

**Yes You Can! Boosting Student Confidence Raises Grades**

# **Student confidence matters, here's what you can do to boost it:**

**Teaching a course where students have preconceived notions?** If students are likely to have had a bad past experience, it's important to help boost their confidence

## **For everyone:**

- Help students form study groups
- Teach students to talk back to their inner critics
- Make the first assignment an easy A
- Create a low test–anxiety environment
- Help students make a plan to overcome their barriers

**Cool, cool. But how do you know? Why should we believe you?**

**Well.**

**Once upon a time, some behavioral scientists  
decided to make a Mini Coach...**

# Mini Coach

**Hypothesis:** increasing student motivation will improve student performance

**Intervention:** Based on Motivational Interviewing

	low motivation	high motivation
low confidence	Values–based intervention	Strengths–based intervention
high confidence	Values–based intervention	Sham

**But, we were wrong.**

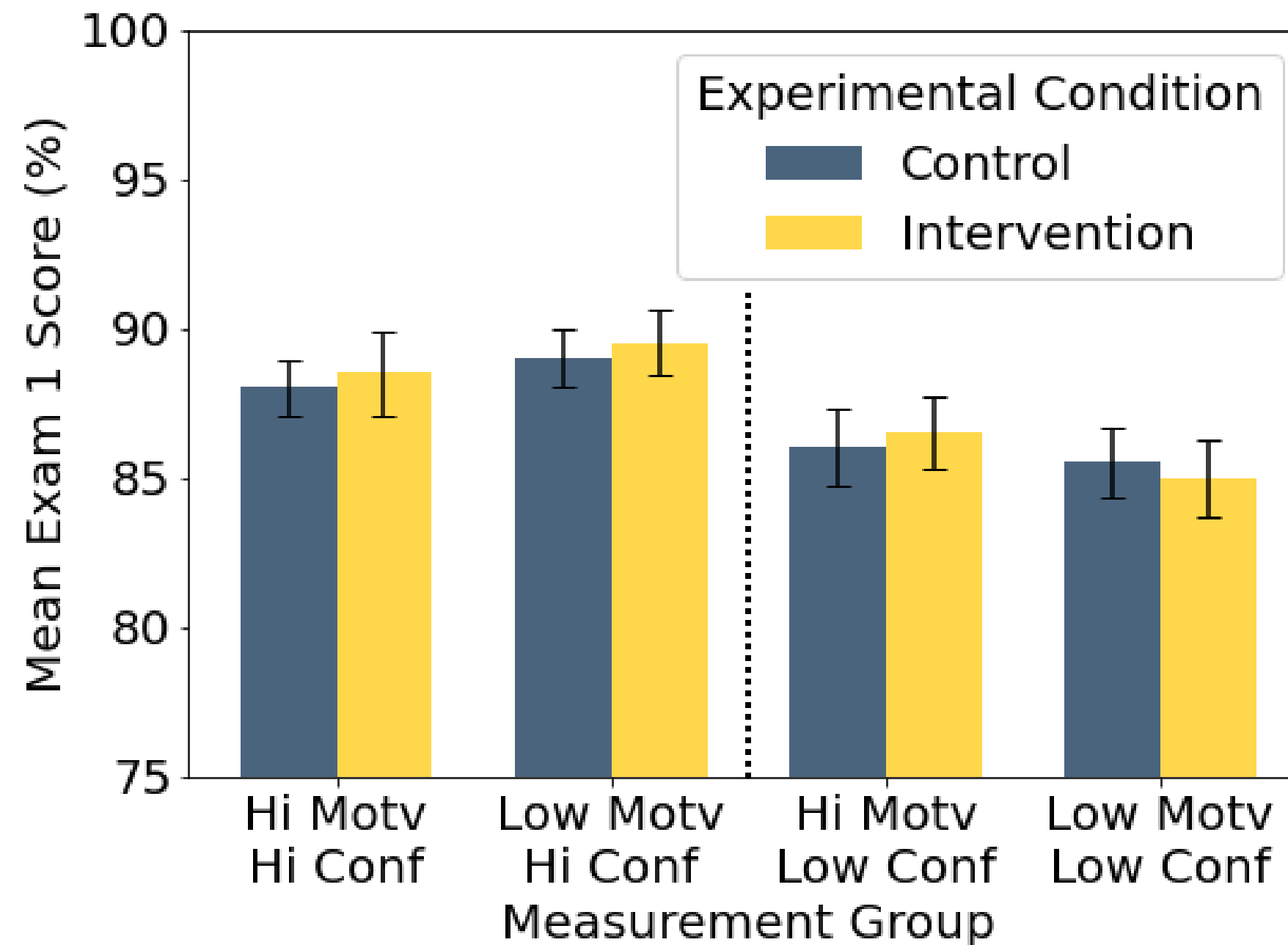
**The Mini Coach didn't work...at least, not the way we expected.**

