

AUGUST 14 2023

Addressing diversity in speech science courses **FREE**

Melissa Baese-Berk; Paul E. Reed

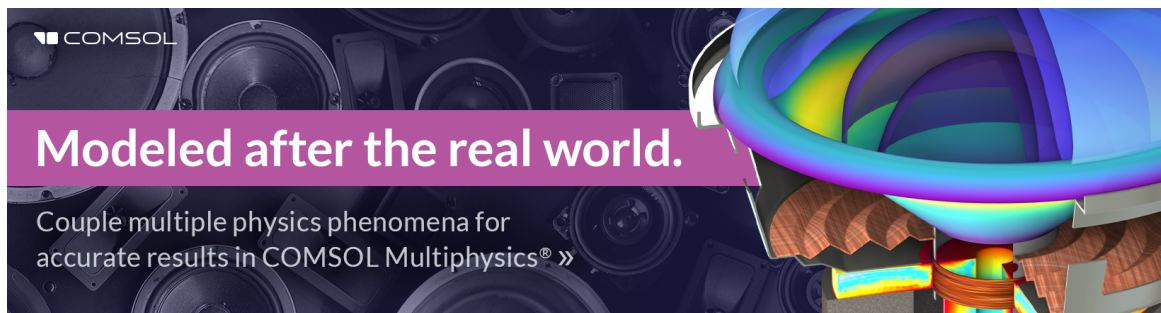


J. Acoust. Soc. Am. 154, 918–925 (2023)

<https://doi.org/10.1121/10.0020613>



CrossMark



Modeled after the real world.

Couple multiple physics phenomena for accurate results in COMSOL Multiphysics® »

The advertisement features a background image of various speakers and a 3D model of a speaker component with a colorful stress or field distribution overlay. The COMSOL logo is in the top left corner of the ad.

Addressing diversity in speech science courses

Melissa Baese-Berk^{1,a)} and Paul E. Reed^{2,b)}

¹Department of Linguistics, The University of Chicago, Chicago, Illinois 60637, USA

²Department of Communicative Disorders, The University of Alabama, Tuscaloosa, Alabama 35487, USA

ABSTRACT:

The study of how speech is produced, transmitted, and perceived is a critical component in the curriculum of multiple disciplines—linguistics, communication science and disorders, cognitive science, and speech technology all rely on a fundamental understanding of speech science. Pedagogy in speech science across these disciplines has a rich history of experiential learning techniques. Despite being at the forefront of pedagogical innovations, speech science courses have lagged in terms of their representation of cultural and linguistic diversity in the classroom. Many speech scientists understand that linguistic diversity is a part of all human language systems. However, in our experience, relatively few courses involve the purposeful inclusion of multiple language varieties throughout the course across all topics. The goal of this paper is to highlight how to be more inclusive in teaching speech science.

© 2023 Acoustical Society of America. <https://doi.org/10.1121/10.0020613>

(Received 10 November 2022; revised 25 July 2023; accepted 27 July 2023; published online 14 August 2023)

[Editor: James F. Lynch]

Pages: 918–925

I. INTRODUCTION

Speech communication, the study of how speech is produced, transmitted, and perceived is a critically important component of the curriculum in multiple disciplines. Fields including linguistics, communication disorders and sciences, cognitive science, and speech technology all rely on a fundamental understanding of speech science. Therefore, courses in speech science and speech communication are integrated into the undergraduate and graduate curricula of a number of programs and majors within an institution. Pedagogy in these courses has a rich history and has developed over the decades to often include state-of-the-art, hands-on, and experiential learning techniques [Catford (2001); Ladefoged and Johnson (2014); Raphael *et al.* (2011), among many others].

Speech science courses have historically been at the forefront of pedagogical innovations, with a focus on experiential learning, project based learning, and practical application. However, our observation is that speech science courses have lagged in terms of their representation of cultural and linguistic diversity in the classroom. Many speech scientists understand that linguistic diversity is a part of all human language systems, and that teaching such diversity will benefit students.¹ However, in our experience relatively few courses involve the purposeful inclusion of multiple language varieties throughout the course across all topics. The lack of inclusion of diverse language varieties results in a lack of active engagement with a number of social variables such as race, ethnicity, and gender identity, among others.

This is inherently problematic, as language always reflects social identifying information. There is a vast literature on how the language we use reflects many of the social groups we belong to and/or participate in [a good starting point is Wardhaugh and Fuller (2014) *inter alia*]. As a basic example, the two authors of this manuscript are easily distinguishable on practically any phonetic measure. A simple comparison of the F1/F2, pitch, or voice quality of their speech would indicate their different regional backgrounds (Midwestern American English for Baese-Berk and Appalachian American English for Reed), along with other socially relevant information, such as both are white Americans and the fact that one identifies and presents as a woman and the other as a man (Thomas, 2002). Listeners use this information in their perception of their speech, and this perception is influenced by the ideologies that listeners bring [e.g., Babel and Russell (2015); Kutlu (2023); Kutlu *et al.* (2022), McGowan (2015); McLaughlin *et al.* (2022), and Tripp and Munson (2022)]. Such information, and its evaluation by listeners, is part and parcel of speech and language production and perception—we speak with voices of individuals with different backgrounds, memberships in various sociological groups,² and the intersections therein, and listeners use this information in perception.

