

Mentoring Practices to Promote Trust, Persistence, and Belonging in Academia

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Key problems for mentors

- How can we provide critical feedback that promotes rather than saps our students' motivation?
- How can we instill a resilient mindset that keeps students motivated in the face of adversity?

Goals of this presentation

- Give practical, actionable recommendations in two ways:
 - Demonstrate how to effectively give feedback in ways that build trust and persistence, even across demographic lines.
 - Demonstrate how a specific classroom intervention can promote belonging and persistence

Two parts of the presentation

- Part I: When providing critical feedback, building trust is paramount. We want to communicate
 - HIGH EXPECTATIONS, high standards, a high bar for performance
 - Provide ASSURANCES and support that the student can meet these standards.
- Part II: To instill a resilient mindset, we need to teach students to perceive their academic adversity as both
 - NORMAL, typical, and expected
 - SURMOUNTABLE with time and effort

Part I: The Mentor's Dilemma

(Cohen et al., 1999; Yeager et al., 2013)

- Scenario: Your mentee, a member of a minoritized group, has written a terrible first draft.
- How can you provide feedback in ways that build trust, motivation, and persistence?
- Temptations:
 - 1. Go easy on them. Offer praise where appropriate and sugarcoat the areas for improvement. Protect mentee's self-esteem.
 - 2. Go hard on them. Scare or shame them into working harder, longer, with more intensity. Toughen them up.

Advising across racial/gender divides

- Stereotypes about intellectual ability make these mentoring relationships especially fraught.
 - Sugarcoated: “Why are they going so easy on me? They must not think I’m very capable.”
 - Get tough: “These expectations are not realistic for someone with my experience. I don’t think I can meet them.”

What should we do?

- Set high expectations (e.g., “I just want you to know that I have really high standards. I’m not looking for something that is just OK or ‘good enough’.”)
- AND provide assurances that students can reach those expectations (“I see a lot of potential in you, and I wouldn’t be giving you this feedback if I didn’t know you could do it”)

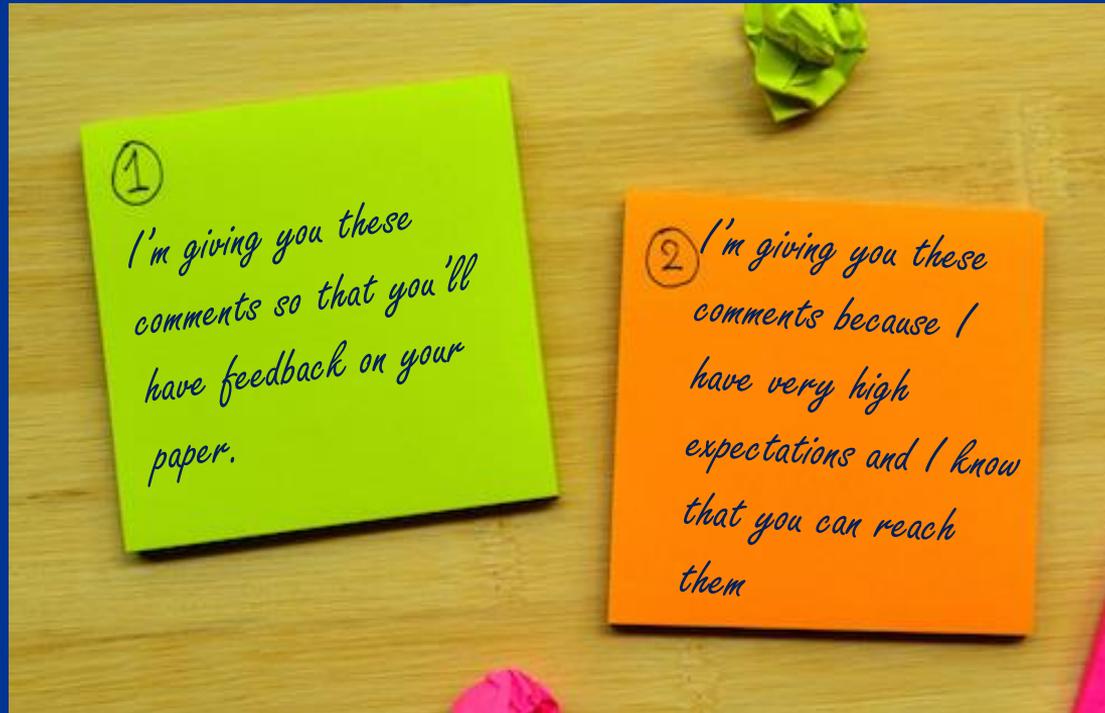
Part I: High expectations and assurance

- Praise and assurances without high standards → Can set expectations too low, overly positive reactions can betray stereotypes and low expectations
- High standards without assurance and support → Can make the mountain seem insurmountable, making doubts about ability linger in the air.
- High standards + Assurance: Communicates that while the student is not there yet, you know they can do it.

Example: mentoring students to improve their essay

(Yeager et al., 2013)

- Student essays were graded and randomly assigned to receive different post-it notes on their assignments.



①

*I'm giving you these
comments so that you'll
have feedback on your
paper.*

②

*I'm giving you these
comments because I
have very high
expectations and I know
that you can reach
them*

Results

YEAGER ET AL.

