

Incorporating an Unconscious Bias Curriculum into Audit Education

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ABSTRACT: In this learning strategy, we share how we incorporated an unconscious bias curriculum into our accounting program to better prepare students as future professionals in a diverse workforce. Our unconscious bias curriculum leverages preexisting resources that are publicly available and free of charge. Based on data collected across five different institutions, we find that students completing the curriculum report improvements in their understanding of how to recognize and mitigate unconscious biases (e.g., halo effect, horns effect, prototype bias, and similarity bias). To help students understand how these biases can affect decisions they make in their future careers, we introduce these topics within an audit class alongside more traditional auditing topics, such as professional judgments and the auditing of complex estimates. However, the nature of the curriculum offers flexibility such that we encourage instructors to consider how the curriculum could be adopted in other accounting classes, undergraduate or graduate.

Keywords: affinity bias; Cornerstone Cares; diversity; halo effect; horns effect; inclusion; prototype bias; PwC Blind Spots; similarity bias; unconscious bias.

I. INTRODUCTION

In this learning strategy, we share how we have designed and incorporated an unconscious bias curriculum into our accounting program at a large, predominantly white (PWI) public university in the southeastern United States. Unconscious biases (e.g., halo effect, horns effect, prototype bias, and similarity bias) can impact day-to-day personal interaction behaviors, and they can also have negative effects on professional decisions and career development. Our unconscious bias curriculum responds to calls for the accounting profession to be more inclusive (e.g., Jiles, Littan, Jules, and Venkatesh 2022) and calls for instructors to incorporate diversity, equity, and inclusion (DEI) in their classrooms (e.g., Ghio, McGuigan, Stewart, Tharapos, and Wood 2023).

Our unconscious bias curriculum leverages preexisting resources that are publicly available and free of charge. To anchor unconscious bias to an accounting context, we introduce these topics within a graduate audit class alongside more traditional auditing topics, such as the Center for Audit Quality's Professional Judgment Resource (Center for Audit Quality (CAQ) 2014) and the auditing of complex estimates in accordance with Public Company Accounting Oversight Board auditing standards (PCAOB 2018). Outside of class, students spend two hours with interactive online activities published by reputable sources, followed by one hour working on a reflection assignment and testing their

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basic comprehension. They conclude with synchronous class time with the leader of our business college's DEI office.¹ All activities can be completed through online instruction or face-to-face instruction and could be appropriate for either undergraduate or graduate classes.

No specialized training is needed on the instructor's part. Instead, instructors can leverage preexisting resources related to DEI within the institution, and we offer ideas for instructors at institutions without those resources. The initial learning activities are delivered asynchronously, providing students with the physical and emotional space to absorb and reflect on the topic at a date, time, and place of their choosing. The synchronous activities allow for an engaging discussion, but without forcing students to verbally participate if they are not ready.²

We tested the effectiveness of our unconscious bias curriculum using anonymized surveys distributed before and after completion of the activities across five different institutions. In addition to gathering data specific to the learning objectives, we also gathered data related to students' comfort in discussing unconscious biases and interest in learning about unconscious bias, as well as their perceptions about whether activities were clear, interesting, and should be used in future business and accounting classes. Our data show that after completing the curriculum, students reported improvements in their knowledge and understanding of (1) what is an unconscious bias, (2) ways to recognize their own potential unconscious biases, (3) ways to mitigate unconscious bias, and (4) how unconscious bias may affect auditors when gathering and interpreting audit evidence.

Although not a stated learning objective of the learning strategy, we also observe that after completing the activities, students' score for "comfort" in discussing unconscious bias improved 18 percent, on average, suggesting that, in addition to the desired learning objectives, these activities also benefit students by making them more comfortable with discussing unconscious bias. To provide confidence for instructors who may not believe that this is a topic of interest to their students, we also note that in pre-activity surveys, 93 percent of our students reported being at least somewhat interested in learning how to recognize and mitigate their own unconscious biases.

Due to the natural psychological causes of unconscious bias, the chances of a person "unlearning" an unconscious bias on their own is almost impossible. By definition, this type of bias is engrained into a person's psyche; in essence, it is part of them. Without compassionate, confident, approachable, and caring faculty to facilitate these conversations and create safe spaces for students to internalize strategies to combat this type of bias, students may fail to mitigate the negative impacts of these biases. Although other cognitive biases can often be observed and rooted out due to their systemic impacts on decisions, unconscious biases do not affect people in standard predictable ways, causing them to need special training to identify and combat these biases (Fay and Montague 2015b). Our curriculum addresses this issue by introducing students to the concept of unconscious bias, as well as ways to recognize and, ultimately, combat it. Additionally, our curriculum should be of interest to the many employers that now expect students to be familiar with these concepts and to act professionally related to these topics.

The remainder of this article is organized as follows. In [Section II](#), we provide a more detailed discussion of unconscious biases and related classroom activities. In [Section III](#), we describe our unconscious bias curriculum, discuss the learning objectives of the curriculum, and report the results of tests of effectiveness. In [Section IV](#), we conclude and discuss additional considerations. Implementation guidance is available in the accompanying Teaching Notes.

II. BACKGROUND AND RELATED CLASSROOM ACTIVITIES

Auditors exercise professional judgment on a daily basis. As summarized by the CAQ's (2014) Professional Judgment Resource and the "I'm not biased, am I?" classroom activity published by Fay and Montague (2015a, 2015b), auditors are subject to several tendencies, traps, and potential lapses in judgment (see [Table 1](#), Panel A). These sources of heuristic biases include confirmation bias, in which auditors may fail to obtain potentially contradictory evidence; overconfidence bias, in which auditors may fail to engage relevant specialists; and anchoring bias, in which auditors may numerically anchor to initial estimates provided by the client. Absent an awareness and intention to mitigate these types of tendencies, traps, and potential lapses in judgment, auditors can miss material misstatements in their client's financial statements. Fay and Montague (2015b) lay out a detailed plan to teach accounting students about these types of cognitive biases and offer sage advice on how these biases lead to predictable and systematic effects on decisions and judgment. We recommend following their guidance on ideas and activities to teach students about these cognitive biases.

¹ Our college refers to this as the Office of Access and Community Connections. For brevity, and to generalize to other institutions, throughout the draft, we refer to it as a DEI office because the underlying mission of the office is to help support inclusivity and access for a diverse set of students, faculty, and staff.

² Even without verbal participation, students can demonstrate professional participation via class attendance and staying focused on the presentation (e.g., no distracting phone or laptop usage).

