

# MicroCommitments: The Effect of Small Commitments on Academic Performance

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# Micro Commitments

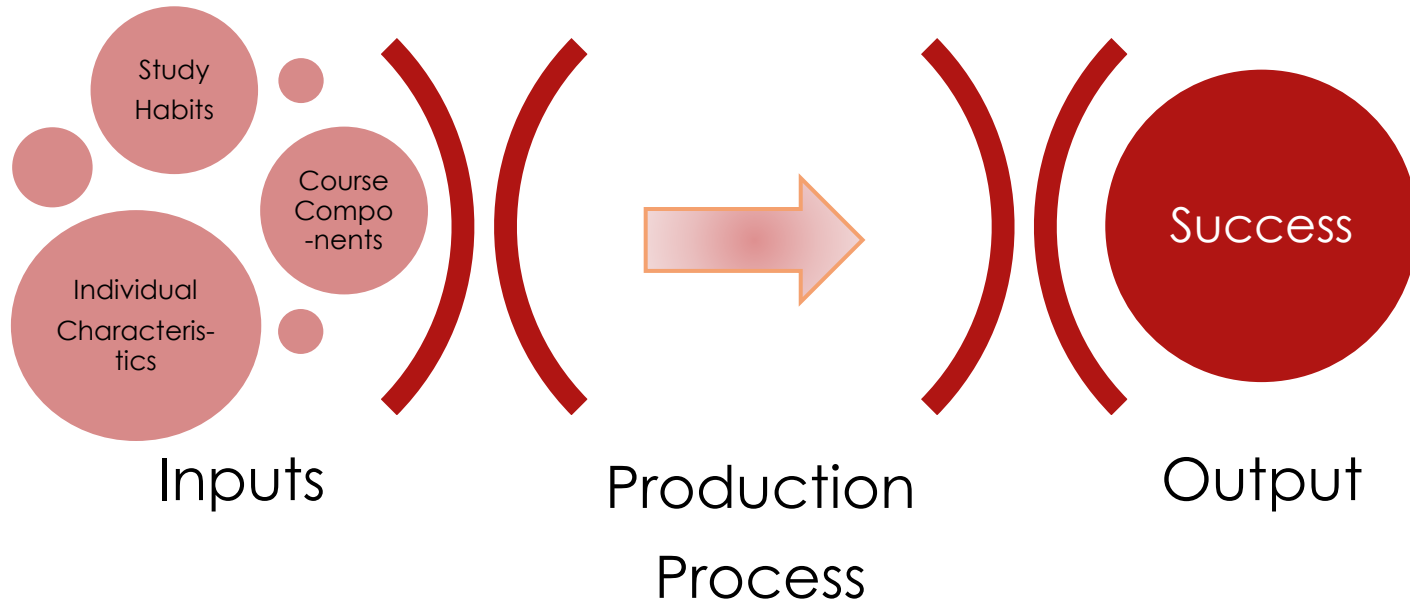
**Goal:** Examine how small commitment devices with social accountability can be used to enhance student academic performance.