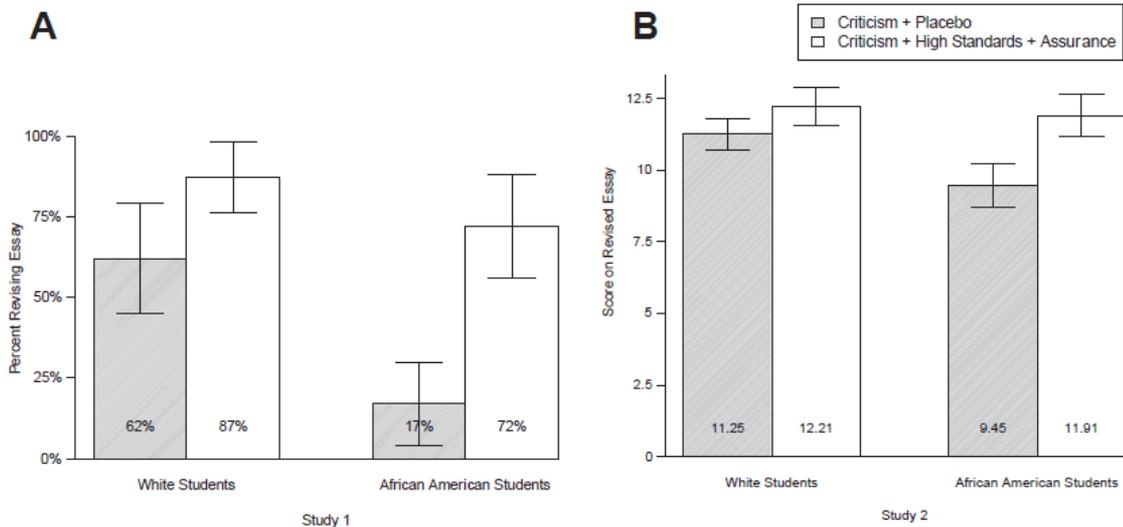


Figure 2. (A) Percent of students who revised their essays, by race and randomly assigned feedback condition (Study 1). (B) Final score on revised essay as graded by teachers, by race and randomly assigned feedback condition (Study 2). Values are covariate-adjusted means controlling for gender, teacher, and first draft scores (means estimated in separate regression models for African American and White students). Error bars: ± 1 standard error.

How else do we communicate our expectations and assurances?

- We do it all the time!
- Faculty mindsets are hidden in the subtext of our words.
- High standards are often assumed. Faculty growth mindsets communicate assurances (Canning et al., 2021)

Canning et al., 2021 (Experimental manipulation)

Table 1. Comparison of Faculty Mindset Syllabus Cues in Study 1.

Concept	Fixed Syllabus	Growth Syllabus
Prerequisites	“If you have not mastered those concepts, you should consider dropping this course.”	“If you have not mastered those concepts, you should see me or a teaching assistant and we will provide resources . . . which should prepare you for this course.”
Daily homework	Not graded. Only encouraged for weaker students.	Graded. Encouraged for all students.
Quizzes	“Based on my previous experiences teaching this class, weaker students that do not perform well on quizzes struggle a lot on the exams. If you realize that you are not performing well on the first quiz, you should consider dropping the course.”	“The quizzes show me how well students are understanding the material, whether there are some students who are not there yet, and whether I need to review certain concepts with the class. If you find yourself failing quizzes, you should seek additional help to grow your understanding of the material.”
Exams	“I do not give partial credit on answers—students either get the questions correct or they do not.”	“I am interested in your learning and your approach to problems. Therefore, partial credit will be given when you have solved parts of the problem correctly.”
Attendance	“I do not take attendance in class. I believe some students can do well in the course without attending class, and I will not penalize these students with strong math abilities. I recommend that weaker students attend every lecture and discussion section.”	“I do not take attendance in class . . . I recommend that all students attend every lecture and discussion section, regardless of previous performance. All students will learn something new and attending class is the best way to learn the concepts and improve your math skills.”
Grading	Heavily weighted final exam. Few opportunities to demonstrate understanding.	Relatively equally weighted, multiple exams. Many opportunities to demonstrate understanding.
Help sessions	“The Math Department offers help sessions for struggling students enrolled in M212. However, smart students who are gifted in math will probably not need these resources.”	“The Math Department offers help sessions for students enrolled in M212. I strongly suggest that all students make use of these resources, as every student can improve and challenge themselves by attending these help sessions.”