TABLE 1
Bias in an Audit Context

Panel A: A Summary of the Types of Biases Discussed in CAQ’s (2014) Professional Judgment Resource and the “I’m Not Biased, Am I?” Classroom Activity Published by Fay and Montague (2015a, 2015b)

Type of Bias	Examples in an Audit Context
Anchoring bias	When an auditor anchors to an initial numerical value and fails to consider the broader range of potential outcomes (e.g., when the client presents an initial estimate and the auditor looks for adjustments relative to that initial estimate). Results in a failure to consider a wider range of potential values.
Availability bias	When an auditor overly relies on information that is easier to retrieve (e.g., client evidence stored on site, as opposed to evidence that has to be accessed through remote storage). Results in a failure to consider all potential evidence.
Confirmation bias	When an auditor puts more weight on information that supports initial beliefs or preferences (e.g., evidence that supports beliefs on whether the economic environment is strong or weak; whether an account is collectible or not). Results in a failure to consider contradictory evidence.
Hindsight bias	When an auditor evaluates the client’s estimate with knowledge that is available at the time of the audit but that was not available at the time of the client’s estimate (e.g., economic conditions known at the time of the audit but were not clearly known at the time the client prepared their estimate). Potentially violates GAAP.
Overconfidence bias	When an auditor overestimates his or her own ability to perform a task (e.g., fails to engage a valuation specialist because the auditor believes he or she individually has sufficient experience to evaluate the client’s estimate without that assistance). Results in a failure to consider alternative viewpoints offered by experts.
Rush to solve	When an auditor is pressured to make a decision quickly and relies on the first solution/conclusion presented (e.g., when under a deadline, once the auditor obtains sufficient evidence to support the client’s estimate, they fail to keep working toward potentially contradictory evidence). Results in a failure to consider all potential evidence.

Panel B: Terms Discussed in the Unconscious Bias Curriculum (Appendix A) and Their Potential Audit Context

Term	Definition	Potential Audit Context
Unconscious bias	Social stereotypes about certain groups of people or places that we create outside of our own conscious awareness (e.g., based on accents, age, dress style, education, ethnicity, gender, geographic location, health, hobbies, income, neurodiversity, parenthood status, physical abilities, physical appearance, relationship status, etc.). These biases can negatively affect decision-making if left unaddressed and are formed based on life experiences, often linking back to childhood.	Unconscious biases can impact decisions relating to: <ul style="list-style-type: none"> - Performance reviews for audit team members - Audit team hiring, firing, and promotion decisions - Team morale and job satisfaction - Assigning risk areas to specific team members - The level of detail with which you review a team member’s workpapers - The extent to which you invite team members to voice their opinions - Assessing qualifications to perform a specific task (e.g., developing or auditing complex estimates) - The extent to which you rely on a client’s inquiry response - Which client personnel you choose to inquire of - Whether you choose to ask questions face-to-face or through email - The extent to which you believe a client’s assumptions are reasonable - The extent of audit evidence you feel that you need to support the audit (based on individual client work)
Halo effect	When a positive first impression positively biases future interactions	
Horns effect	When a negative first impression negatively biases future interactions	
Prototype bias	Assuming someone will perform well (or poorly) based on stereotyping	
Similarity bias (affinity bias)	Having a preference for individuals who are similar to us	

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The judgment tendencies and biases discussed in CAQ (2014) and Fay and Montague (2015a, 2015b) focus largely on heuristic biases and temporal issues with audit evidence collection (e.g., the timing of receiving the client estimate relative to preparing an independent estimate or the tendency to form one's own opinion about current economic conditions before considering alternative viewpoints). In this learning strategy, we link an additional type of bias—unconscious bias—with the tendencies and traps that can negatively impact auditor judgment. In contrast to other cognitive biases, the study of unconscious bias relates to social biases that can be associated with characteristics of people and places. Rooted in such theories as affinity bias (e.g., Ritter, Bynum, Gumpertz, and Butler 2021; McCormick 2015) and social identity theory (Tajfel and Turner 1979), unconscious bias is created in a person's mind by accumulated experiences, opinions of family members or trusted friends, media influences, and cultural and socio-economic factors (e.g., Noon 2018; Allport 1954). These accumulated unconscious biases can impact day-to-day personal interaction behaviors (Banks and Ford 2009; Degner and Dalege 2013), and they can also have negative effects on professional decisions and career development.³

Whether choosing something as simple as which checkout lane to use at the grocery store or as complex as selecting an architect to design your dream home, all of us make decisions based on some sort of bias. That bias may be due to previous experiences with cashiers of a certain race, sex, or physical ability status, or assumptions that younger architects are less qualified than older architects. Studies have shown that unconscious bias is not limited to our personal interactions, but that it also manifests itself in making work decisions. A key setting where unconscious bias impacts the workplace is through the creation of teams or working groups. Teams that are diverse in nature reach more optimal solutions than teams where all members think the same and come from the same background (Goldberg, Kessler, and Govern 2019). Although research is clear that teams with diverse races, ages, experiences, educational backgrounds, and cultural upbringings come to better solutions, without training and recognition of tendencies, people are naturally drawn to want to be grouped with people who are most like them. This psychological tendency is referred to as affinity bias, or by some as social identity theory (Tajfel and Turner 1979).

Unconscious bias left unchecked can perpetuate stereotypes already experienced in the workplace. For example, Gaucher, Friesen, and Kay (2011) find that job advertisements contain gendered wording that matches the gender of those that currently hold the position. Job postings for positions typically performed by male professionals contain words such as “ambition” and “analyze,” whereas job postings for positions largely held by female professionals contain words such as “understand” and “support.” Due to this differentiated wording, job postings that use the masculine wording are answered by fewer female candidates.

Workplaces are, in fact, aware of these unconscious biases and, as a result, introduce mechanisms to counteract them, such as introducing work-life balance programs, all-female mentoring and networking concepts, and other women's initiatives (Cohen, Dalton, Holder-Webb, and McMillan 2018). However, research points to the need for more training and corrective solutions in corporate settings, particularly in the accounting profession (e.g., Davis, Dickins, Higgs, and Reid 2021). Our learning strategy contributes to both education and practice by testing the effectiveness of widely available unconscious bias training resources in a professional audit context.

We believe unconscious bias education in the audit curriculum is particularly important because auditing is a profession based on professional judgment. Thus, there are multiple opportunities over the course of an audit for unconscious biases to negatively impact auditor decision-making. As summarized in Table 1, Panel B, unconscious biases about a person's background can impact their staffing assignment or how auditors interpret evidence gathered from their client. Because of the need for high-quality professional judgments and the need to work in groups and with others, professional accounting firms are taking strides in training employees to identify and combat unconscious biases.