**We know:**

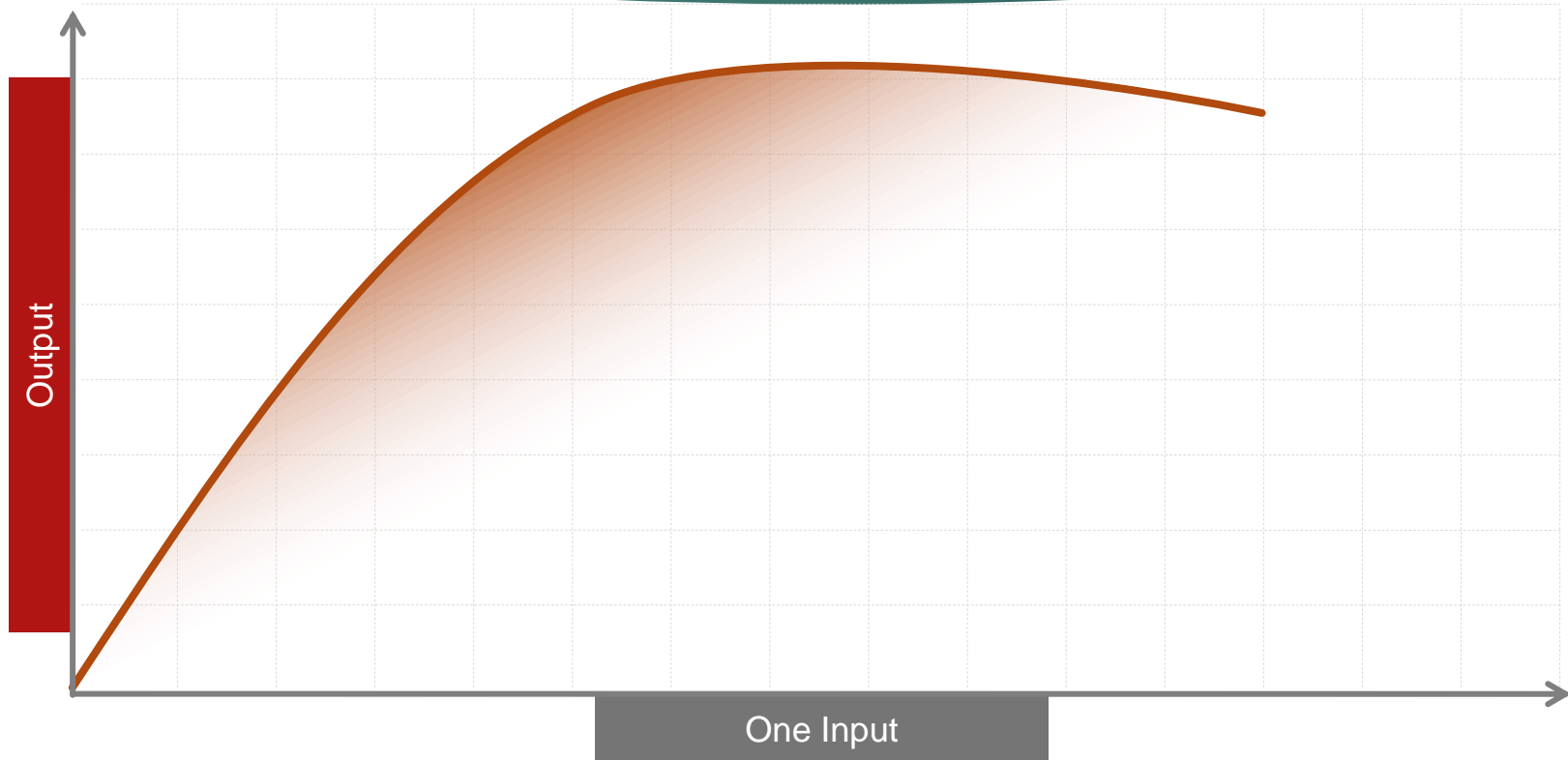
- (1) social accountability makes commitment devices effective,
- (2) commitment devices mitigate procrastination and
- (3) procrastination is negatively correlated with academic performance

**Hypothesis:** Using technology that provides small commitments with a social accountability feature will help students procrastinate less and better maintain engagement with course content yielding improved academic performance.

