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# **Integrating Virtual Clinical Education Into Graduate Programs During the Pandemic & Beyond**

## **Disclosure: Erica Williams, Ph.D.**

- Erica is a salaried Clinical Associate Professor of Speech and Hearing Science at Arizona State University
- Erica has no financial disclosures
- Erica is a member of the ASHA Council for Clinical Certification

## **Disclosure: Mollie Harding, Au.D.**

- Mollie is a salaried Clinical Assistant Professor of Speech and Hearing Science at Arizona State University.
- Mollie received financial compensation for contributing to the library of audiology simulations on Simucase, a commercially-available simulation platform, which may benefit from research we performed.
- Mollie has no non-financial relationships to disclose.

# Learning Objectives

1. Learn about advantages and disadvantages of virtual learning modalities from our student and faculty perspectives
2. Learn about which modalities were most effective in developing specific skills per student survey data and current literature
3. Learn how to develop an effective virtual simulation

**We be  
will  
covering**



**What did we do and why**

**Our solutions**

**Faculty perspectives**

**Student perspectives**

**Numerical survey data**

**Literature**

**Simulation development**

**What did we do and why?**

# The Effect of the Pandemic on Clinical Education

We did not offer in-person education from March through July of 2020.

Virtual clinical simulation: Simulation activities that can be completed with both clinical preceptor and student 100% remote.

Hybrid clinical simulation: Simulation activities that can be independently be completed in person with remote debriefing activities.

# The Effect of the Pandemic on Clinical Education

- AuD: 10% of a student's supervised clinical experience may be used towards ASHA certification
- What is (and is not) CS: Not labs. Standardized patients, simulation technologies. Can be synchronous or asynchronous. There is a 25% observation/debriefing requirement.
- Expanded CFCC definition of audiology simulation through December 2021: "Case discussions in which the student is asked to make evidence-based recommendations for procedures, predict and analyze results, and make evidence-based recommendations. Case discussions may be live with a clinical instructor or may include written responses with a debrief with the clinical instructor"

# **Our Solutions**



- 1. Commercially-available simulations**
- 2. Discussion Boards**
- 3. Instructor-led Simulations**
- 4. Instructor-led Discussion**
- 5. Hybrid Simulations**

# Commercially-Available Simulations

# Discussion Boards



In response to the case address any/all of the following:

- Any direct questions from the presenter
- What you would do if you were the clinician
- Any other questions or observations
- Please be sure to directly address how you would counsel in this situation.

Click the "snowman" to see the rubric for grading.

# Instructor-Led Case Studies

## Vestibular Case History Form

Name: Minepra McGonagall Age: 56 Today's Date: \_\_\_\_\_

Date of Birth: \_\_\_\_\_ Height: 5'6" Weight: 140

Describe the major problem or reason you are seeing

us: dizziness

When did your symptoms begin? 1 year ago

Did your symptoms begin gradually \_\_\_\_\_ or suddenly ☒ ?

Do you experience any of the following? ☒ dizziness ☒ vertigo ☒ spinning

☒ lightheadedness ☒ nausea ☒ vomiting

If you have spinning, do you see the room spin or do you feel yourself spin?

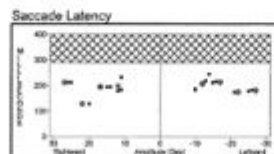
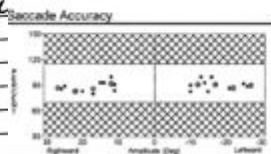
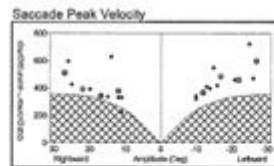
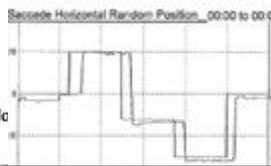
☒ room spinning ☐ self spinning

How long do your symptoms last? Seconds ☒ Minutes \_\_\_\_\_ Hours \_\_\_\_\_ Days ☒ No

If your symptoms are episodic, do you feel free of symptoms between episodes? Yes ☒ No

	Y	N	If yes, please describe
Do you experience a spinning sensation? What movements or positions cause it?	<input checked="" type="checkbox"/>		<u>head movement</u>
Do you experience a feeling of being off balance?	<input checked="" type="checkbox"/>		
Are you more off balance in the dark?		<input checked="" type="checkbox"/>	
Are you more off balance on uneven surfaces?		<input checked="" type="checkbox"/>	
Have you had "near falls"?	<input checked="" type="checkbox"/>		
Have you fallen to the ground?		<input checked="" type="checkbox"/>	
Have you injured yourself due to your symptoms?		<input checked="" type="checkbox"/>	
Do you stumble, stagger, or side-step while walking?		<input checked="" type="checkbox"/>	
Do you drift to one side when walking? To the right or left?		<input checked="" type="checkbox"/>	

## Saccade-Both Eyes and Tracking-Both Eyes



• What testing do we want to complete?