Our curriculum can be used alongside CAQ (2014) and Fay and Montague (2015a, 2015b).⁴ Our curriculum also complements work done by Ritter et al. (2021), which introduces an instructional exercise in gender bias and shows how gender bias is part of larger biases that can impact individual decision-making. Following a call in Ritter et al. (2021), our curriculum allows instructors to cover a wider range of sources of unconscious bias beyond gender bias. Our curriculum also fits into broader initiatives to incorporate DEI in accounting classrooms (e.g., Ghio et al. 2023), including resources that help instructors to create more inclusive classrooms (Bishop-Monroe and Garcia 2023; Garcia 2020) and to consider a broader range of student needs, including physical ability status or neurodiversity (Walstra and Chukwuma 2023). For example, by learning about unconscious biases, students are also implicitly learning about the importance of diversity in their teams and how they can contribute to creating an inclusive professional environment.

³ Explicit biases are characterized by society as sexism, ageism, and racism (Jones et al. 2017). Although these explicit biases certainly exist, similar issues rooted in unconscious biases are far more difficult to identify and can cause individuals and companies alike to make professional judgments that are negatively affected by our unconscious, preconceived notions.

⁴ For a more in-depth classroom exercise on anchoring biases that can arise unconsciously, see Boylan (2008).

III. UNCONSCIOUS BIAS CURRICULUM

Learning Objectives

Our unconscious bias curriculum, detailed in [Appendix A](#), leverages preexisting resources that are publicly available and free of charge. The entire curriculum requires less than three hours of asynchronous student work and up to 75 minutes of synchronous class time. Activities can be completed through online instruction or face-to-face instruction and should be appropriate for either undergraduate or graduate classes.⁵ Our learning objectives are as follows:

LO1: Improve knowledge and understanding of the difference between unconscious bias and conscious bias.

LO2: Improve knowledge and understanding of ways to recognize your own potential unconscious biases.

LO3: Improve knowledge and understanding of ways to mitigate unconscious bias.

LO4: Improve awareness and understanding of how unconscious bias may affect auditors when gathering and interpreting audit evidence.

Classroom Validation

We first implemented the curriculum at a large, PWI public university in the southeastern United States in each fall semester of 2020 through 2023. We also sought voluntary participation from other audit instructors and were able to collect data from four additional institutions in fall 2023 that range across the southeast, northeast, and western United States and across public and private educational institutions. To test the effectiveness of the curriculum, overall and for individual activities, we used anonymous student surveys distributed before the start of Activity 1 (“pre”) and after completion of Activity 5 (“post”).⁶ In addition to gathering data specific to the learning objectives, we also gathered data related to students’ comfort in discussing unconscious biases and interest in learning about unconscious bias, as well as their perceptions about whether activities were clear, interesting, and should be used in future business and accounting classes.

In total, we collected data from 403 students who completed the curriculum in their graduate or undergraduate audit course. Based on anonymous survey data collected, approximately half of the students identified as female (48 percent). We collected data related to race and ethnicity at the four additional institutions in fall 2023; of the 165 students from those institutions, 22 percent identify as a race or ethnicity that is not White or Caucasian.⁷

We implemented the curriculum in a graduate audit course as part of a module related to auditing complex estimates, including fair value, alongside materials from [CAQ \(2014\)](#) and [Fay and Montague \(2015a, 2015b\)](#). Three (one) of the instructors at the four additional institutions implemented the curriculum in graduate (undergraduate) audit classes. One instructor of graduate audit introduced the curriculum as a stand-alone module at the beginning of the semester.

In [Figures 1 and 2](#), we report statistics related to the students’ *ex ante* comfort in discussing unconscious biases (“comfort”) and interest in learning about ways to recognize and mitigate their own unconscious biases (“interest”), respectively. Students reported an average score of 3.44 (3.90) for comfort (interest) in the pre-assessment and 4.06 (4.08) in the post-assessment. The distribution of scores depicted in [Figures 1 and 2](#) reveal a range of comfort and interest related to unconscious bias. Although not a stated learning objective of the learning strategy, we note that students’ scores (untabulated) for comfort (interest) improved 18 (5) percent, on average, with $p < 0.01$ ($p < 0.05$), suggesting that, in addition to the desired learning objectives, these activities also benefit students by making them more comfortable with discussing and more interested in learning about unconscious bias.

Main Findings

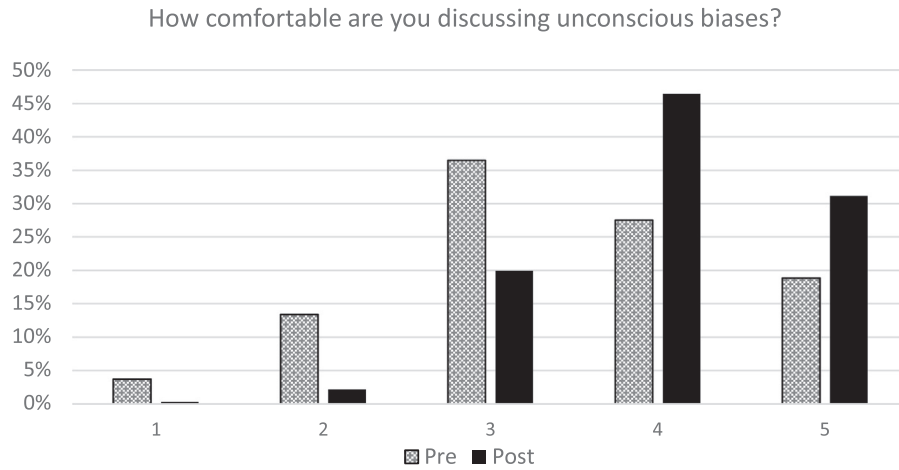
We used two methods to assess the extent to which the curriculum accomplished the four stated learning objectives. First, we collected students’ self-assessments of their knowledge of the difference between unconscious bias and

⁵ We initially considered also assigning the Project Implicit tests as part of the asynchronous activities but ultimately decided not to. Future research may consider the effectiveness of adding requirements for students to self-test. For more information about Project Implicit, visit <https://www.projectimplicit.net/>

⁶ Our Institutional Review Board (IRB) determined that the voluntary, anonymous collection of student survey data did not constitute human subjects research.