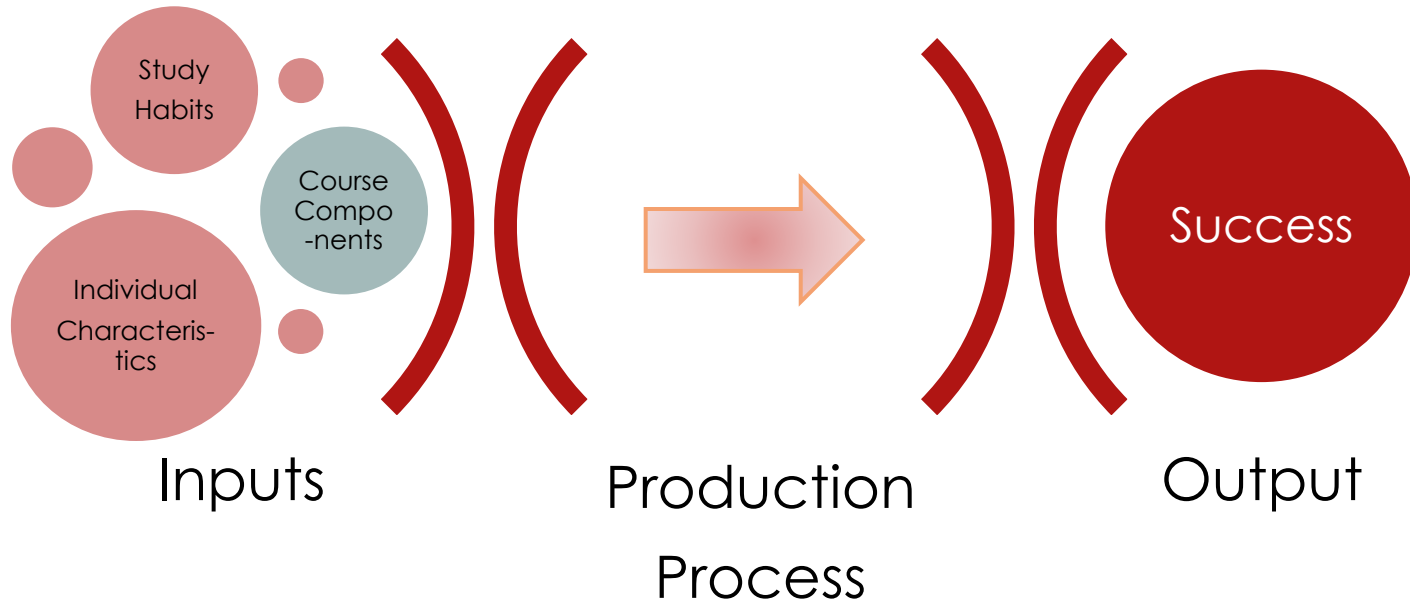
# Making Student Success



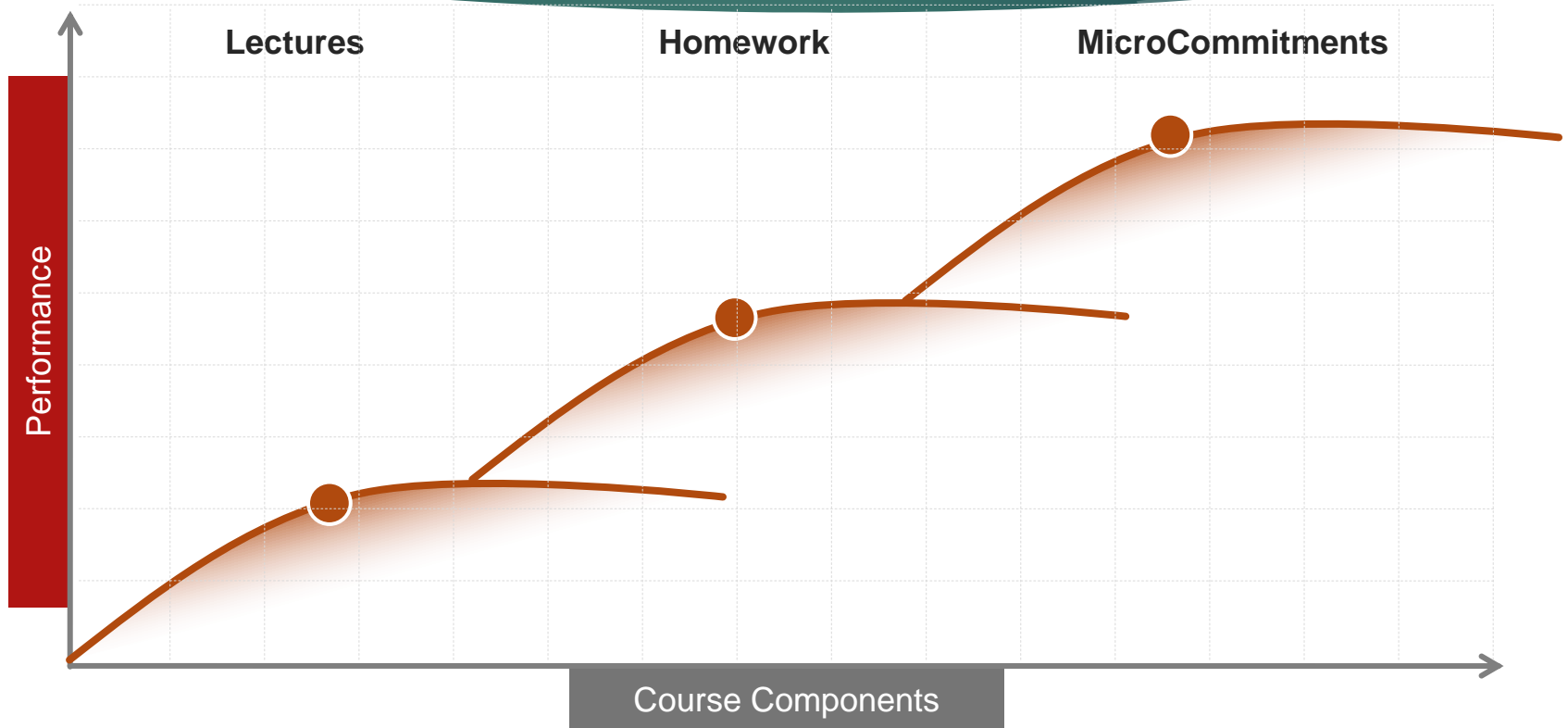
# Student Success Production Function



# Making Student Success



# Student Success Production Function



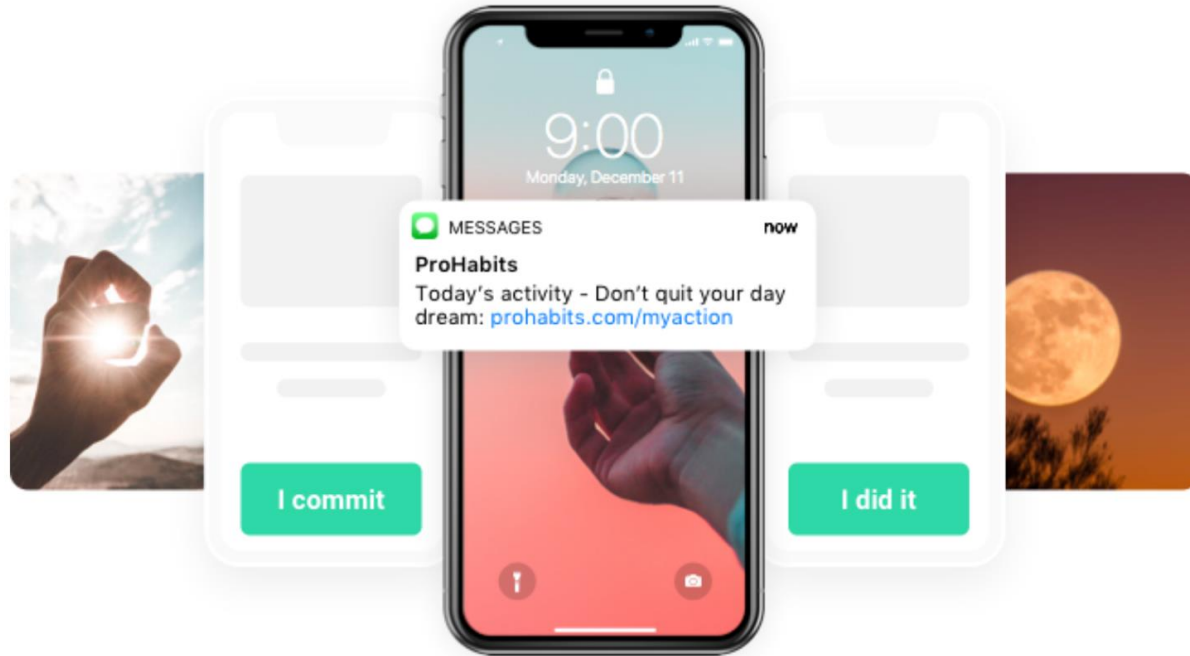
# Commitment Devices

- ▶ Time Inconsistent Preferences
  - ▶ Instant Gratification—Doing Pleasurable Things Too Soon
  - ▶ Procrastination—Doing Onerous Tasks Too Late
- ▶ Problems in the Realm of Student Success
  - ▶ Too Little Studying
  - ▶ Studying Too Late
- ▶ Students Want Help Mitigating Procrastination  
