Waves in Practice: Audiologists' Perspectives on Electrophysiologic Assessment

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UAMS
College of Health Professions

Disclosures

- Kelsey Mankel is currently employed as a faculty member at the University of Memphis.
  - This work was sponsored by the University of Memphis Center for Research Initiatives and Strategies for the Communicatively Impaired (CRISCI) Faculty Research Grant (KM).
- Caitlin Nelms Price is currently employed as a faculty member at the University of Arkansas for Medical Sciences.
  - Dr. Price also serves on the Council of Academic Programs in Communication Sciences and Disorders (CAPCSD) Admissions Committee.

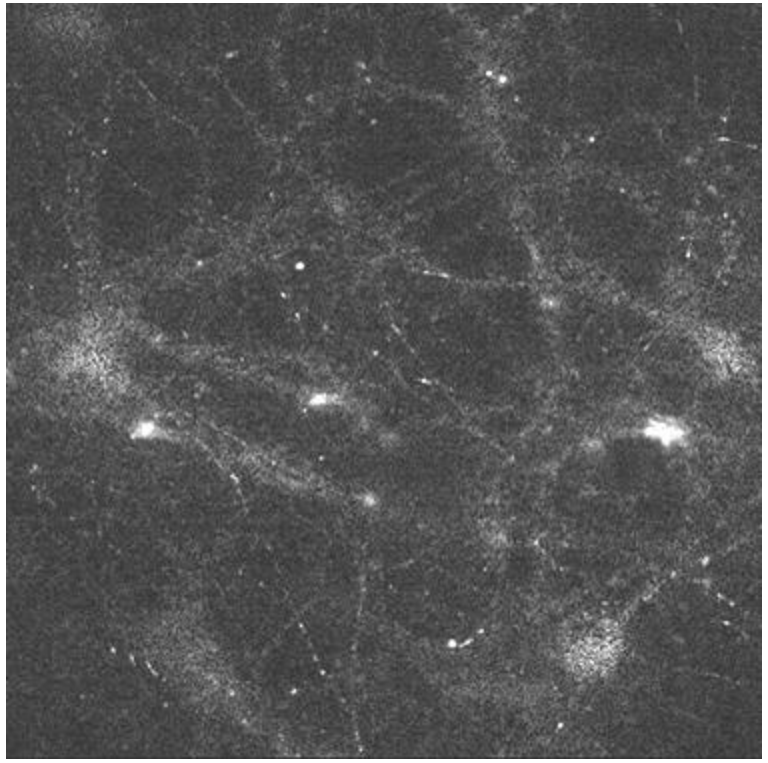
Learning outcomes

1. Explain the role of electrophysiologic assessments in audiology clinical practice.
2. Describe the advantages and challenges to implementing electrophysiologic techniques reported by U.S. audiologists.
3. Identify potential opportunities for advancing the use of electrophysiology within the audiology field.

Definitions

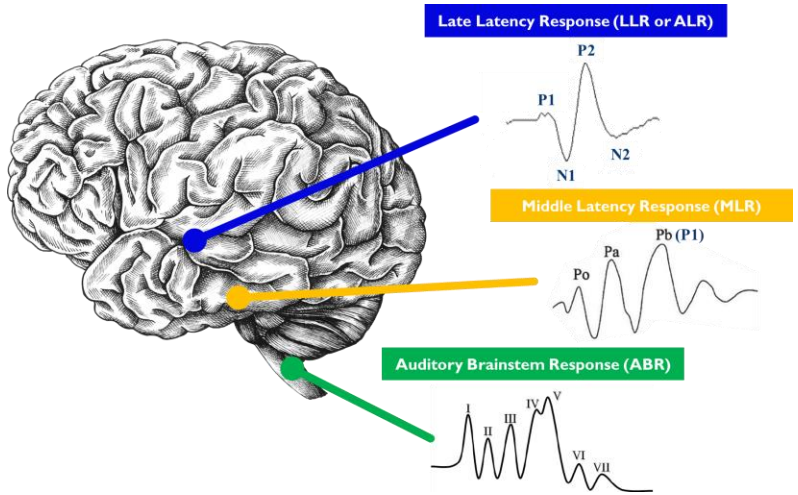
- Electrophysiology: the study of electrical properties of biological cells and tissues

- Electrodiagnostic assessments (per ASHA): Procedures to assess the functional status of the central or peripheral neural pathways and associated sensory systems using electrophysiological testing methods.[1]

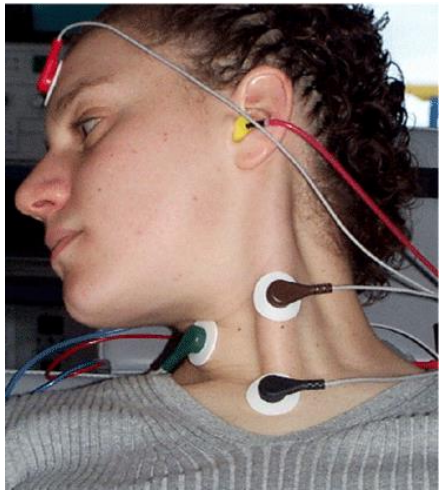


Electrophysiology in Audiology

Auditory evoked potentials



Vestibular evoked myogenic potentials



- Within the audiology scope of practice, electrophysiologic techniques:
  - Provide objective measures of auditory & vestibular system function
  - Assess auditory processing at multiple levels of the auditory pathway

Clinical applications

- Electrophysiologic measures have the potential to:
  - Screen hearing function
  - Provide objective measure of neural pathway functionality
  - Estimate auditory sensitivity when behavioral measures cannot be reliably obtained
  - Improve diagnostic sensitivity
  - Facilitate treatment recommendations
  - Monitor intervention outcomes

- Yet clinical implementation remains somewhat limited
  - Reported usage ranges from 47-75%[2-5]

Study motivation

Clinical

- Do clinicians have the access and knowledge to wield these tools to provide the best care possible for their patients?

Education

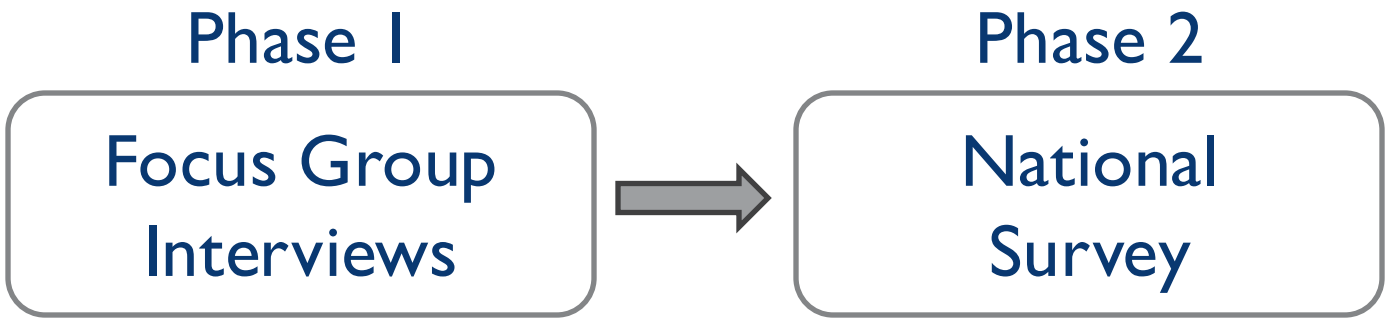
- Are we training students and clinicians to practice at the top of their scope?

Research

- What work still needs to be done to support the use of these techniques in the field (i.e., evidence-based practice)?

Study aim and design

Characterize the current perceptions, experience, and practice patterns of electrophysiologic testing among U.S. audiologists



Focus Group Interviews

Topics:

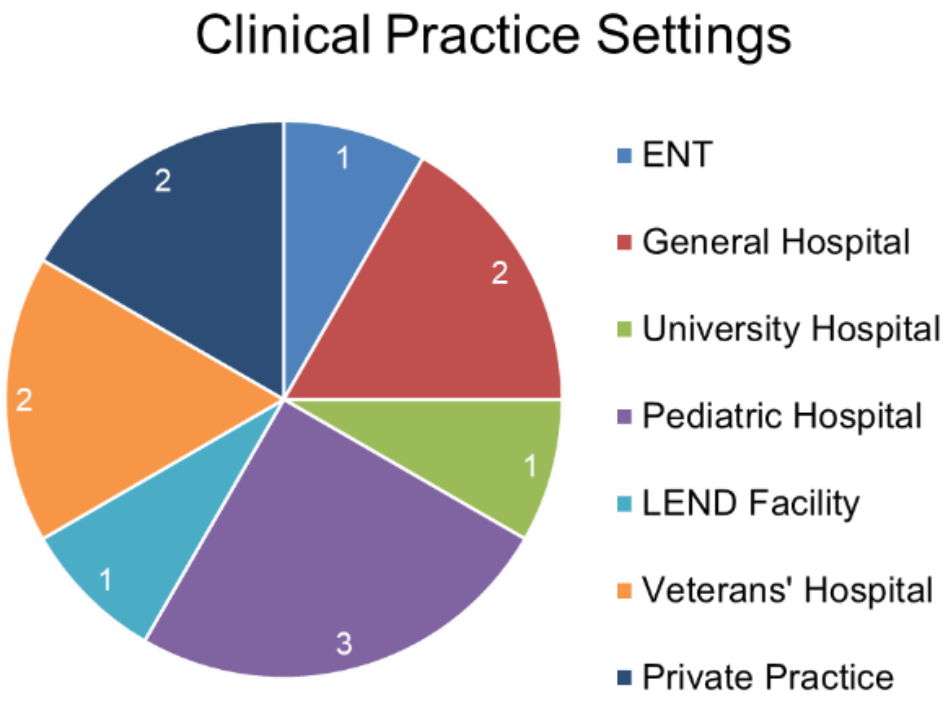
- Experiences and familiarity
- Perceived utility and challenges
- Educational and training background