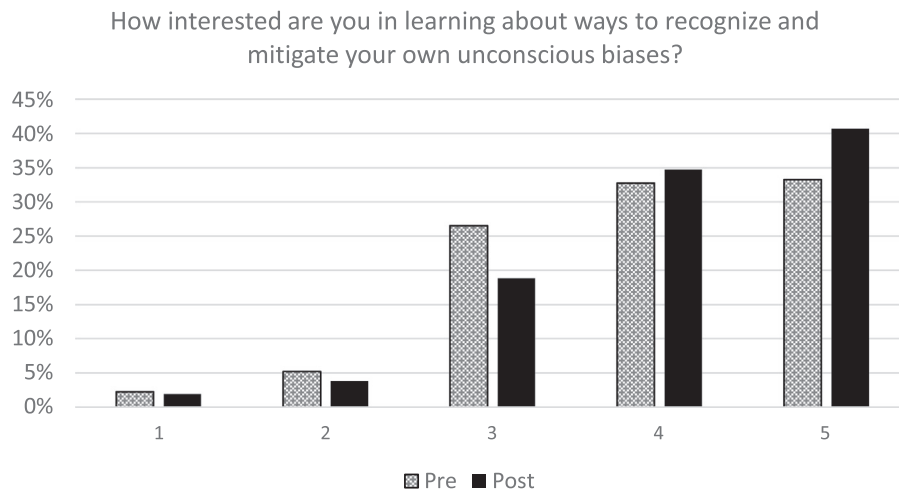
⁷ We discussed the curriculum activities and survey with our IRB, who recommended that we not collect any data that could potentially identify students in their responses; this led to us agreeing not to collect race or ethnicity data in surveys at our own institution. Data retained by our accounting department indicate that between 2020 and 2023, 10–21 percent of students participating in the Unconscious Bias Curriculum identified as a race or ethnicity that is not White or Caucasian.

FIGURE 1
Comfort



n = 403 in the pre-assessment and n = 366 in the post-assessment. Students were provided with a five-point scale, where 1 = not comfortable, 3 = somewhat comfortable, and 5 = very comfortable.

FIGURE 2
Interest



n = 403 in the pre-assessment and n = 366 in the post-assessment. Students were provided with a five-point scale, where 1 = not interested, 3 = somewhat interested, and 5 = very interested.

conscious bias (LO1), ways to recognize their own potential unconscious bias (LO2), and ways to mitigate unconscious bias (LO3). We also asked students to rate their agreement or disagreement with the following statement: “Unconscious biases may affect auditors when gathering and interpreting audit evidence” (LO4). Students reported their self-assessments both prior to and after completing the activities, allowing us to test for a statistical difference in the mean scores to assess whether the curriculum was effective at achieving our learning objectives. As reported in Table 2, Panel A, all four learning objectives were achieved. Economically, the activities are most effective at improving knowledge of ways to recognize (51 percent improvement) and mitigate (64 percent improvement) unconscious bias, which are the two areas where students rated their knowledge the lowest in the pre-activity survey.

TABLE 2
Student Feedback

Panel A: Comparing Pre- and Post-Assessment Summary Feedback

	Pre-Activities			Post-Activities			t-statistic
	n	Mean	Std. Dev.	n	Mean	Std. Dev.	
LO1: Rate your knowledge of the difference between unconscious bias and conscious bias.	403	3.36	0.82	366	4.42	0.63	31 0.00***
LO2: Rate your knowledge of ways to recognize your own potential unconscious biases.	403	2.85	0.90	366	4.30	0.71	51 0.00***
LO3: Rate your knowledge of ways to mitigate unconscious bias.	403	2.60	0.92	366	4.26	0.74	64 0.00***
LO4: Rate your agreement or disagreement with the following statement: “Unconscious biases may affect auditors when gathering and interpreting audit evidence.”	403	4.31	0.69	366	4.65	0.59	8 0.00***

*** Indicates that the t-statistic for difference between pre- and post- mean values is statistically significant, $p < 0.01$.

This panel reports the mean, standard deviation, and test of differences for student data that were anonymously and voluntarily collected using Google Forms. Students completed the “Pre-Activities” survey immediately prior to starting Activity 1; students completed the “Post-Activities” survey following the completion of Activity 5. Students were provided with a five-point scale. For LO1–3 questions, 1 = no knowledge, 3 = some knowledge, and 5 = high knowledge; for LO4 questions, 1 = strongly disagree, 3 = neutral, and 5 = strongly agree.

Panel B: Individual Activity Feedback

	Cornerstone Cares	PwC Blind Spot Videos	Hear Me Out: Accent Bias	Independent Reflection Question	Live Class Discussion with Diversity Leader
	n = 244	n = 364	n = 359	n = 285	n = 360
LO1: This activity improved my understanding of unconscious bias.	4.23	4.34	4.09	4.12	4.46
LO2: This activity improved my understanding of how to recognize unconscious bias.	4.20	4.21	3.92	4.04	4.32
LO3: This activity improved my understanding of how to mitigate unconscious bias.	4.22	4.13	3.84	3.96	4.31
LO4: This activity improved my understanding of how unconscious bias can affect audits.	3.98	4.21	3.82	4.15	4.29
This activity was clear.	4.26	4.44	4.14	4.23	4.52
This activity was interesting.	3.86	4.04	3.89	3.86	4.34
I would recommend this activity.	4.11	4.29	3.88	4.10	4.47

This panel reports the mean scores based on student data that were anonymously and voluntarily collected using Google Forms following the completion of Activity 5—Live Class Discussion with Diversity Leader. Students were provided with a five-point scale, where 1 = strongly disagree, 3 = neutral, and 5 = strongly agree. Sample sizes vary because the instructor did not assign Activity 1—Cornerstone Cares in the curriculum (n = 99) or because the student selected “NA—did not complete.” Based on one-way t-statistics, all values are statistically significantly greater than 3.00 (p < 0.01). Those with a mean score greater than 4.00 with p < 0.10 (p < 0.01) are **bolded (bold italics)**.

Second, we collected students' perceptions of the individual activities after completing the full curriculum. Here, we asked whether each activity improved their understanding of unconscious bias (LO1), how to recognize unconscious bias (LO2), how to mitigate unconscious bias (LO3), and how unconscious bias can affect auditors when gathering and interpreting audit evidence (LO4). We also asked for their perceptions of whether the activities were clear, whether they were interesting, and whether they would recommend the activity to others. As reported in [Table 2](#), Panel B, all four learning objectives were achieved, with all scores statistically greater than 3.00 (neutral) and the lowest average score at 3.94.⁸

Across the five activities, the Hear Me Out: Accent Bias podcast received the weakest scores. Only two questions for that activity received a mean score statistically higher than 4.00 ("agree"). The highest-rated activity was the live class discussion with the campus DEI leader. The Cornerstone Cares activity, the PwC Blind Spots Videos activity, and the Independent Reflection Question activities received generally comparable scores overall. Students perceived that all of the activities were clear, with all scores higher than 4.00. They also found them to be interesting (ranging from 3.86 to 4.34). Additionally, these activities should be of interest to other academics interested in incorporating unconscious bias into audit or other business or accounting classes, as mean scores for recommending the activity ranged from 3.88 to 4.47.