**(Maybe we should have seen this coming.)**

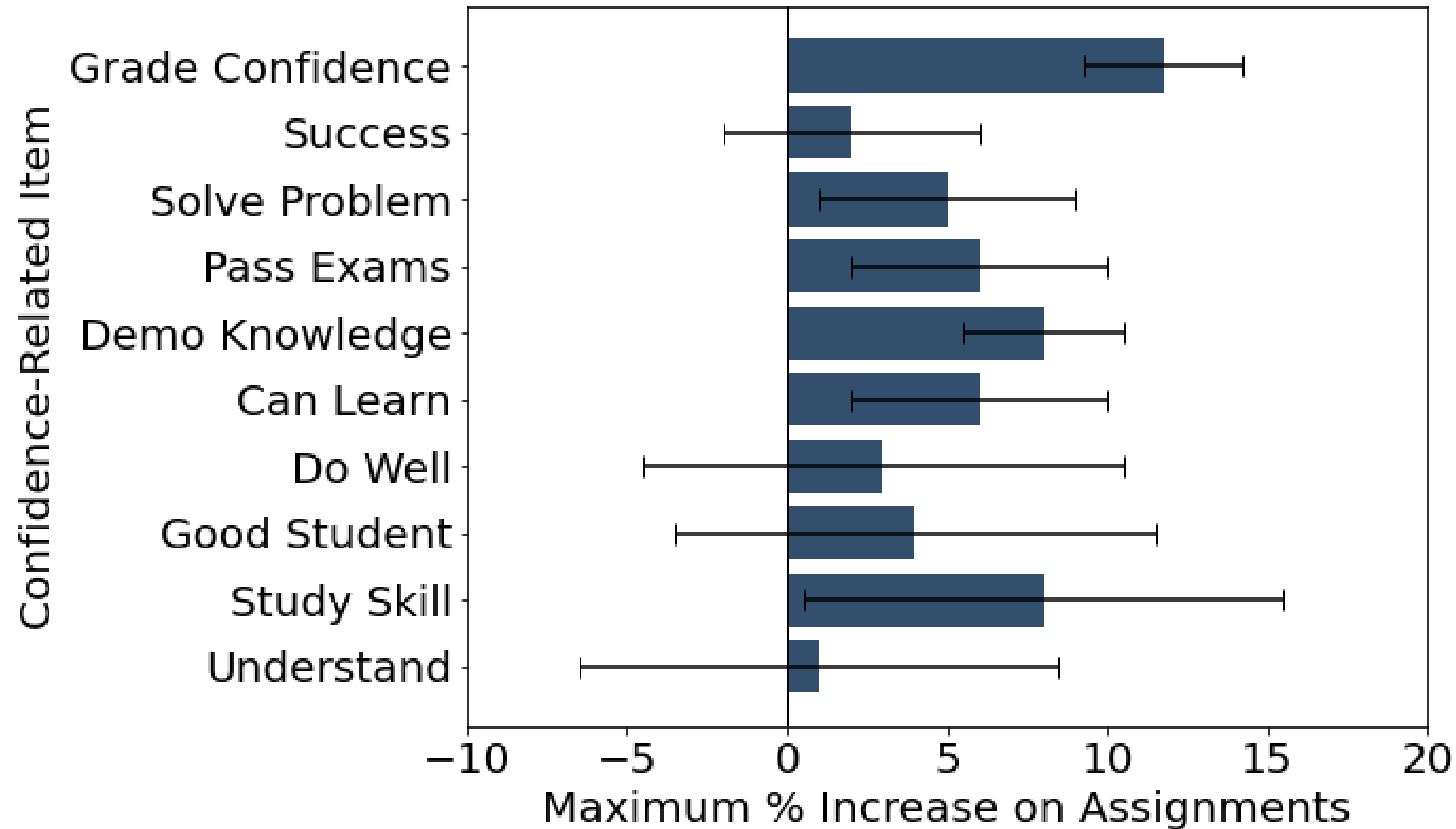
# Results from Mini Coach

**We predicted:** increasing student motivation would improve student performance

**We found:** student \*confidence\* impacts student performance, not motivation



## The confidence finding generalizes to a bunch of confidence-related items





**So Mini Coach showed us that instead of focusing on  
boosting student motivation, we should work on student confidence**

**So...**

**We dug deeper.**

**We interviewed 25 students at 4 time points during the semester  
about their confidence levels**

# What we found

## Vicarious experience

Like, I have friends [that are] like oh my God its a hard course. But then they're like okay, I got through it... And someone constantly telling you that [it's hard] can kind of just make you think that it's hard and sometimes not necessarily hard.

”

## Performance

I got my exam one grade back, and I feel like like that grade gave me the confidence that I can do it.

”

## Verbal persuasion

And [my roommate] talks about like, like, I'm so proud of you, like, you are smart, just like, words of affirmation, basically.

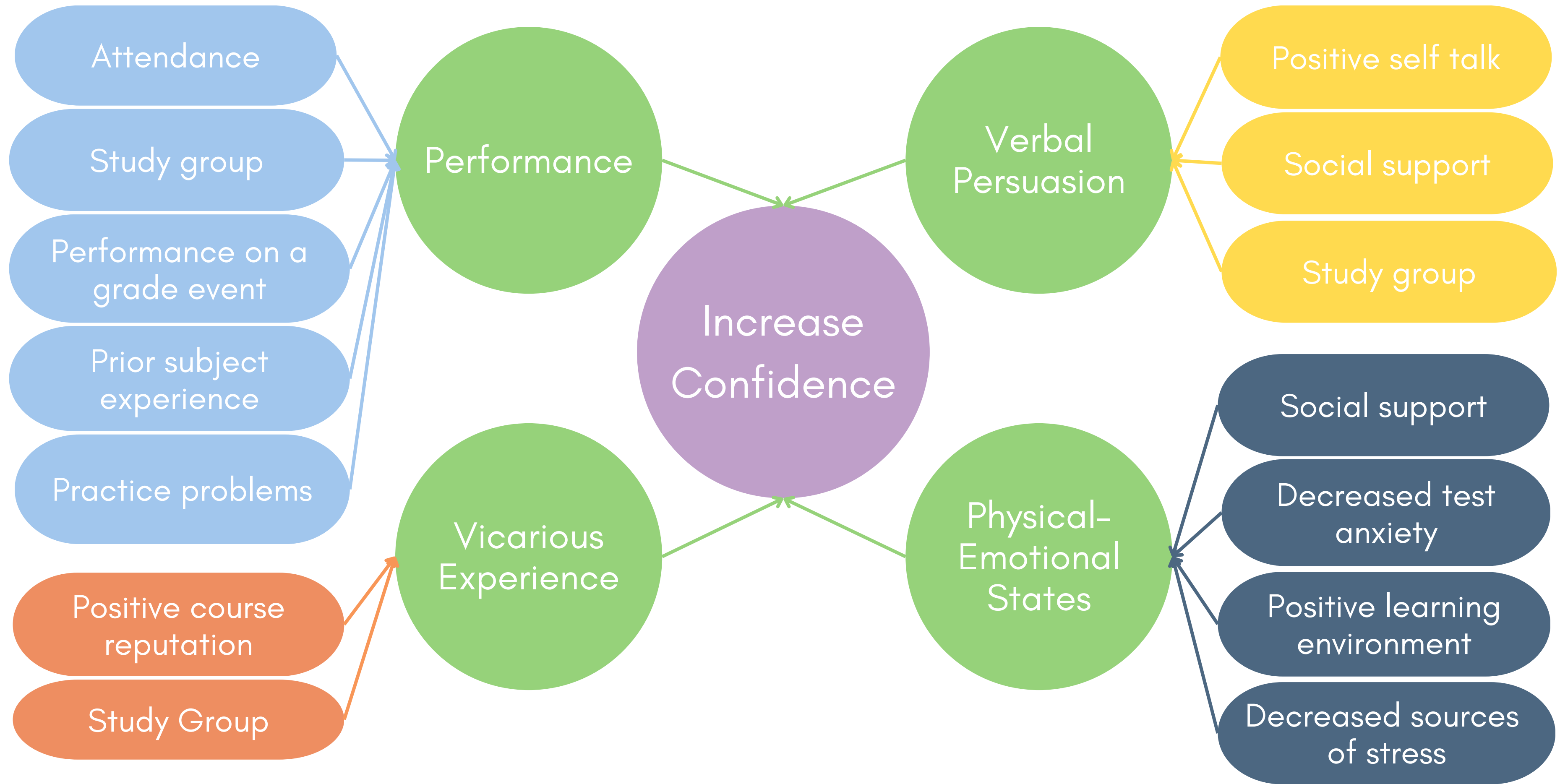
”

## Physical/emotional state

Sometimes before exams my hands shake a little bit. But so I kind of had that a little bit before the last exam...but not to the extent where it was like really bad.

