

Title

Does an Instructor's Apparent Ethnicity or Gender Affect Online Student Learning?

Introduction

This study is based on answering the question: Does an instructor's apparent ethnicity or gender affect online student learning?

The research literature concerning this question, provides anything but simple answers. Instead, providing complex and often contradictory answers. This complexity is due to the answers being more based on conjecture and theory than science and data.

The present study tested a novel scientific method to empirically answer whether an instructor's apparent ethnicity or gender affects online student learning. This novel method had study participants in an asynchronous online classroom learning a lesson, being taught by professors of different ethnicities and genders.

Methods

Three hundred thirty-eight students enrolled in a Southwestern United States college served as participants. Participants were 18 years of age or older ($M = 24.5$, $SD = 7.5$); identified themselves as Hispanic (65%), White (22%), Black or African American (7%), Asian (3%), American Indian or Alaska Native (1%), or "Other" (2%); identified themselves as female (73%), male (25%), or "Other" (2%); and had the following majors: Psychology (38%), Pre-Nursing (24%), Biology (6%), Business Administration (4%), Kinesiology (4%), Liberal Arts (3%), Computer Science (3%), Teaching/Education (3%), Biology, Pre-Professional (3%), Criminal Justice (1%), or not answered (11%).

Using an anonymous Qualtrics link, participants completed a digital survey.

The digital survey first asked participants about some of their demographics, including age, ethnicity, gender, and major.

Following the demographic questions, participants were randomly assigned to—and then participated in, one of seven conditions.

The seven conditions required participants to read exactly-the-same 895-word lesson. The lesson was titled, "The Earth and Moon: Understanding Tides." The lesson included graphics.

What differed between the seven conditions' lessons was who developed the lesson. Six of the conditions had a photograph of a "College Professor" presented to the participants. Participants were told the photograph was of the college professor who developed the lesson. The photograph was of a White Male, White Female, Black Male, Black Female, Hispanic Male, or Hispanic Female college professor. The photographs of college professors were generated by artificial intelligence (Canva's Magic Design AI generator tool); besides ethnicity and gender differences, the college professors had the same physical characteristics, the same age, and level of

attractiveness. All the college professors were smiling, wearing glasses, and dressed in professional attire.

The seventh condition had no photograph of a college professor presented to participants. Instead, this condition simply told participants, “A college professor developed the lesson.”

This seventh condition served as the control condition for any potential biases being brought out by professors’ ethnicities or genders.

In addition to asking the participants to read the lesson, they were also told they would be quizzed about the lesson’s material. Participants were given an unlimited amount of time to read and study the lesson; however, they were not able to refer to the lesson once they “clicked” to the quiz following the lesson.

As all seven conditions received the same lesson, all seven conditions received the same 10-question quiz following the lesson. Each of the 10 questions composing the quiz were multiple-choice with four possible choices. For six of the seven conditions, as the photograph of the professor was visible while participants were reading and studying the lesson, so too was the photograph of the professor visible when participants were answering each of the quiz questions.

Following the 10-question, multiple-choice quiz, all seven conditions asked participants to rate—on a 5-point Likert scale, with 1 equaling extremely bad and 5 equaling extremely good, how well the professor did in preparing the lesson and the quiz. For the six conditions having a photograph of a professor, the photograph was visible when participants were rating the professor.

Results

Overall, participants ($n = 338$) had an average quiz score of 60% ($SD = .03$)—the easiest question had an average score of 86% and the most difficult question had an average score of 37%.

When being taught by the control professor—the condition without a photograph of a professor, overall, participants had an average score of 64% ($SD = .18$). Participants’ average quiz scores ranged from 62% to 56%—none of these scores were significantly different from one another ($ps > .05$). These scores were 62% ($SD = .18$) for the Black Male professor, 61% ($SD = .16$) for the Hispanic Female professor, 61% ($SD = .19$) for the Hispanic Male professor, 60% ($SD = .17$) for the White Female professor, 56% ($SD = .17$) for the Black Female professor, and 56% ($SD = .19$) for the White Male professor.

Overall, participants’ average rating of the control professor was 4.2 ($SD = .8$). Participants’ average ratings of the Black Male, 4.3 ($SD = .8$), Hispanic Female, 4.3 ($SD = .8$), White Female, 4.3 ($SD = .8$) and Black Female, 4.1 ($SD = 1.0$) professors did not significantly differ from participants’ average rating of the control professor, $ps > .05$. However, participants’ average ratings of the White Male, 4.0 ($SD = 1.0$) and Hispanic

Male, 3.9 (SD = .9) professors were significantly lower than participants' average rating of the control professor, $ps < .05$.