Canning et al. (2021)

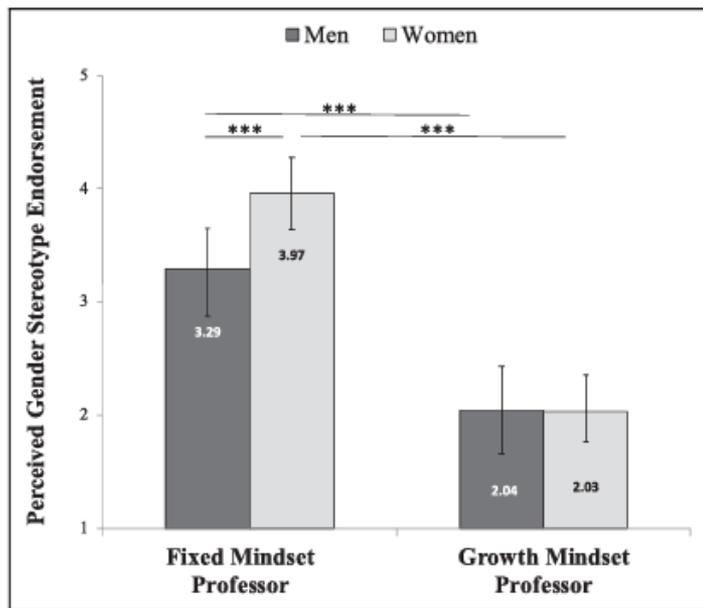


Figure 2. Expectations that the professor would endorse gender stereotypes as a function of student gender and professor mindset beliefs. Note. Error bars represent 95% CI. * $p < .05$. ** $p < .01$. *** $p < .001$.

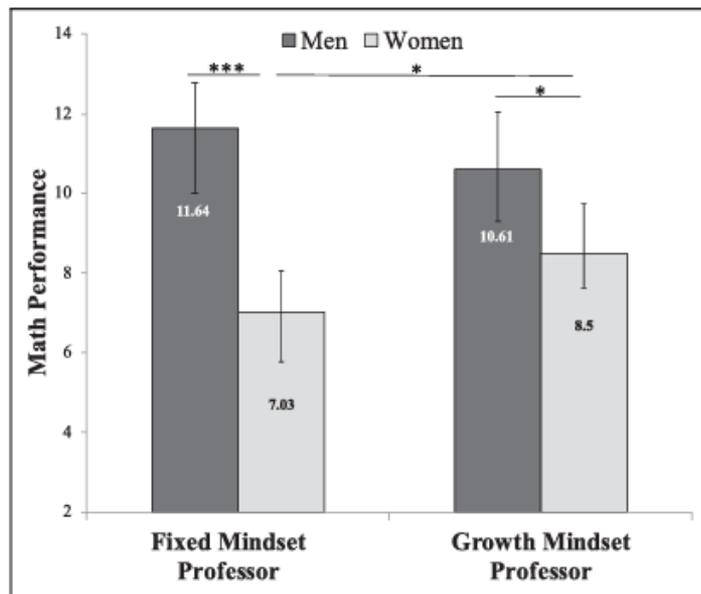


Figure 4. Mean math performance as function of student gender and professor mindset beliefs. Note. Error bars represent 95% CI. * $p < .05$. ** $p < .01$. *** $p < .001$.

Part II: Instilling a resilient mindset

- Adversity is normal and surmountable
 - Adversity is normal: “This is difficult. It is normal to struggle at times.”
 - Adversity is surmountable: “If you stick with it, you will be successful.”
- Classroom-based intervention to teach this mindset
- Scripts available online <https://osf.io/cjqs6/>

Fostering a resilient mindset

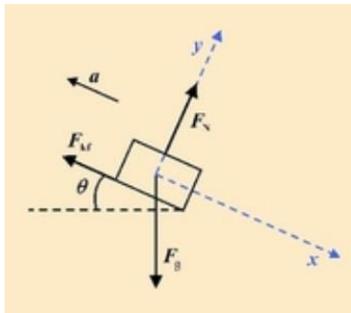
(Binning et al., 2020; also see Walton & Cohen, 2007; 2011; Yeager et al., 2016)

- Physics (N = 607) and Biology (N = 1215)
- Social contexts raise different threats and concerns for students

Stereotypes

Maybe
you
don't
belong
here

Maybe I
don't
belong
here



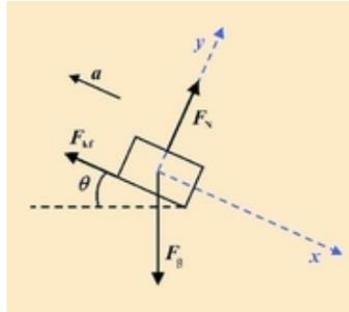
Establish a new classroom norm

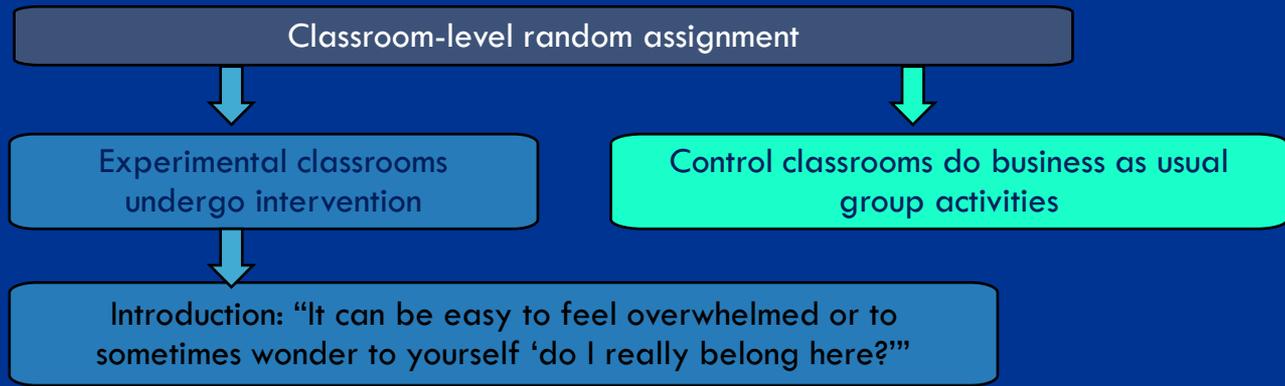
- Teach students that adversity is NORMAL and SURMOUNTABLE

