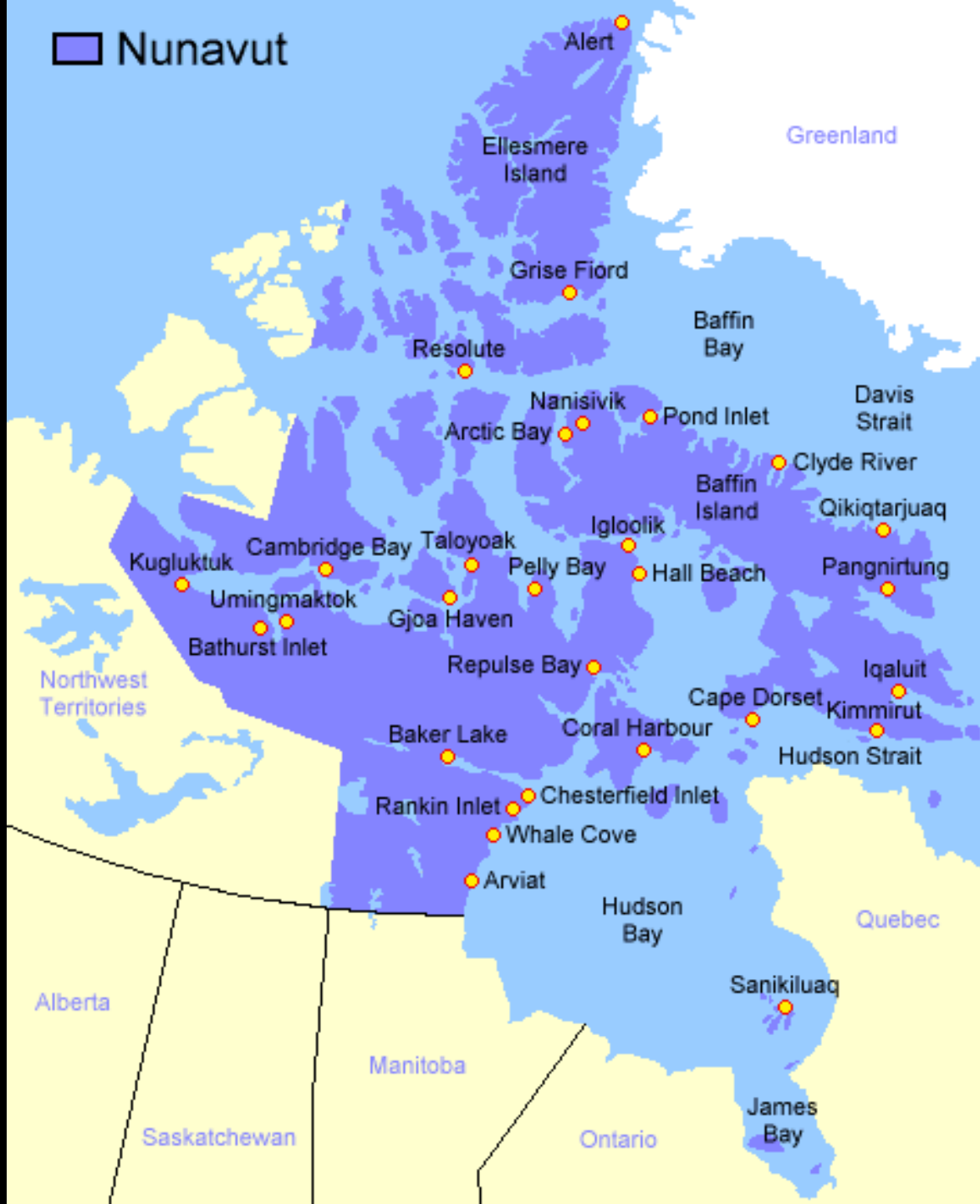
- Interview-based qualitative study exploring attitudes toward teleaudiology
- Potential participants were nominated by a panel of 3 experts, with the goal of inviting hearing health care professionals with varied but relevant work histories
- 60-100 minute long interviews of 11 hearing health care practitioners (data saturation was obtained) were conducted
- Interviews were transcribed and coded by 2 independent coders

Qualitative study: Major themes revealed

A total of 97 codes emerged, clustering into core themes:

- Advantages & disadvantages of teleaudiology





Accessibility

Convenience

Principal disadvantage: Teleaudiology could pose a threat to patient-practitioner relationship quality





Discomfort...

...it's a gut feeling....

....the in-person experience is **richer**...

oh

“You almost need to be in [the client’s] presence to understand their body language and eye contact and their tone. I’m not exactly sure what it is. It’s almost an intangible thing to me. In order to feel comfortable with someone and trust them, I would prefer to have built that in person.”

***-Audiologist (public setting)
18 years of experience***

Singh et al. (submitted)