In our experience and in conversations and sessions on teaching with peers and colleagues, many speech science courses do not involve consistent and systematic discussions of (or even inclusion of) linguistic diversity outside of a single class session, module, or textbook chapter. Yet, our professional organizations have increasingly noted their commitment to diversity, both within the professional community, but also in education and outreach. For example, the American Speech and Hearing Association (ASHA) hosts a Special Interest Group devoted to Cultural and Linguistic

^{a)}Part of this work was completed while at Linguistics Department, The University of Oregon, Eugene, OR 97403, USA.

^{b)}Electronic mail: pereed1@ua.edu

Diversity. While in the wake of the murder of George Floyd and the proliferation of the Black Lives Matter movement many professional organizations and academic communities released statements of institutional commitment to diversity (see the statements from the authors' institutions and departments in the appendix³). However, it seems to us that a focus on many aspects of diversity has remained a side issue in the classroom, such that linguistic diversity is relegated to "special" status for a single module within a course or a single course within a curriculum. In our conversations with colleagues who also teach such classes, it seems that for many, discussions about variation broadly defined in classrooms default to making comparisons with the majority variety of a nation, with occasional comparison to the majority variety of the regional variety of the institution. For example, an informal survey of the introductory phonetics and speech science textbooks on the authors, shelves indicated that most did not address variation at all, two books referenced differences in national varieties (i.e., American and British varieties), and one had a chapter on variation toward the end of the book. In one case, the textbook includes feature lists for varieties and only list those things that are seen as "different" from the local mainstream or hegemonic variety. In fact, even when a feature is present in all varieties, such as nasal fronting of (ing), it is often included in the lists. Yet, the main "difference" may only be one of relative frequency, not presence or absence of a feature. Further, many books that include such feature lists lump together regional varieties, ethnic varieties, and second language varieties within the same chapter, drawing a *de facto* similarity across these varieties and concepts. More troublesome, the discussion of features shared among many varieties, e.g., consonant cluster reduction or nasal fronting, is often not clearly distinguished from phonological patterns that might indicate a phonological delay and/or a speech sound disorder. Our point here is not that these authors are not aware of linguistic diversity, rather when they were deciding what topics are core and which are peripheral the lack of inclusion implies that these topics are not core to the subject area.

In this manuscript, we argue that this "status quo" in how speech science courses are taught must change, such that linguistic diversity must be addressed in all courses, even in those courses where diversity *per se* is not the focus. Below, we first lay out our concerns with current approaches to teaching about cultural and linguistic diversity in a speech science curriculum. Next, we explain the benefits of inclusion of instruction around diversity throughout the curriculum. Finally, we present some specific recommendations for instructors to incorporate teaching of linguistic diversity throughout their curriculum and speech science courses.

II. CURRENT APPROACHES AND CHALLENGES

In this paper, we adopt the theoretical footing of Critical Language Pedagogy, which is "an instructional approach that guides students to critical examinations of the ideologies surrounding language and dialects, the power relations such ideologies uphold, and ways to change these

ideologies" [Godley and Minnici (2008), p. 320]. Such an approach does not merely identify the power structures inherent in language, but also attempts to empower instructors and students to consider ways to change such ideologies. Godley and Reaser (2018) refines the definition as "the use of critical understandings of dialects and language ideologies to not only question but also change the way that language attitudes uphold racism and other forms of discrimination" (p. 50). Thus, the approach of including cultural and linguistic diversity throughout a curriculum or by separating it as something to only focus on in one course or one module undergirds and tacitly supports the ideology that language diversity is not important. Further, such an approach implicitly and tacitly supports the notion that speakers of diverse varieties are not important either.

It is important to note here that attitudes toward speech varieties is often a proxy for attitudes toward those who speak that variety. Many of these attitudes reflect varying levels of social stigma and circulating tropes and beliefs about and toward the group. Bloome (2008), writing about the United States, makes this point explicit "Those varieties of English associated with white, northern, middle- and upper- class communities are perceived as better than those varieties of English associated with groups such as African Americans, Mexicans, and other Latino communities, and people from working class backgrounds" (p. xiii). The myriad attitudes about certain groups are expressed toward the language varieties of those groups. We, as educators, should be rightly concerned that our pedagogical approaches might be, even unintentionally, supporting negative stereotyping and/or supporting sexism, racism, homophobia, and xenophobia. In this regard, separating out examples of linguistically diverse voices may be furthering stigmatizing, even if unintentionally doing so. That is, intentionality is not the key here, but rather the harm done by a particular practice.

We find this Critical Language Pedagogy approach helps to underscore the importance of addressing cultural and linguistic diversity in our courses. Understanding how ignoring or avoiding diversity actually upholds, if not actively encourages, discriminatory ideologies can add a sense of necessity. We take for granted that no instructor wants to encourage discriminatory belief systems.