”

# We used the data to make a model



**WHOA. That's a lot.**

**TL;DR: These are 4 high impact factors that boost student confidence.**



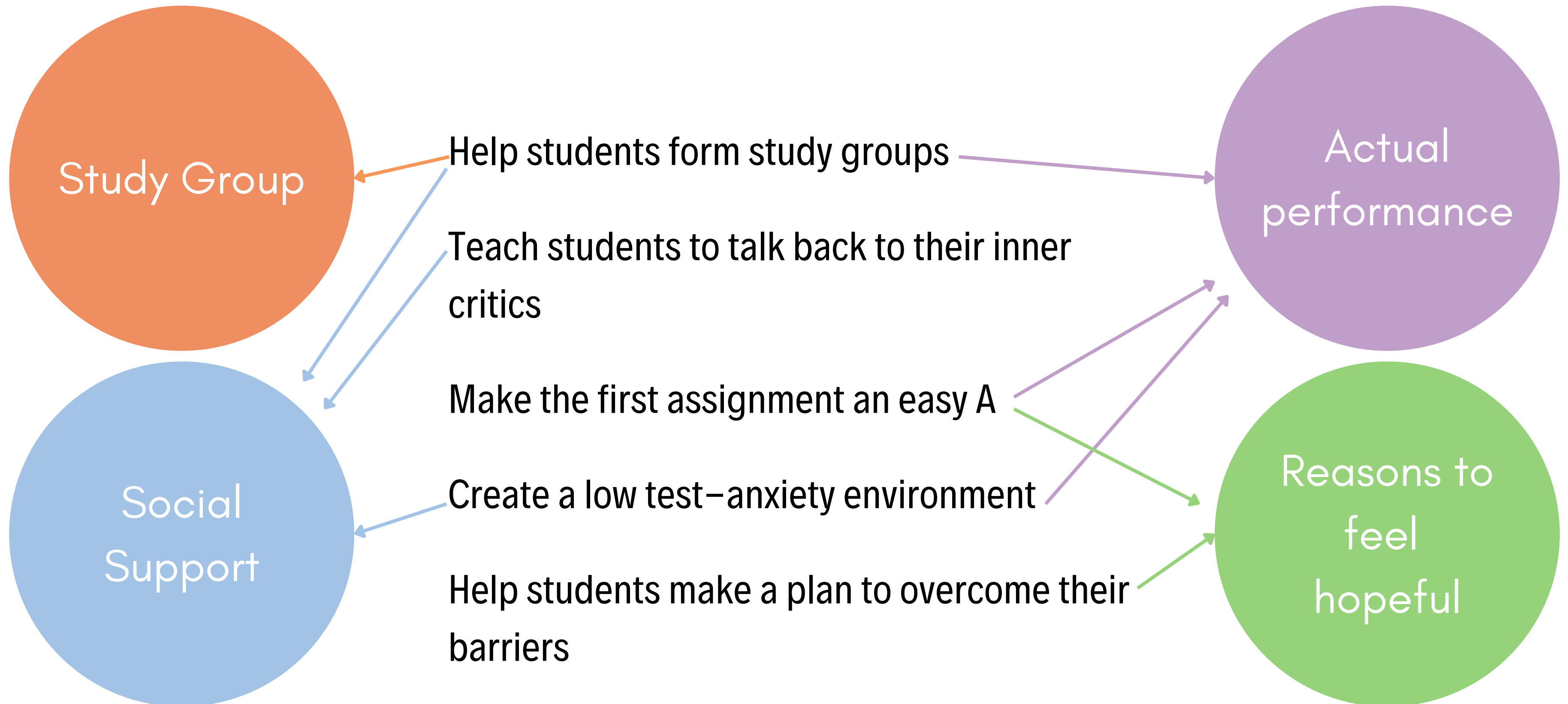
Study Group

Social  
Support

Positive  
performance  
early on

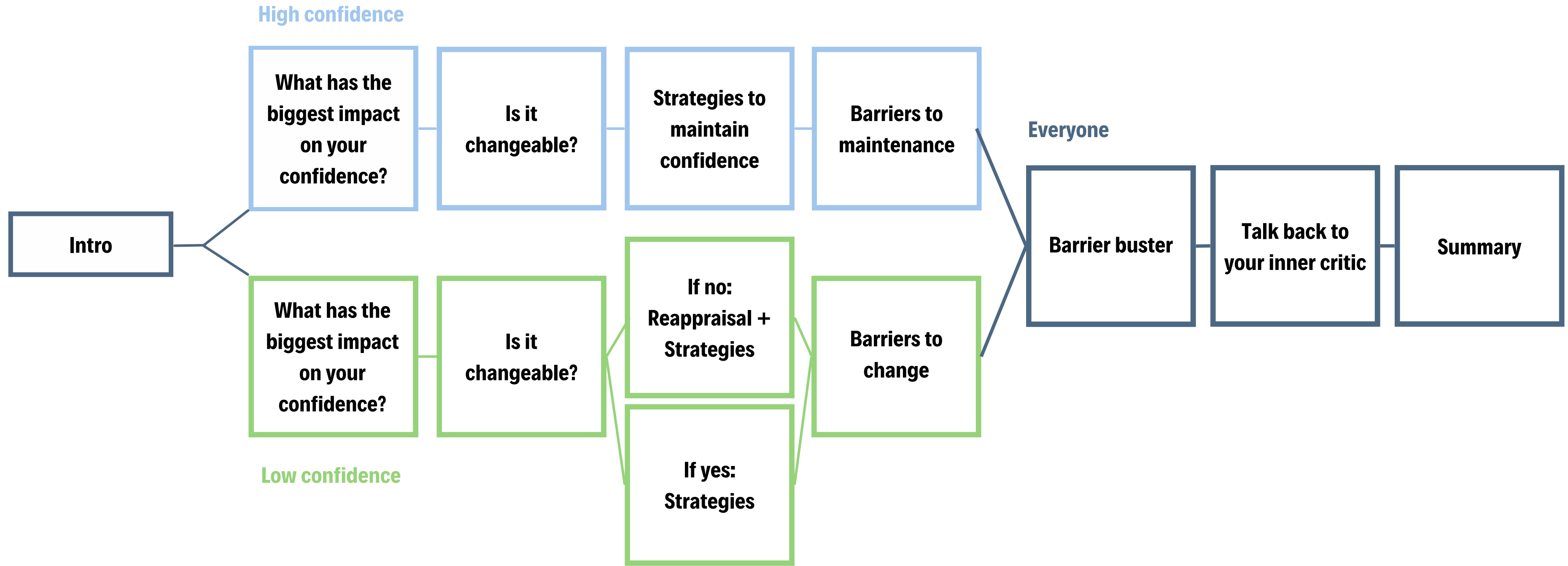
Reasons to  
feel  
hopeful

## Remember these?



# We used our model to make an intervention.

## It's called The Confidence Playbook



# It looks like this:

Which of these most keeps your confidence from being higher?

- ☐ I didn't do as well as I'd hoped to on the first graded assignment
- ☒ I find the Math 105 content difficult
- ☐ I have low class attendance
- ☐ The Math 105 content isn't interesting to me
- ☐ I'm not able to study as much as I need to
- ☐ My friends or family don't support me
- ☐ My overall stress level is high
- ☐ I don't have enough time to work on Math 105
- ☐ I don't have a study group
- ☐ I don't trust the instructors to treat me fairly
- ☐ The grading structure of Math 105 makes it hard to do well
- ☐ I am not a good test taker
- ☐ My classmates say negative things about Math 105
- ☐ I'm not comfortable asking for help when I need it
- ☐ I don't have any past experience with the Math 105 topics
- ☐ Other

Sometimes we can change the things that impact our confidence, other times we cannot. Thinking about how difficult you find the course content, does this feel like something you have the power to change?

- ☒ Yes
- ☐ No



Tailored to their reason for having low confidence & belief they can change it

There's no doubt Math 105 is tough. In high school, teachers typically teach a little about a lot of different ideas. In college, you're expected to learn a lot about a lot of ideas. And some classes just come a little harder sometimes.

While you can't really change the course content itself, you can think about how to make it easier to understand.