Study II

Study 2: Survey of Attitudes

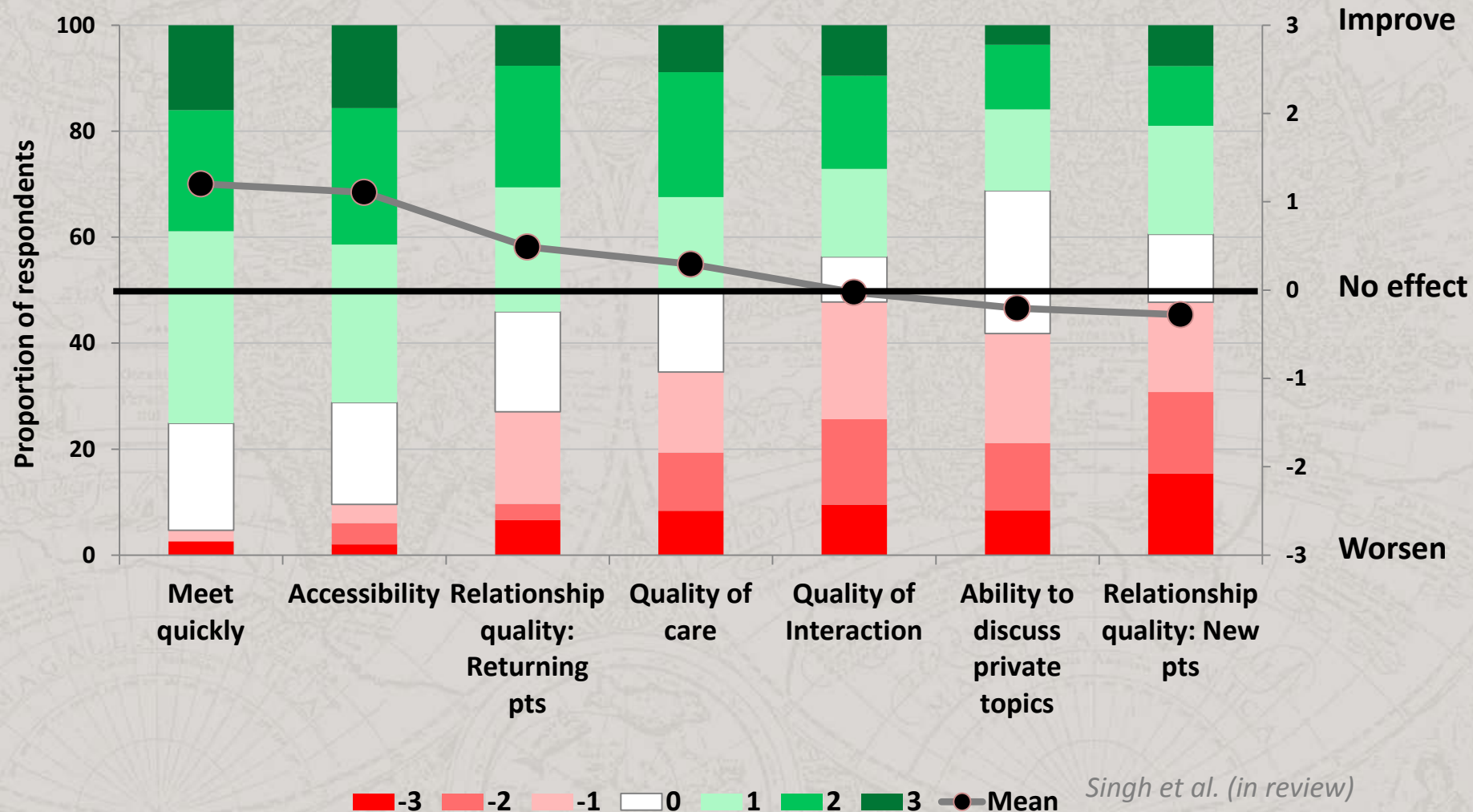
Goal: To survey attitudes toward teleaudiology in a large sample of hearing health care practitioners

Participants:

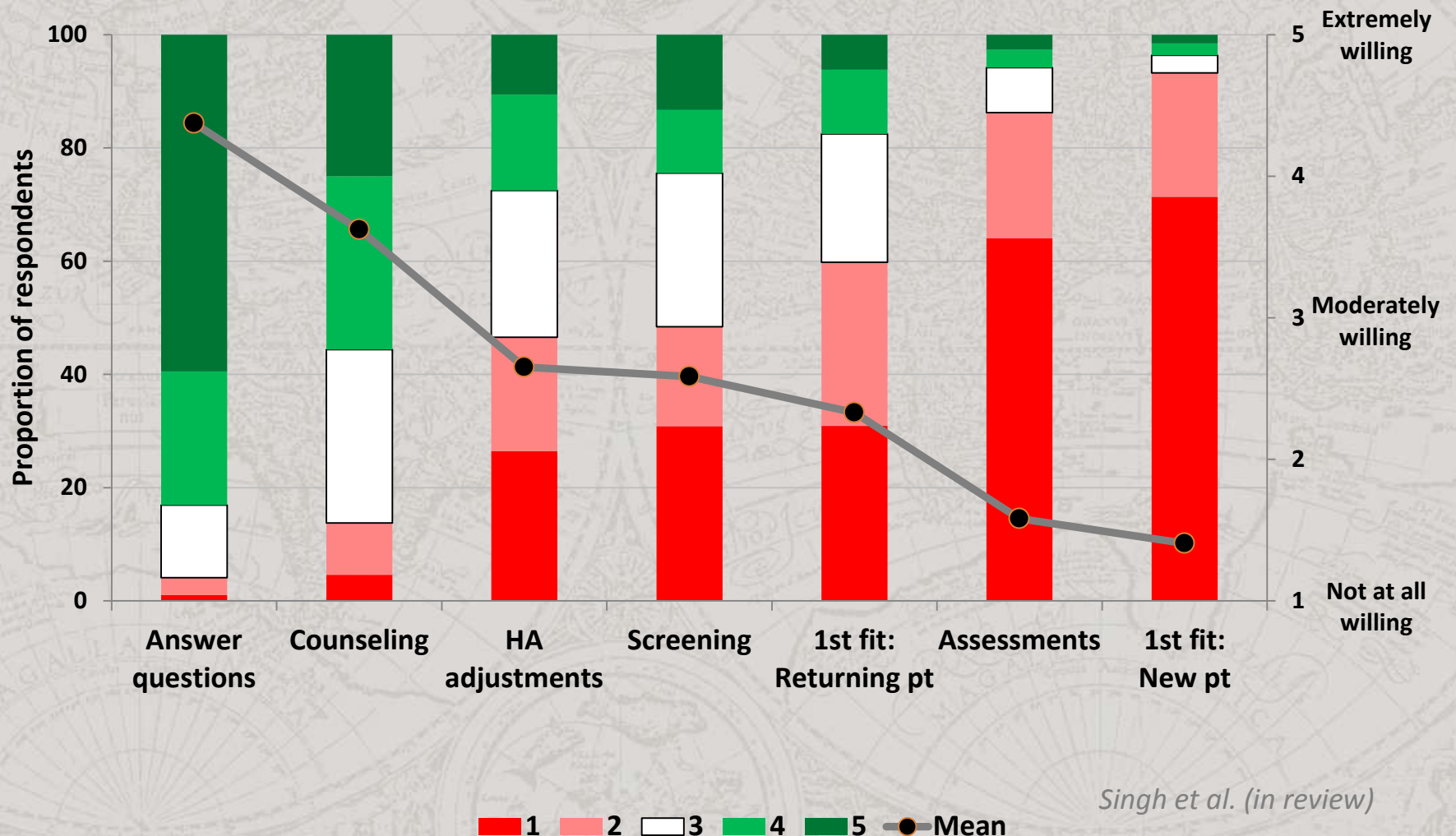
- Recruited through electronic mailing lists and postings at conferences
 - 202 practitioners ($M = 39.3$ years age; $SD = 11.0$)
 - 28: Owned their own clinic(s)
 - 109: Worked in a private practice
 - 53: Worked in a non-profit environment