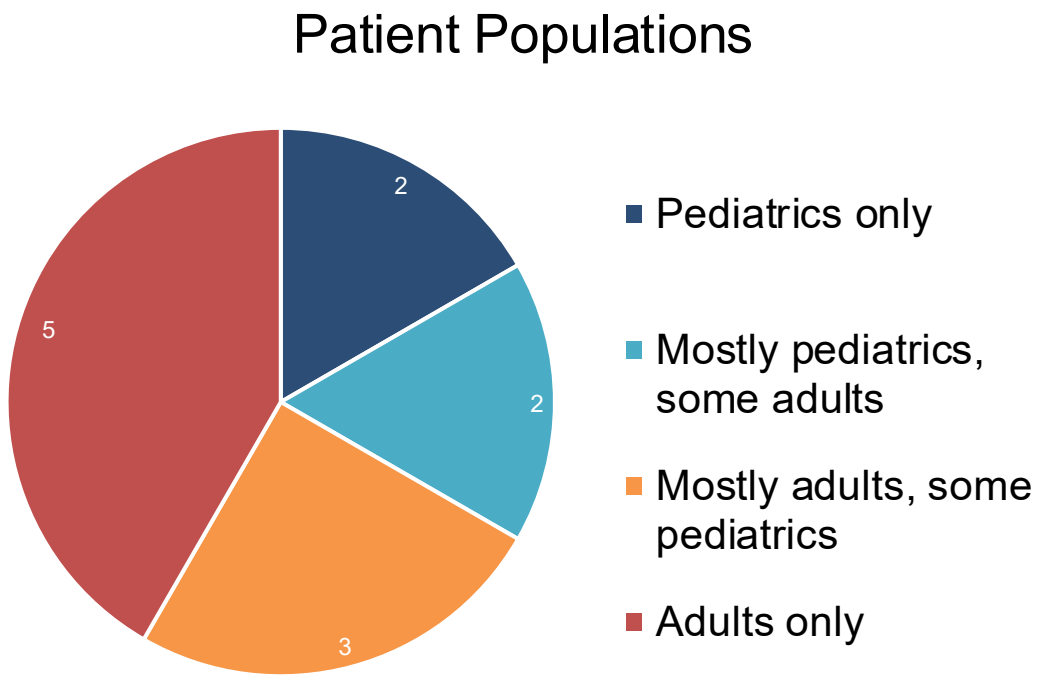
Survey development

Characterize the ***perceptions*** and ***lived experiences*** of practicing audiologists concerning the use of electrophysiology techniques in clinical practice