**Breaking the content into small pieces and staying on top of the work may help make Math 105 feel more manageable.**

Some ways to do that include:

- **Study in small amounts, but often.** Set aside a little time, even 20 minutes, each day to work on Math 105.
- **Do more practice problems.** Redo homework problems, do problems from past exams, or use the textbook to get more practice.
- **Join a study group.** Look around your class and see if there are any obvious study groups. Channel all of your bravery and ask a member if you can join.
- **Make a study group of your own.** Who in your class do you click with? If there is someone, invite them to study with you. If you don't know who to ask...
- **Go to office hours to meet people you might study with.** Office hours aren't just for struggling students. Many students go just to do their work and hear the questions others ask. See if there are people at office hours who might want to be in a study group.

Which of these, if any, might you want to try?

- ☐ Study in small amounts, often
- ☒ Do more practice problems
- ☐ Join a study group
- ☐ Make a study group of your own
- ☐ Go to office hours
- ☐ None of these
- ☐ Something else

**Busting barriers**

What do you think might get in the way of your new approach?

- ☐ I'm too busy
- ☐ No interest in doing it
- ☐ The steps are too hard to take
- ☐ It's a low priority
- ☒ I'm too stressed by other things
- ☐ I don't have the energy
- ☐ Something else



**Busting barriers**

What might you do to overcome your stress level?

What's one step you can take in the next two days to help you implement your plan?

Box breathe

Listen

Respond

Re-focus

## 4 steps to quiet your inner critic

Building confidence requires all of us to confront the mean voices in our heads. Our own Inner Critics.

**Everyone has an inner voice that criticizes them.** Most of the time, that voice is hypercritical and unhelpful. Our inner critics undermine our confidence and affect our ability to perform. Quieting that voice is critical for achieving your goals.

To quiet your inner critic:

**Step 1: Breathe.** Practice box breathing to help quiet your mind and get back into the present moment. Navy SEALs use box breathing to lower their heart rates and prepare for action. It will do the same for you. **Box breathing means:**


- Inhale for a count of four.
- Hold for a count of four.
- Exhale for a count of four.
- Hold for a count of four.
- Repeat.

**Step 2: Tune in to your thoughts.** It's tempting to try to ignore those critical thoughts. But that often just makes them louder. Pause and listen to your inner critic. What is it saying?

**Step 3: Talk back.** Tell that critical voice why it's wrong. Think of this as a conversation between two parts of yourself. One part, the critical part, is hurt and upset. The other part, you, is wise-minded and calm. Your critic needs reassurance that its worst fears aren't true. More on how to do that in a minute.

**Step 4: Engage your senses.** Now it's time to give your brain something else to do. Focus on using one of your five senses, for example:

- Tune into the sound of a bird chirping.
- Really inhale the smell of your cup of coffee.
- Focus on how soft a blanket feels under your fingers.
- Suck on a lemon drop or mint. Focus on the flavor.
- Turn on some calming music, listen carefully to the melody.



Tailored to their reason  
for having low  
confidence

## Talking back to your critic

Talking back to your inner critic might sound a little wacky, but it can be quite effective.

When your critic starts talking to you, notice what they say and instead of accepting it, **defend yourself**.

Here's an example:

**Critic:** "You don't know anything about Math 105. How could you think you'd do well?"

**Argue back examples:**

- "I'm not supposed to come in knowing it all. I'm here to learn. That's the whole point."
- "I'm a smart and capable person. I wouldn't be a student here if I wasn't. Of course I can learn this."

**Now it's your turn.**

What's something your inner critic says to you about Math 105?

You're not a math person

What might you say to argue back?

There's no such thing as a math person. I'm a hard worker and that's what matters.

## What will you do next?

In this Playbook, we've looked at:

- What undermines your confidence
- What might help you boost it
- How to talk back to your inner critic

Before we close this Playbook, what's one thing you'll try over the next two days to reframe your thoughts about Math 105?

---

**We're still running this experiment,  
but we're uncovering some interesting things**

**What have we found?**



# Sample Description

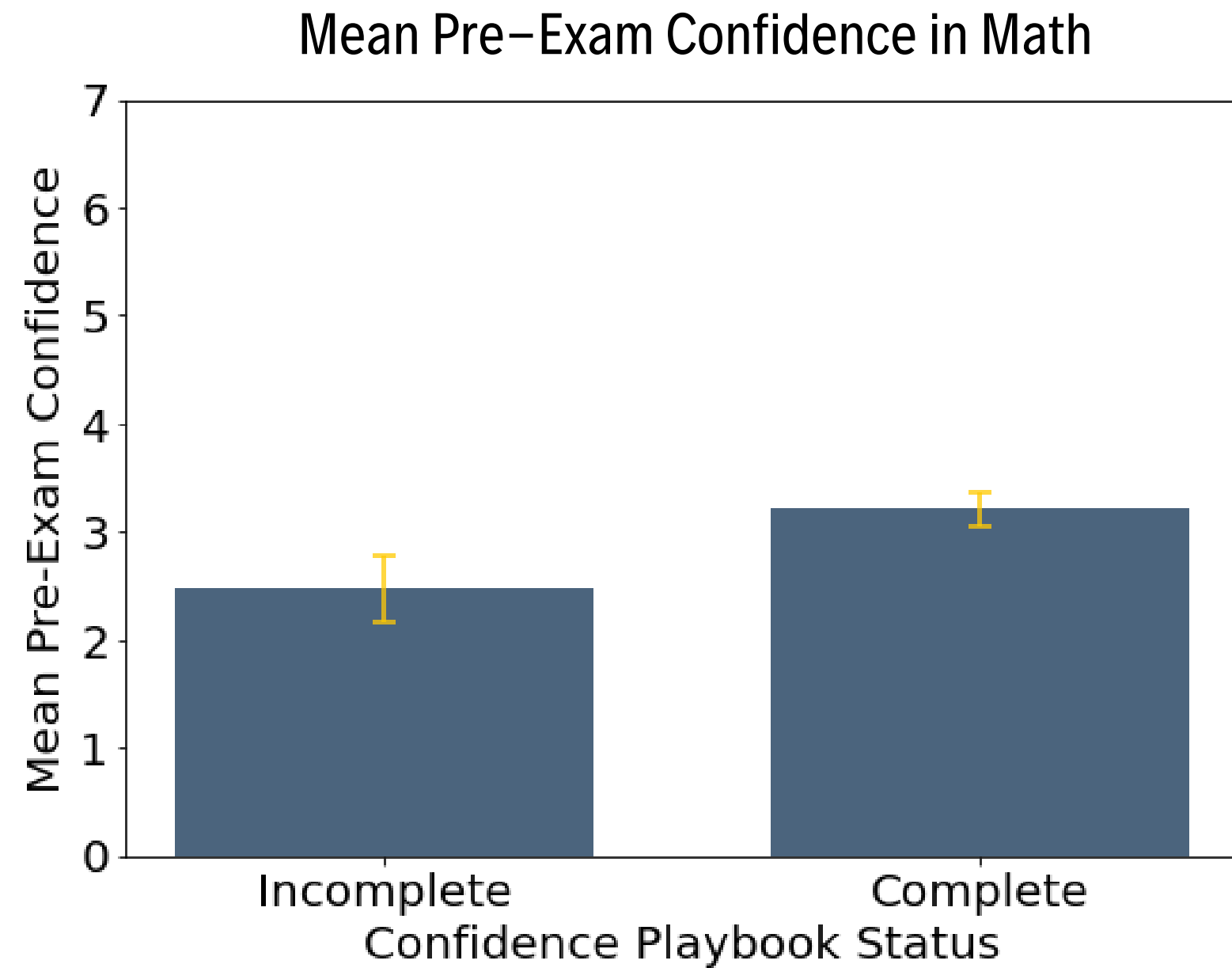
Total course enrollment, number of Confidence Playbook (PB) completions, and PB completion rate by course.