To provide additional context to these quantitative scores, we invited students to provide qualitative feedback related to four different prompts: topics covered in this week's activities that you found most useful; topics you think should have been added to this week's activities; topics you think should have been eliminated from this week's activities; and other suggestions that could have improved this week's activities. To analyze these qualitative data, we used a thematic content analysis technique to code each student's responses to these four questions ([Neuendorf 2018](#); [Saldaña 2021](#)). We read through all the comments to create overarching themes for answers to each prompt, and then student responses were coded by one researcher and a graduate research assistant. After independent coding, an interrater reliability of 95 percent was achieved across all the written responses. The research team identified all responses coded differently by each independent coder and agreed on codes for each response.

Regarding specific activities that students listed as most useful, 31 percent of the 247 students who responded to the question made reference to the PwC Blind Spots Videos; 12 percent listed the Hear Me Out: Accent Bias training; 12 percent listed the Live Class discussion; and 10 percent (of those who completed Cornerstone Cares) listed the Cornerstone Cares videos. Three such comments were:

I found the PwC videos were most useful as they were quick, but they got right to the point.

I particularly liked the "Hear Me Out" activity because it related to one of my experiences with professional meetings during recruiting.

I found the Cornerstone videos extremely helpful. They were short and broken down, which I think helped me learn about unconscious bias much better. I also found the podcast about accents extremely useful. I never thought about having biases towards certain accents, but the podcast definitely helped enlighten me that even something as small as the way someone talks affects how I view them.

Additionally, 25 percent of responding students referenced the usefulness of the mitigation tactics, and 22 percent of responding students noted usefulness of learning about a particular type of bias (e.g., halo and horns effect). Students frequently noted (14 percent of responding students) that they found it useful to be challenged to consider their own personal bias or lack of understanding about this topic.

When commenting on topics that should be added, 46 percent of students left the question blank, and 27 percent of students said they didn't have anything to add. Of those that responded to the question, 72 percent suggested that the instructor should add more specific examples about biases or how unconscious bias could affect auditing. We note that students were not given [Table 1](#) as part of the initial learning strategy design; we believe this student concern could be mitigated by giving students a chance to first brainstorm examples through the reflection prompt, and then instructors can use [Table 1](#) to facilitate a discussion of additional examples. Based on the lack of student feedback asking for more training activities, we feel that the use of the selected activities gives a well-balanced and solid foundation for the learning strategy.

Regarding topics that should be eliminated, 48 percent of students left no response to this question, and 37 percent of students left a response indicating that they did not find anything that needed to be eliminated (e.g., "NA" or "none"). Only 6 percent, 5 percent, and 2 percent of students recommended removing the Hear Me Out podcast, Cornerstone Cares, and the PwC videos, respectively. The most common specific complaint about Hear Me Out (Activity 3), made

⁸ A third potential test for effectiveness is how students performed on their asynchronous comprehension quiz (Activity 4). Students from our graduate audit class participate in weekly asynchronous reading/activity comprehension quizzes on a variety of topics. Between 2020 and 2023, students averaged an 84 percent on those quizzes on other topics and a 93 percent on the unconscious bias module.

by four students, was the podcast format (as opposed to video) or not feeling like it was as engaging as the other activities; the most common complaint about Cornerstone Cares (Activity 1), made by seven students, was that videos were individually short, but there was redundancy across videos. Less than 1 percent ($n = 3$) of students commented about wanting to eliminate the live class presentation with the DEI expert, and comments suggested that the recommendation was due to the choice of specific speaker or not feeling like the speaker tied it back to accounting and audit enough.

Finally, there were very few other suggestions offered (55 percent did not respond to this question, and 31 percent responded in a way that indicated there were no other suggestions—e.g., “everything was good”). The few suggestions we did receive most commonly related to issues already discussed above—e.g., wanting to see more examples—and the importance of an engaging live class discussion. We highlight one student’s comment in other suggestions, as it reiterates the need for teaching this in a specific professional context and ensuring that when the professor wraps up the discussion, it is clear how this relates to the specific context of accounting and auditing:

Focus on how being aware of unconscious bias provides value. If there is no value proposition, this simply serves as another reminder, and it won’t stick with anyone. Part of this providing value would be showing how it applies to auditing/accounting specifically. I feel like the only activity that was thought-provoking in applying it to accounting was the [reflection] essay response in the quiz.

As a result of student feedback, we adjusted our own live class discussion in fall 2023 to provide more examples and more in-class interaction; we provide our example slide deck and in-class activity in the Teaching Notes Supplemental Materials.

Cross-Sectional Variation in Findings

With and Without Cornerstone Cares

First, we test whether modifications to the curriculum significantly impact learning outcomes. This is important because some instructors may wish to limit the amount of time students are expected to complete asynchronous activities outside of class. In [Table 3](#), Panel A, we present student pre and post data with and without the completion of Cornerstone Cares. We note that in both groups, there are economically and statistically significant improvements in student knowledge and understanding, suggesting that even with modifications, the learning strategy can still be effective. However, students who completed all activities (i.e., with Cornerstone Cares) report higher post scores for LO1–3. Instructors may wish to consider the economic significance of these differences relative to the amount of time available to have students work outside of class.⁹

Gender

Second, we test whether learning strategy efficacy varies based on gender.¹⁰ We report the mean results for pre- and post-surveys across gender groups in [Table 3](#), Panel B. We note that scores from female and nonbinary students are higher, on average, but overall, the findings are mixed as to how gender appears to cross-sectionally impact learning efficacy. We note that male students experience economically similar growth rates pre- to post-curriculum related to LO1 (31 and 30 percent growth, respectively), LO3 (66 and 63 percent growth, respectively), and LO4 (10 and 7 percent growth, respectively). However, female and nonbinary students report greater growth related to LO2 (55 percent growth, compared to 47 percent in males).

In [Figure 3](#), we present heat map shading of mean scores by activity to further highlight differences between the two groups. Darker (lighter) shading represents higher (lower) scores. Consistent with the data reported in [Table 3](#), Panel B, female and nonbinary students rate the activities more positively than their male counterparts, on average. When looking at the relative scoring within a group, we note that male students are proportionately more favorable toward the PwC Blind Spots videos and the live-class activity, whereas female and nonbinary students report positive feedback across many of the activities.