• Interpretation of Saccade and Smooth Pursuit Results?

# Instructor-Led Simulations

The screenshot shows a Google Slides presentation titled "Tyson (revised)". The main slide is titled "Tyson" and contains the following text:

You are about to see a five-year-old male due to speech and language delay. The family did not complete their case-history form prior to the appointment.

What do you do?

- [Review case history](#)
- [Otoscopy](#)
- [Tympanometry](#)
- [Acoustic reflexes](#)
- [OAEs](#)
- [Behavioral audiometry](#)
- [Nothing more](#)

The presentation interface includes a sidebar with slide thumbnails, a top menu bar with options like File, Edit, View, Insert, Format, Slide, Arrange, Tools, Add-ons, and Help, and a bottom status bar with "Click to add speaker notes" and an "Explore" button.

## Tyson: Case History

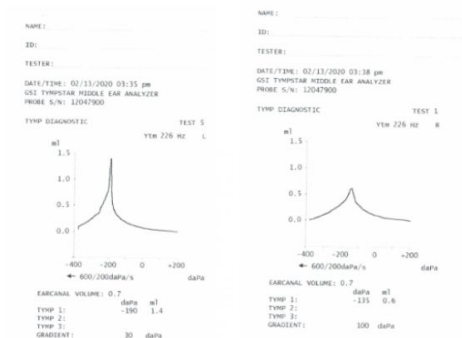
What questions will you ask?

- [Please elaborate on his speech and language problems.](#)
- [Is there a family history of hearing loss?](#)
- [Did he pass the newborn hearing screen?](#)
- [Has he had his hearing tested before?](#)
- [How do you think Tyson hears?](#)
- [Has he had recent ear infections?](#)
- [When was the last time he saw an ENT doctor?](#)
- [Are there other concerns for his academic development?](#)
- [What are your concerns for auditory processing?](#)

[\(back\)](#)

## Tyson: Tympanometry

[\(back\)](#)



# Hybrid Clinical Simulations



4. Next, orient the hearing aid on the t-coil spot (the big circle with a T in the middle of the test box. In spot 2 measure for the telephone program (hearing aid flat), in spot 3 measure for the loop program (hearing aid vertical). You will need to select separately for each on the Verefit.

Here's an example of the t-coil vertical



5. Do the telephone/loop programs each equal the microphone program? If so, you've achieved transparency. If not... you need to go back into the software and adjust the level of the respective telephone program so that the microphone and t-coil curves are equal. **Take a picture of your result and upload.**
6. Take it one step further. What if it is a telephone+mic program or a loop+mic program? What type of transparency are you looking for then? Change both of your t-coil programs to be +mic programs and repeat step 5 but including transparency for the +mic component. **Take a picture of your results and upload.** If you are having difficulty with your results, temporarily turn your HA features off.

**Counseling: How would you counsel your patient as to what you are doing and why as you complete these additional measurements on their hearing aids while they are sitting in your office? Your patient is a 67 year-old female, has worn hearing aids previously but this is the first time with a telecoil.**

**Our Solutions:**

**Faculty**

**Perspectives**

# Commercially-Available Simulations

## Advantages

- Ready for immediate use
- Requires very little time and effort
- Students can gain perspective on differences of professional opinion

## Disadvantages

- Cases may not be appropriate for a student's academic level
- Faculty professional opinion may differ
- Cost

# Discussion Boards

## Advantages

- Case information can be tailored for the audience
- Allows students to see cases that wouldn't otherwise be exposed to

## Disadvantages

- Requires time and effort
- Difficult to determine level of engagement without face-to-face interaction

# Instructor-Led Case Studies

## Advantages

- Case information can be tailored for the student level
- Allows for brief instructional introduction to topics beyond a student's academic level but might encounter clinically