Course	Enrollment	PB Completions	PB Completion (%)
Chemistry (Spring 2024)	687	210	31
Chemistry (Fall 2024)	1796	455	25
Math (Fall 2024)	566	357	63

Of these students, we are interested in those with low confidence and low expected grades (“low” = first quartile)

Course	Incomplete	Complete
Chemistry (Spring 2024)	40	17
Chemistry (Fall 2024)	60	32
Math (Fall 2024)	14	28

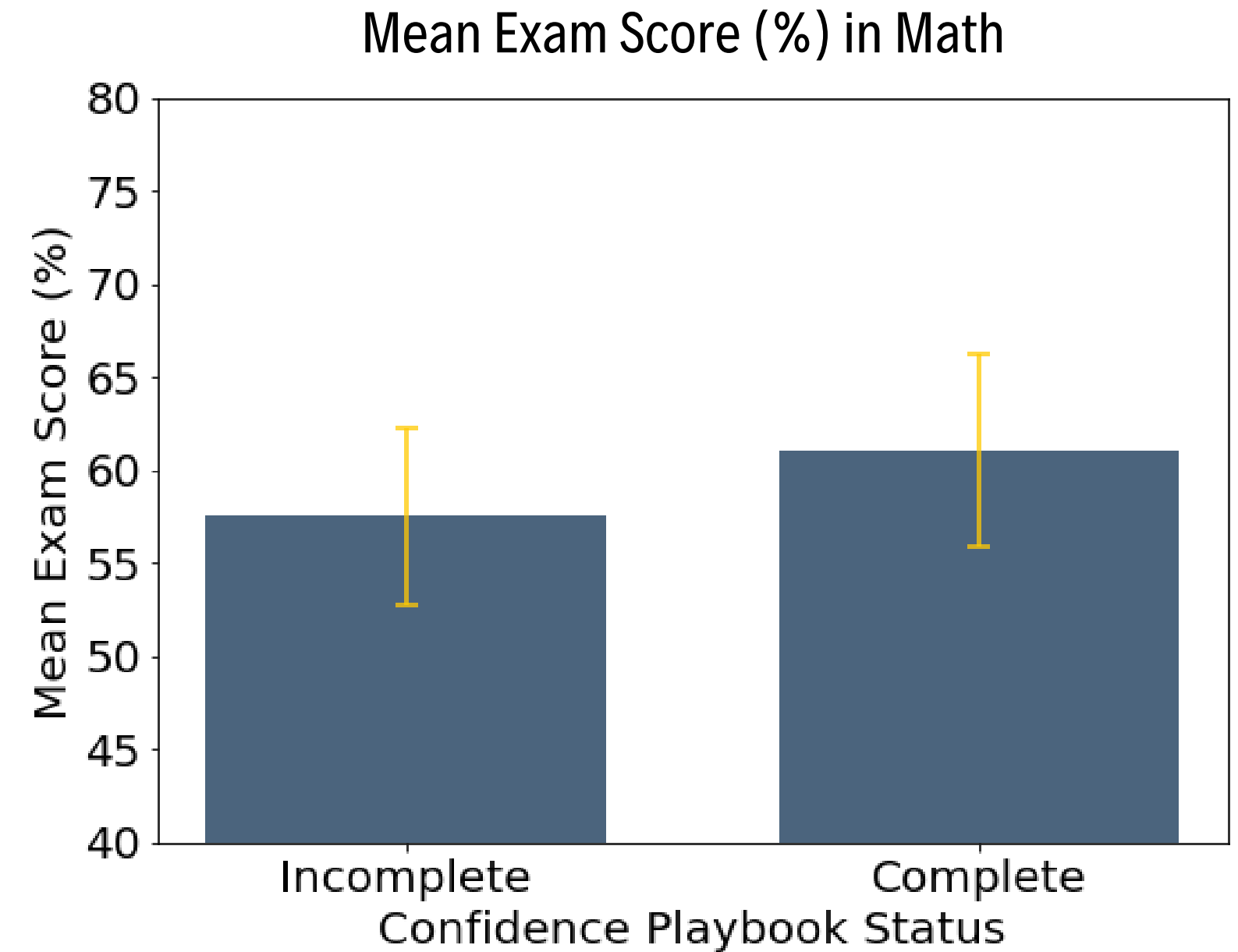
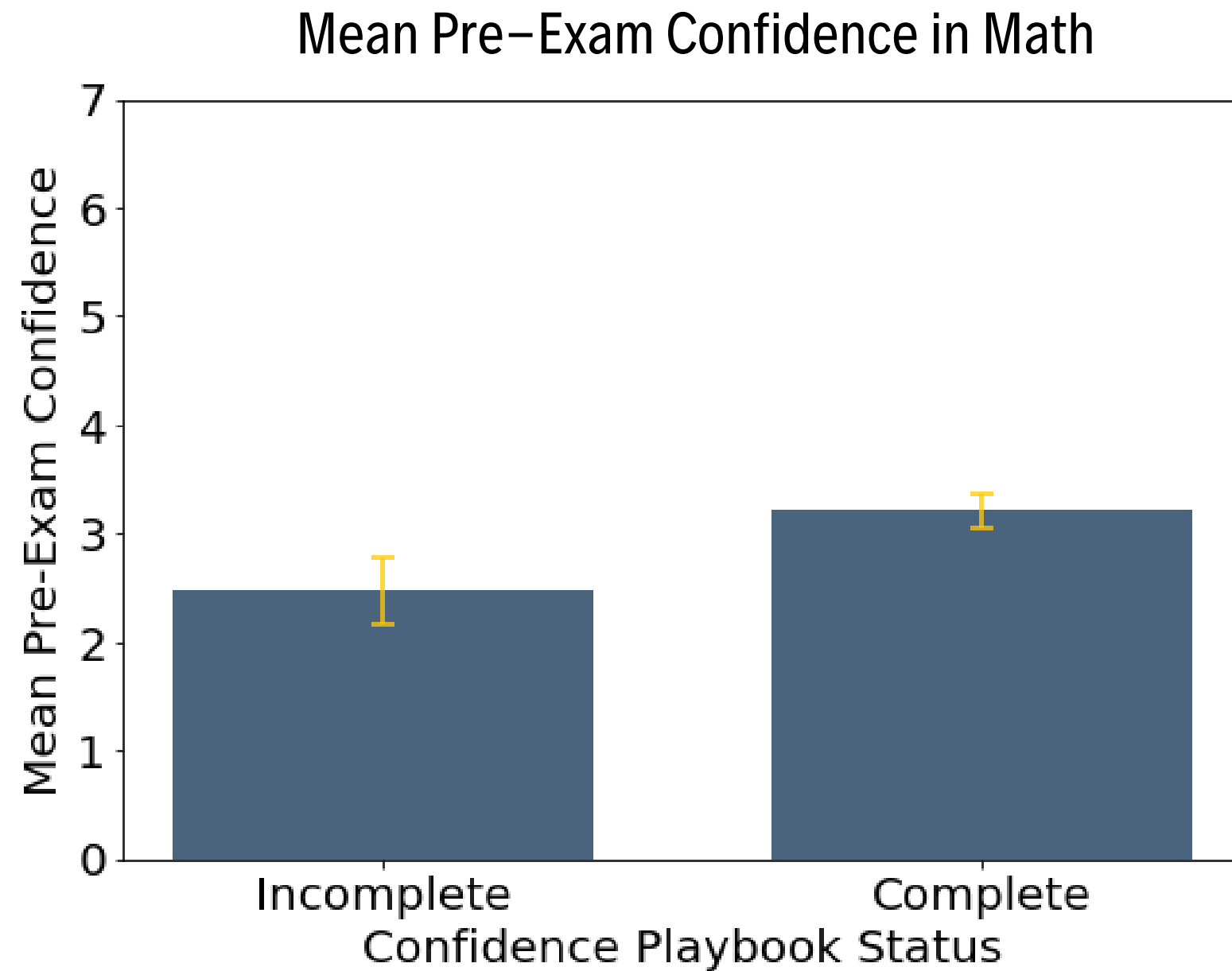
# Playbook completion boosts pre-exam confidence and exam scores in Math