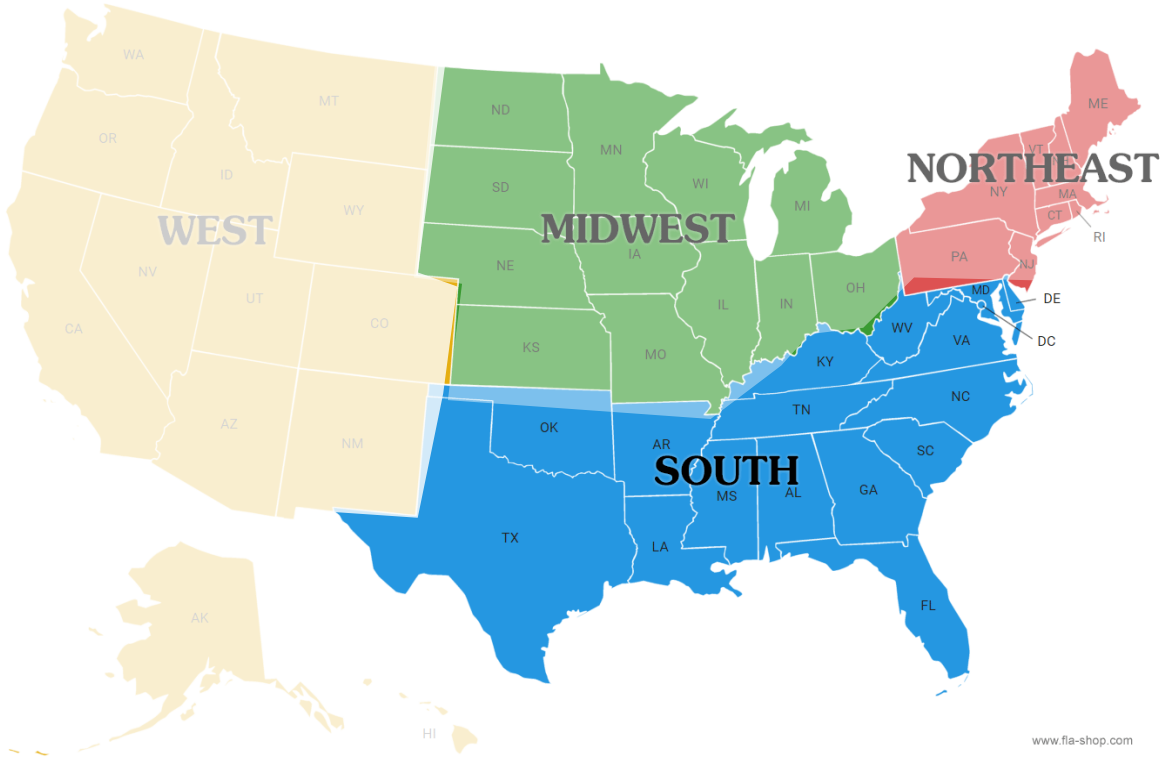
Interviews: Participant characteristics

- 12 participants
  - 9 females, 3 males





Interviews: Participant demographics



Survey sections

Employment & clinical experience

Clinical practice

- *Separated by pediatric vs. adult patient populations*

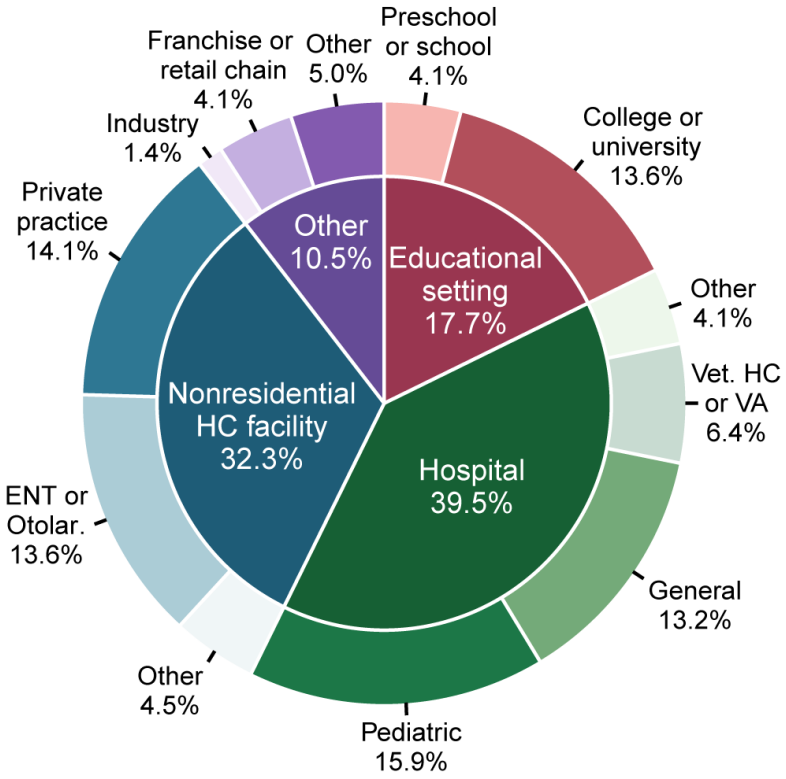
Education & training background

Demographics

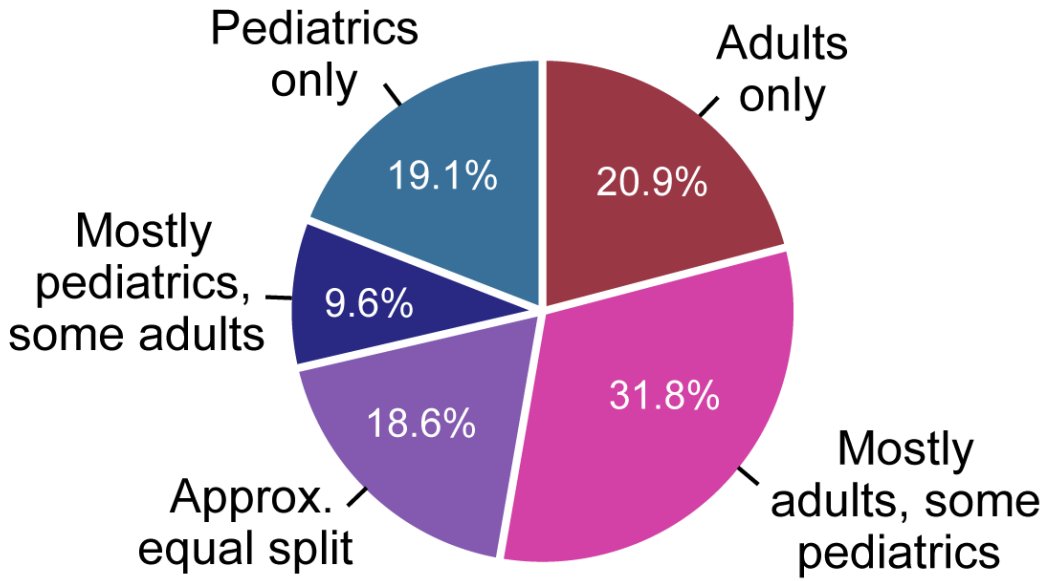
Survey: Participant characteristics

- 220 participants
  - 190 females, 23 males, 4 non-binary, 3 prefer not to say

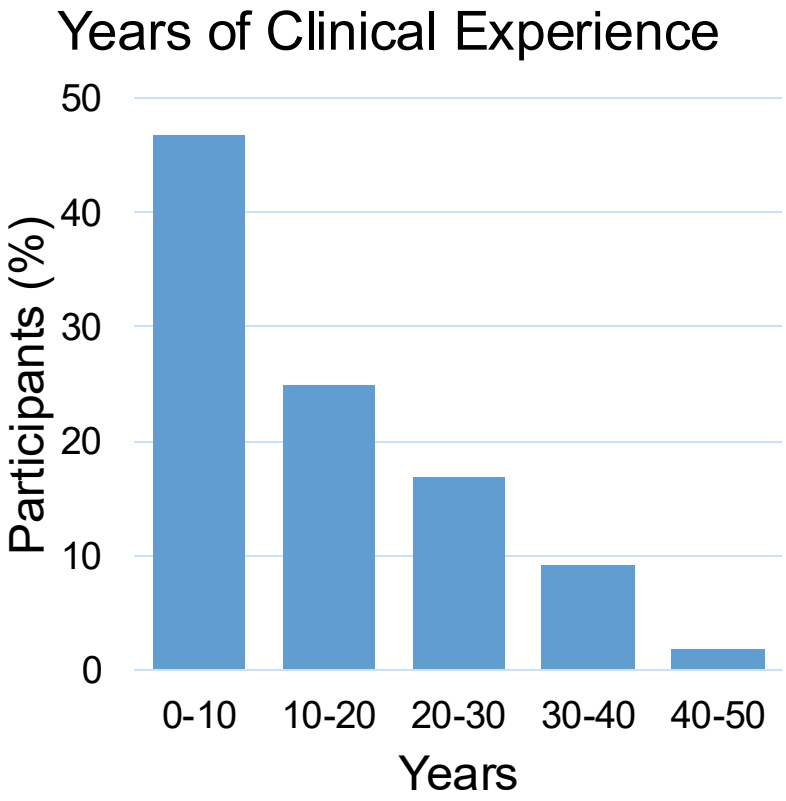
Clinical Practice Settings