Black participants ($n = 24$) had an average quiz score of 57% (SD = .11)—the easiest question had an average score of 88% and the most difficult question had an average score of 29%.

When being taught by the control professor, Black participants had an average score of 70% (SD = .23). Black participants' average quiz scores relative to the professors teaching them, ranged from 67% to 42%. Black participants' average quiz score was 67% (SD = .2) for the Black Male professor, which was significantly higher than participants' scores for all other professors; respectively 60% (SD = .26) for the White Male professor, 53% (SD = .28) for the Hispanic Male professor, 48% (SD = .30) for the Hispanic Female professor, and 42% (SD = .26) for the Black Female professor, $ps < .05$.

Black participants' average rating of the control professor was 5.0 (SD = 0). Black participants' average ratings of the remaining professors did not significantly differ from one another with one exception. Black participants' average rating of the Black Female professor, 3.5 (SD = 1.7) was significantly lower than all other professors; respectively, Black Male, 4.3 (SD = .6), White Male, 4.3 (SD = .6), Hispanic Female, 4.0 (SD = .7), and Hispanic Male, 4.0 (SD = 1.7), $ps < .05$.

(Note: The White Female professor was not included for data analyses because no Black participants had her as a professor.)

Hispanic participants ($n = 221$) had an average quiz score of 61% (SD = .03)—the easiest question had an average score of 90% and the most difficult question had an average score of 37%.

When being taught by the control professor, Hispanic participants had an average score of 66% (SD = .20). Hispanic participants' average quiz scores relative to the professors teaching them, ranged from 63% to 58%—none of these scores were significantly different from one another ($ps > .05$). The scores were 63% (SD = .16) for the Hispanic Female professor, 60% (SD = .19) for the Black Male professor, 59% (SD = .18) for the Black Female professor, 59% (SD = .18) for the White Male professor, 59% (SD = .20) for the Hispanic Male professor, and 58% (SD = .18) for the White Female professor.

Hispanic participants' average rating of the control professor was 4.2 (SD = .8). With one exception, Hispanic participants' average ratings of the remaining professors; respectively, Hispanic Female, 4.3 (SD = .8), Black Male, 4.3 (SD = .8), Black Female, 4.3 (SD = .9), White Female, 4.1 (SD = .8), and White Male, 4.0 (SD = 1.1), did not significantly differ from the rating of the control professor. However, Hispanic participants' average rating of the Hispanic Male professor, 3.8 (SD = .9) was significantly lower than the rating of the control professor, $p < .05$.

White participants ($n = 73$) had an average quiz score of 61% ($SD = .06$)—the easiest question had an average score of 90% and the most difficult question had an average score of 37%.

When being taught by the control professor, White participants had an average score of 63% ($SD = .24$). White participants' average quiz scores relative to the professors teaching them, ranged from 67% to 52%. White participants with Hispanic Female, 67% ($SD = .19$), Hispanic Male, 67% ($SD = .20$), or Black Male, 67% ($SD = .26$) professors had significantly higher average quiz scores than those participants with White Female, 59% ($SD = .16$), Black Female, 54% ($SD = .25$), or White Male, 52% ($SD = .22$) professors, $ps < .05$.

White participants' average rating of the control professor was 3.9 ($SD = 1.1$). White participants' average ratings of the Hispanic Female, 4.5 ($SD = .9$), Hispanic Male, 4.4 ($SD = .7$), White Female, 4.5 ($SD = .5$), and Black Male, 4.3 ($SD = .5$) professors were significantly higher than the average rating of the control professor, $ps < .05$. White participants average ratings of the White Male, 4.0 ($SD = 1.2$) and Black Female, 3.9 ($SD = .8$) professors did not significantly differ from the average rating of the control professor, $ps > .05$.

Female participants ($n = 248$) had an average quiz score of 61% ($SD = .03$)—the easiest question had an average score of 89% and the most difficult question had an average score of 39%.