Error bars represent  $\pm 1$  standard error

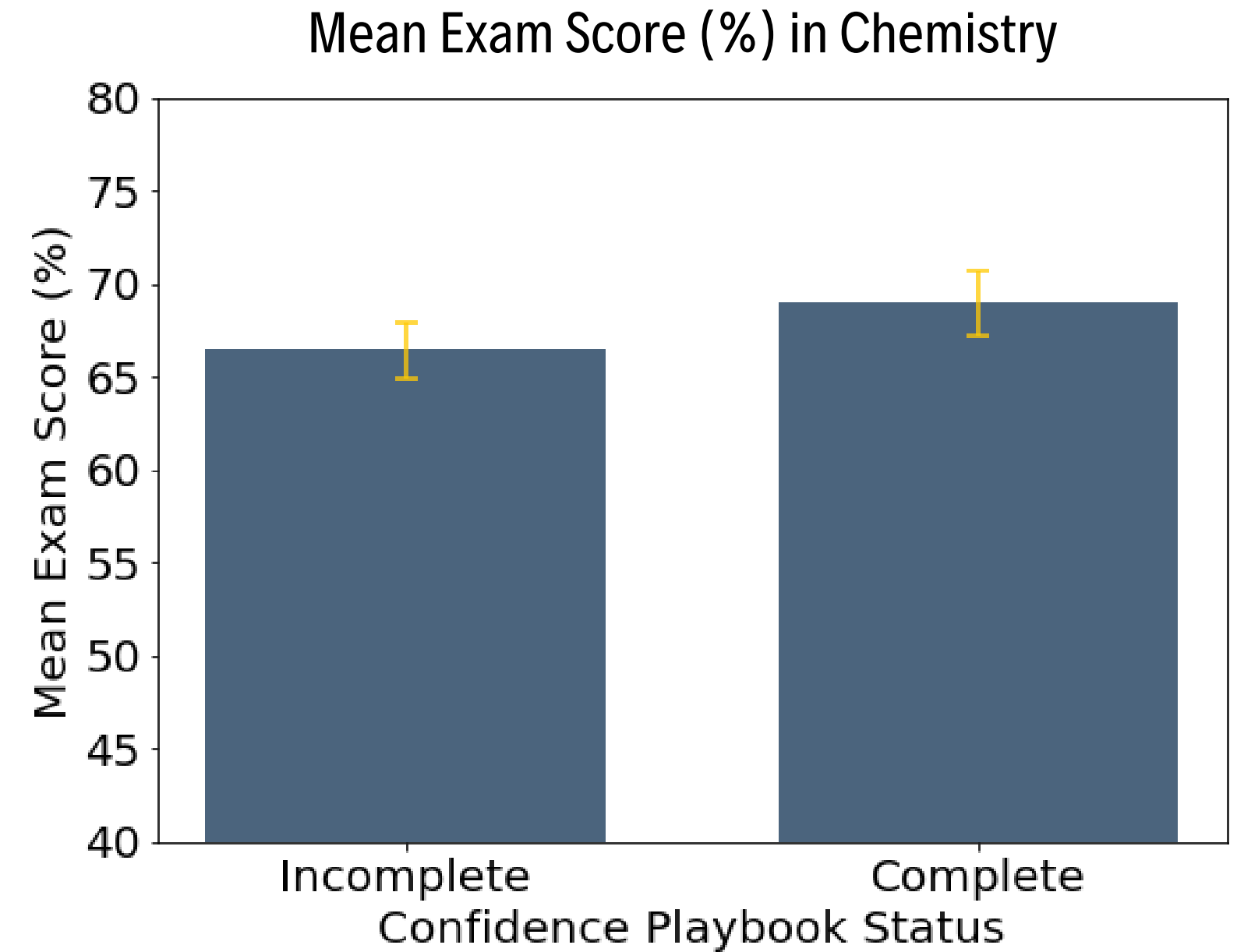
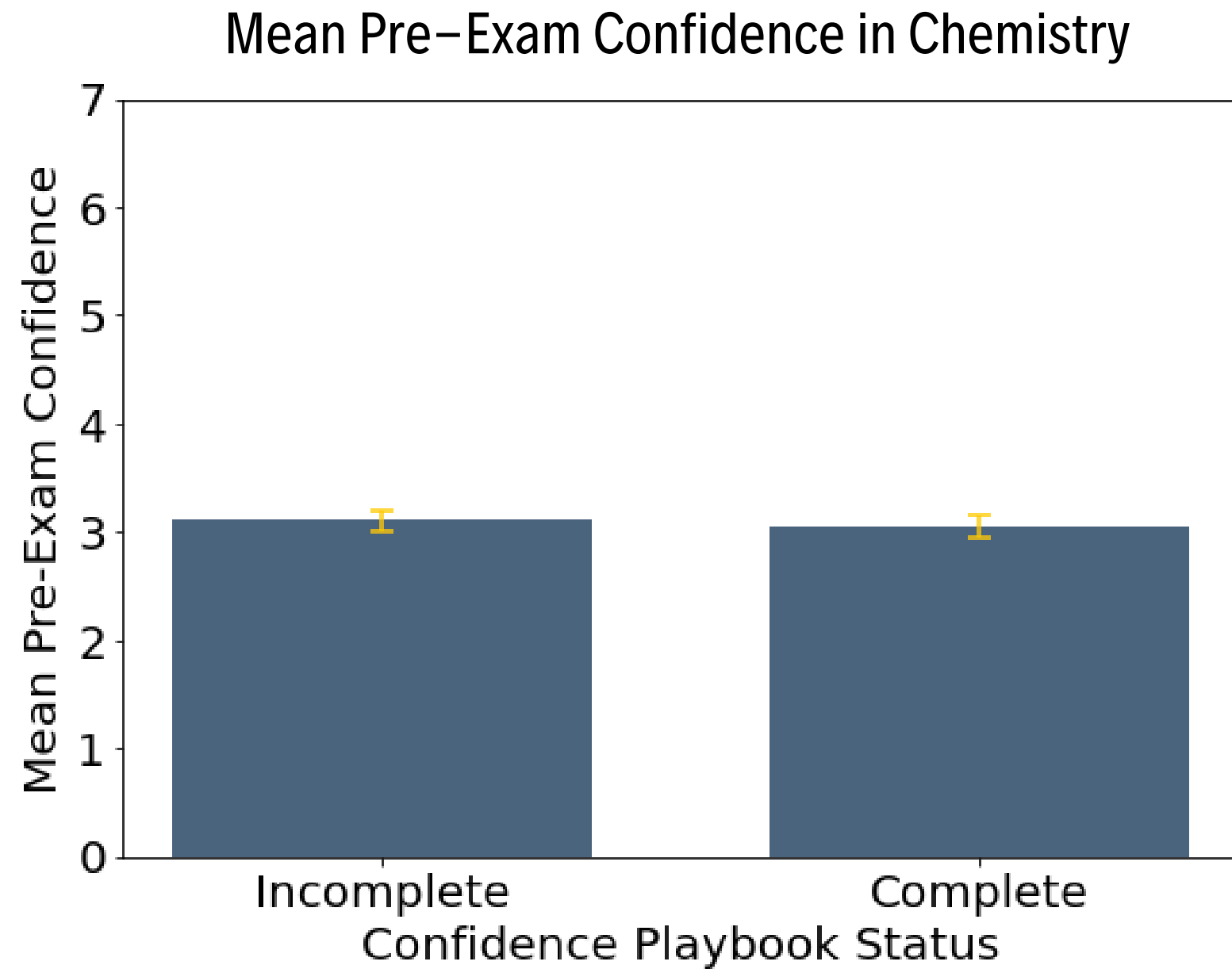