## Disadvantages

- Requires extensive time and effort
- When offered in groups, student engagement differed

# Instructor-Led Simulations

## Advantages

- Case information can be tailored for the student level
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## Disadvantages

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# Hybrid Clinical Simulations

## Advantages

- Allows for hands-on practice by students.
- Can explore a wider range of topics than by discussion only

## Disadvantages

- Required extensive time and effort
- Some debriefings were challenging to conduct in a virtual setting

# Our Solutions:

# Student

# Perspectives

# Commercially-Available Simulations

## Advantages

- The videos were engaging
- Useful examples of counseling situations

## Disadvantages

- Cases available lacked variety
- Automated feedback did not help understanding or encourage critical thinking
- Professors disagreed with case interpretation at times

**“I liked that it gave examples of what to say for counseling and it gave me ideas for things I might want to test for a patient that I wouldn’t have thought of before.”**

**“I didn’t feel like it explained any reasoning behind the correct and incorrect options.”**

# Discussion Boards

## Advantages

- Discussion encouraged more critical thinking and collaboration

## Disadvantages

- Repetitive
- Replying to others' posts felt forced
- Did not require application of test batteries or clinical decision-making, only test interpretation

**“I liked that these were real cases. We were able to bounce ideas off other students. This was great because some students came up with ideas that I hadn't thought of and vice versa. I was disappointed when these cases ended.”**

**“The discussion  
questions got repetitive.  
Didn’t really like  
responding to other  
people.”**

# Instructor-Led Case Studies

## Advantages

- Provided learning experiences in a variety of areas beyond diagnostics, such as aural rehab
- Slow pace and lack of structure allowed for customization and comprehension

## Disadvantages

- Discussions lacked structure

**“No structure.”**

**“Spending more time on one element of a case was helpful because it allowed us to discuss the thought process more and better get my head around all of the details that I need to look at and what they could mean.”**

# Instructor-Led Simulations

## Advantages

- Helped with clinical decision-making
- Instructor presence facilitated discussion and understanding
- Ability for Q&A in real-time
- Learned about unique cases in a professor's area of expertise
- Appreciated effort put forth by faculty in case development