Singh et al. (in review)

Perceived effect of teleaudiology on hearing health care



Willingness to use Teleaudiology: Clinical tasks

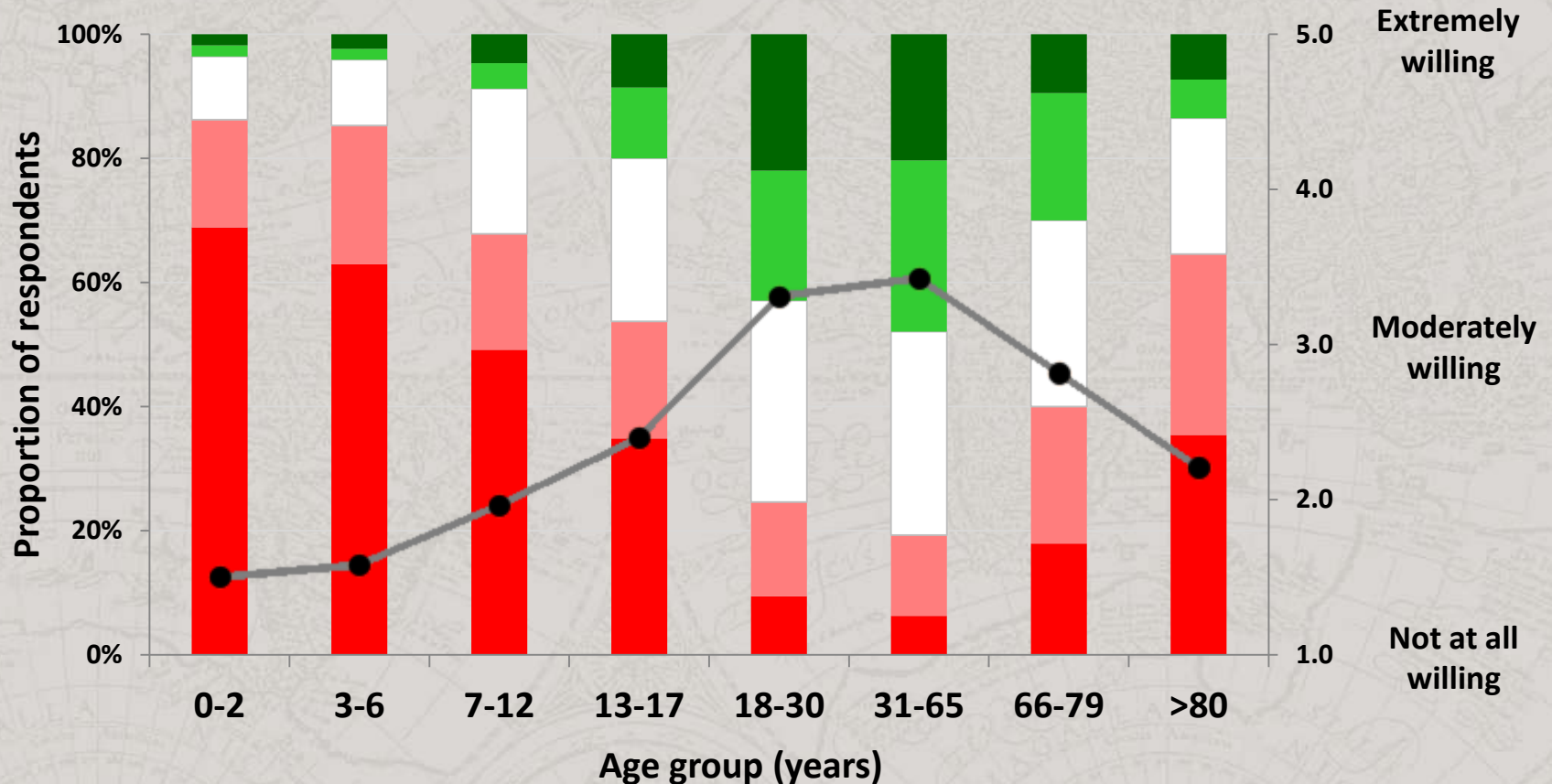


Willingness to use Teleaudiology: Patient groups



Singh et al. (in review)

Willingness to use Teleaudiology: Age groups



Study 2: Conclusions

On average, it is believed that teleaudiology will increase accessibility, but will likely have a minimal effect on hearing health care.

However, there are significant proportions of clinicians who have opposing attitudes toward teleaudiology.

Willingness to conduct teleaudiology appointments was dependent on the clinical task to be performed and the patient group receiving service.