Stereotypes

It's normal
to struggle,
I'm sure
she'll get it

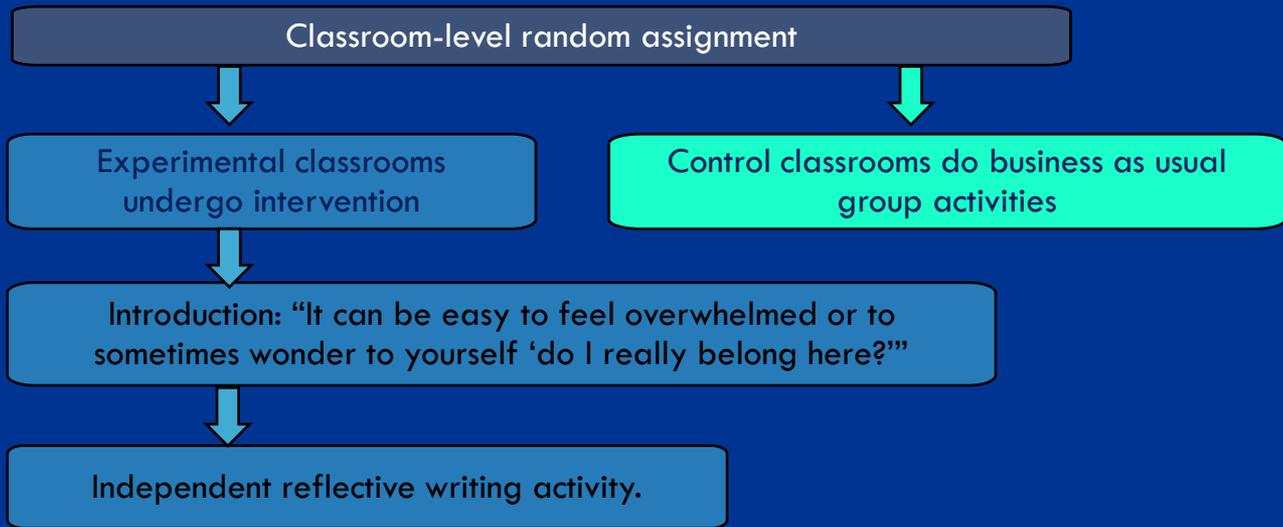
It's normal
to struggle,
and I can
do this





Intervention message

- *...It can be easy to feel overwhelmed and to ask yourself, “Do I really belong here?” and “Am I smart enough to make it?” These kinds of experiences are normal in the transition to college. Everyone goes through them, and they get better with time as you adjust to college.*



Writing exercise

- Write about concerns you have about college, e.g., the challenges in the transition to college, worries about your coursework, or thoughts about taking a college (physics or biology) course? How do you think these concerns will change over time. Please don't put your name on it. It will not be graded.

Many students experience difficulties and worries coming to college. From trying to make new friends, to finding their way in a new academic environment. Take a few minutes to write about some concerns you have about college, e.g., the challenges in the transition to college, worries about your coursework, or thoughts about taking a college physics course. How do you think these concerns will change over time?

Please don't put your name on it. It will not be graded.

Though college overall is a difficult transition in itself, the hardest part most definitely is allowing my mind to digest new information from numerous classes all at once. I've never been accustomed to having multiple, rigorous courses from period to period, in a row. From online was to paper assignments, to programming, it's all pretty new. Yes, at times I may think to myself "Oh, I'm not sure if I'm up to the challenge, I'm cut for it," yet I keep pushing to allow myself to adjust. It's the past that's got me to where I am that will get me to where I want to go. Moreover, I miss the comfort of my own home. Oh, and I almost forgot my mommy.

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Please don't put your name on it. It will not be graded.

I never took a physics class in high school. It is a little weird about it. I will be able to understand the concepts and that is through my high school and some self-study. So I will not be able to do any thing.

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Being accustomed has become a natural occurrence. I don't have much of my college experience. Then it is hard for my style, but it is very limited. I had not really in physics, calculus, and chemistry, and that was my only experience. I will not be able to understand it. This often leads to me not going to class. I am a bit discouraged by it. I got very up my self, and the old experience. I hope I can better understand it.

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I am not very excited with the transition to college life. and in the first I am already used to it. It is very interesting and a bit overwhelming when I look at it all sometimes. but I think I am built for physics. It is actually my most subject and I am most excited about this class. I don't have a lot of trouble understanding both the concepts and how to do problems. I don't see other changing my view now. I will probably be stressed and concerned over physics until the very end now. I think being flipped physics course I might help but I still don't know understand problems, even though we do them in class.