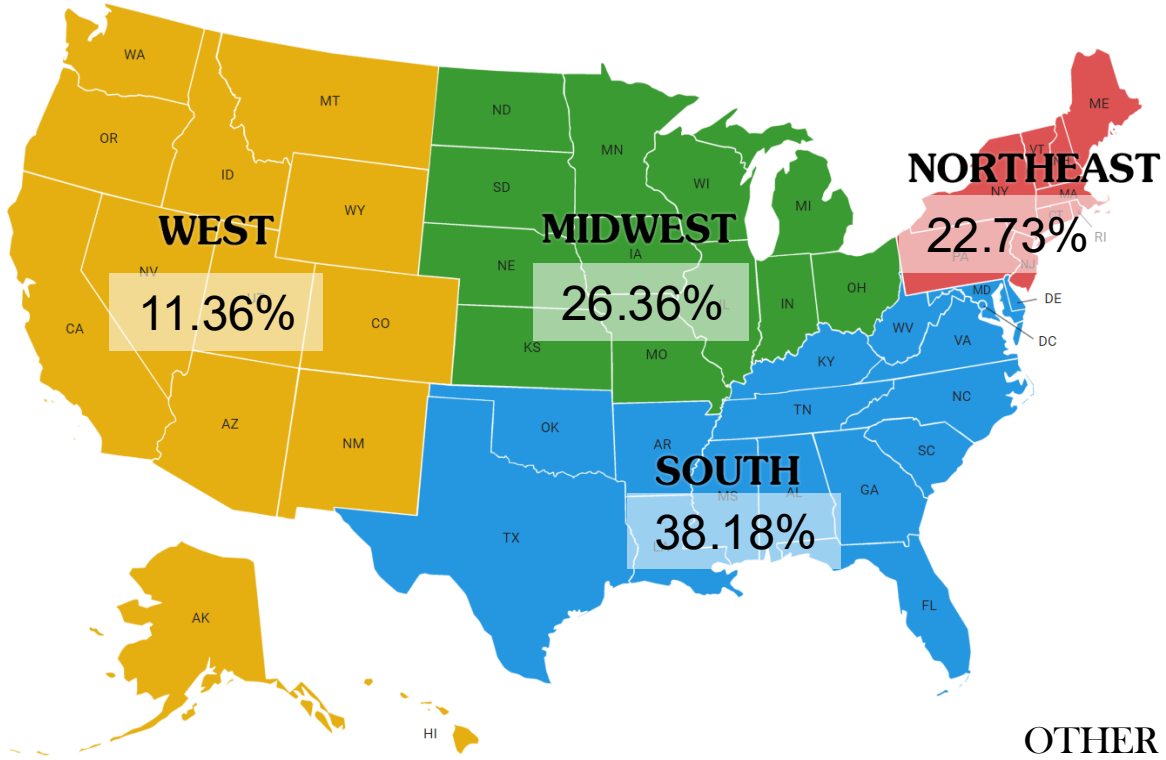


Patient populations



Survey: Participant demographics



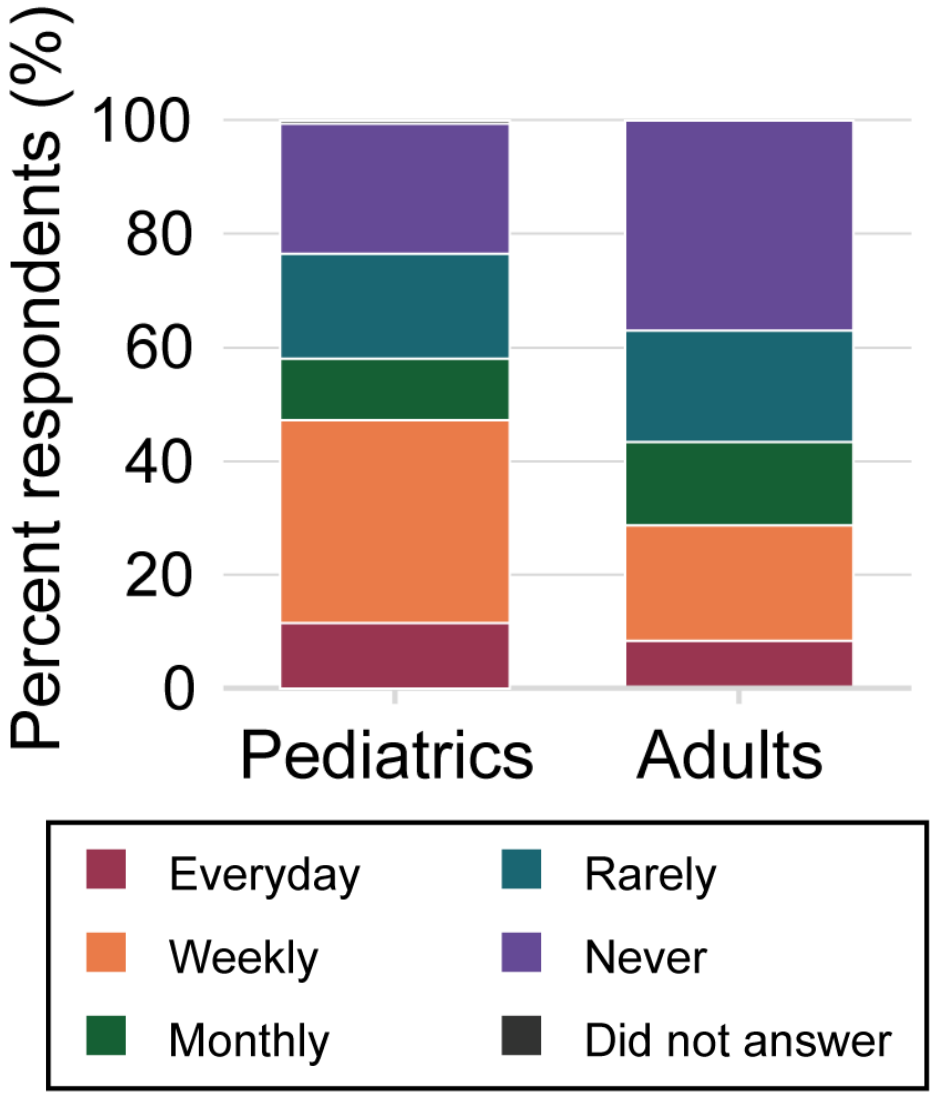


OTHER
1.36%

Results

Practice patterns, clinical advantages, and barriers to implementation

Frequency of use



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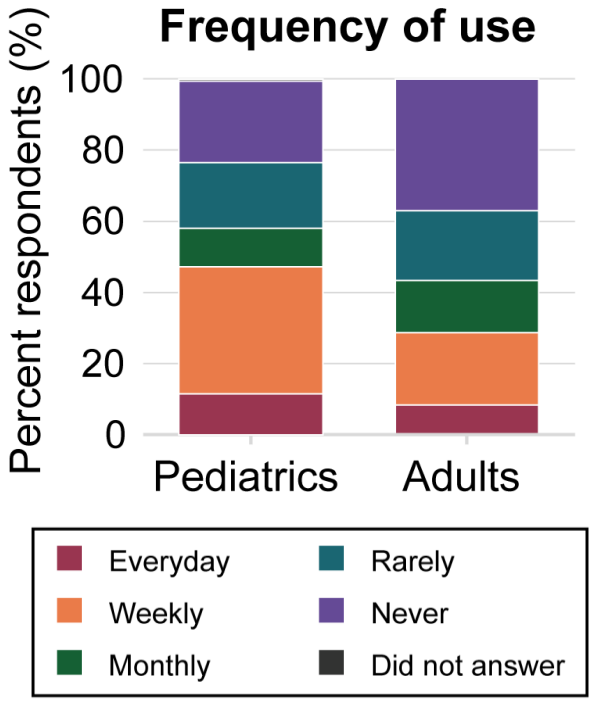
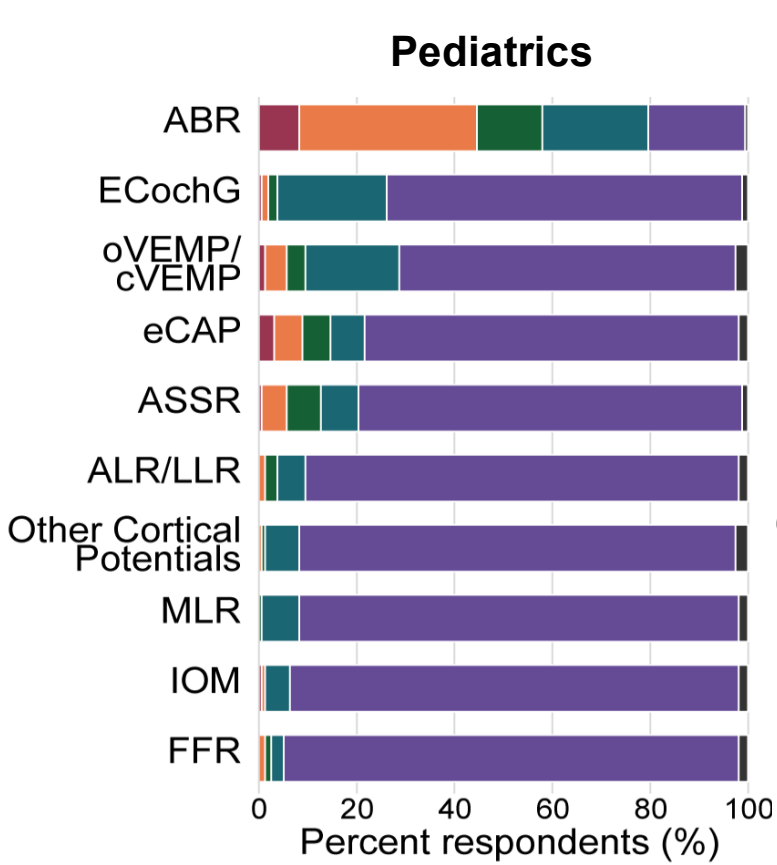
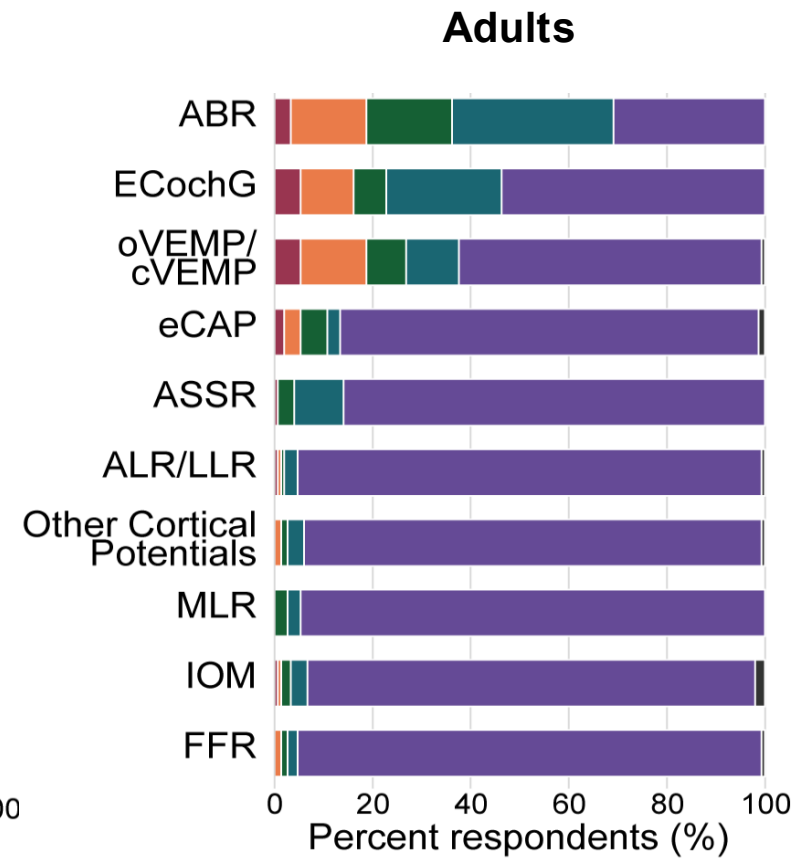
Frequency of use







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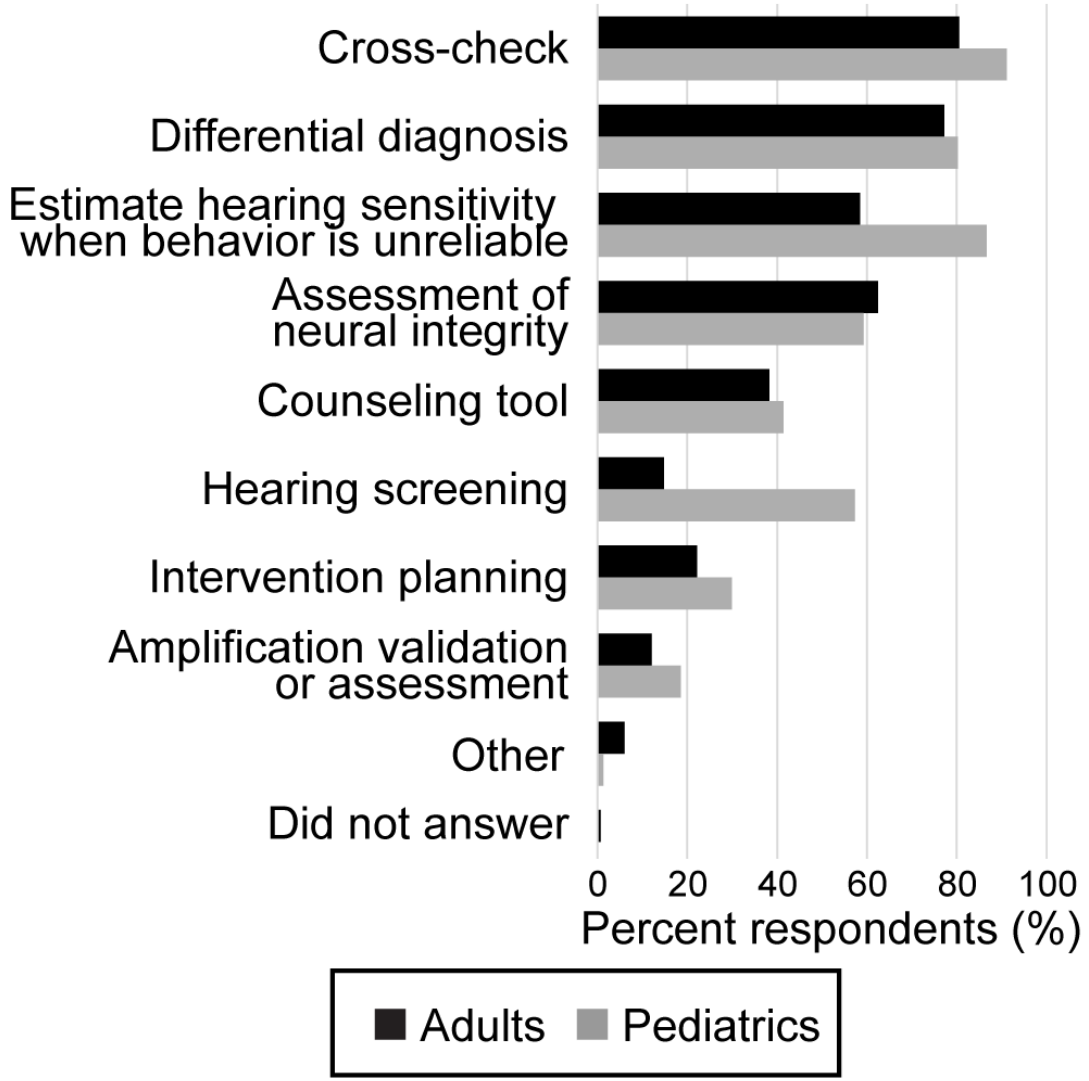
Purpose of electrophysiologic testing