## Disadvantages

**“I especially enjoyed  
where each decision  
took you to either results  
or more options.”**

# Hybrid Clinical Simulations

Advantages

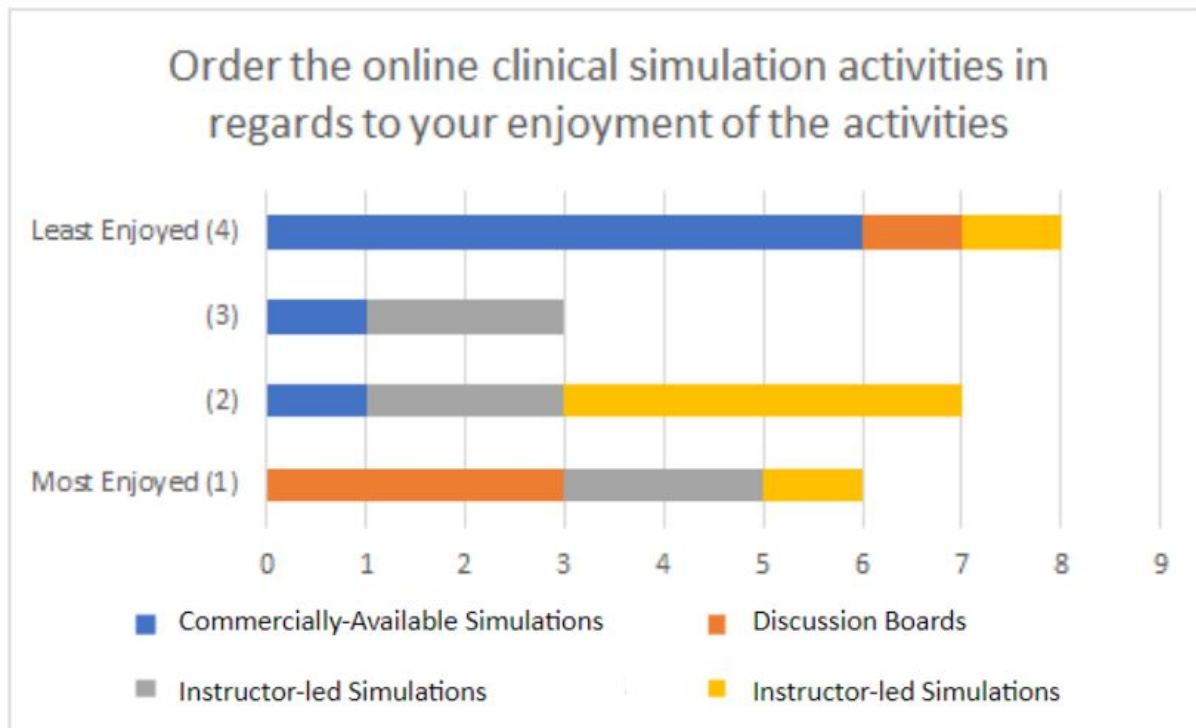
Disadvantages



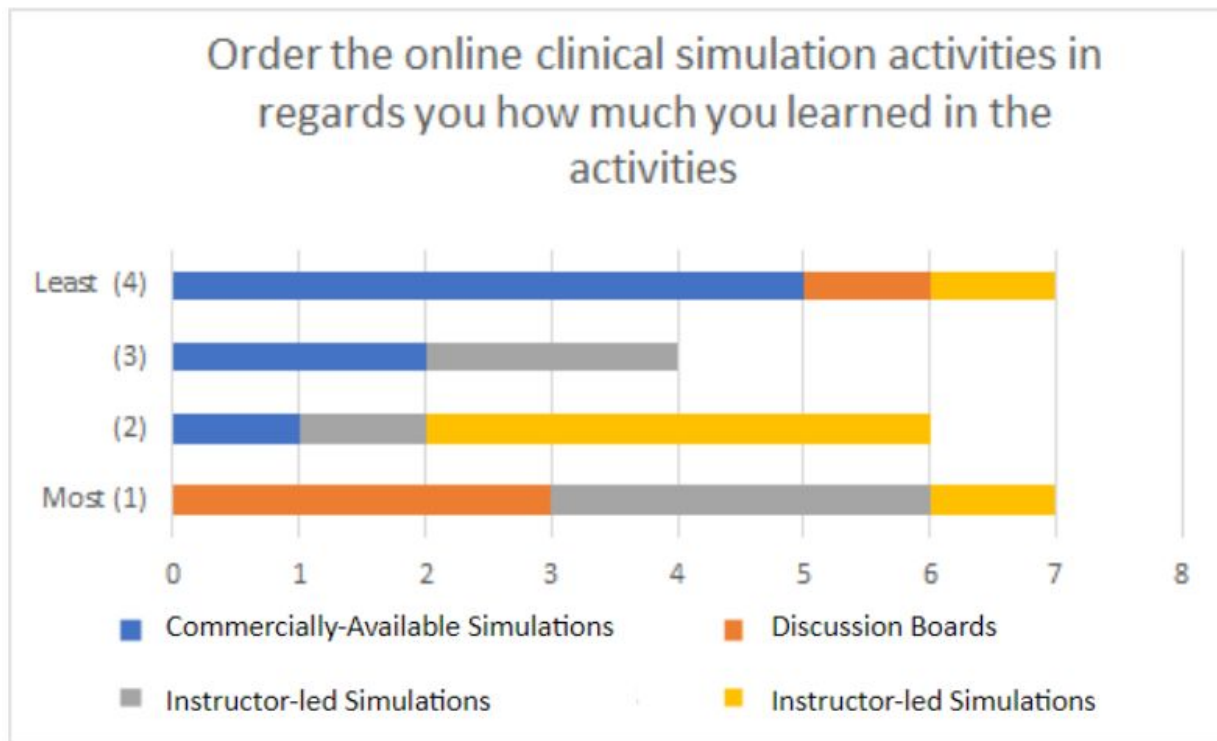
N=1

# **Numerical survey data**

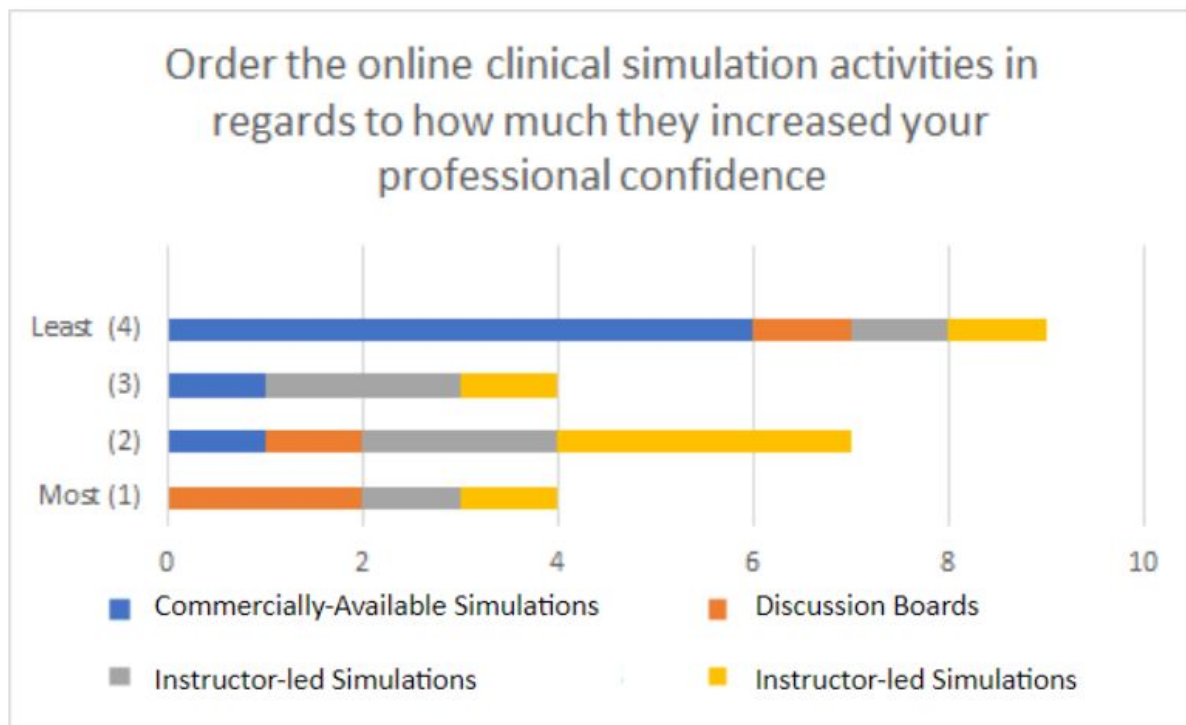
# Did you enjoy the simulation?



# How much did you learn?



# Did you increase professional confidence?



# Hybrid Clinical Simulations



N=1

# Literature

# What is Simulation?

“Simulation is a technique-not a technology-to replace or amplify real experiences with guided experiences that evoke or replicate substantial aspects of the real world in a fully interactive manner.” (Gaba, 2004)

# Effects of Using Simulation

Simulation can effectively be substituted for a certain proportion of clinical training hours as demonstrated in many health professions.

# Simulations in CSD Education

## Benefits for the Program

- Augmenting clinical placements
- Teaching complex populations

## Benefits for Students

- Increase confidence
- Increase preparedness
- Broader range of experience

Significant Barriers: Time to implement and learn how to use simulation, restricted availability for usage, cost.

# Simulations in CSD Education

## Best practices

- Associated of Standardized Patient Educators
- Council on Academic Programs in Communication Sciences and Disorders

Simulated vs. standardized patients

Our application: standardized patient counseling in the virtual clinical environment

# Simulations in CSD Education

Standardized patients and counseling (Schroy, 2015)

