

Supplemental Material

CBE—Life Sciences Education

Thompson *et al.*

Name	Institution	email	Developed and framed research question(s)	Analyzed data	Contributed to data analyses	Wrote the paper	Contributed to paper writing/editing	Contributed course data	Managed data	Attended Network Meeting	Comments
Abby Grace Drake	Cornell University						X	X		X	
Carrie Hall	University of New	carrie.hall@unh.edu					X	X		X	
Catherine Creech	Mt. Hood Commur	catherine.creech@mhcc.edu					X	X			
Cissy Ballen	Auburn University	mjb0100@auburn.edu	X		X	X		X		X	
Jordan Harshman	Auburn University	jharshman@auburn.edu					X			X	
Marcos E. Garcia-Ojeda	UC Merced	mgarcia-ojeda@ucmerced.edu					X			X	
Michele Shuster	New Mexico State	mshuster@nmsu.edu					X	X		X	
Rachael Robnett	University of Neva	rachael.robnett@unlv.edu					X			X	
Rebecca Brunelli	California State Un	rbrunelli@csuchico.edu	X				X				
Sadie Hebert	University of Minne	sjhebert@umn.edu		X		X			X	X	
Sara Berk	Auburn University	saraberk@uw.edu		X			X				
Sehoya Cotner	University of Minne	sehoya@umn.edu	X			X	X	X		X	
Seth K. Thompson	University of Minne	thom2587@umn.edu	X			X				X	
Sheritta Fagbodun	Tuskegee Universi	SFagbodun@Tuskegee.edu					X	X		X	
Todd Lamb	Auburn University	tcl0011@auburn.edu			X				X		

METHODS

Participants

Participants were undergraduate students enrolled in biology courses at nine institutions. The majority of the data was collected during the fall 2017 and spring 2018 semesters, but also included data from the fall 2015, spring 2016, fall 2016, spring 2017, and fall 2018 semesters. Students completed post-course surveys that assessed test anxiety using four items from the Motivated Strategies for Learning Questionnaire (Pintrich, 1991). Demographic information was self-reported through the surveys or collected through institutional data sources. Course performance data was provided by instructors. This work was approved by the Institutional Review Board at each participating institution. All participants consented to participate and were free to opt out from the study.

Data analysis

Students' course performance data were matched to their survey responses, and data were de-identified. Students with a reported gender of "they/them" were not included in this analysis due to low numbers and the potential for identification (n = 18).

All data analysis was performed using R (R Core Team, 2019). An average test anxiety score was calculated for each student by taking the mean of their responses to the four Likert-type test anxiety survey items, where 1 = "Not at all true of me" and 7 = "Very true of me". Weighted exam percent was calculated for each student by taking the sum of all exam points earned divided by the sum of all exam points possible multiplied by 100. Mean differences for average test anxiety or weighted exam percent were calculated by taking the difference

between the means of each group being compared (e.g., male average test anxiety minus female average test anxiety). A two-sample t-test was calculated to compare the two group means, and a 95% confidence interval for the difference between group means was calculated. A Bonferroni correction was used to correct for multiple t-tests, and statistical significance was defined as $p < 0.006$.



Equity and Diversity In Undergraduate STEM

Dear [Name],

We write to invite you to join an NSF-supported Research Collaborative Network, EDU-STEM (“Equity and Diversity in Undergraduate STEM”).

[Their university] meets the location and institution criteria that we seek as part of the networks objectives, broadly described below:

The primary objectives of EDU-STEM are to:

Objective #1: reveal regional and institutional differences, if they exist, in the cultural climate for women and minorities in STEM disciplines (initially focusing on the life sciences) through data collection and research

Objective #2: develop a community of faculty that can serve as leaders—at their home institutions and nationally—in inclusive teaching and assessment

Objective #3: increase the number of faculty in the US that are familiar with barriers to inclusion in STEM, and can apply evidenced-based techniques for countering known barriers

You can more information about the network on our website:

<https://sites.google.com/umn.edu/edustem/>

My colleagues and I are in the first year of the grant, so we’re identifying our first round of network participants. We think you would be ideal network participants because I know you are interested in biology education and we are especially interested in network representatives from a range of institution types.

As a participant, we’d seek your help in a national effort to identify barriers to equity in biology courses. **We will identify barriers by surveying students, collecting performance data (grades). We’d ask each network member to seek IRB approval to collect these data** (ideally, in two or more classes at your institution), however we are able to provide background information, consent-form templates, etc. to make this process as easy as possible. We’d also invite you to join for annual meetings that focus on equity in undergraduate life sciences.

We are able to cover travel costs and provide participants with additional financial incentives for participation. There is high likelihood of publication, and network members would be encouraged to collaborate on manuscripts resulting from our data, or to present on these findings at discipline-specific meetings, at their home institutions, etc. We have led multiple similar collaborations that have resulted in publications. Our hope is that this is an easy “entry point” into DBER for interested folks.

Please let us know your thoughts, including if you have any questions. I will send additional information about next steps if you are interested in joining our network. Thanks for your time!

Sincerely,