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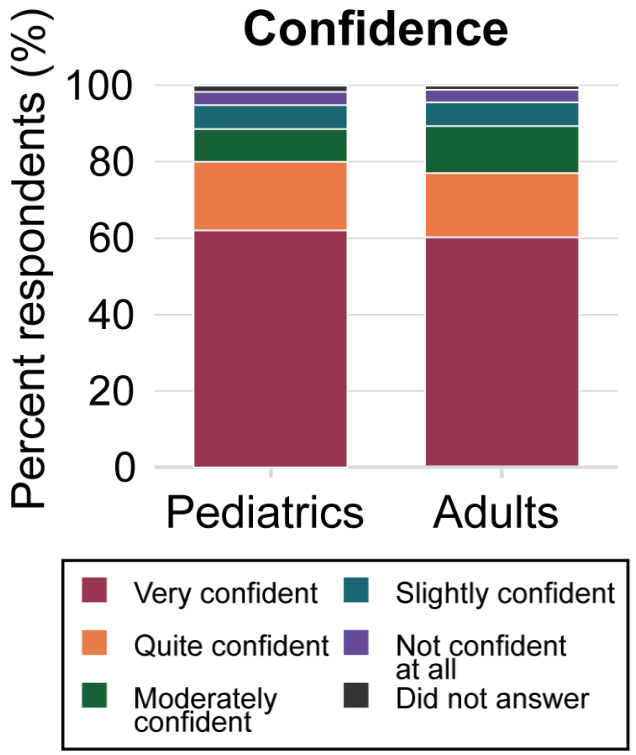
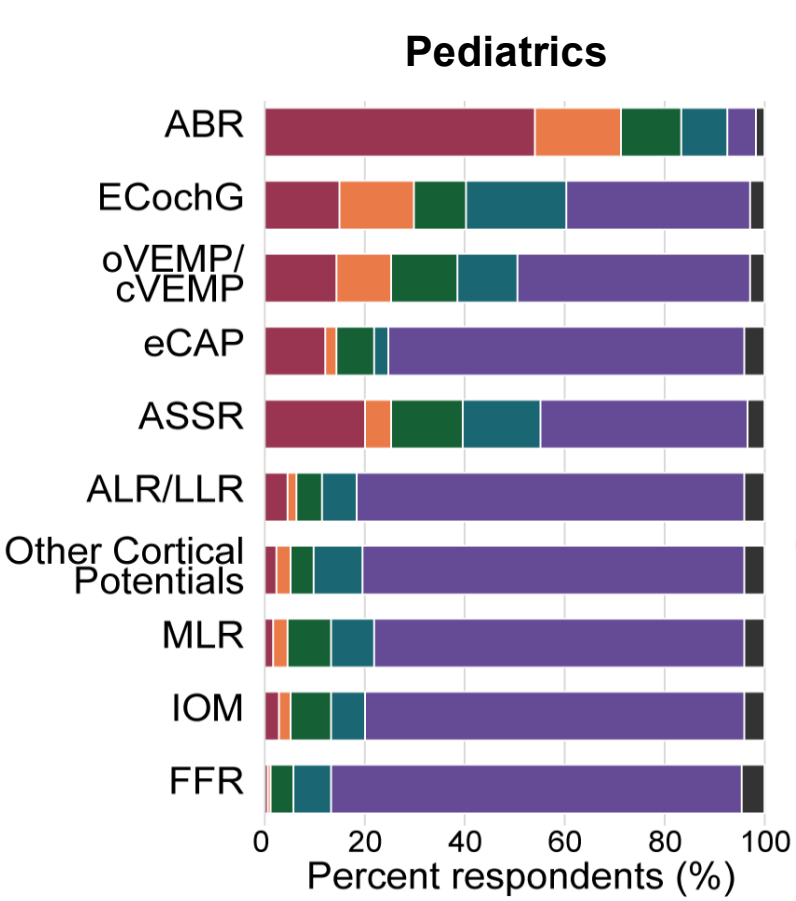
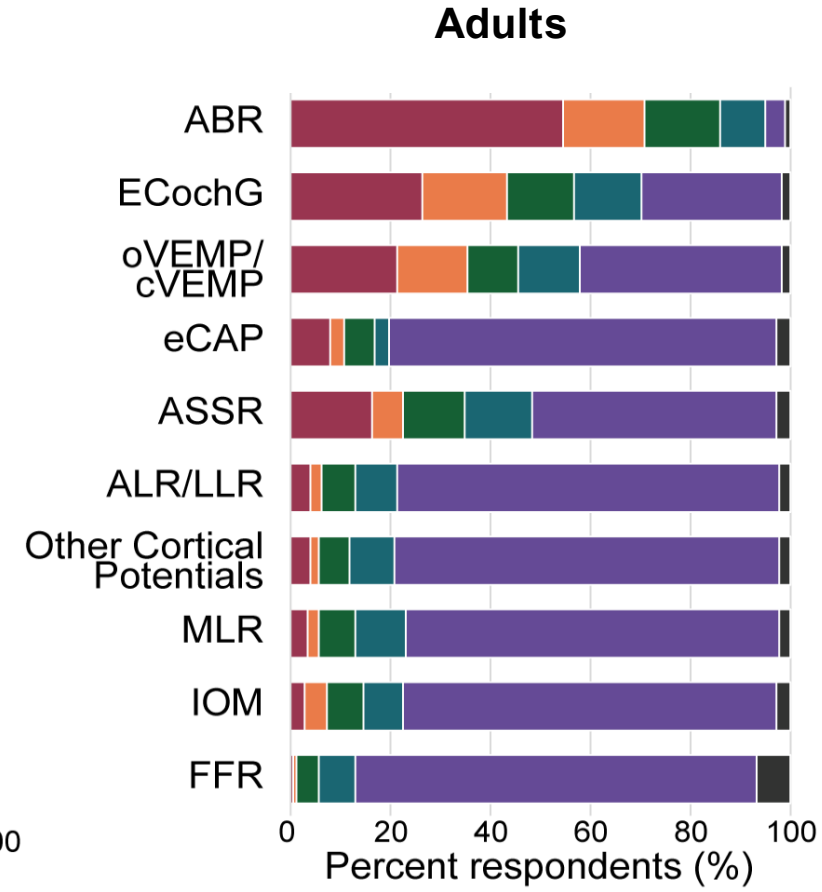
Confidence







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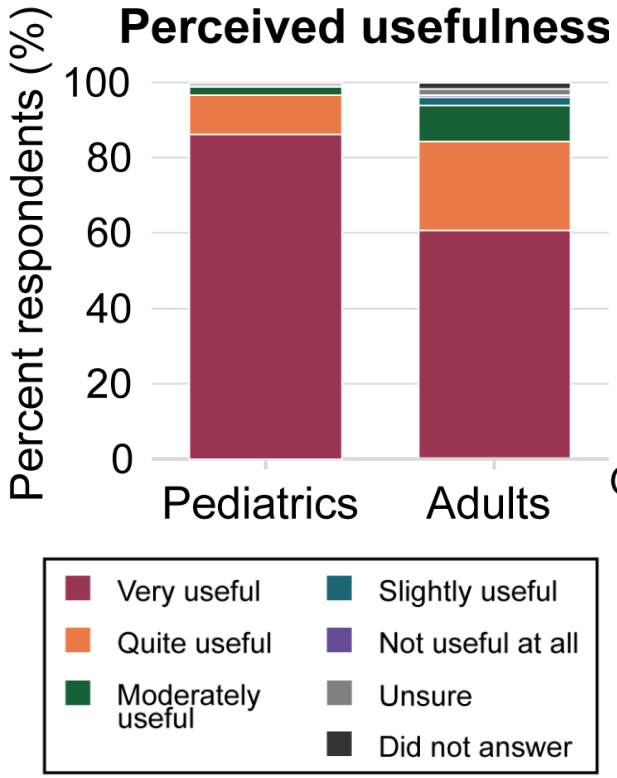
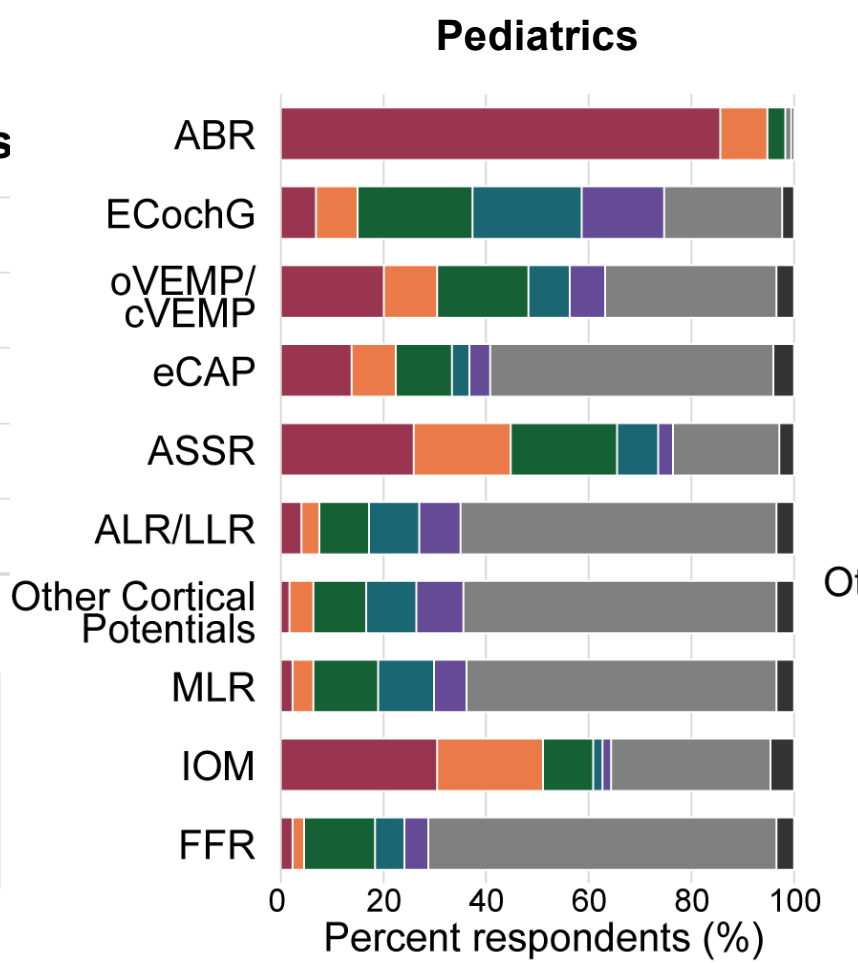
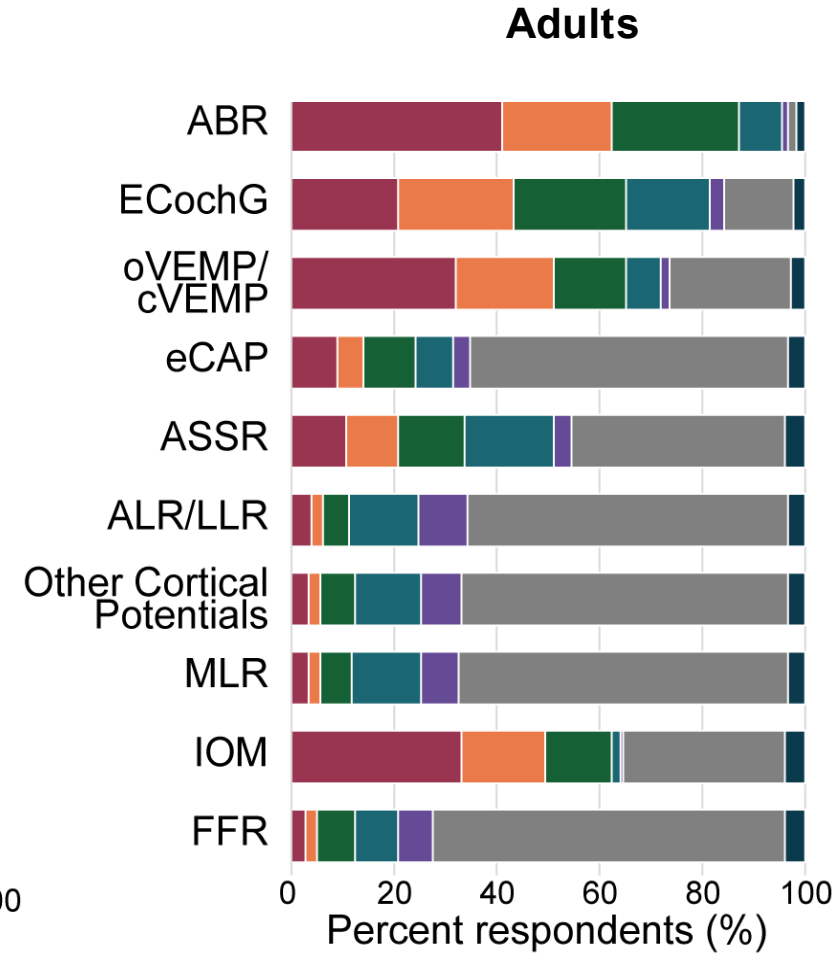
Perceived usefulness