Singh et al. (in review)

Study III

Study 3: Pediatric vs. Non-pediatric Practitioners

Goal: To better understand the observed reluctance of using teleaudiology with pediatric populations

Original sample: Only 15 of the 202 participants indicated that pediatrics comprised their primary clientele

Collected data on 30 additional practitioners who indicated that pediatrics comprise their primary clientele

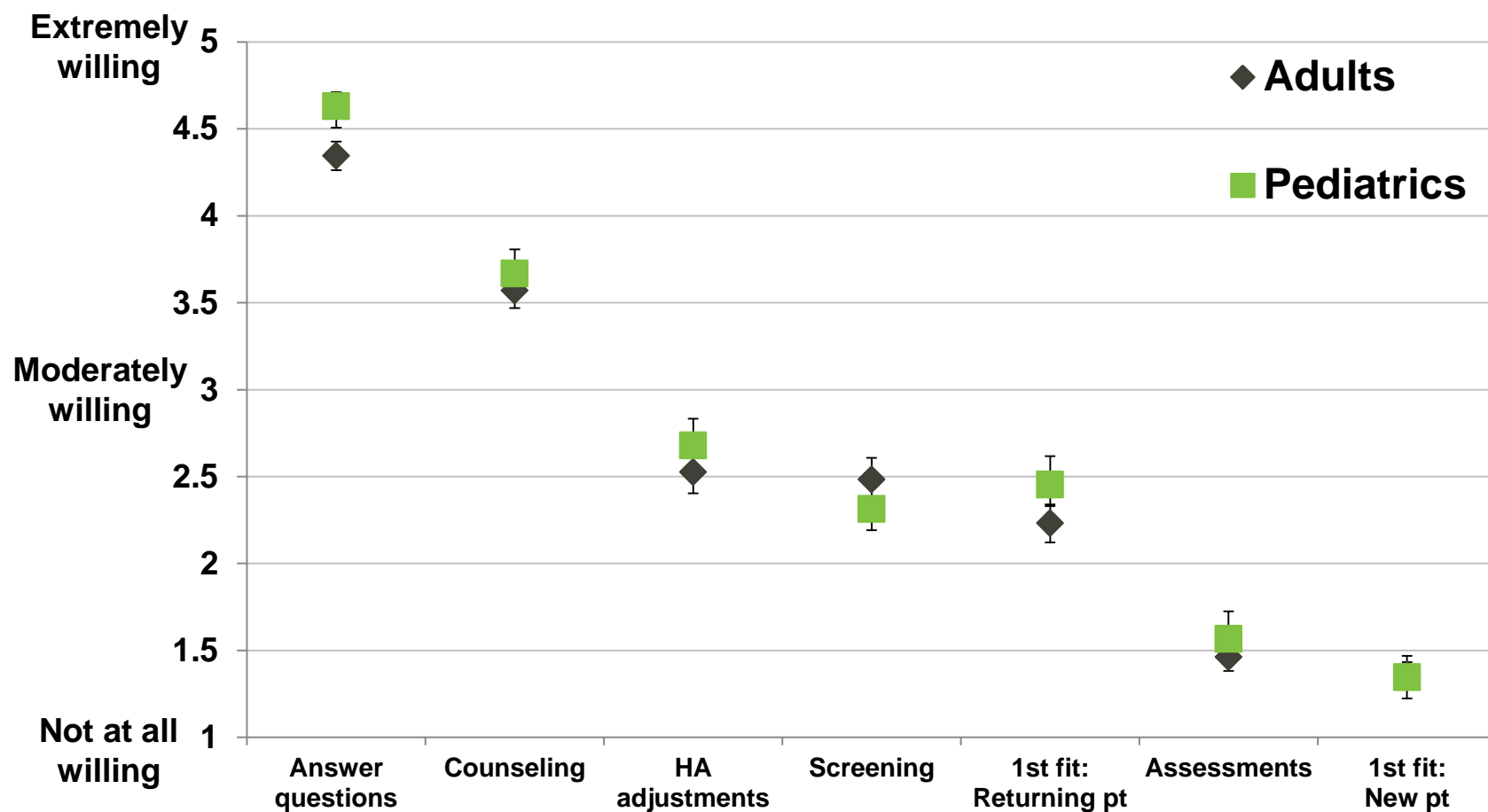
Study 3: Pediatric vs. Non-pediatric Practitioners

We compared the results of practitioners who indicated that:

- Pediatrics comprise their primary clientele (n = 55)
- Adults comprise their primary clientele (n = 126) from Study 2