(Ariely & Wertenbroch, 2002)

# Commitment Devices

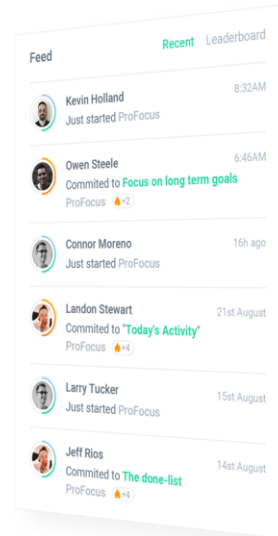
- ▶ Successfully Mitigate Time Inconsistency Problems
  - ▶ No-Drop Prosecution Policies (Aizer & Dal B, 2009)
  - ▶ Christmas Club Accounts, 401Ks, Tuition Savings Accounts
- ▶ Social Accountability Increases Effectiveness
  - ▶ Publicness of Commitment Enhances Weight Loss (Nyer & Dellande, 2002)
  - ▶ Increases Gas and Electricity Conservation
- ▶ Nudging Does Not Affect Academic Performance (Oreopoulos et.al. 2018)

# MicroCommitments Tool

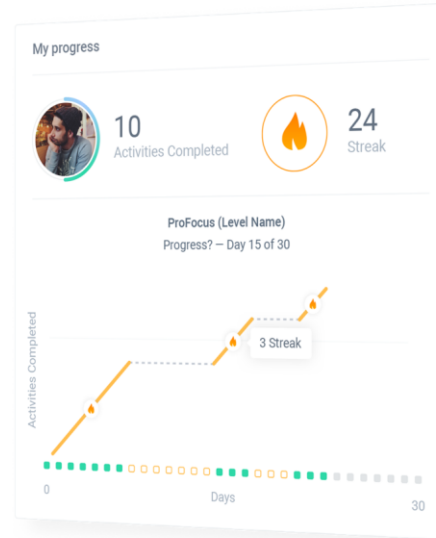


# Social Accountability

## Social



## Personal



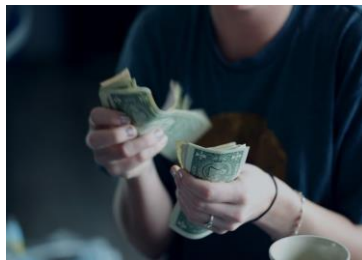
# MicroCommitments Tool



## Risky Business

What are your feelings about risk? Do you enjoy the thrill of uncertainty or despise the unknown? Try to identify two situations in which your risk preferences are different.

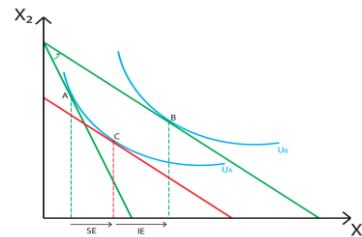
I commit



## Prices

Think about something that you own. If you were to buy the same item, how much would you be willing to pay for it? Now if someone asked to buy your item off of you, how much would you be willing to sell it for?