Many students experience difficulties and worries coming to college. From trying to make new friends, to finding their way in a new academic environment. Take a few minutes to write about some concerns you have about college, e.g., the challenges in the transition to college, worries about your coursework, or thoughts about taking a college physics course. How do you think these concerns will change over time?

Please don't put your name on it. It will not be graded.

The main concern I have is how to find my way in a new place. I have been very nervous about the transition to college. I am not sure if I will be able to understand it. This often leads to me not going to class. I am a bit discouraged by it. I got very up my self, and the old experience. I hope I can better understand it.



Many students experience difficulties and worries coming to college, from living in a new place, to trying to make new friends, to finding their way in a new academic environment. Take a few minutes to write about some concerns you have about college, e.g., the challenges in the transition to college, worries about your coursework, or thoughts about taking a college physics course. How do you think these concerns will change over time?

Please don't put your name on it. It will not be graded.

- concerned about time management \Rightarrow won't change
- concerned about if engineering is right for me = won't change
- the desire to leave and go home = never will change
- procrastination = may change but I \heartsuit TV
- being independent = nope
- PHYSICS & ENER OCII = Kill me now
- getting sick at college \Rightarrow always worried
- how to transfer \Rightarrow maybe
- how to become a commuter after signing up to live on campus \Rightarrow any info?
- computer troubles \Rightarrow already had some
- feeling lonely \Rightarrow ehhh
- lack of exercise \Rightarrow do the hills count?
- getting fat \Rightarrow see above
- andrew \Rightarrow vghhhh

Many students experience difficulties and worries to trying to make new friends, to finding their way in a new academic environment. Take a few minutes to write about some concerns you have about college, worries about your coursework, or thoughts about taking a college physics course. How do you think these concerns will change over time?

Please don't put your name on it. It will not be graded.

Being somewhat like home... but for some it my college to do for my life, don't want that sort of thing... it's a different world... I will not be with my friends... they often look like I am... I am a discouraged student due to the fact that I am at class that most students at class that most students up my self... and I will become better over time I will become better... definitely not being any... can be better in hand myself to do

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Please don't put your name on it. It will not be graded.

As someone who had to do this, I can say that the transition to college is a very stressful time. I was very nervous about the transition to college, but I think I will be able to handle it. I will probably be stressed out for the first few weeks, but I think I will be able to handle it. I will probably be stressed out for the first few weeks, but I think I will be able to handle it.

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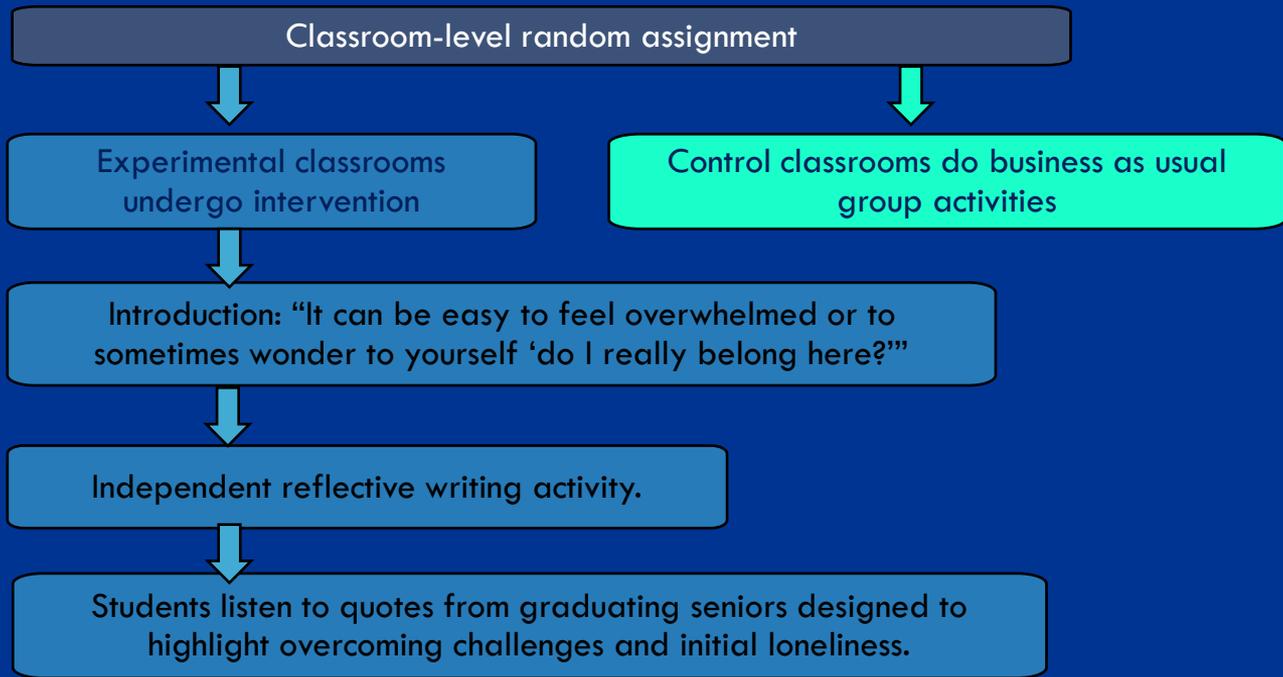
I am not very concerned with the transition to college. I was very nervous about the transition to college, but I think I will be able to handle it. I will probably be stressed out for the first few weeks, but I think I will be able to handle it.