Pediatric vs. Non-pediatric Practitioners

Willingness to use teleaudiology: Tasks



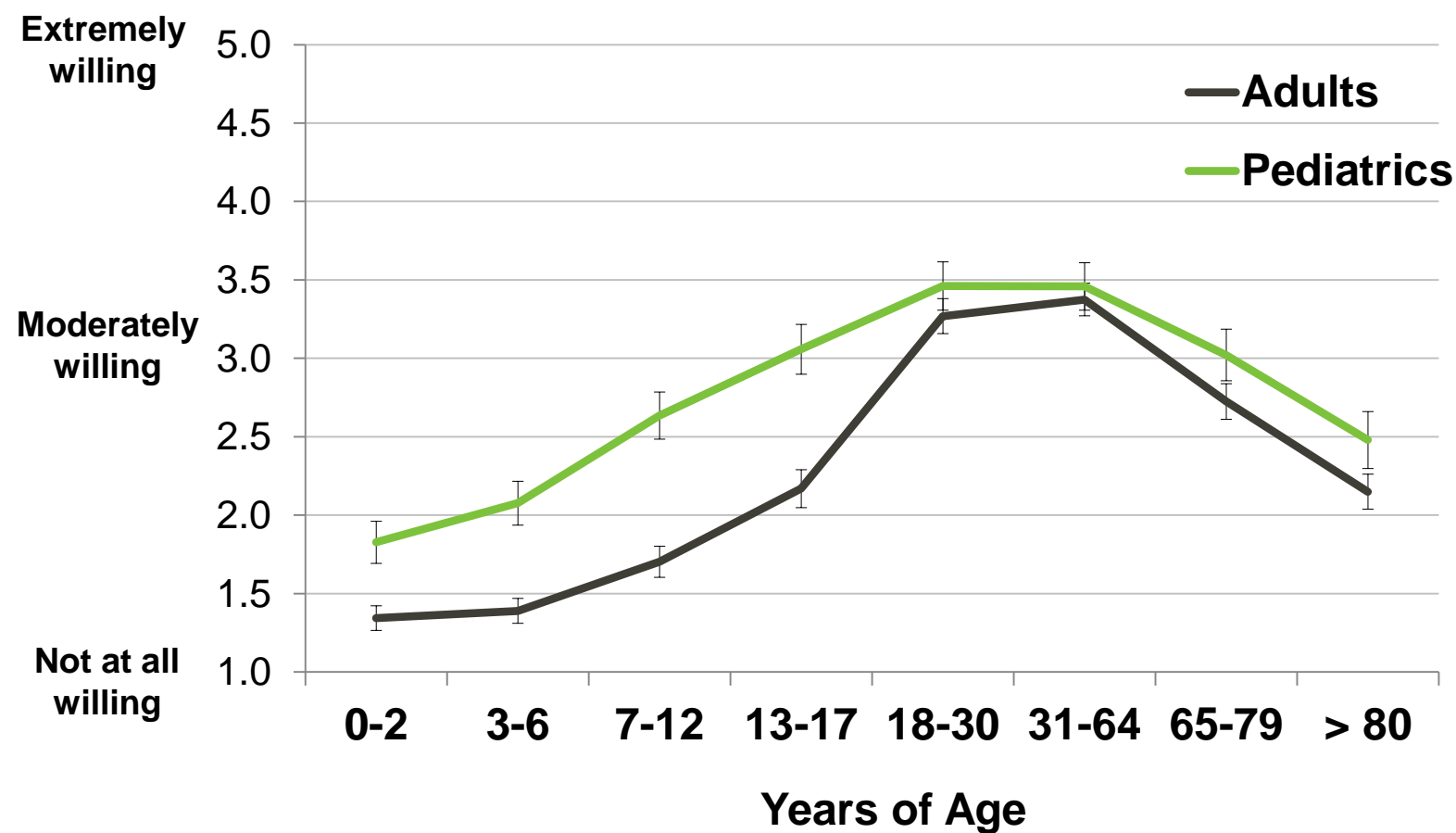
Pediatric vs. Non-pediatric Practitioners

Willingness to use teleaudiology: Age groups



Pediatric vs. Non-pediatric Practitioners

Willingness to use teleaudiology: Age groups



Study 3: Interpretation

Reluctance of practitioners to conduct teleaudiology appointments with pediatric populations may be due to a practitioner's familiarity conducting audiology appointments with children.

Study IV



What are the attitudes of **audiology patients** toward teleaudiology?