A. Special status of linguistic diversity

As described above, in discussions with colleagues and peers including including at two special sessions at Acoustical Society of America meetings (Munson and Speights, 2023; Reed, 2021; Reed and Baese-Berk, 2023), the prevailing conclusion was that in many speech science curricula, linguistic diversity holds a "special" status, often addressed as a niche issue after learning the fundamentals or basics. This special status may take the form of a single linguistic and cultural diversity course, a sociolinguistics course, or a one-off seminar in the area. While some programs require students majoring or minoring in this area to take a course on this topic, many others do not, allowing these courses to have elective status. Some

individual courses that are not directly “about” linguistic diversity may include some content in the area, but the content is often relegated to a single module or chapter within the course, again cordoning off the “diversity” material from the “real” class content. Because there certainly is enough content on linguistic diversity relevant to speech scientists to fill many such modules and courses, we argue that it is time to do away with the “special” status.

The primary reason for this argument is that the current instructional norm implies that there is a “standard” or “mainstream” (i.e., non-diverse) form of language (Lippi-Green, 1997, 2012), and that this portion is the more important content for students to master. While it is true that, in any classroom, an instructor must make decisions about what content to emphasize and what content not to emphasize, these decisions are not made without consequence. That is, one must examine what is being included in the topic of “diversity” and what is included in the “standard” course content. Typically, “diversity” includes speech from non-white, non-cisgender, and non-native,⁴ and/or non-monolingual speakers. Therefore, even if a standard is not explicitly defined, it is implicitly defined, within U.S., U.K., Australian, and Canadian contexts, as the speech of the demographic majority: white, cisgender, native, monolingual speakers of English. As both authors teach in a U.S. context and are most familiar with this, we can also add that in the U.S. this “standard” is most closely associated with some type of Midwestern U.S. speech. By including some content within the umbrella of diversity, anything not included under that umbrella becomes the norm, whether that is the intention of the instructor or not. In fact, by presenting certain forms of speech as “diverse,” instructors may actually be reinforcing certain negative ideologies, and as a reviewer noted to us, these negative ideologies include racism and white supremacy. A historic and real-world example of this reinforcement is Heath (1983), where both implicitly and explicitly, results suggested that teachers interpreted, and thus reinforced the idea that, the speech patterns of non-mainstream White and Black speakers were of lower status, lower academic potential, and even forms of disrespect.

Additionally, this instructional method misrepresents linguistic diversity as something that can be perceived or produced separately from other aspects of language. In reality, all language tells a listener many things, beyond the semantic and denotational content being communicated. All productions convey aspects of a speaker, from region (Burdin *et al.*, 2022), race (King, 2021), to gender (Zimman, 2017) and gender expression (Tripp and Munson, 2022). Importantly, listeners can recognize these social variables in production, quite easily. For example, listeners identify a talker’s perceived gender, race, age, and even status as a language learner with relatively little exposure [e.g., Baese-Berk *et al.* (2018), Craft *et al.* (2020), Holliday and Villarreal (2020); McGowan (2015), and Merritt and Bent (2022)]. Listeners can identify transient characteristics of a talker and even aspects of mood and other paralinguistic

aspects of speakers (Gobl and Ni Chasaide, 2013), as well as the other characteristics described above. Disentangling social information from linguistic content is not possible, as the same acoustic signal conveys many different types of information simultaneously [Labov *et al.* (2011) and Sumner *et al.* (2014), among others]. Therefore, to focus on “objective” aspects of a speech signal, but ignore social information, one is not truly focusing on the acoustic signal. That is, by marking some aspects of the signal as “objective” and other as “social,” one is necessarily privileging the speech of individuals who are perceived to use “neutral” acoustic features. And, unfortunately, those that are perceived to use “non-neutral” acoustic features would not have access to this additional privilege. Additionally, the “social” aspects of any speech signal are measurable and demonstrable in the classroom setting, or certainly within a project/homework setting, and would help any instructor reach course content goals and standards. For example, many courses include a discussion of the vowel space and how we classify vowels using formant measures. Thus, a simple demonstration and comparison of the similarity and difference in F1 and F2 for different regions, or different speakers, or different varieties in the classroom can help students understand the utility of formants, while also fully exemplifying diversity in many forms. Depending upon the preferences and directions for particular courses, similar demonstrations using pitch, voice quality, or other phonetic phenomena could also be utilized. Given this, it is critical that instructors reassess the special status historically given to linguistic diversity and consider reframing it as central to speech science more broadly.

Such pedagogical decisions can be informed by a diversity science approach (Plaut, 2010). In this approach, an instructor can and does note difference, but also emphasizes that we might have different ways of perceiving what is difference. The instructor can use the perceptions of difference as a way to situate the social aspects of speech within historical frameworks. Further, the instructor can highlight how each person might perceive difference in slightly different ways, based on their individual backgrounds. Such an approach can help avoid “color-evasive” and/or “colorblind” approaches to pedagogy, which tend toward reifying existing inequalities (Bonilla-Silva, 2022). Here, difference is part and parcel of perception, and is informed by who the listener is and who the speaker is.