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Provide narratives to scaffold experiences with adversity

- Students' path to success is a journey with a beginning, middle, and an end. Along that path, some struggles will be encountered but they will be overcome.

Physics Customization

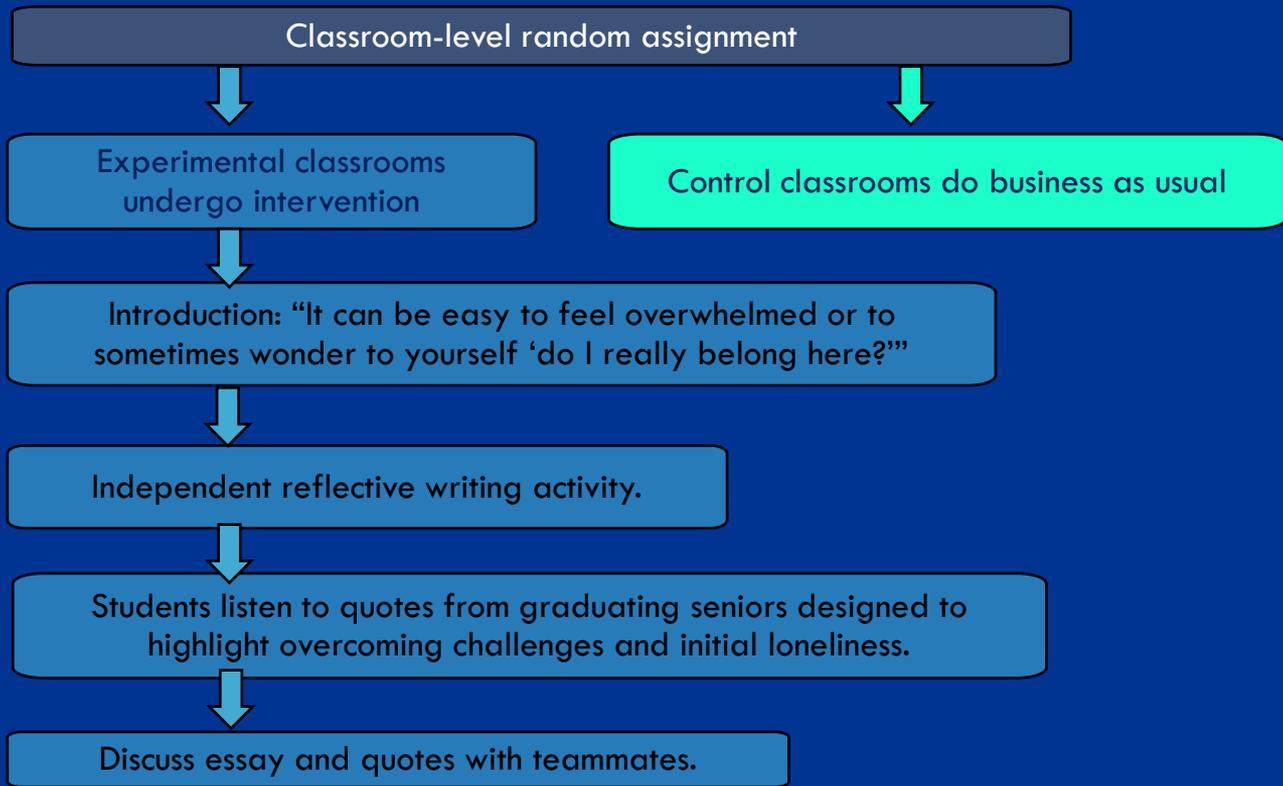
- ▶ I was one of just a handful of women in one of my intro physics study groups, and sometimes I felt a little embarrassed to ask questions. However, I quickly learned that other students usually had the same question I did, and we all benefitted from working with each other and learning from each other. Sometimes I had difficulty with an idea that my classmates understood. Other times, they struggled with concepts that I understood. I remember there wasn't always an "aha!" moment, where everything clicked. It was usually much more gradual, with some concepts only becoming clear after lots of practice and discussion with my study group. I realized that everyone struggles some times, and the important thing is to not give up and help each other out."