Race or Ethnicity

Finally, we test whether learning strategy efficacy varies by race or ethnicity. We report the mean results for pre- and post-surveys in [Table 3](#), Panel C. We divide the data between those that indicate identifying as White or Caucasian

⁹ This cross-sectional examination is not a perfect comparison between groups because we do not have different sets of data within a single university and school year. Instead, data without Cornerstone Cares come from the years 2022 and 2023 and are mainly represented by one institution. If we keep only 2022 and 2023 data, to try to be more comparable, we find that the post mean scores are closer together between the two groups, with mean scores of 4.39, 4.30, 4.23, and 4.52 in the with Cornerstone Cares group, for LO1–4, respectively. Regardless, this shows that learning objectives can be achieved even if modifying the curriculum to remove Cornerstone Cares.

¹⁰ Students were asked an open-ended question: “Please indicate gender.”

TABLE 3
Cross-Sectional Variation in Pre- and Post-Assessment Summary Feedback

Panel A: With and Without Cornerstone Cares (Activity 1) in the Curriculum

	Pre		Post, without Cornerstone Cares			Post, with Cornerstone Cares		
	n	Mean	n	Mean	% Change	n	Mean	% Change
LO1: Rate your knowledge of the difference between unconscious bias and conscious bias.	403	3.36	121	4.36	30***	245	4.44	32***
LO2: Rate your knowledge of ways to recognize your own potential unconscious biases.	403	2.85	121	4.19	47***	245	4.36	53***
LO3: Rate your knowledge of ways to mitigate unconscious bias.	403	2.60	121	4.17	60***	245	4.31	66***
LO4: Rate your agreement or disagreement with the following statement: “Unconscious biases may affect auditors when gathering and interpreting audit evidence.”	403	4.31	121	4.71	9***	245	4.62	7***

Panel B: Gender

	Gender = Male					Gender = Female or Nonbinary				
	Pre		Post		% Change	Pre		Post		% Change
	n	Mean	n	Mean		n	Mean	n	Mean	
LO1: Rate your knowledge of the difference between unconscious bias and conscious bias.	207	3.29	177	4.32	31***	188	3.49	163	4.55	30***
LO2: Rate your knowledge of ways to recognize your own potential unconscious biases.	207	2.86	177	4.22	47***	188	2.86	163	4.42	55***
LO3: Rate your knowledge of ways to mitigate unconscious bias.	207	2.53	177	4.19	66***	188	2.68	163	4.37	63***
LO4: Rate your agreement or disagreement with the following statement: “Unconscious biases may affect auditors when gathering and interpreting audit evidence.”	207	4.19	177	4.60	10***	188	4.45	163	4.76	7***

(continued on next page)

and those that identify as at least one race or ethnicity other than White or Caucasian.¹¹ We note only small differences in pre-scores between these two groups, on average, and no systematic differences in efficacy, on average. We note that growth improvement is economically similar across the two groups for LO1 and LO4. For LO2, we note that White or Caucasian students report higher growth rates (59 percent growth relative to 48 percent growth), and for LO3, we note that students identifying as non-White or -Caucasian report higher growth rates (79 percent growth relative to 65 percent growth).

¹¹ Students were asked, “Please select your racial and/or ethnic identities (select all that apply): Asian (Far East, Southeast Asian, Indian subcontinent, etc.); Black or African American; Hispanic or Latino/a/x; Native American, Alaskan, or Indigenous; Native Hawaiian or other Pacific Islander; White/Caucasian; Other [prompts for open response].” Based on the distribution of results and taking into consideration potential statistical power of tests, we divided the data based on those who only selected White/Caucasian and those who selected something other than White/Caucasian. We considered also examining the intersectionality of gender and race/ethnicity, but are unable to empirically examine these cross-sections based on the sample sizes where we have both sets of data.

TABLE 3 (continued)

Panel C: Race or Ethnicity

	Race/Ethnicity = White or Caucasian					Race/Ethnicity = Non-White or Caucasian				
	Pre		Post		% Change	Pre		Post		% Change
	n	Mean	n	Mean		n	Mean	n	Mean	
LO1: Rate your knowledge of the difference between unconscious bias and conscious bias.	128	3.23	115	4.42	37***	37	3.16	25	4.40	39***
LO2: Rate your knowledge of ways to recognize your own potential unconscious biases.	128	2.73	115	4.34	59***	37	2.84	25	4.20	48***
LO3: Rate your knowledge of ways to mitigate unconscious bias.	128	2.55	115	4.23	65***	37	2.46	25	4.40	79***
LO4: Rate your agreement or disagreement with the following statement: “Unconscious biases may affect auditors when gathering and interpreting audit evidence.”	128	4.15	115	4.55	10***	37	4.22	25	4.56	8*

***, * Indicate that the t-statistic for difference between pre- and post- mean values is statistically significant, $p < 0.01$ and $p < 0.10$, respectively. This table reports the mean, percent change, and test of differences for student data that were anonymously and voluntarily collected using Google Forms. Students completed the “Pre” survey immediately prior to starting Activity 1; students completed the “Post” survey following the completion of Activity 5. Students were provided with a five-point scale. For LO1–3 questions, 1 = no knowledge, 3 = some knowledge, and 5 = high knowledge; for LO4 questions, 1 = strongly disagree, 3 = neutral, and 5 = strongly agree. In Panel A, we compare the respective sets of post data to the pooled pre data because pre data should not be affected by the activities that will be completed. In Panel B, n varies from Table 2, Panel A because gender is a voluntary question. In Panel C, n varies from Table 2, Panel A because race or ethnicity is a voluntary question that was only collected from the four additional schools in 2023.