When being taught by the control professor, Female participants had an average score of 64% ($SD = .18$). Female participants' average quiz scores relative to the professors teaching them, ranged from 65% to 57%—none of these scores were significantly different from one another ($ps > .05$). The scores were 65% ($SD = .15$) for the Hispanic Female professor, 62% ($SD = .19$) for the Hispanic Male professor, 62% ($SD = .19$) for the White Female professor, 61% ($SD = .17$) for the Black Male professor, 58% ($SD = .18$) for the Black Female professor, and 57% ($SD = .22$) for the White Male professor.

Female participants' average rating of the control professor was 4.2 ($SD = .9$). Female participants' average ratings of the Black Male, 4.3 ($SD = .7$), Hispanic Female, 4.2 ($SD = .8$), Black Female, 4.2 ($SD = 1.1$), White Female, 4.2 ($SD = .7$), and White Male, 4.1 ($SD = .9$) professors did not statistically differ from participants' average rating of the control professor, $ps > .05$. However, participants' average rating of the Hispanic Male professor, 3.9 ($SD = .9$) was significantly lower than participants' average rating of the control professor, $p < .05$.

Male participants ($n = 85$) had an average quiz score of 56% ($SD = .06$)—the easiest question had an average score of 86% and the most difficult question had an average score of 34%.

When being taught by the control professor, Male participants had an average score of 65% ($SD = .27$). Male participants' average quiz scores relative to the professors

teaching them, ranged from 63% to 48%—none of these scores significantly differed from the average quiz score of participants being taught by the control professor, $ps > .05$. The scores were 63% (SD = .23) for the Black Male professor, 58% (SD = .21) for the Hispanic Male professor, 55% (SD = .20) for the White Male professor, 54% (SD = .16) for the White Female professor, 49% (SD = .16) for the Black Female professor, and 48% (SD = .26) for the Hispanic Female professor.

Male participants' average rating of the control professor was 4.3 (SD = .8). Male participants' average ratings of the Hispanic Female, 4.6 (SD = .5), White Female, 4.5 (SD = .9), Black Female, 4.2 (SD = .6), Black Male, 4.2 (SD = 1.0), and White Male, 4.1 (SD = 1.1) professors did not statistically differ from participants' average rating of the control professor, $ps > .05$. However, participants' average rating of the Hispanic Male professor, 3.9 (SD = .9) was significantly lower than participants' average rating of the control professor, $p < .05$.

Discussion

The present study's results are a microcosm of the research literature about the effects of ethnicity and gender on learning within the classroom:

- (1) As can be found in the research literature, ethnicity and gender have little or no effects on classroom learning—the present study empirically demonstrates this with its overall results, its Hispanic participant results, its female participant results, and its male participant results.
- (2) As can be found in the research literature, ethnicity and gender have significant effects on classroom learning—specifically, students with similar ethnicities and genders to their professors learn best. The present study empirically demonstrates this with its Black participant results.
- (3) As can be found in the research literature, ethnicity and gender have significant effects on classroom learning—specifically, students with dissimilar ethnicities and genders to their professors learn best. The present study empirically demonstrates this with its White participant results.

The present study also examined students' subjective ratings of their professors. And, like the research literature, the present study's student rating results are mixed—empirically demonstrating subjective ratings to be associated with objective learning and to not be associated with objective learning.

So, where do all these results leave us? They leave us with making two things clear:

- (1) Ethnicity and gender are important when it comes to learning within the classroom.
- (2) Empirically speaking, no one knows what exactly this importance is.

To find what this importance may be, future research may find what is behind people's ethnicities and genders through studying their personalities. Personality is at the core of

most of what we do. And it may be the key to understanding the complex relationships amongst ethnicity, gender, and classroom learning.

Whether we ever truly understand these relationships, we do know ethnicity and gender are important when it comes to learning within the classroom. Thus, any classroom should have ample space for open discussions about this importance.

References

Basow, S. A., Codos, S., & Martin, J. L. (2013). [The Effects of Professors' Race and Gender on Student Evaluations and Performance.](#) *College Student Journal*, 47, 352-363.

[Canva. Magic Design.](#)

Chavez, K., & Mitchell, K. M. W. (2020). [Exploring Bias in Student Evaluations: Gender, Race, and Ethnicity.](#) *Political Science & Politics*, 53, 270-274.

Goldberg, L. R. (1992). [The Development of Markers for the Big-Five Factor Structure.](#) *Psychological Assessment*, 4, 26-42.

[Qualtrics.](#)

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11/19/2023

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Submitted for presentation at the 2024 annual meeting of the Southwestern Psychological Association.

Do not cite.

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