B. Instructional burdens

One challenge often faced by instructors of speech communication courses is that they do not necessarily feel qualified to cover content on linguistic diversity. This concern stems from a variety of sources. Some instructors may be less familiar with the content in this area, given their own training and areas of research and teaching expertise. Other instructors may be concerned about teaching issues of diversity given their own privileged backgrounds (i.e., a white instructor may be concerned about teaching issues of race,

given their own lack of lived experiences as a minoritized individual). While these challenges and concerns are understandable, it is critically important that the instructional burden and responsibility of teaching about linguistic diversity be spread broadly, and not solely the purview of individuals from minoritized groups or those who have extensive training in sociolinguistics.

Often individuals from minoritized backgrounds are required to teach about issues related to their background [e.g., Will (2020)], and they experience an “emotional tax” (Travis and Thorpe-Moscon, 2018) due to the increase in the “emotional labor” (Grandey *et al.*, 2019; Hochschild, 1983). In some cases, this is because of their own research or teaching expertise in the area. However, in other cases, it is because of their lived experiences and not about any particular area of professional expertise. That is, issues regarding diversity and teaching about them often fall solely and squarely onto individuals from these “diverse” backgrounds, even if their work does not fall in this area, whereas individuals from “non-diverse” backgrounds are not required to do so. However, by pigeonholing these individuals, we necessarily restrict the areas of research that are “appropriate” (Will, 2020) for individuals from minoritized backgrounds and then further restrict those areas to non-core areas of research and teaching, creating a segregation in both teaching and research areas.

Relatedly, diversity work (i.e., service related to diversity, equity, and inclusion initiatives) within institutions is often taken on by individuals from minoritized backgrounds, including people of color, women, and members of LGBTQ+ communities. By requiring members of these communities to do diversity work and excusing members of majoritized groups from this work, the burden and obligation on minoritized groups is increased, which contributes to the very diversity issues we point out in this paper. Additionally, in many university and higher educational settings, service work is often not merited the same favor as research and publications with respect to tenure and/or promotion. By placing the burden on minoritized individuals more heavily, institutions may be further disadvantaging the possible career advancement of some scholars. Ellis and Kendall (2021) address this in a recent article, stating that members of the majoritarian culture “should not be absolved for their lack of awareness because, ultimately, they are complicit in enabling the system” (p. 1917). Thus, we all need to take responsibility for understanding and teaching about all facets of diversity, and not delegate only to minoritized individuals.

However, if linguistic diversity is included throughout speech science curricula and throughout individual courses, we can reduce this burden on individuals from these groups. We also make clear to our students that these issues are not just for minoritized groups, but something that all individuals in this field must engage with.

Some individual instructors are concerned that they are not qualified to undertake this work. However, it is important to note that, as instructors, we are routinely required to

teach content outside our area of research specialization. In the case of other speech science content, we are able to quickly master material in order to teach it (e.g., specific technical details of content in a course that we may be unfamiliar with). An instructor whose background is phonetics might be tasked with teaching syntax, or a research-oriented teacher might need to discuss clinical applications. We argue that it is possible to do the same or similar adaptation with content related to linguistic and cultural diversity. That is, it is not the case that sociolinguistic expertise is required to include a diversity of voices in our class content, nor is it the case that this expertise is required to address issues of diversity in the classroom. Rather, in the same vein as other concepts, each instructor can incorporate aspects of linguistic diversity in each and every course.

The two authors recognize these concerns of feeling somewhat unqualified. However, there are numerous ways to use one’s own life as a starting point for discussion, and that a person with lots of relative privilege can also have some needed insights. For example, the second author, Reed, comes from a position of relative privilege. He is a straight, white, educated, cis-gender man. Such social aspects reflect groups that have historically had more power and advantage in his United States context—heterosexuals, European Americans, those with access to education, men, etc. However, he is from the Appalachian region of the U.S., which is routinely seen as a poor, backward, and culturally stigmatized area of the nation. Some of his speech patterns are more associated with regional stigma (Appalachia and poverty), while others might be more associated with advantage and privilege (education and gender). Such facts demonstrate that even extraordinarily privileged individuals have aspects of their backgrounds that can be helpful to demonstrate diversity in its many forms.⁵

III. FACTORS DRIVING CHANGE

In addition to the societal implications discussed above, inclusion of linguistic diversity content throughout the curriculum will have a positive effect on learning outcomes for our students.

For those instructing students in clinical domains, the need to have a background in linguistic diversity is paramount. The American Speech-Language Association (ASHA) has made its position clear regarding dialectal variation. “It is the position of the American Speech-Language-Hearing Association (ASHA) that no dialectal variety of English is a disorder or a pathological form of speech or language. Each social dialect is adequate as a functional and effective variety of English. Each serves a communication function as well as a social solidarity function. It maintains the communication network and the social construct of the community of speakers who use it. Furthermore, each is a symbolic representation of the historical, social, and cultural background of the speakers” (American Speech-Language-Hearing Association, 2003). Thus, to adequately ensure that dialectal variation is not treated as or considered as

pathological, a clinician must have awareness of the features that comprise a given dialect. However, given the racial and gender breakdown of the membership, 91.3% of SLPs are white, and 95.6% are female (American Speech-Language-Hearing Association, 2021), the overwhelming majority of clinicians are white women. While this is not an inherently “bad” thing, issues might arise when any field faces such disproportionate representation. Certain cultural and linguistic practices might be unfamiliar to some practitioners, some cultural groups might prefer a clinician with a shared background, and a lack of overt representation can make future recruitment more difficult. One way to begin to address these potential issues is to include instruction about dialectal and language variation throughout a curriculum that can help raise awareness on the part of future clinicians.

