

# Culturally inclusive course material for the Speech Sciences: Evaluation of an undergraduate speech science course with diversity emphasis



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## INTRODUCTION

- Students pursuing professional careers in allied health will work with populations that are culturally and linguistically diverse (Horvat et al., 2014).
- Education and cultural competency is critically important to providing health services to those of diverse populations (Horvat et al., 2014).
- Students in health science professions lack confidence when working among culturally diverse populations (Ah & Cassara, 2013)
- Multicultural education is often a topic left out in university curriculum (Smith et al., 2007), especially in foundational science courses

### Purpose

- Evaluate scientific knowledge and cultural competence in a group of undergraduate students taking a speech science course focused on culturally-related clinical applications
- We hypothesized that participating in the speech science modules would increase confidence in scientific and diversity topics, improve topic knowledge accuracy, and increase cultural-related empathy

**Table 1.** Learning objectives that guided module development.

Overarching Learning Objectives
• Students will gain knowledge in speech science concepts and measurement techniques to increase their ability to use and apply fundamental scientific knowledge
• Students will identify and describe real-life situations where they will be able to apply their speech sciences skills in a thoughtful and culturally responsive way
• Students will reflect on their own opinions, biases, and beliefs surrounding culturally-related topics in speech-language pathology in order to improve their ability to provide care that includes empathy, responsiveness, and humility.

Including culturally-inclusive course materials in foundational science courses is beneficial to students pursuing professional careers in the health sciences because they help to promote cultural and linguistically diverse education, humility, and responsiveness



## METHODS

- A total of 61 undergraduate students participated in Fall semester, 2022
- Five educational modules were developed that included a pre-recorded lecture and interactive, in-person lab.
- Module pre/post assessments were completed, including 5-point Likert ratings on their confidence in their own knowledge
- At the beginning and end of the semester, students completed a 20-question empathy-assessment to assess changes in any beliefs, biases, or attitudes over the course of the semester (Gonzalez et al., 2021) (*The Munroe Multicultural Attitude Scale Questionnaire*, 2006) (Wang et al., 2003)

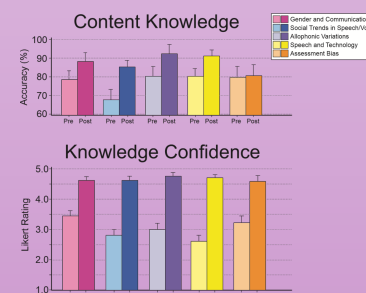
**Table 2.** Five content areas for the educational modules.

Module	Clinical Applications and Examples
Gender and Speech	Using speech science knowledge during Gender Affirming Voice Therapy
Social Trends in Speech/Voice	Clinical Glottal Fry and Upspeak
Allophonic Variations in Speech	Phonemic variations in non-native English speakers seeking accent services
Speech and Technology	Dialectal biases in automatic speech recognition software (i.e., Siri, Google)
Speech Sound Assessment Biases	Biases standardized tests have toward linguistically-diverse children and how to combat these issues

## RESULTS

- Mixed-effect model showed a significant improvement in content knowledge in the post-assessment ( $p < .001$ ), with scores increasing from 77% to 87%, on average
- Mixed-effect model revealed significantly increased confidence in module content ( $p < .001$ ) with an average Likert increase of 1.6 points (Pre = 2.99/5, Post = 4.63/5)
- One sample *t*-test showed a significant improvement in empathy between the pre-semester and post-semester assessment ( $p = .012$ ), increasing from 5.22/6 to 5.36/6

**Fig 1.** Bar plots for knowledge and confidence outcomes.



## DISCUSSION

- Overall, students were able to increase confidence and knowledge across scientific and culturally-relevant topic areas
- Although the empathetic assessment only showed a 0.14/6 increase, this reflected a small-to-medium effect size improvement ( $d = 0.36$ ). Questions that showed the largest change were related to *Empathetic Perspective Taking*, indicating students had a greater ability to put themselves into the place of someone else after viewing the modules

**Table 3.** Pre/Post ratings of questions related to *Empathetic Perspective Taking*. A rating of 1 indicated that they "strongly disagree" that the statement described them, and a rating of 6 indicated they "strongly agree" the statement describes them.

Question	Pre-Rating	Post-Rating
I don't know a lot of information about important social and political events of groups other than my own.	3.07 (1.21)	2.53 (1.32)
It is difficult for me to put myself in the shoes of someone who is culturally different from me	2.93 (1.32)	2.42 (1.10)

- This work can be used as a model to develop further course content that emphasizes cultural diversity in the foundational sciences

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## REFERENCES

- Ah, D. V., & Cassara, N. (2013). *Perceptions of cultural competency of undergraduate nursing students*. 2013.
- Gonzalez, E., Sperandio, K. R., Mullen, P. R., & Tuzson, V. E. (2021). Development and Initial Testing of the Multidimensional Cultural Humility Scale. *Measurement & Evaluation in Counseling & Development*, 54(1), 56-70. <https://doi.org/10.1080/07481756.2020.1745648>
- Horvat, L., Horey, D., Romios, P., & Kis-Rigo, J. (2014). Cultural competence education for health professionals. *Cochrane Database of Systematic Reviews*, 5.
- Smith, W. R., Betancourt, J. R., Wynia, M. K., Bussey-Jones, J., Stone, V. E., Phillips, C. O., Fernandez, A., Jacobs, E., & Bowles, J. (2007). Recommendations for Teaching about Racial and Ethnic Disparities in Health and Health Care. *Annals of Internal Medicine*, 147(9), 654-665.
- *The Munroe Multicultural Attitude Scale Questionnaire*. (2006). <https://doi.org/10.1177/0013164405285542>
- Wang, Y.-W., Davidson, M. M., Yakushko, O. F., Savoy, H. B., Tan, J. A., & Bleier, J. K. (20030505). The Scale of Ethnocultural Empathy: Development, validation, and reliability. *Journal of Counseling Psychology*, 50(2), 221. <https://doi.org/10.1037/0022-0167.50.2.221>