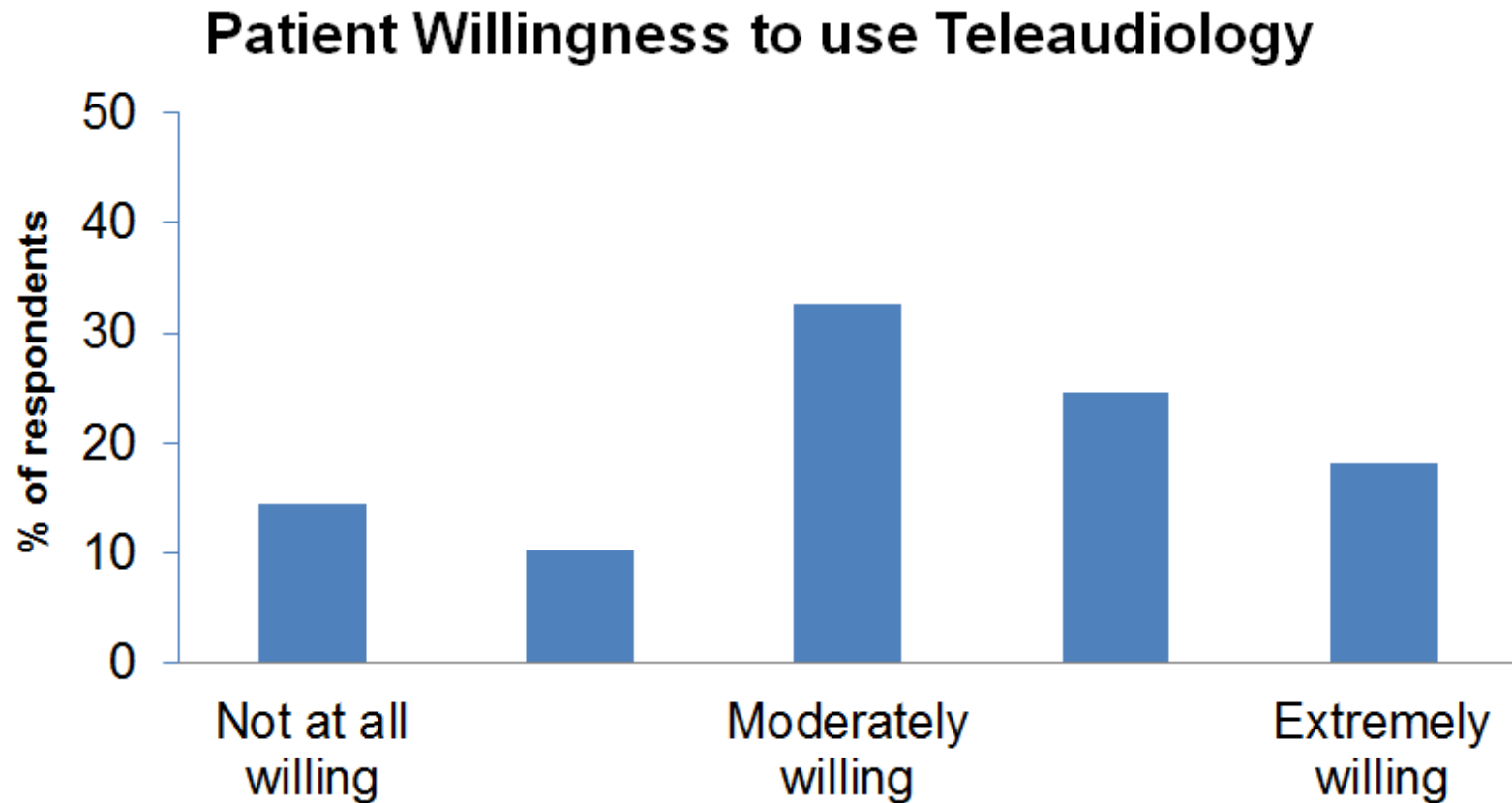
Patient attitudes toward teleaudiology

- Questionnaire design
- Postings at 50+ audiology clinics (electronic or paper copies)

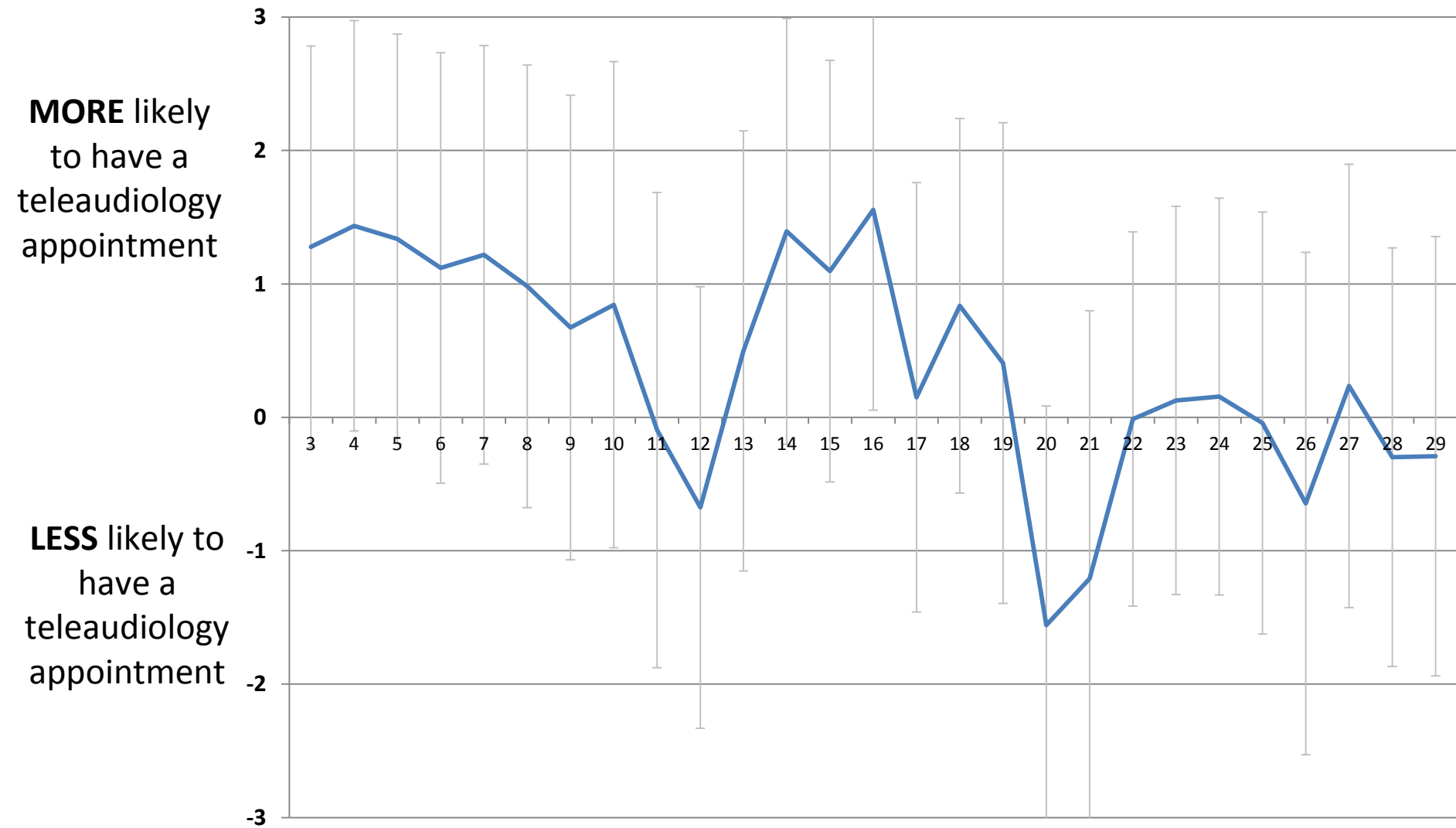
224 respondents

- All had experienced at least one audiology appointment
- 129 males; 95 females
- Mean age = 67.1 years ($SD = 15.3$)