# Playbook completion boosts pre-exam confidence and exam scores in Math



Error bars represent +/- 1 standard error

## ...Not so much in Chemistry



Error bars represent  $\pm 1$  standard error

# What are we seeing?

- **It seems to be working.**
  - Students we worry about the most (low confidence + low predicted performance) are positively impacted by the playbook
  - Students that have high/high are also positively impacted
- **But not for everyone.**
  - What's happening for students in the middle
  - Impact varies between courses, which is really interesting

# Why is Confidence Playbook More Effective in Math?

Student characteristics by course.

	Measure	Chemistry (Fall 2024)	Chemistry (Winter 2024)	Math (Fall 2024)
	Student Count	92	57	42
★	Grade Confidence	4.02	4.09	3.75
	Pre-Exam Confidence	3.16	2.93	3.05
	Grade (expected)	2.85	2.67	2.93
	Grade (earned)	2.94	3.01	2.46
★	Grade Delta	-0.31	-0.26	-0.79
	GPAO	3.25	3.27	3.24
	Exam Score (%)	65.25	68.83	57.95

Students in Chemistry and Math differ by:

- Grade confidence (lower in Math)
- Grade penalty (higher in Math)

# Why is Confidence Playbook More Effective in Math?

Percentage of students listing each reason for their reported grade confidence.

Reason for Confidence		Chemistry (Fall 2024)	Chemistry (Winter 2024)	Math (Fall 2024)	Past experience is unique to Math
	ComparePeers	0.44	0.39	0.33	
	CourseDifficult	0.56	0.55	0.65	
	GradingScheme	0.28	0.28	0.34	
	Instructors	0.11	0.07	0.22	
	Other	0.00	0.02	0.00	
★	PastExperience	0.42	0.25	0.52	
	PeopleSay	0.24	0.38	0.10	
	Reputation	0.23	0.29	0.20	
	Schedule	0.42	0.61	0.46	
	Studying	0.51	0.52	0.40	
	SubjectDifficult	0.72	0.67	0.78	
	TakingTests	0.62	0.67	0.50	
	WillWork	0.11	0.03	0.16	
	WorkAble	0.30	0.40	0.33	

# Why is Confidence Playbook More Effective in Math?

## **Chemistry and Math are differentiated by:**

- Grade confidence (lower in Math)
- Reason for confidence (“Past Experience” is unique to Math)
- Grade penalty (higher in Math)

Suggests that PB may have been more impactful in Math because Math has a larger confidence problem, rooted in past experience

**This is not about Math.**

**This is about the features we found in Math.**

**We don't have all of the answers.**

**Now, we're exploring how confidence plays out in additional courses with  
different “types” of students.**



## **Here's what we do know:**

**Teaching a course where students have preconceived notions?** if students are likely to have had a bad past experience, it's important to help boost their confidence

### **For everyone:**

- Help students form study groups
- Teach students to talk back to their inner critics
- Make the first assignment an easy A
- Create a low test–anxiety environment
- Help students make a plan to overcome their barriers

# Bad preconceived notions?

- Prioritize student confidence
- Address preconceived notions head on, from day one
- Easy-ish A early on

This is significantly impacted by cultural factors and conversations outside of the classroom.

# Study groups

- Create in–class opportunities for students to work together
- Play matchmaker – assign students to groups
- Offer out–of–class group assignments
- Allow students to collaborate on HW

# Inner critic

- Name that we all have an inner critic
- Offer your own example of what an inner critic says to you
- Share what you say back
- Ask what a student's inner critic says
- Prompt them to write a message back

## **An early, easy-ish A**

- Can't be TOO easy or TOO hard, look for the goldilocks of assignments
- Doesn't matter how many points it's worth
- Celebrate how well the class performed

# Low test anxiety environment

Consider:

- Open book tests
- Take home tests
- Untimed tests
- Tests with the option to retake
- Dropping the lowest test score
- Lower stakes tests (more often, worth fewer points)

# Planning to bust barriers

- Name that we all have barriers to feeling confident
- Offer your own example
- Share how you get past it
- Ask what a student's barrier is
- Prompt them to make a plan to beat it:
  - what will they do?
  - what will they do in the next 2 days?