-Allison, Pitt Electrical Engineering Senior

Biology Customization

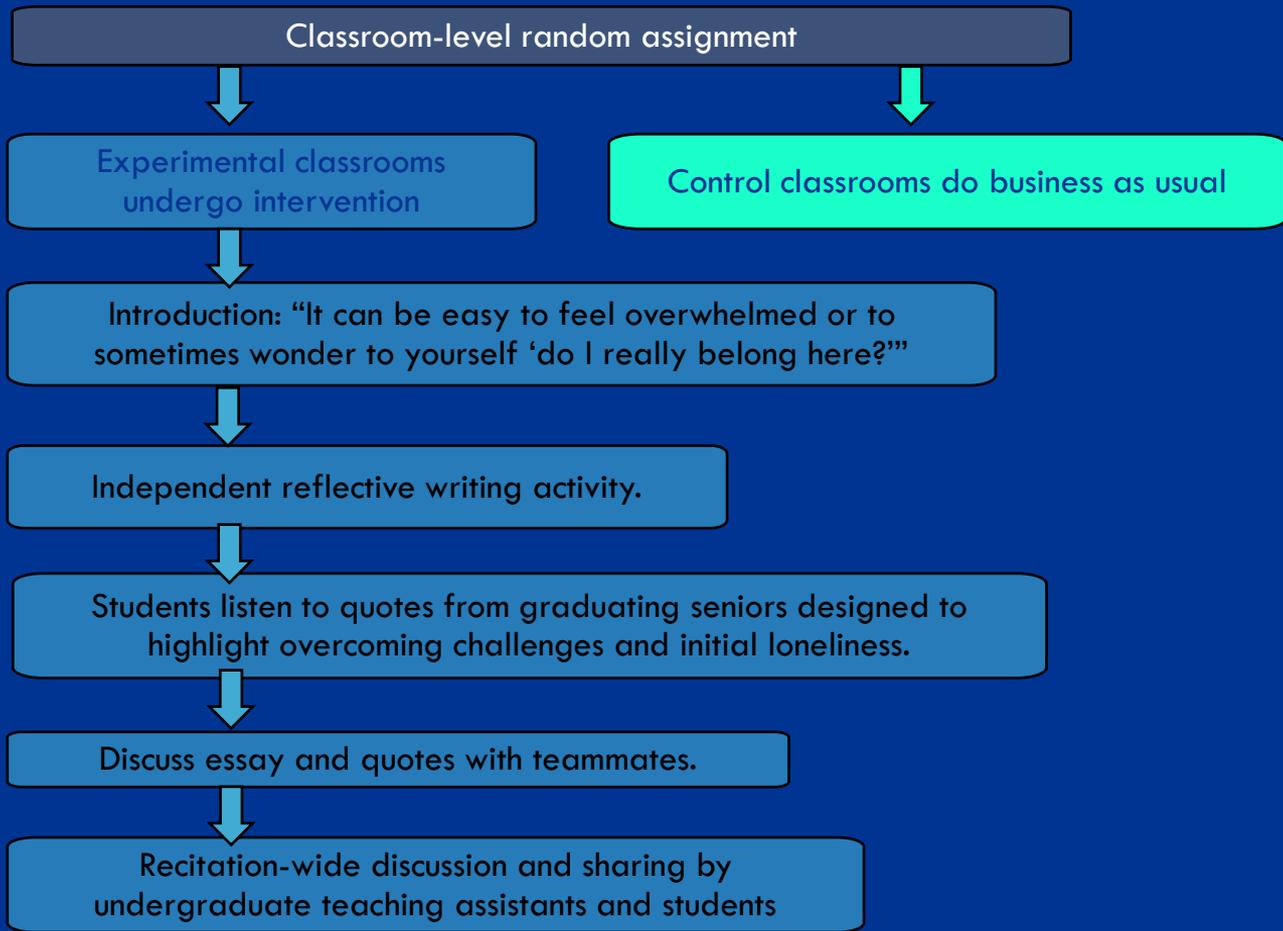
- “I didn’t go to a very good high school, and I worried that my high school courses had not prepared me well for college...Around my sophomore year I felt more comfortable – I began to enjoy my classes more and I found some close friends who I trusted. I also became more comfortable speaking in class, and sometimes I asked my friends to edit my papers for me. And I saw that even when professors are critical, or their grading harsh, it didn’t mean they looked down on me or that I didn’t belong.” It was just their way of motivating high achieving students.”

--- Senior, White male



Brief group discussion

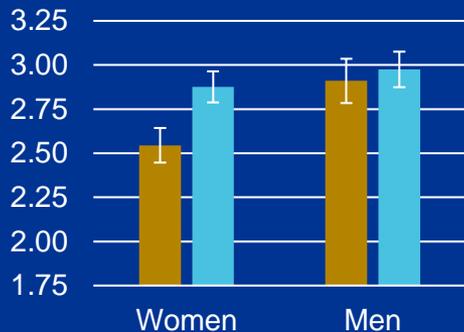
- Saying is believing (Higgins & Rholes, 1978)
- Discussion generates social proof of intervention message:
 - Why do you think so many students don't realize other students are struggling?
 - How do you think your life will be different when you are a Junior or Senior?



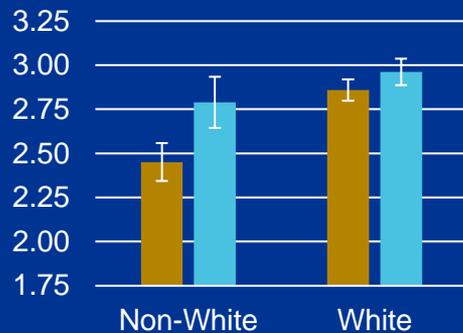
No other differences between conditions

- All analyses control for a number of variables (race, gender, instructor, SAT math, SAT verbal, and HS GPA)