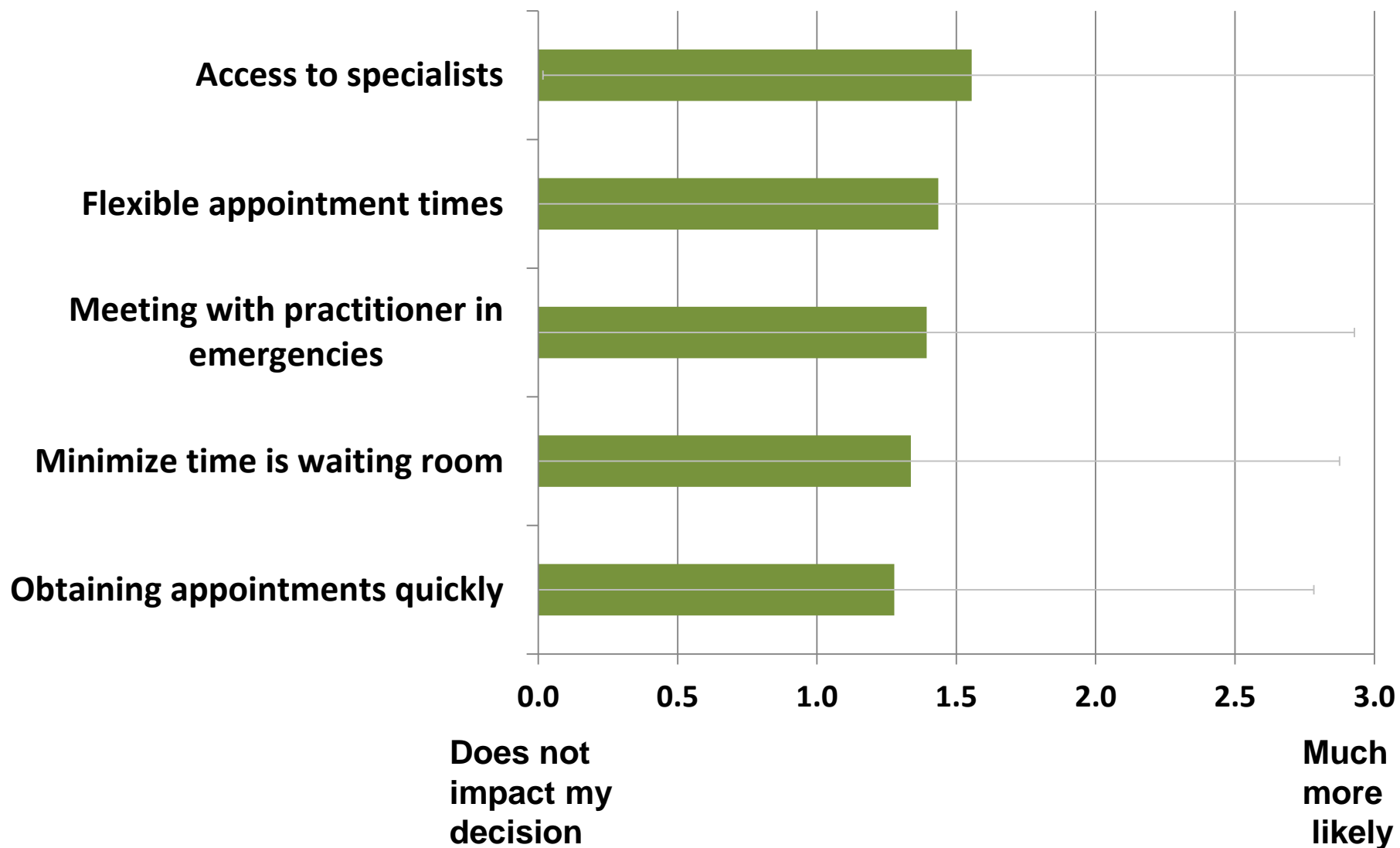
Patient attitudes toward teleaudiology



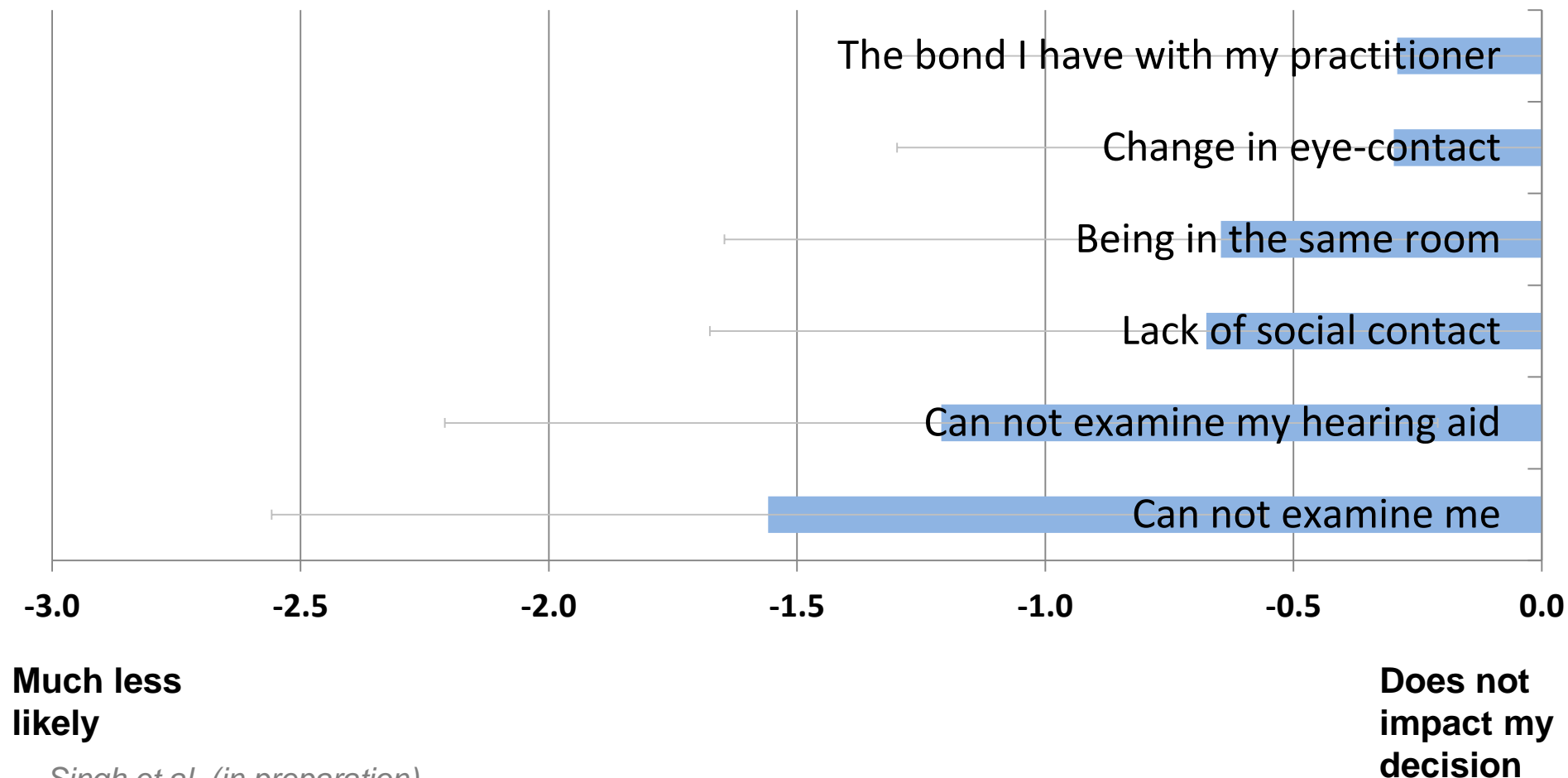
Examined 27 factors that contribute to willingness to participate in a teleaudiology appointments