**Yes You Can!**

**Instructors can have a positive impact on student confidence.**

**Especially** in courses where students have  
**lower confidence and tend to underperform.**



**Questions for us?**

**Have ideas for what we should look at next?**

**How have you tackled increasing confidence in your classrooms?**

**Tell us about it:**

**katebarr@umich.edu**

**marmills@umich.edu**

**Want more? Check out:**

Guys, Where's the Love? Tailored Nudges to Boost Confidence

Mar 4, 2025

3:30pm – 4:00pm CT

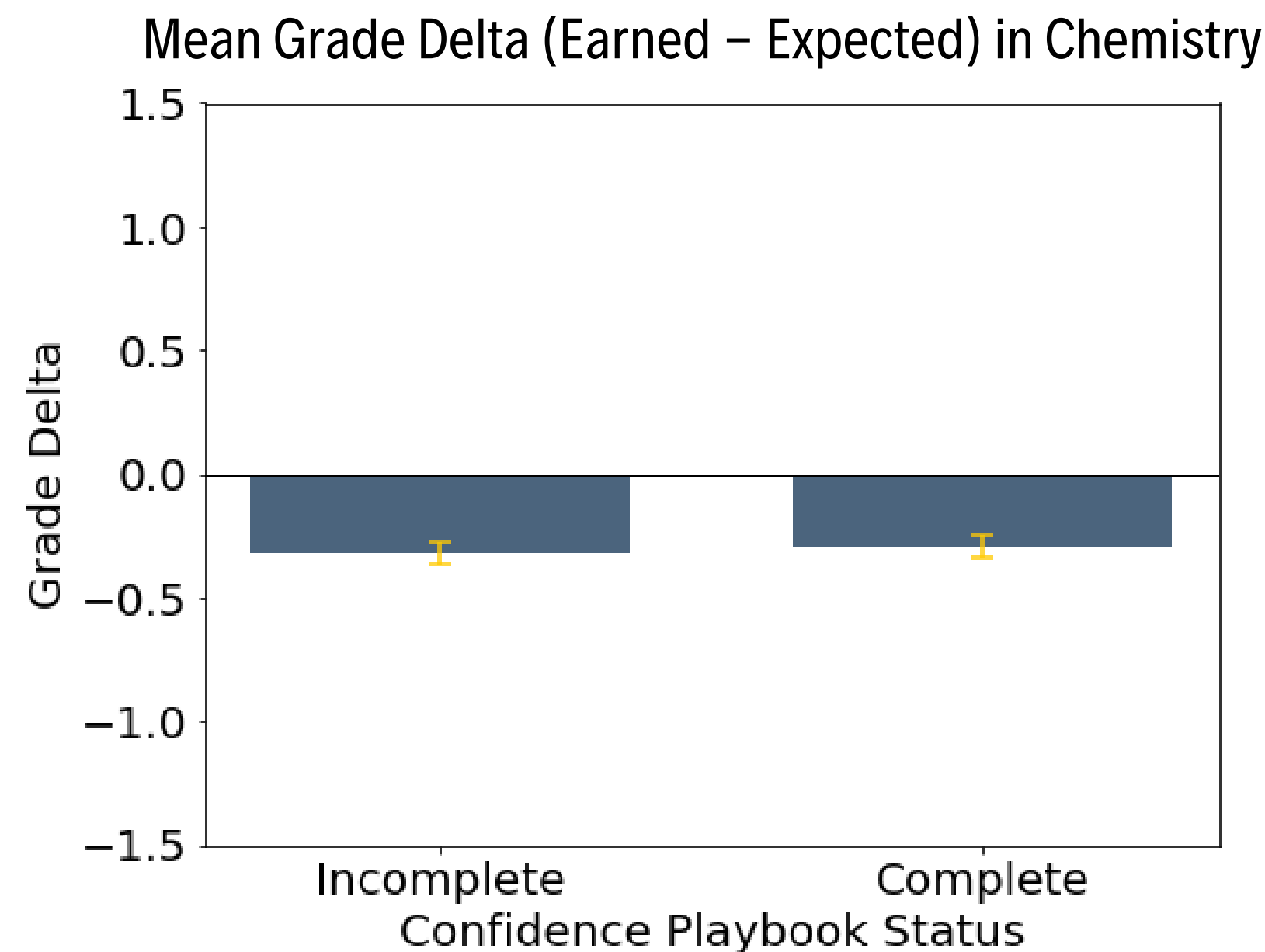
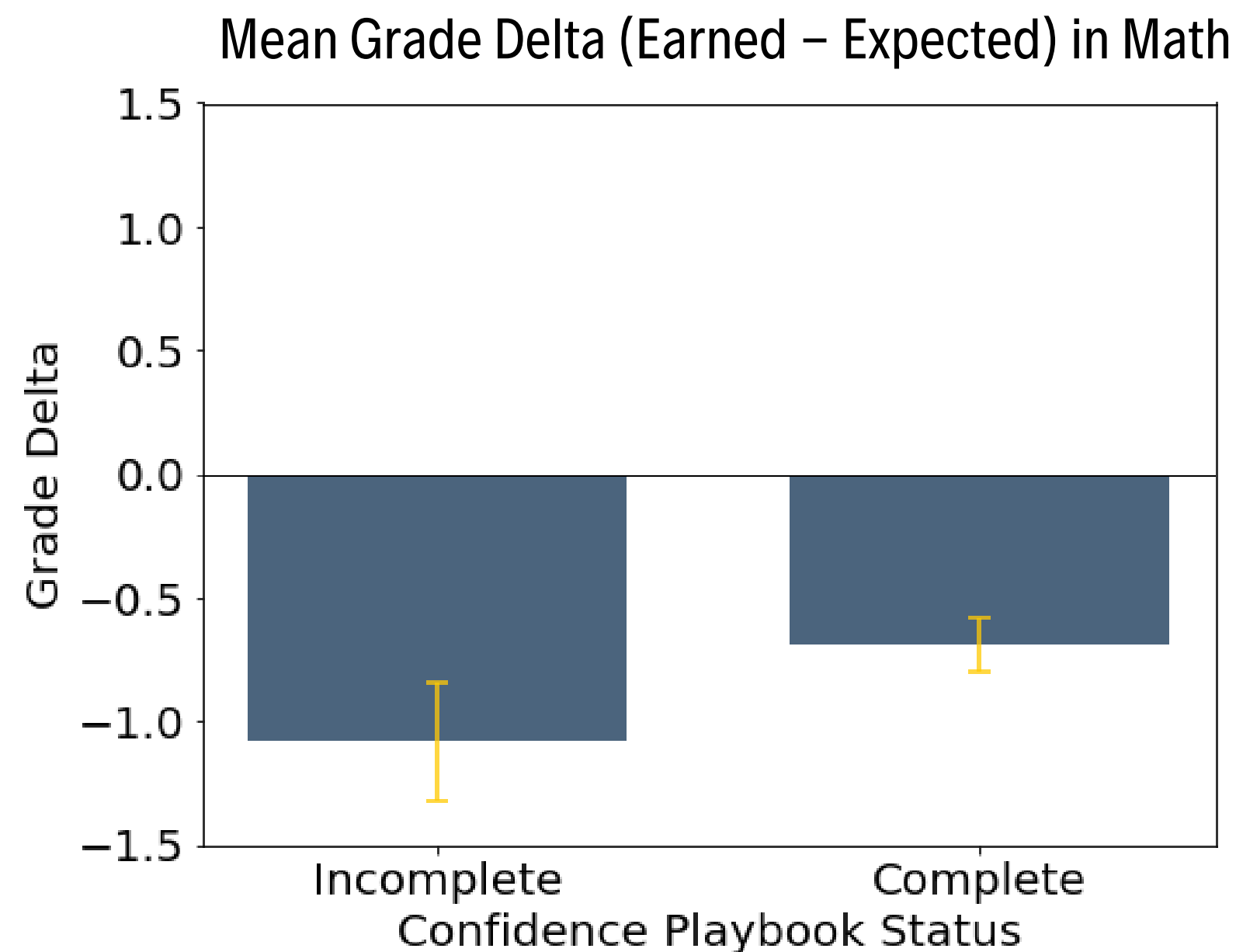
Austin Convention Center / Room 13AB

CPE Credit Code: HE150927

# APPENDIX

**What about over confident students?**

**Math and Chemistry students both underperform expectations given their GPA**  
**... But, in Math, playbook completers underperform less than non-completers**



Error bars represent +/- 1 standard error