I commit

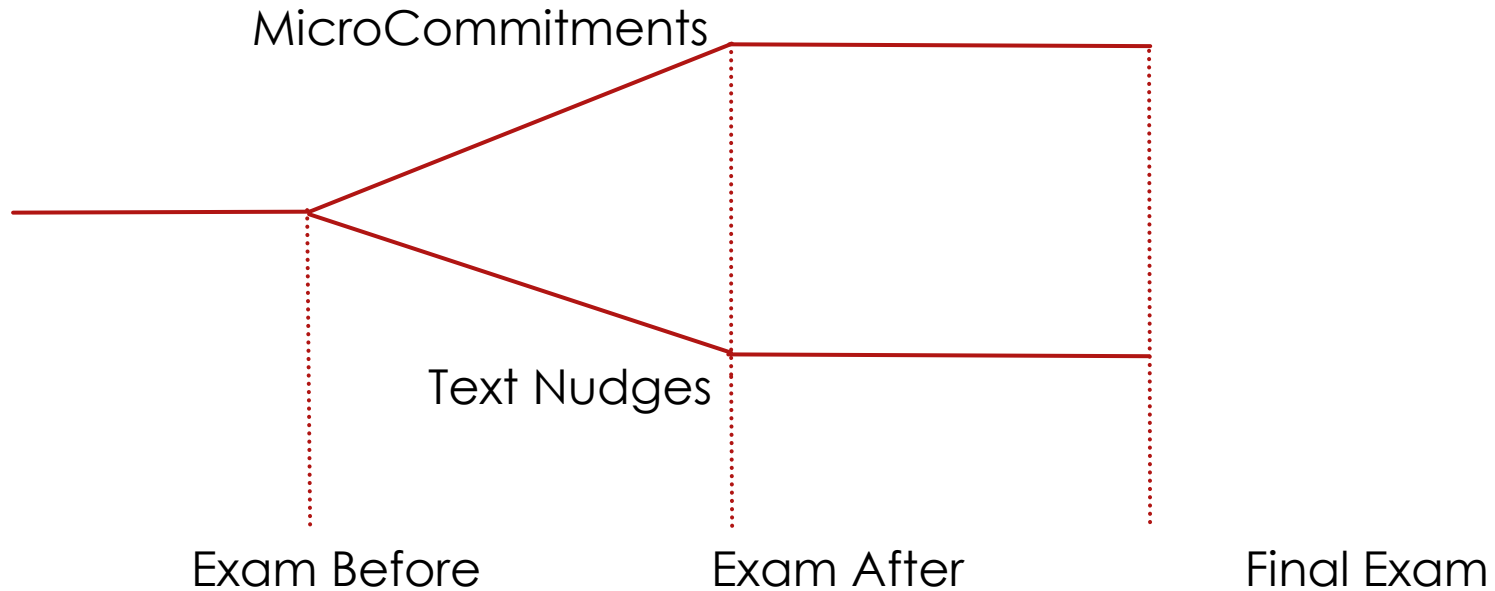


## Decompose Choices

Remember and visualize: The change in the budget line (as a result of a price change) is twofold. FIRST, there is a slope rotation because there is a new price. SECOND, there is a shift because you are "wealthier" or "poorer".

I commit

# The Experiment



# The Experiment

- ▶ Face-to-Face Courses—727 Students in 10 Economics Courses Taught by 4 Professors at the University of Notre Dame
- ▶ Online Course—276 Students in an Economics Course at Florida Atlantic University
- ▶ Hybrid Course—147 Students in an Economics Course at University of Illinois at Urbana-Champaign

# Empirical Analysis

Did the Student Receive  
MicroCommitments?