Moreover, the racial and gender breakdown of clients is not nearly so homogenous as clinicians. Racial and ethnic minorities makeup more than 40% of the population of the United States (USA Facts, 2022), and future population predictions indicate this number is likely to grow. Further, 21.5% of households speak languages other than English at home. However, only about 6.5% of SLPs are bilingual (American Speech-Language-Hearing Association, 2021). Further, clinicians can rarely choose the backgrounds of individuals they will work with, which leads to a requirement to work with a variety of individuals from a variety of populations. Exposure to variation during their training is crucial for clinicians to understand the distinction between “deficit” and “difference.”⁶ This is also critically important for individuals planning to teach language, as choice of language varieties represented in those classrooms must be purposeful (Wei *et al.*, 2005). Equally important, many phonological assessments do not fully incorporate dialectal variation into their use. It is then incumbent on the clinician to interpret the scores in light of dialectal variation within the assessed population. For example, one widely used assessment, the Goldman-Fristoe Test of Articulation 3 (Goldman *et al.*, 2015), asks for the clinician to note the dialect of the speaker, and includes certain dialectal productions as correct (productions from African American English, Spanish Influenced English, and Asian Influenced English). However, as one would expect, the manual cannot capture all the possible dialectal variations, and shows the productions as contrasts with “Standard American English.”

In terms of pedagogical implications, an additional benefit of including linguistic diversity throughout the speech communication curriculum is that students will benefit from this representation. This type of representation can increase student interest in course content in a variety of ways [e.g., United States Department of Education (2016)]. One way is that students can often see and envision themselves more in the topic when diverse voices and examples are used. Further, support for and understanding of cultural differences can increase when students are presented with appropriately situated examples. A second pedagogical implication is an increased connection to “real world” or applied content. By removing the abstraction of standard

language and embracing linguistic diversity in all its complexity, students will be rewarded with knowledge that is more directly applied to the world around them.

In addition, many students in speech science classes have interest in language technology, including text-to-speech and automatic speech recognition (ASR) tools. However, current technology focuses primarily on prestige dialects (i.e., those of white, upper-middle class individuals). That is, language models used to train ASR systems typically focus on speech by majoritized groups. This results in reduced accuracy for other dialects. For example, Koenecke *et al.* (2020) demonstrate that multiple popular ASR systems make more errors with African-American speakers than with white speakers. Wassink *et al.* (2022) replicate and extend this study, demonstrating that the errors ASR systems make can be attributed to sociophonetic variation. This suggests that knowledge of, or even awareness of, sociophonetic variation, such as that proposed here to be included in classrooms, could improve performance of this language technology in a way that could ensure more access across a range of demographic groups. Additionally, many language models can “overrepresent hegemonic viewpoints and encode biases potentially damaging to marginalized populations” [Bender *et al.* (2021), p. 610]. With a better understanding language variation, students could have better insight into what these hegemonic viewpoints and/or biases might be and can help develop better models, or at the very least, be more aware of the potential issues with using language models.

IV. RECOMMENDATIONS

To this point, we have argued that the status quo in speech science teaching with regard to linguistic diversity is insufficient and must shift to address both societal and pedagogical needs. We have explained why many common concerns must not continue to limit instruction, and we have made some small pedagogical suggestions throughout. However, many instructors may still wonder how they can incorporate linguistic diversity into their existing and forthcoming courses. Below, we propose some pedagogical modifications ranging from relatively simple to more involved.

The simplest step for an instructor is to include a diversity of voices in their classroom. That is, if an instructor is discussing speech, their voice is not the only one a student should hear, nor are the voices typically included with texts in this area (i.e., cisgender, white men, or women from specific, ostensibly “neutral” geographic regions). When discussing speech production or perception, an instructor can present a variety of voices from a variety of linguistic backgrounds. There are many databases that include talkers from various backgrounds, for example, the International Dialects of English Archive (IDEA, 2022). Instructors already do this to some extent when discussing various speech sounds that may not be differentiated in the speech communities of a majority of students (e.g., /i-/ merger in Southern American English and /ɔ-/ merger in many dialects of

American English). Exposing students to a variety of voices also has the added benefit of allowing them to hear a similar variety to those they might be exposed to in the real world.

Instructors should also be clear with their students that “neutral” speech or a “neutral” accent is a myth. All speech, and all speakers, signals both social and linguistic information simultaneously. It is impossible to divorce one aspect from the other. Therefore, if students believe there is a “neutral” (i.e., “unmarked”) form of speech, this is likely because they are perceiving its speakers as being unmarked. Instructors can help students examine their own perception of who is marked (i.e., “different”) or unmarked, and whose speech is marked and unmarked, by encouraging them to engage with this observation.