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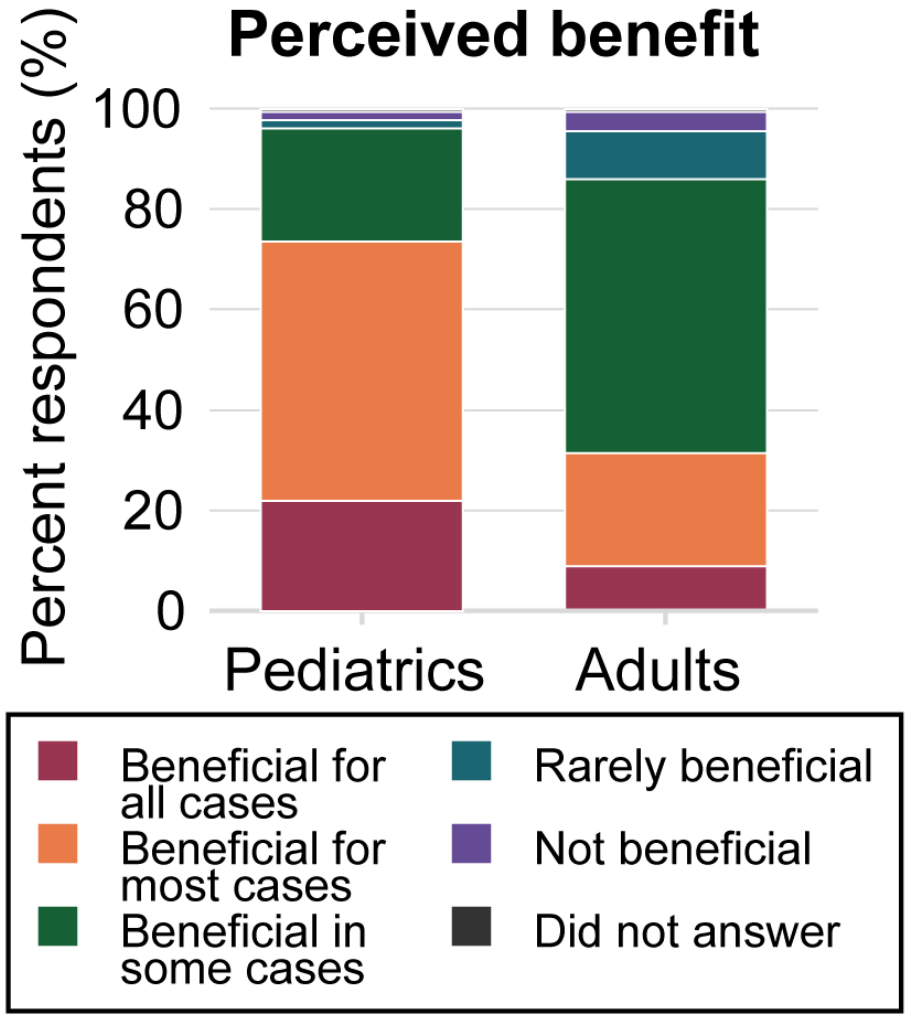
Perceived benefit



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Clinical advantages

- Alternative evaluation for difficult-to-test populations
- Functional assessment of central auditory structures
- Role in differential diagnosis
- Aid in clinical decision making
- Objective cross-check

Clinical advantages

*The advantage of the electrophys…is that it does bring something to table that **an MRI isn't going to do**. So yeah, you can **assess the function** of what's happening on the auditory nerve...**function versus structure**. – FG2*

*I immediately think of **difficult to test**. I immediately think of **young age** and a means of providing care to **patients when we couldn't otherwise get the results that we would need** for for those patients. – FG8*

*The advantages would be that you can get a lot of information. **You can rule a lot of things out**. – FG12*

*It's [electrophysiology] just kind of a great tool, **a lifeline** like I said for us to just figure that out **so we can move forward**. – FG5*

*It's nice because sometimes things just don't add up, and it's nice to **double check yourselves** and have that **definitive measure**. – FG4*

- Alternative evaluation for difficult-to-test populations
- Functional assessment of central auditory structures
- Role in differential diagnosis
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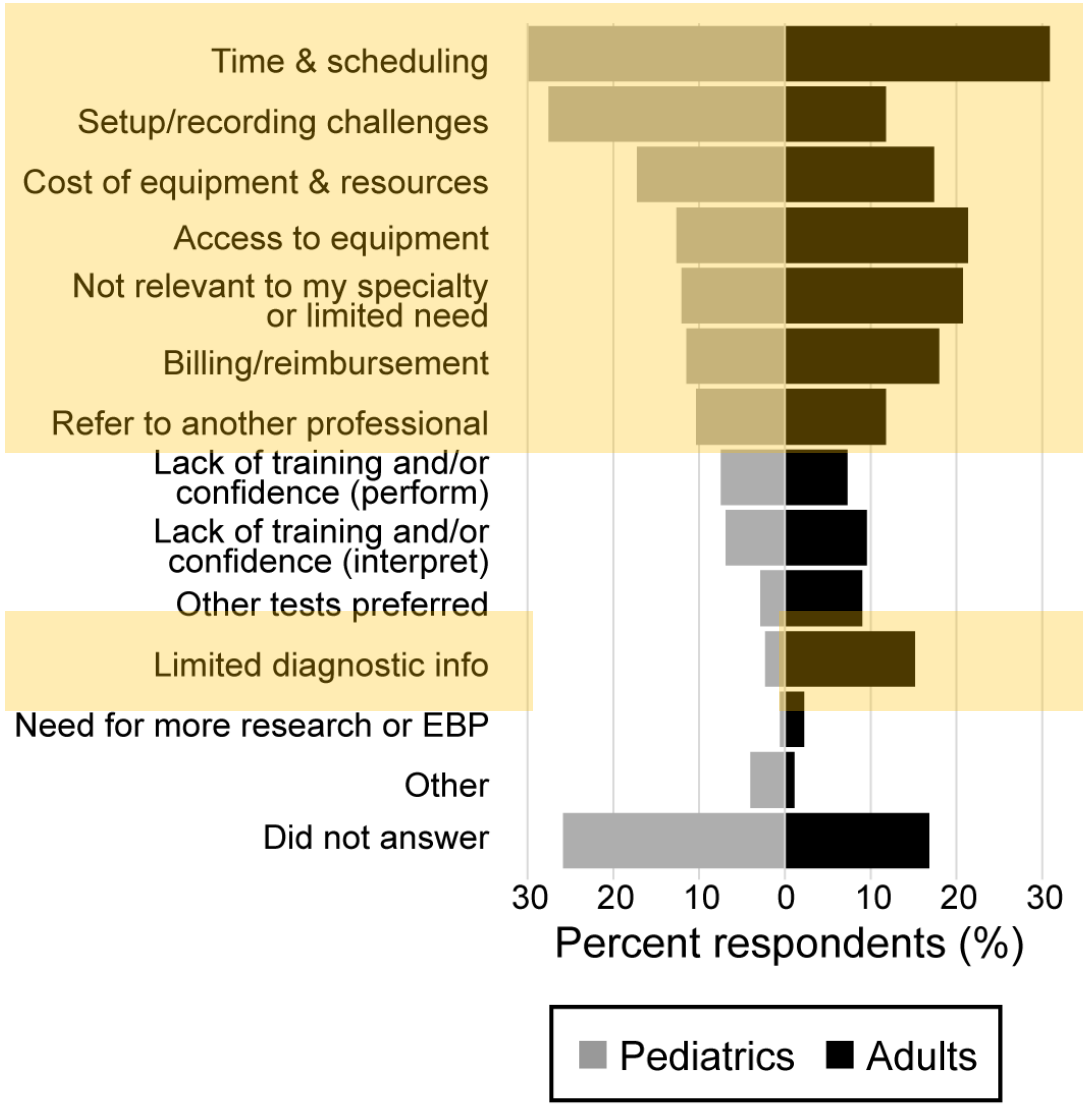
Discussion

What do you feel are some of the greatest clinical advantages of electrophysiologic measures?

- How do your own experiences align with or differ from our participants?

What do you think are the biggest challenges to using electrophysiology in clinical practice?

Barriers to clinical implementation



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Top barriers to clinical implementation

- **Top 5 for pediatrics:**

1. **Time & scheduling**
2. Setup/recording challenges
3. **Cost of equipment & resources**
4. Refer to another professional
5. **Access to equipment**

- **Top 5 for adults:**

1. **Time & scheduling**
2. **Access to equipment**
3. Billing & reimbursement
4. Not relevant to my specialty or limited need
5. **Cost of equipment & resources**

Mankel, Price, Milman, & Austin (in revision)

Barriers to implementation

- Interprofessional communication & electrophysiology understanding
- Cost
  - Billing and reimbursement
  - Cost of equipment/resources
- Lack of time
- Limited confidence in performing and interpreting measures
- Patient-related concerns

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*We have a lot of residents who cycle through, and **all of their understanding of the testing is different**. So I think sometimes that can be difficult, just kind of that **interdisciplinary like knowledge** and **management** of what exactly these tests mean, and just **not over or undervaluing the tests**. – FG9*

*Thinking in terms of a business perspective, you have to be able to **make enough money to pay for the equipment and the time and the staff** and all of that so **that's tough**. – FG11*

*So it's about **money and time**. That seems to be the the only thing that runs this world. – FG1*

*I know we have some audiologists who **don't really feel comfortable doing those tests**, or maybe aren't, as I don't want to say, skilled at interpretation, but like maybe **struggle a little bit more**, and you do **want to make sure that all your patients seen are getting the same standard of care**, so that can be a limitation as well. – FG9*