Instructor and Class

$$Performance_{ic} = \alpha + \beta M_{ic} + \partial X_{ic} + \gamma_c + u_{ic}$$

Student Exam Score  
After Experiment

Academic, Demographic  
and Socioeconomic  
Characteristics

Analyze by:  
Course Type, Student GPA, Student Procrastination and Student Self Efficacy

# Dependent Variables

		Definition	Mean	Std. Dev.
<i>Dependent Variables</i>				
Exam After		Score on exam immediately following experiment, percentage	73.92	26.84
Relative Exam After		$\frac{(\text{Student Exam After Score} - \text{Class Mean Exam After})}{\text{Class Mean Exam After}}$	0.010	0.154

# Explanatory Variables

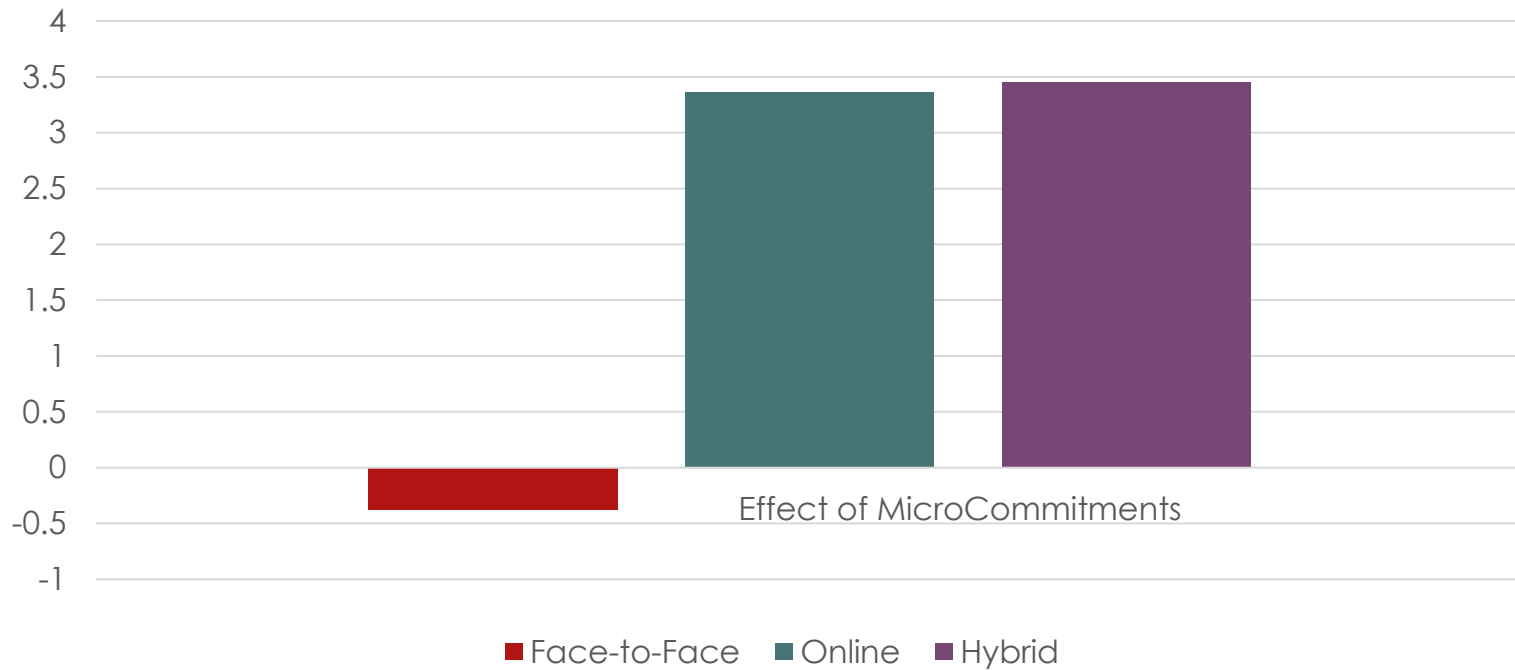
	Definition	Mean	Std. Dev.
MicroCommitments	=1 if the student received the microcommitments with social accountability	0.531	0.499
Exam Before	Percentage score on exam before the experiment	77.73	27.64
Prior Econ	=1 if has taken a college-level micro- or macroeconomic principles course in a prior semester	0.279	0.449
High Perform	=1 if high performing	0.571	0.495
Required	=1 if the course is required for major	0.770	0.465
High Procrastination Type	=1 if High Procrastination type	0.516	0.500
High Efficacy Type	=1 if High Self Efficacy	0.567	0.496
Female	=1 if female	0.469	0.499