FIGURE 3
Cross-Sectional Variation in Student Perceptions, by Gender

	Mean Student Perceptions by Activity: Male					Mean Student Perceptions by Activity: Female and Non-Binary				
	CC N = 120	PwC N = 175	HMO N = 172	Reflection N = 137	Live Class N = 172	CC N = 108	PwC N = 163	HMO N = 161	Reflection N = 122	Live Class N = 162
Improved Understanding of Unconscious Bias	4.09	4.25	3.95	4.07	4.37	4.44	4.49	4.27	4.24	4.62
Improved Understanding of How to Recognize	4.04	4.13	3.75	3.89	4.24	4.41	4.34	4.12	4.23	4.45
Improved Understanding of How to Mitigate	4.10	4.01	3.71	3.90	4.24	4.43	4.33	3.99	4.09	4.45
Improved Understanding of How Affect Audits	3.88	4.14	3.69	4.03	4.23	4.13	4.31	3.99	4.31	4.36
Activity was Clear	4.17	4.39	4.03	4.17	4.43	4.40	4.57	4.30	4.33	4.65
Activity was Interesting	3.73	3.90	3.72	3.75	4.29	4.02	4.26	4.09	4.04	4.44
I would recommend this Activity	3.94	4.16	3.74	4.04	4.41	4.31	4.48	4.04	4.19	4.54
Average across all questions	3.99	4.14	3.80	3.98	4.32	4.30	4.40	4.12	4.20	4.50

Refer to Table 2, Panel B for table notes and full descriptions of question and activity headers. Question and activity headers have been shortened in this graphic for presentation purposes only. Darker (lighter) shading indicates higher (lower) average scoring. Total counts (n) vary from Table 2, Panel B because gender is a voluntary question.

Similar to Figure 3, in Figure 4, we present heat map shading of mean scores by activity to further highlight differences between the two groups. Here, we note that average scores across the activities are similar between the two groups, except that non-White and -Caucasian students rate the live class discussion higher than White or Caucasian students.

Can These Resources Be Helpful in Other Accounting Classes?

Although we have not tested the efficacy in nonaudit settings, we do believe that accounting instructors in other subject matter areas could easily modify the reflection prompt questions and in-class lecture to adapt to other accounting settings. For example, these unconscious biases have been shown to affect artificial intelligence-related coding through

FIGURE 4
Cross-Sectional Variation in Student Perceptions, by Race or Ethnicity

	Mean Student Perceptions by Activity: White or Caucasian					Mean Student Perceptions by Activity: Non-White or Caucasian				
	CC N = 98	PwC N = 114	HMO N = 114	Reflection N = 111	Live Class N = 109	CC N = 20	PwC N = 24	HMO N = 24	Reflection N = 24	Live Class N = 25
Improved Understanding of Unconscious Bias	4.08	4.41	4.22	4.16	4.23	4.05	4.42	4.04	4.42	4.52
Improved Understanding of How to Recognize	3.99	4.37	4.06	4.12	4.14	4.15	4.54	4.08	4.21	4.58
Improved Understanding of How to Mitigate	4.06	4.28	3.99	4.02	4.10	4.05	4.46	4.08	4.21	4.28
Improved Understanding of How Affect Audits	4.03	4.30	3.98	4.12	4.18	3.84	4.00	3.79	4.33	4.32
Activity was Clear	4.15	4.48	4.22	4.23	4.31	4.15	4.50	4.33	4.58	4.68
Activity was Interesting	3.79	4.15	4.05	3.95	4.12	3.95	4.21	4.04	4.08	4.48
I would recommend this Activity	3.95	4.31	3.98	4.18	4.22	4.21	4.50	4.04	4.21	4.48
Average across all questions	4.01	4.33	4.07	4.11	4.19	4.06	4.38	4.06	4.29	4.48

Refer to Table 2, Panel B for table notes and full descriptions of question and activity headers. Question and activity headers have been shortened in this graphic for presentation purposes only. Darker (lighter) shading indicates higher (lower) average scoring. Total counts (n) vary from Table 2, Panel B because race and ethnicity is a voluntary question only asked of the four additional schools participating in 2023.

the types of training samples that coders use (Chen 2023). Thus, our curriculum could be relevant to accounting data analytics or accounting information systems classes. We further believe that many of our examples related to the *audit* of complex estimates, and fair values could easily be adapted to the *preparation* of complex estimates and fair values in financial accounting classes. Overall, though, these lessons apply broadly to the professional work environment that accounting majors will experience throughout their careers, and, thus, they could also be incorporated into other types of ethics or professional development coursework.

IV. CONCLUSION AND DISCUSSION

In today's world, it seems that topics such as unconscious bias are discussed openly and freely at many levels of society. Forums for discussing biases and prejudices can be found when turning on local or national news, participating in political discourse, walking across campus, or even in day-to-day work interactions. Preparing ourselves as instructors as well as equipping our students to have intelligent and honest conversations and viewpoints on these topics should be of primary importance to us as educators. Building unconscious bias into educational curricula would be beneficial to all secondary education students, not just accounting students. More than just helpful in navigating life, it is imperative for accounting students and students considering professional careers to have the opportunity to engage with these topics in a low-stakes environment where they can self-examine and create lasting impressions of what unconscious bias is and how to mitigate it in their careers.

Instructors should be aware that conversations about unconscious bias have the potential to trigger deep emotions and responses within their students and cause potentially uncomfortable situations within the classroom. In preparing for these potentially charged conversations, we recommend that instructors leverage any DEI resources already in place on campus. Experts in DEI-related and student-facing offices have experience navigating emotionally sensitive topics and are valuable resources that can aid instructors in methods of teaching this topic, as well as provide an outside voice to lend expertise toward this important subject. Forces from outside the classroom and institutions of higher learning also play an important part in an instructor's choice in how to implement this topic into their course (e.g., state legislatures). Some of these external forces have caused universities to lose centralized staff and resources related to DEI issues. In those situations, the need for individual instructors to educate their students about issues such as unconscious bias is even more vital to their students' eventual success in the accounting workplace. We recommend that instructors work with campus administrators to ensure that any planned curricula comply with local and state regulations. Additional recommendations and implementation guidance are provided in the Teaching Notes.

Finally, our tests of efficacy reveal some potentially interesting patterns cross-sectionally across gender and race/ethnicity that warrant further investigation in future research. Specifically, we find that female and nonbinary students rate the activities more positively than their male counterparts, on average. Further, we note that White or Caucasian students report higher growth rates related to recognizing their own unconscious biases, whereas students identifying as non-White or -Caucasian report higher growth rates related to mitigating unconscious biases. These results beg the following questions: Are female and nonbinary students more open to recognizing their own biases relative to male students? In terms of educating themselves on potential biases, do White or Caucasian students recognize that they have more "room to grow" relative to students of another race/ethnicity? Answers to these questions will likely be important as accounting educators' DEI curriculum matures.

TEACHING NOTES

Teaching Notes are available only to full-member subscribers to the *Issues in Accounting Education* through the American Accounting Association's electronic publications system at <https://publications.aaahq.org>. Full-member subscribers can use their usernames and passwords for entry into the system where the Teaching Notes can be reviewed and printed. Please do not make the Teaching Notes available to students or post them on websites.

If you are a full member of AAA with a subscription to *Issues in Accounting Education* and have any trouble accessing this material, please contact the AAA headquarters office at info@aaahq.org or (941) 921-7747.