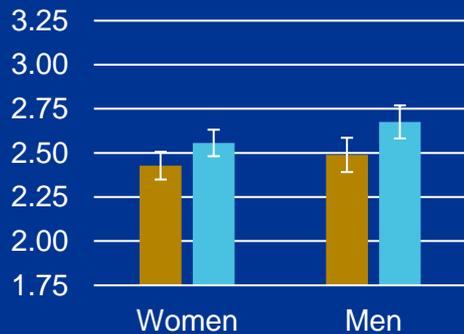
Physics by Gender



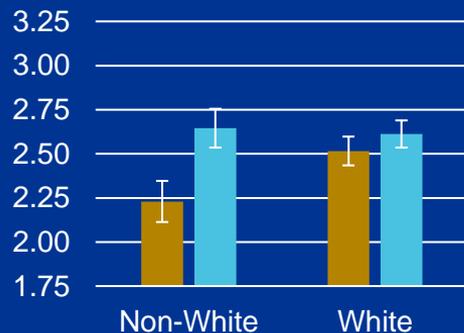
Physics by Race



Biology by Gender



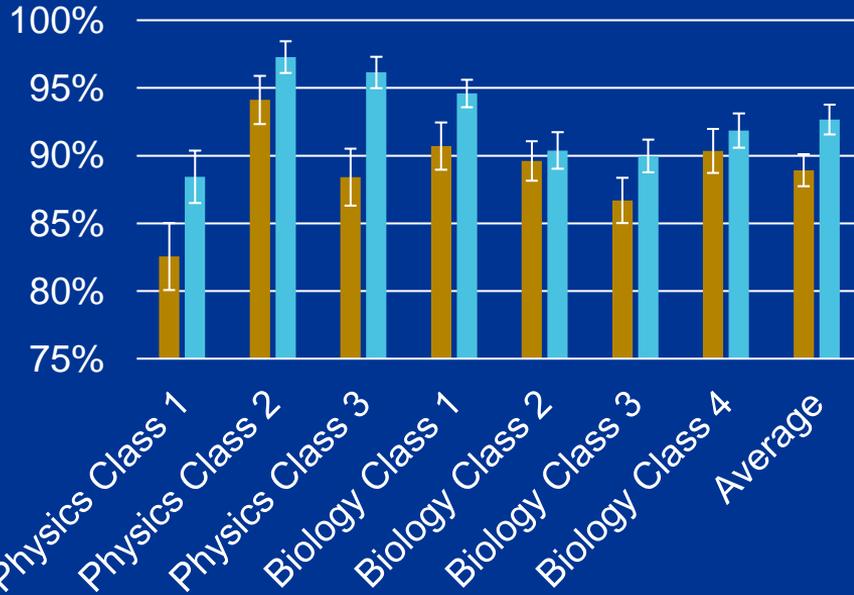
Biology by Race



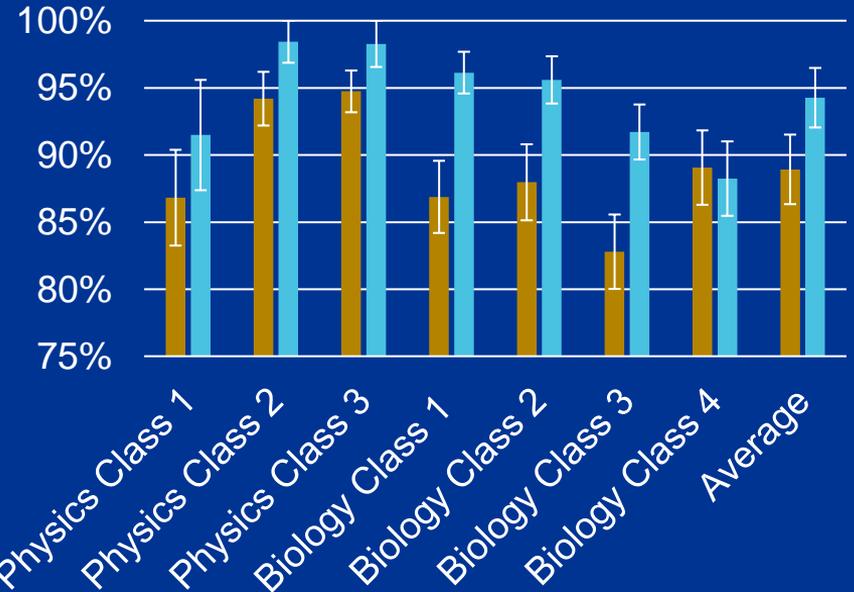
— Intervention
— Control

RESULTS

Attendance in Discussion Section



One-Year College Persistence



Intervention
Control

Practical tips for building resiliency

- Balance the positive and negative
- Real barriers do exist.
 - They are surmountable and not determinative

Summary and Discussion: “Difficult but doable”

- Part I: Communicate high expectations and provide assurances that students can meet those expectations
- Part II: Communicate the normalcy of adversity - it is expected - and provide assurances that students can surmount it.
- Both approaches have a latent subtext: “This thing you are doing is difficult – it’s supposed to be difficult, I expect it to be difficult and challenging. But it is also doable. You have what it takes to be successful, even if you don’t know it yet.”

Conclusion

- We have more power than we realize to empower students and shape students' "meaning-making" (Walton & Wilson, 2018)
 - In how we give feedback
 - In how our actions tell our students what is normative, expected, and doable
- By using this power wisely, we can help students thrive

Thank you!

- Kevin Binning
- kbinning@pitt.edu
- Scripts available online <https://osf.io/cjqs6/>