Another concrete recommendation is for instructors to discuss linguistic varieties which exist in their classrooms. By engaging the naturally occurring variety among their students, they will both engage with issues of diversity in their classroom and have opportunity to validate their students’ linguistic experience. For example, in his courses, Reed routinely discusses his own Appalachian English dialect. He will use AppEng in class, discuss its features, and then the class discusses the various features. From this, the course moves to discussing the varieties of students in the class. Each class then serves as a wonderful laboratory, as each student cohort is unique and includes different voices. However, the initial discussions are centered on the speech varieties of the professor, so that it is never a sense of ridicule or exoticizing a variety, rather an example of scientific inquiry into the features and characteristics of each variety. From this initial discussion, the class then becomes the dataset, and each activity can include discussion of similarities and differences within the classroom. From this starting point, more examples from databases, social media, popular media, and other sources can then be included, incorporated, and discussed. It should be noted that this approach can be undertaken with some caution so as to not increase the emotional labor required of students from marginalized backgrounds.

During these discussions it is critically important to emphasize that difference and dialect are not deficit. So often, non-mainstream and/or minoritized varieties are compared and contrasted with some type of mainstream or standardized variety. Such comparisons have a tendency to exoticize non-mainstream varieties. Given that certain phonological patterns, especially those involving gradient phenomena (e.g., consonant cluster reduction, fricative stopping, etc.), are routine features of many English varieties around the world, only presenting them as different from a normative variety can make it seem that their use is deficient. Instructors can easily default to making rarer and/or more different realizations seem like deviations. However, one way to re-emphasize the fact that every speaker uses a dialect. Depending upon the course, organizational statements from the Linguistic Society of America, the American Speech-Language Hearing Association, or the Acoustical Society of America could be used to remind

students that it is the view of these bodies that dialects are not disorders, that language diversity is inherent in language itself, and that such diversity should be celebrated instead of criticized.

Instructors can also make space in their classrooms and in their assignments for discussions of linguistic diversity broadly construed. In discussions of linguistic diversity, instructors can make explicit connections to other types of diversity, as linguistic diversity is simply a reflection of other types of diversity (e.g., gender, race, socioeconomic status, etc.).

Finally, we recommend that instructors discuss inclusion of linguistic diversity with their colleagues. Such conversations can help expand networks to include scholars across institutions, disciplines, and even geography. If an instructor feels apprehensive or tentative in discussing certain topics, scholars who research linguistic diversity can be invited to give guest lectures or presentations. Departments can assess their current curriculum for obvious places where this content can be included or emphasized. If the content is currently relegated to a single class, the instructors of that class may be able to identify such instances in other classes.

V. CONCLUSION

In conclusion, in this manuscript, we address the issue of linguistic diversity in speech science courses. We argue that for too long linguistic diversity has been treated as a “special” topic, relegated to separate units or separate (often optional) courses. We suggest that, instead, linguistic diversity must be included throughout the curriculum. We demonstrate that inclusion of linguistic diversity throughout speech science courses has both pedagogical and practical benefits. Finally, we make specific recommendations about how such diversity can be included in class content.

Speech science courses have long served as a laboratory for inclusive, engaged, and creative pedagogy. Instructors must recognize that, because language always conveys social information, failure to include linguistic diversity in courses implies that there is a single “standard” form of speech, which typically conforms to white, educated, middle-class, male speech norms, whether or not this is their intent. It is our hope that this piece can serve as a starting point for future discussions of how to incorporate linguistic diversity throughout courses and curricula in speech science.

ACKNOWLEDGMENTS

We would like to thank the attendees and participants in the Spring 2021 Acoustical Society of America Session “Teaching Speech and Hearing Sciences to Undergraduates” for the discussion that generated this paper. Further, we thank Jamaal Muwwakkil for reading a draft and providing feedback and suggestions. All errors remain our own.

¹As an anonymous reviewer noted, while it is the case that many speech scientists understand that there are many languages and ways of speaking these languages, it is less clear that they share an understanding of why the current status quo is harmful.

²It should be noted that we use sociological groups here as a shorthand. Sociological groups are constructed, not essentialist, and we do not intend to claim otherwise. Further, speakers have complete agency with respect to how they choose to express (or not express) all aspects of their person to construct their socially facing selves according to the context. For example, an “ethnolinguistic repertoire” is “a fluid set of linguistic resources that members of an ethnic group may use variably as they index their ethnic identities” [Benor (2010), p. 160]. This highlights the constructed and contextual reality of language and groups.

³See supplementary materials at <https://doi.org/10.1121/10.0020613> for Appendixes A and B.

⁴There are myriad ways that linguistic nativeness is defined (see Cheng *et al.*, 2021). For our purposes here, we understand nativeness to mean that a person acquired the language during childhood and early adolescence.

⁵We recognize that some might find this particular writing style less formal than some. However, this is a Forum article which provides some flexibility with respect to style. Further, such impositions of “style” are rooted in prejudice toward non-academics. See Charity Hudley and Mallinson (2018) for an explanation of how we might need to re-evaluate how we perceive notions of writing and style.