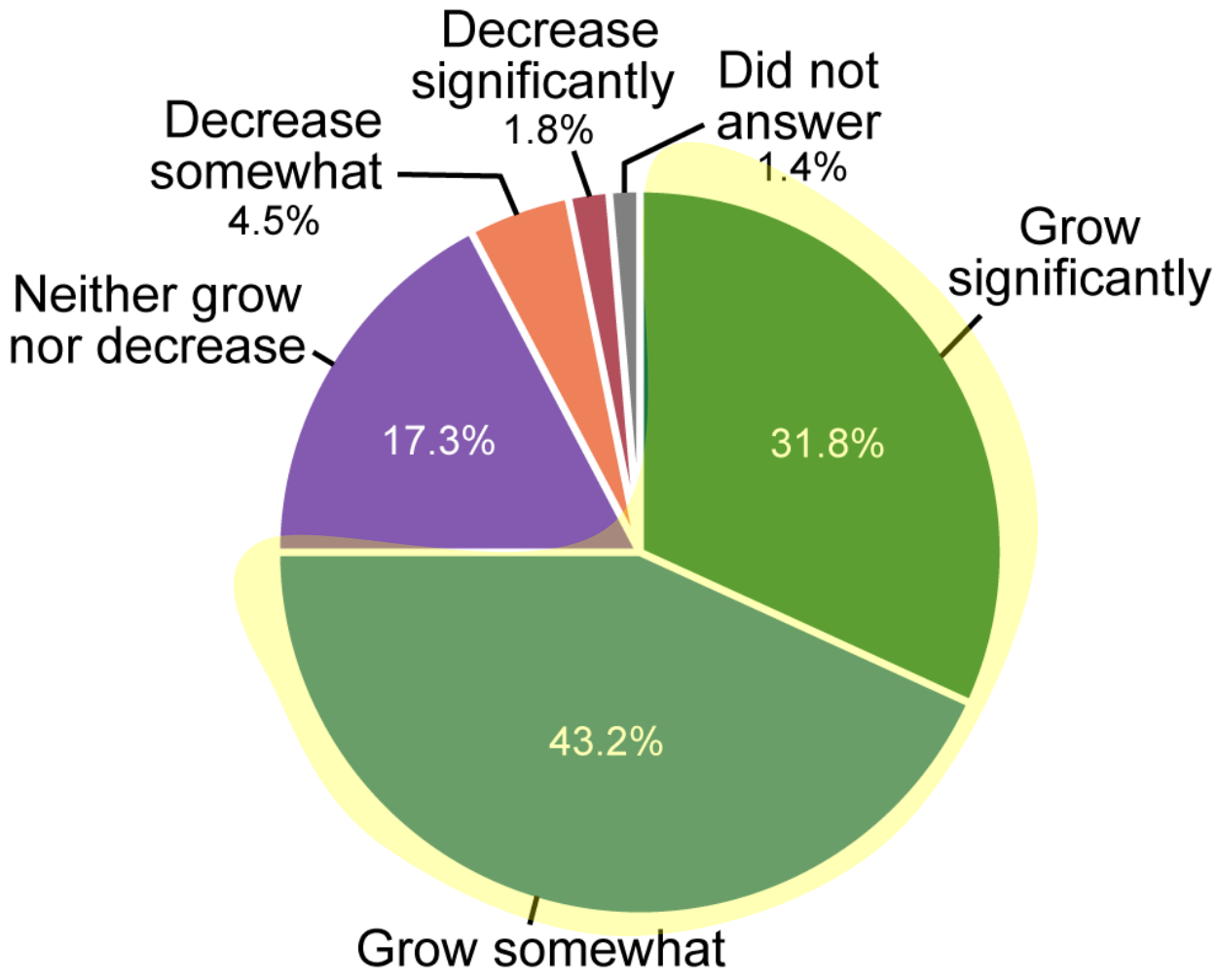
*So you're kind of on their time. Whenever they choose they want to go to sleep. If they, you know, **get one of those kids that moves every 3 seconds, and then you have to start it over**. It takes a lot longer. – FG5*

Common challenge: Navigating interprofessional communication & understanding about auditory electrophysiology

Moving Forward

Looking to the future of electrophysiology in audiologic practice

Future of electrophysiology in audiology



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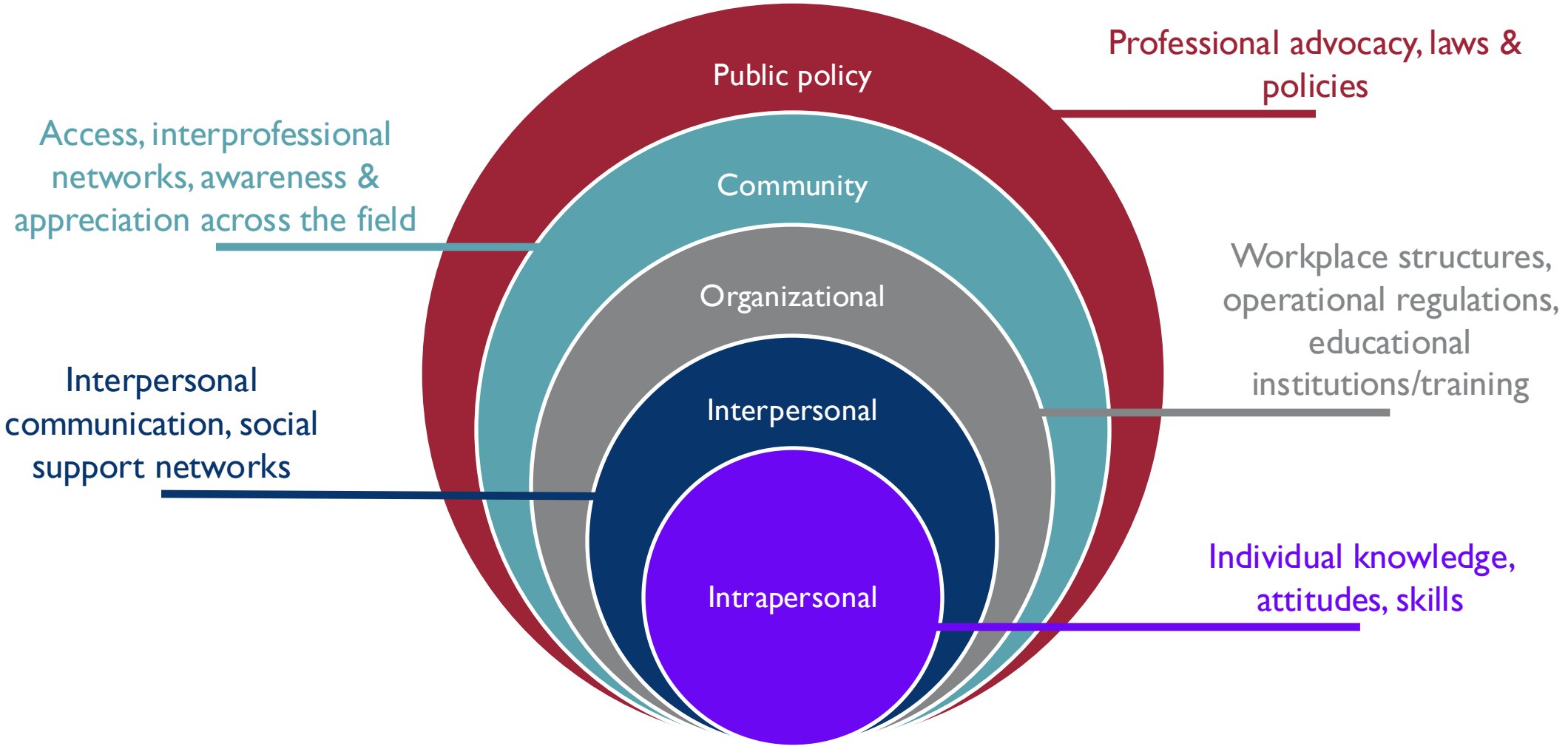
Discussion

What practical strategies do you think could increase the use of electrophysiology or improve its implementation?

Strategies to overcome challenges

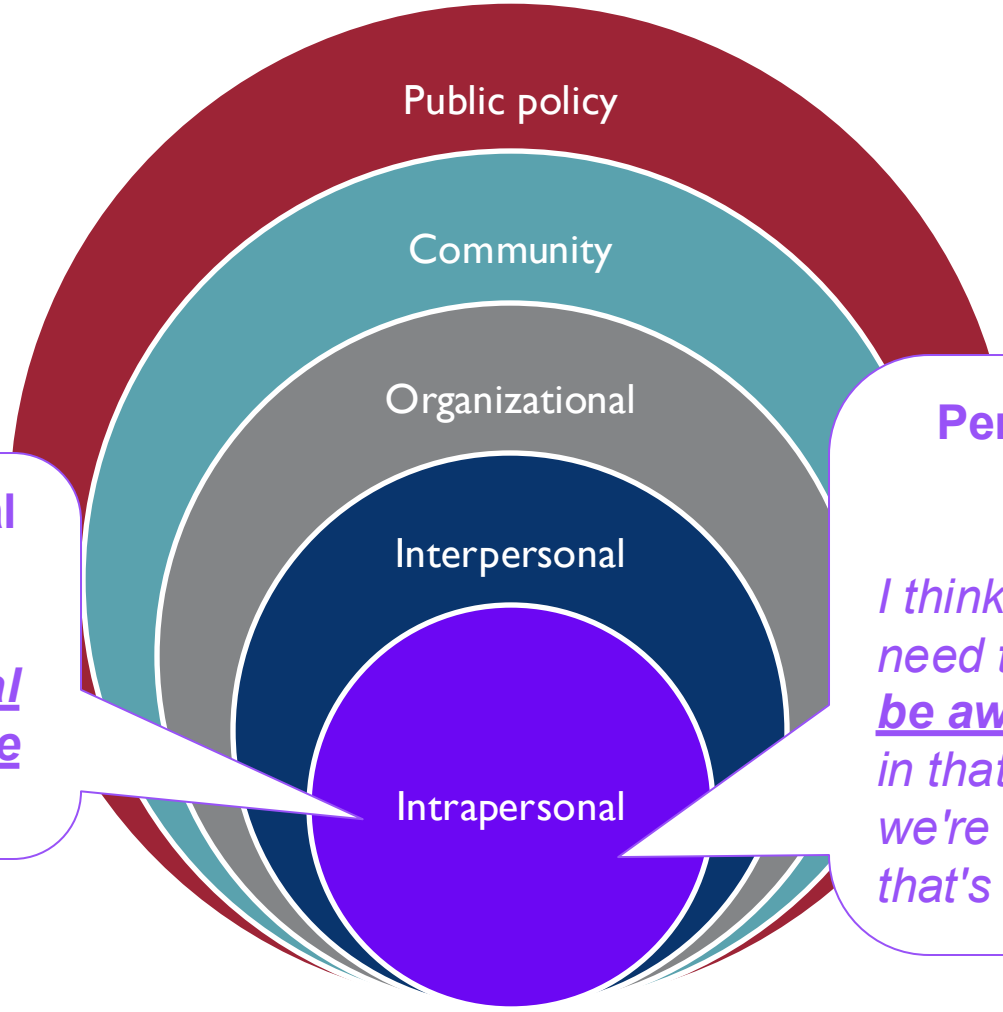
- Improving interprofessional communication & education
- Increasing clinical exposure and experience with techniques
- Training at the university level
- Creating a community/support network within the field