# The Results

- ▶ Overall, Students Who Received the MicroCommitments Earned on Average 1.33 Points Higher on Their Next Exam.

	Exam After	Relative Exam After
MicroCommitments	1.329*** (0.470)	0.016** (0.008)

# Effect By Course Type



# The Results

- ▶ The Positive Effect of MicroCommitments Was Larger for Those of a Relatively High Procrastination Type (IPS by Steel, 2010).

Procrastination Type	<u>Exam After</u>		<u>Relative Exam After</u>	
	High	Low	High	Low
MicroCommitments	1.966** (0.778)	1.417* (0.714)	0.003*** (0.011)	-0.003 (0.011)

# The Results

- ▶ The Positive Effect of MicroCommitments Was Larger for Those of a Relatively High Procrastination Type (IPS by Steel, 2010).

Procrastination Type	<u>Exam After</u>		<u>Relative Exam After</u>	
	High	Low	High	Low
MicroCommitments	1.782** (0.877)	0.652 (0.812)	0.035*** (0.011)	-0.003 (0.011)

- ▶ The Positive Effect of MicroCommitments High Self-efficacy Students in Online and Hybrid Courses (MSLQ by Pintrich, Smith, Garcia & McKeachie, 1991).

	<u>Exam After</u>		<u>Relative Exam After</u>	
	High Self-Efficacy	Low Self-Efficacy	High Self-Efficacy	Low Self-Efficacy
MicroCommitments	3.298*** (1.435)	3.294 (2.078)	0.050*** (0.007)	0.034 (0.026)

# Implications

- ▶ MicroCommitments may be an effective substitute for in-class reminders students get in face-to-face courses.
- ▶ MicroCommitments can help mitigate student procrastination.
- ▶ MicroCommitments could mitigate some tradeoffs when face-to-face classes are moved to distance learning.
- ▶ MicroCommitments could help Higher Ed effectively navigate the online learning landscape resulting from COVID-19.

# Extensions

## ▶ Gamification

- ▶ Emphasize Leaderboard
- ▶ Focus on Motivation

## ▶ Gender

- ▶ Does Gender Affect One's Motivation
- ▶ Does Gender of Those on the Leaderboard Affect One's Motivation



The End

		Definition	Mean	Std. Dev.
MicroCommitments		=1 if the student received the microcommitments with social accountability	0.531	0.499
Exam Before		Percentage score on exam before the experiment	77.73	27.64
Prior Econ		=1 if has taken a college-level micro- or macroeconomic principles course in a prior semester	0.279	0.449
High Perform		=1 if high performing	0.571	0.495
Required		=1 if the course is required for major	0.770	0.465
Younger than 20		=1 if age is 19 or less	0.780	0.414
Single		=1 if single	0.939	0.240
No Children		=1 if does not have a child	0.959	0.199
High Weekly Study Hours		=1 if high weekly study hours	0.097	0.296
High Procrastination Type		=1 if High Procrastination type	0.516	0.500
High Efficacy Type		=1 if High Self Efficacy	0.567	0.496
Female		=1 if female	0.469	0.499
Nonwhite		=1 if nonwhite	0.304	0.460
Works 20+ Hours a Week		=1 if student works over 20 hours a week	0.152	0.359
Receives Financial Aid		=1 if student receives financial aid	0.398	0.488
Freshman		=1 if class standing is freshman	0.508	0.500