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APPENDIX A

Unconscious Bias Curriculum

Activity 1: Cornerstone Cares Playlist—Unconscious Bias (90 Minutes)¹²

First, we require students to complete Cornerstone Cares' free resource playlist titled "Recognizing and Mitigating Unconscious Bias," available for free after individual account registration at <https://www.cornerstoneondemand.com/company/cornerstone-cares/>. Cornerstone Cares is used by professional organizations to provide free training to employees. The Unconscious Bias playlist includes the following online classes that are 3–8 minutes each:

- How unconscious bias affects your work, whether you know it or not
- Why everyone has unconscious bias
- Can you change bias?
- What unconscious bias looks like at work
- The power of uncovering your unconscious bias
- Know when you're acting biased
- When you should be aware of unconscious bias
- Slow down your thinking to avoid unconscious bias
- Interrupt your bias in the moment
- Break the everyday habit of bias
- Why it's hard to talk about bias—and why you should
- How to talk about bias
- Build structures to combat bias
- Model bias-interrupting behaviors

To help students focus during the videos, we tell them that we expect them to know how to answer the following questions after completing Activity 1:

- What is "unconscious bias" and who is subject to it? Why does it happen?
- What types of decisions can it affect? When is it likely to occur?
- How can you lessen the impact of unconscious bias?
- How can you learn to recognize it?
- How can you interrupt it?
- One way to mitigate it is to "replace biased habits"—what does that mean and what are examples?
- What structures can teams and companies put in place to mitigate bias?
- How can you model bias-interrupting behaviors for other team members?

Activity 2: PwC Blind Spots (15 Minutes)¹³

Second, we require students to watch a series of four videos available for free on PwC's website at <https://www.pwc.com/us/en/about-us/blind-spots.html>:

(continued on next page)

¹² In Section III, we report tests of learning strategy efficacy with and without Activity 1.

¹³ If you would like MP4 recordings of these videos, please contact Jack Schattner (jack.schattner@pwc.com). You will be asked to sign a contract specifying the usage of those videos.

APPENDIX A (continued)

- Challenge assumptions
- Enhance objectivity
- Overcome stereotypes
- Broaden perspectives

Some of the content in these videos replicates what is taught in Cornerstone Cares, but we recommend this additional activity to provide brand-name (i.e., a Big 4 accounting firm) recognition for the importance of studying unconscious bias within the accounting curriculum. After watching these videos, students should be able to define and understand the following terms and should be able to identify ways to mitigate each type of identified bias:

- Blind spots
- Halo effect
- Horns effect
- Prototype bias
- Similarity bias

As an optional activity (neither collected nor graded), we encourage students to pause and reflect upon what they have learned by completing PwC's "Discussion guide" available at the bottom of the web link above.

Activity 3: Hear Me Out: Accent Bias, a Podcast Funded by Harvard and PwC (15 Minutes)

Third, we require students to listen to a podcast funded by Harvard and PwC titled, "Hear Me Out: Accent Bias," available at <https://outsmartinghumanminds.org/module/hear-me-out/>. This activity allows students the opportunity to recognize their own potential biases by listening to voice actors and reflecting upon what assumptions they made based on audio cues alone.

Activity 4: Asynchronous Knowledge Check and Reflection (60 Minutes)

This final asynchronous activity introduces accountability for the completion of the previous asynchronous activities and allows an opportunity to stop and reflect. In this activity, students complete an asynchronous quiz facilitated through an online learning management system. The quiz contains multiple-choice questions designed to test basic comprehension and retention of the lessons learned from each activity above (see Teaching Notes for example questions). Students also complete a short reflection answering the following three questions:

- (1) *How/where could unconscious biases affect your interactions with clients and team members?*
- (2) *How/where could unconscious biases affect your interpretation of audit evidence—particularly evidence related to auditing complex estimates, including fair value?*
- (3) *What could you do to reduce the extent to which unconscious bias affects your audit-related decisions/behaviors?*

The reflection prompt specifically asks students to take what they have learned and anchor it in an auditing context. Students are given the following information about grading of the reflection answer:

In grading your response, I'm looking for your ability to use the terms and concepts introduced in the unconscious bias videos/podcast and link that to the other concepts you've learned related to auditing fair value and complex estimates. I'm looking for your ability to incorporate precise language introduced this week and be technically correct with your explanations.

Activity 5: In-Class Lecture (up to 75 Minutes)¹⁴

The concluding activity for the entire curriculum is an in-class lecture. We have implemented this lecture on four different occasions and, depending on other activities planned for class on a particular day, have adjusted the content to range from 30 to 75 minutes. On all occasions, we have leveraged our business college's DEI office in planning for this in-class lecture day, and the leader from that office (i.e., a third party compared to the normal class instructor) completed the lecture. The leader from that office and the audit instructor worked together to ensure that the focus of the

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¹⁴ An example slide deck and in-class activity are provided in the Teaching Notes, as well as suggestions on how to find a speaker.

APPENDIX A (continued)

lecture was in helping students understand how these biases can affect their professional careers as auditors and in business more broadly. The topics covered in this in-class lecture include:

- Describing the lifecycle of unconscious bias and how it is accumulated beginning at birth and defined by learned experiences and tragic experiences.
 - Connecting unconscious biases covered with Activities 1–3 with the judgment tendencies and biases discussed in [Fay and Montague \(2015a, 2015b\)](#) (availability, overconfidence, confirmation, rush to solve).
 - Linking the lessons learned in Activities 1–3 to daily audit activities:
 - *Awareness* of where it is likely to occur in an audit (e.g., when interacting with clients and team members, when deciding whether to trust inquiry responses, when deciding what evidence to gather and how to weight potential contradictory evidence, when deciding whether to trust management assumptions and forecasts about future plans);
 - *Acceptance* that it occurs; a concentration is placed on challenging bias that can seem destructive versus constructive in leading groups or organizations;
 - *Focusing* on ways to mitigate it (e.g., learning more about biases, getting alternative viewpoints from other team members, etc.); and
 - *Committing* to improvement (e.g., personal development goals).
 - Testing their own unconscious bias with photo activities and references to Harvard’s Project Implicit Bias, Implicit Association Test.
 - Examining affinity groups and circles of trust by completing a learning exercise that reviews personal support circles based on gender, education level, race, and ethnicity.
 - Clarifying that explicit bias can also exist and how that differs from unconscious bias.
 - Discussing strategies to reduce social biases: stereotype replacement, counter-stereotyping, individuation, perspective taking, and intergroup contact.
-