⁶See also Jon Henner and Octavia Robinson’s work on Crip Linguistics for more discussion of the racist history associated with deficit-based conversations (Henner and Robinson, 2023).

American Speech-Language-Hearing Association (2003). “Position on social dialects” <https://www.asha.org/policy/tr2003-00044/> (Last viewed 8/7/2023).

American Speech-Language-Hearing Association (2021). “2021 member and affiliate profile” <https://www.asha.org/siteassets/surveys/2021-member-affiliate-profile.pdf> (Last viewed 8/7/2023).

Babel, M., and Russell, J. (2015). “Expectations and speech intelligibility,” *J. Acoust. Soc. Am.* **137**(5), 2823–2833.

Baese-Berk, M., Morrill, T. H., and Dilley, L. (2018). “Predictability and perception for native and non-native listeners,” *Ling. Vanguard* **4**(s2), 20170022.

Bender, E. M., Gebru, T., McMillan-Major, A., and Shmitchell, S. (2021). “On the dangers of stochastic parrots: Can language models be too big?,” in *Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency*.

Benor, S. B. (2010). “Ethnolinguistic repertoire: Shifting the analytic focus in language and ethnicity,” *J. Socioling.* **14**(2), 159–183.

Bloome, D. (2008). “Foreword: 3/5 of a language?,” in *Affirming Students’ Right to Their Own Language: Bridging Language Policies and Pedagogical Practices*, edited by J. S. Cobb, D. Y. Straker, and L. Katz (Routledge, New York).

Bonilla-Silva, E. (2022). *Racism without Racists: Color-Blind Racism and the Persistence of Racial Inequality in America*, 6th ed. (Rowan and Littlefield, Lanham, MD).

Buridin, R. S., Holliday, N. R., and Reed, P. E. (2022). “American English pitch accents in variation: Pushing the boundaries of mainstream American English-Tobi conventions,” *J. Phon.* **94**, 101163.

Catford, J. (2001). *A Practical Introduction to Phonetics*, 2nd ed. (Oxford University Press, Oxford).

Charity Hudley, A. H., and Mallinson, C. (2018). “Dismantling ‘The Master’s Tools’: Moving students’ rights to their own language from theory to practice,” *Am. Speech* **93**(3–4), 513–537.

Cheng, L. S. P., Burgess, D., Vernooij, N., Solís-Barroso, C., McDermott, A., and Namboodiripad, S. (2021). “The problematic concept of native speaker in psycholinguistics: Replacing vague and harmful terminology with inclusive and accurate measures,” *Front. Psychol.* **12**, 715843.

Craft, J. T., Wright, K. E., Weissler, R. E., and Queen, R. M. (2020). “Language and discrimination: Generating meaning, perceiving identities, and discriminating outcomes,” *Annu. Rev. Linguist.* **6**(1), 389–407.

Ellis, C., and Kendall, D. (2021). “Time to act: Confronting systemic racism in communication sciences and disorders academic training programs,” *Am. J. Speech. Lang. Pathol.* **30**(5), 1916–1924.

Gobl, C., and Ni Chasaide, A. (2013). “Voice source variation and its communicative functions,” in *The Handbook of Phonetic Sciences*, edited by W. J. Hardcastle, J. Laver, and F. E. Gibbon (Wiley-Blackwell, Malden, MA), pp. 378–423.

Godley, A. J., and Minnici, A. (2008). “Critical language pedagogy in an urban high school English class,” *Urban Educ.* **43**(3), 319–346.

Godley, A. J., and Reaser, J. (2018). *Critical Language Pedagogy: Interrogating Language, Dialects, and Power in Teacher Education* (Peter Lang Publishing, New York).

Goldman, R., Fristoe, M., and PsychCorp (2015). “Gfta-3: Goldman-fristoe 3 test of articulation,” an imprint of Pearson Clinical Assessment.

Grandy, A. A., Lawrence Houston, I., and Avery, D. R. (2019). “Fake it to make it? Emotional labor reduces the racial disparity in service performance judgments,” *J. Manage.* **45**(5), 2163–2192.

Heath, S. B. (1983). *Way with Words: Language, Life, and Work in Communities and Classrooms* (Cambridge University Press, Cambridge).

Henner, J., and Robinson, O. (2023). “Unsettling languages, unruly body-minds: A crip linguistics manifesto,” *J. Crit. Study Commun. Disability* **1**(1), 7–37.

Hochschild, A. R. (1983). *The Managed Heart: Commercialization of Human Feeling* (University of California Press, Berkeley).

Holliday, N. R., and Villarreal, D. (2020). “Intonational variation and incrementality in listener judgements of ethnicity,” *Lab. Phonol.: J. Assoc. Lab. Phonol.* **11**(1), 3–21.

IDEA (2022). “International dialects of English archive (idea),” dialectsarchive.com (Last viewed 8/7/2023).

King, S. (2021). “Rethinking race and place: The role of persona in sound change reversal,” *J. Socioling.* **25**(2), 159–178.