Factors MOST LIKELY to motivate a teleaudiology appointment



Factors LEAST LIKELY to motivate a teleaudiology appointment



Singh et al. (in preparation)

Study V

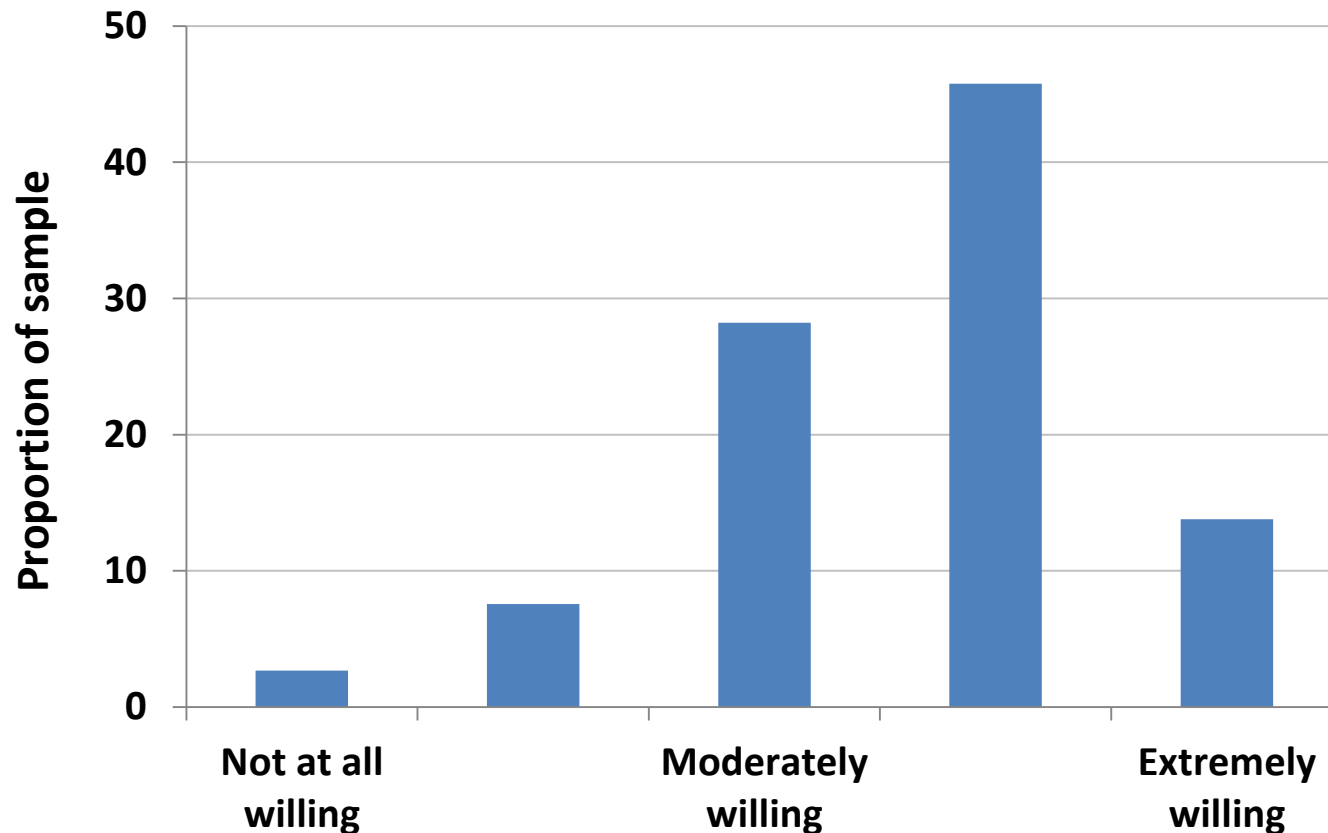


What are the attitudes of parents of hard-of-hearing children toward teleaudiology?

Attitudes of parents of hard-of-hearing children toward teleaudiology

- Questionnaire design
- On-line survey: Consisting of 450 respondents
- Reported being the parent of at least 1 HI child
- Mean age = 31.4 years ($SD = 7.1$)
- Mean age of child = 6.3 years ($SD = 4.2$)

Willingness to have a teleaudiology appointment: Parents of hard-of-hearing children



Study VI

Motivation

- Purpose: Investigated short-term audiological outcomes when using an internet-based tool for the purpose of conducting follow-up adjustments to hearing instruments.



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Conclusion

Why are there such fervent beliefs for and against the use of teleaudiology in hearing health care?

In part, practitioners may be adopting different frames of reference regarding:

- Clinical tasks to be performed
- Patient populations being served
- Previous experience with telemedicine/audiology applications

Thank you!
Questions?
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