# Simulation development

# Demonstration of Instructor-Led Simulations

Meet Tyson

# Developing Instructor-Led Simulations

Blank presentation

# Developing Hybrid Clinical Simulations

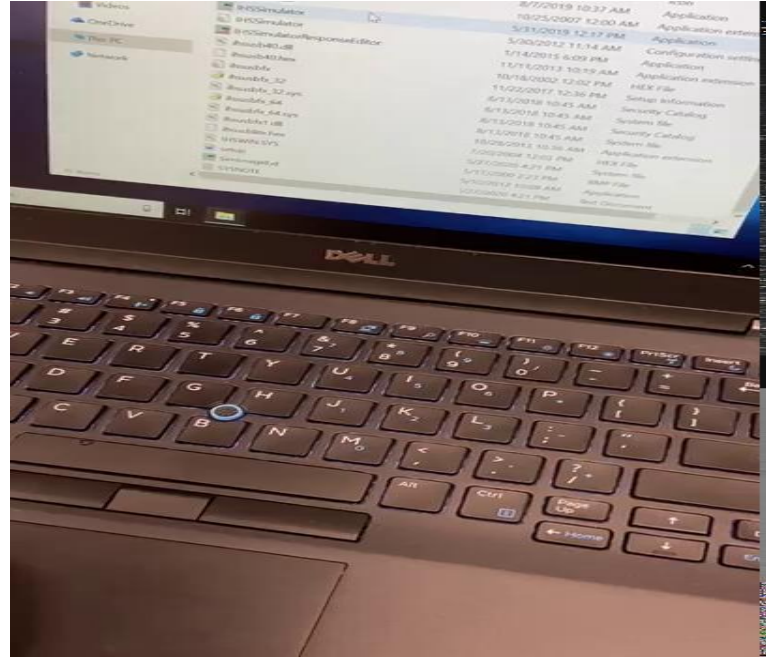
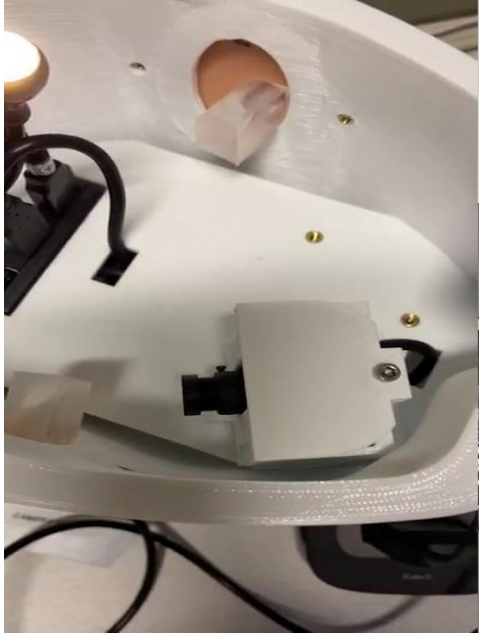


# Topics



1. **Earmold impressions**
2. **Probe Tube Depth Placement**
3. **Open Fit RICs**
4. **Cerumen Management**
5. **Directional Mic/Noise Reduction Verification**
6. **CROS vs. Osseointegrated devices**
7. **T-coil verification**
8. **ABR**
9. **Fonix Box**

## Developing Hybrid Clinical Simulations

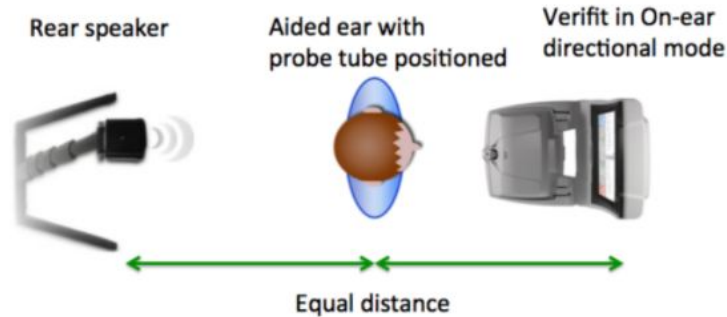


# Developing Hybrid Clinical Simulations

Complete with the Phonak Audeo V90-13. When you are done, please mess up the programming for the next person. You are completing this for a 46 year old female.

## Noise Reduction Verification

1. Set up your "patient" as follows:



2. Program the hearing aid to a mild-moderate sloping flat SNHL
3. Select Noise Direction Test from the Verifit II main menu
4. Complete the test in slots 1 and 2 for Vacuum and Pink noise, with noise reduction on.

# Developing Hybrid Clinical Simulations

## Debriefing Discussion Examples

How would you use the noise reduction verification tool with a patient? Counsel your 45-year old female patient who works in a busy office environment as a result of what you are seeing with the noise reduction verification in our simulated patient.

You've completed t-coil verification in your patient who has worn hearing aids previously, but this is her first time with a t-coil. How do you counsel your patient as to what you are doing and why as they are sitting in your office?

# Conclusions

1. Each method of simulation has advantages and disadvantages
2. Numerical data shows student preferences may reflect personal learning styles
3. We are excited to see the future of clinical simulation in CSD education!

# References

Dudding, C. C., & Nottingham, E. E. (2018). A national survey of simulation use in university programs in communication sciences and disorders. *American Journal of Speech-Language Pathology*, 27(1), 71-81.

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Questions?