Koenecke, A., Nam, A., Lake, E., Nudell, J., Quartey, M., Mengesha, Z., Toups, C., Rickford, J. R., Jurafsky, D., and Goel, S. (2020). “Racial disparities in automated speech recognition,” *Proc. Natl. Acad. Sci. U.S.A.* **117**(14), 7684–7689.

Kutlu, E. (2023). “Now you see me, now you mishear me: Raciolinguistic accounts of speech perception in different English varieties,” *J. Multiling. Multicultural Develop.* **44**(6), 511–525.

Kutlu, E., Tiv, M., Wulff, S., and Titone, D. (2022). “Does race impact speech perception? An account of accented speech in two different multilingual locales,” *Cogn. Res.* **7**(1), 7.

Labov, W., Ash, S., Ravindranath, M., Weldon, T., Baranowski, M., and Nagy, N. (2011). “Properties of the sociolinguistic monitor,” *J. Socioling.* **15**(4), 431–463.

Ladefoged, P., and Johnson, K. (2014). *A Course in Phonetics*, 7th ed. (Cengage Learning, Boston).

Lippi-Green, R. (1997). *English with an Accent: Language, Ideology, and Discrimination in the United States* (Routledge, New York).

Lippi-Green, R. (2012). *English with an Accent: Language, Ideology, and Discrimination in the United States*, 2nd ed. (Routledge, New York).

McGowan, K. B. (2015). “Social expectation improves speech recognition,” *Lang. Speech* **58**(4), 502–521.

McLaughlin, D. J., Brown, V. A., Carraturo, S., and Van Engen, K. J. (2022). “Revisiting the relationship between implicit racial bias and audiovisual benefit for nonnative-accented speech,” *Atten. Percept. Psychophys.* **84**(6), 2074–2086.

Merritt, B., and Bent, T. (2022). “Revisiting the acoustics of speaker gender perception: A gender expansive perspective,” *J. Acoust. Soc. Am.* **151**(1), 484–499.

Munson, B., and Speights, M. (2023). “Centering social justice in speech and hearing acoustics pedagogy,” *J. Acoust. Soc. Am.* **153**, A210.

Plaut, V. C. (2010). “Diversity science: Why and how difference makes a difference,” *Psychol. Inquiry* **21**(2), 77–99.

Raphael, L. J., Borden, G. J., and Harris, K. S. (2011). *Speech Science Primer: Physiology, Acoustics, and Perception of Speech*, 6th ed. (Lippincott Williams and Wilkins, Baltimore, MD), pp. 1–333.

Reed, P. E. (2021). “Incorporating dialectal variation into the introductory phonetics course: The class is the data,” *J. Acoust. Soc. Am.* **149**, A131.

Reed, P. E., and Baese-Berk, M. M. (2023). “Addressing diversity in speech science curricula,” *J. Acoust. Soc. Am.* **153**, A210.

Sumner, M., Kim, S. K., King, E., and McGowan, K. B. (2014). “The socially weighted encoding of spoken words: A dual-route approach to speech perception,” *Front. Psychol.* **4**, 01015.

- Thomas, E. R. (2002). "Sociophonetic applications of speech perception experiments," *Am. Speech* **77**(2), 115–147.
- Travis, D. J., and Thorpe-Moscon, J. (2018). *Day to Day Experience of Emotional Tax among Women and Men of Color in the Workplace* (Catalyst, New York).
- Tripp, A., and Munson, B. (2022). "Perceiving gender while perceiving language: Integrating psycholinguistics and gender theory," *WIREs Cogn. Sci.* **13**(2), e1583.
- United States Department of Education (2016). *Advancing Diversity and Inclusion in Higher Education: Key Data Highlights Focusing on Race and Ethnicity and Promising Practices* (Office of Planning, Evaluation and Policy Development, Washington, DC).
- USA Facts (2022). "Our changing population: United States," <https://usafacts.org/data/topics/people-society/population-and-demographics/our-changing-population/> (Last viewed 8/7/2023).
- Wardhaugh, R., and Fuller, J. (2014). "Blackwell Textbooks in Linguistics," in *An Introduction to Sociolinguistics*, 8th ed. (Wiley-Blackwell, New York).
- Wassink, A. B., Gansen, C., and Bartholomew, I. (2022). "Uneven success: Automatic speech recognition and ethnicity-related dialects," *Speech Commun.* **140**, 50–70.
- Wei, L., Miller, N., Dodd, B., and Hua, Z. (2005). "Childhood bilingualism: Distinguishing difference from disorder," in *Clinical Sociolinguistics*, edited by M. J. Ball (Wiley-Blackwell, New York), pp. 193–206.
- Will, M. (2020). "No one else is going to step up: In a time of racial reckoning, teachers of color feel the pressure," *EducationWeek*, <https://www.edweek.org/teaching-learning/no-one-else-is-going-to-step-up-in-a-time-of-racial-reckoning-teachers-of-color-feel-the-pressure/2020/07> (Last viewed 8/7/2023).
- Zimman, L. (2017). "Gender as stylistic bricolage: Transmasculine voices and the relationship between fundamental frequency and /s/," *Lang. Soc.* **46**(3), 339–370.