Moving forward



Adapted from McLeroy et al (1988)

Intrapersonal



Importance of clinical experience

*I think **the more clinical experience you get the better**. – FG9*

Personal ownership of learning

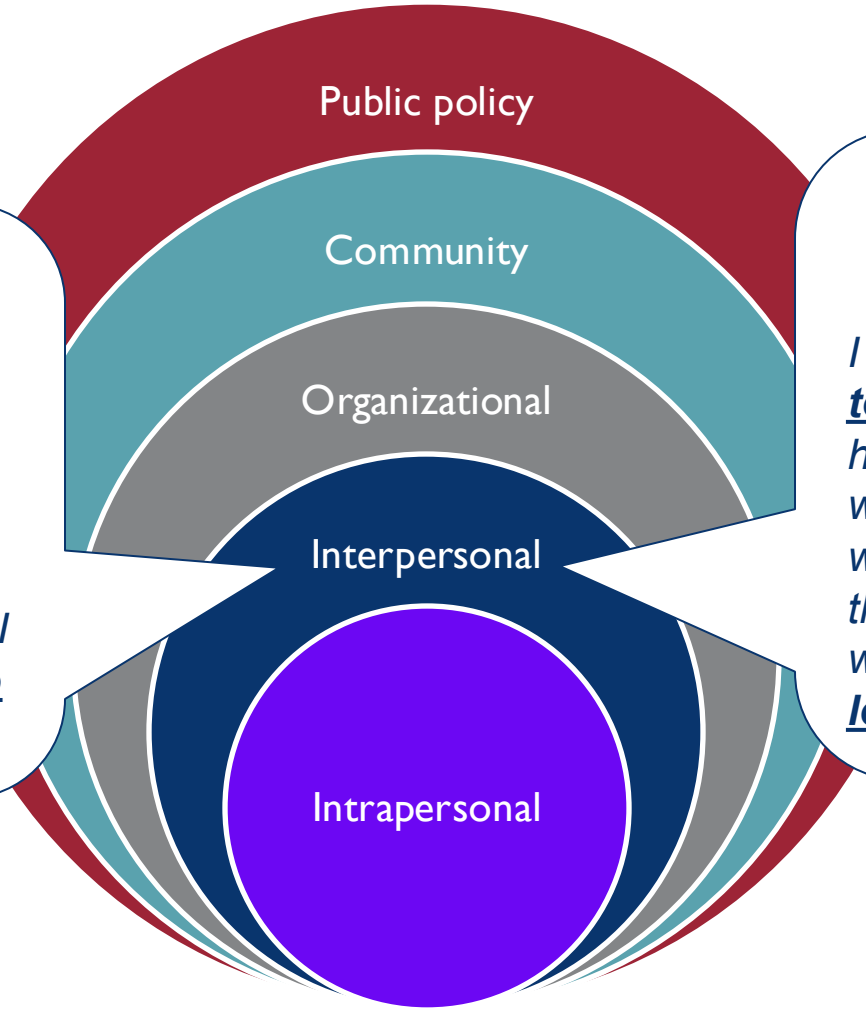
*I think more audiologists need to just **just know and be aware** of what's going on in that portion of the field if we're going to sell it. I think that's the bottom line. – FG2*

Adapted from McLeroy et al (1988)

Interpersonal

Peer mentorship & collaboration

*There's still times where I wheel into the audiology office and say, "Guys, are you seeing what I'm seeing?" So it's still **a lot of collaboration** in some of those responses in some of those tests, too, just to make sure that you know we're we're not missing anything. So I feel that **we work together in in continuing to help and teach each other too**. – FG8*



Interprofessional communication

*I always look at that as a **teaching moment**…They don't have any way to learn if it weren't for us. And so when I write the reports back, I write them in an instructional way…**they're never going to learn if you say no**. – FG10*

Adapted from McLeroy et al (1988)

Organizational

Scheduling & staffing

*I definitely think **schedule flexibility.** So and if you're so tight on a schedule, you know, it's it's hard to go to your employer and say, hey, can we just get another audiologist, you know? So so, Staff. I think, **having enough staff to provide that flexibility** because things do run late. **ABRs do take time**. – FG8*

Passionate educators & supervisors

*I think it's also having the appropriate professor, and like somebody who's actually **knows the material well enough, and likes it, and is passionate about it to kind of make somebody else be passionate about it**…maybe more and more people get interested in it. And **then it maybe happens more**. – FG3*

Administrative support

*You have to you have to kind of **spread the word to the higher ups**…Like if you **get that support and that backing**, I think that would also help maybe spread word on new technology or purchase new technology. – FG5*

Adapted from McLeroy et al (1988)

Community

Referral network

*So once we've diagnosed them or started on one path, we're a **referral powerhouse**, and we just send them out to whoever is going to be the the person who should be taking this test and doing this for them and ABR, ECochG, all those things. – FG1*

Financial support & access

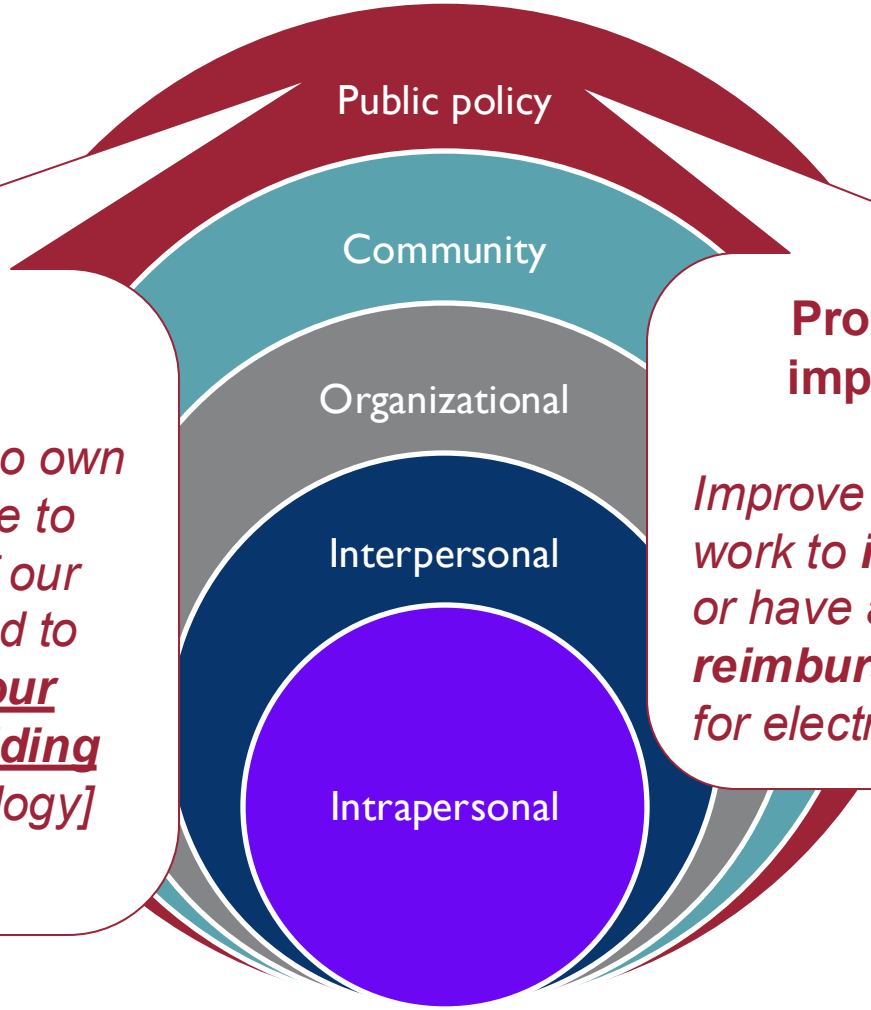
*It would be nice if there was a way to have like **grants available** for like the equipment. Because that, just **taking like the financial burden** I think off of a small private practice, that alone doesn't fix the problem, but it **doesn't make it as as scary** to dive into something like that. – FG12*

Intraprofessional awareness

*And advertising is that it's like, [electrophysiology] is a **specialty in audiology**. And this is something that you can go into and really make a full time job of it…I certainly think that it's a subspecialty that's like there's definitely room to grow there. I think it just needs to be **marketed to students and audiologists** as that. – FG4*

Adapted from McLeroy et al (1988)

Public policy



Owning scope of practice

I do think, as audiologists, we need to own our scope, and we all need to be able to function at the highest level of our of our scope of practice…I think we do need to make sure that we are like ***owning our scope of practice and just not yielding it****. Because it it I think [electrophysiology] does have value. – FG9*

Professional advocacy & improved reimbursement

Improve equipment, and maybe work to ***increase reimbursement*** *or have a more* ***time-based reimbursement*** *for ABR at least, or for electrophys in general. – FG5*

Adapted from McLeroy et al (1988)

Key takeaways

Electrophysiology usage is fairly common (more so in pediatrics) but not always frequent, though most clinicians view measures as beneficial or useful

Key barriers included lack of time, cost, access, population-specific challenges, and interprofessional communication or understanding

Practicing to the top of the license in auditory electrophysiology means improving access & reducing barriers across multiple levels

Thank you!

University of Memphis Center for Research Initiatives and Strategies for the Communicatively Impaired (CRISCI) Faculty Research Grant

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Contact Information & Feedback Survey

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We welcome your feedback!

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