

Practicing How to Teach With AI: Do simulated tutoring sessions improve tutoring?

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Stanford | SCALE Initiative
Accelerator for Learning

Challenge: Tutor-Pipeline

Tutoring can accelerate learning, but tutors are in short supply amid rising demand (Nickow et al., 2024; Groom-Thomas et al., 2023)

To expand access, programs recruit and train “novice” tutors

How do we help them get better, quickly, and at scale?

Context: On-line SAT program with *volunteer* tutors

Tutor recruitment & training challenges very acute here

Volunteer are mostly students with high SAT scores. They provide a 4-week program (8 sessions) to ~4 students.

How do we help them get better, quickly, and at scale?

Idea: a safe place to practice teaching with AI?

Business-as-usual: Volunteers must complete a self-paced modules (2 hrs.) and a 1-hr synchronous bootcamp

Intervention: Add AI-powered, tutor-training simulator (implemented in the last 6 months*)

Idea: a safe place to practice tutoring with AI?

Example of “Get them talking” simulator

The screenshot shows a virtual tutoring session interface. At the top, a prompt reads: "Prompt: You're leading a brand-new session—practice welcoming them, setting participation norms, and get everyone to talk in the first 5 minutes." The main area displays a grid of participants: "You" (labeled "RP" in a blue circle), Sarah, Fatima, Paula, and William. A circular inset shows a real-time video feed of a young man. On the right, a "Simulation Goals" panel lists: "Set Participation Norms" (Not yet observed), "Everyone Talks" (Observed), and "Pause & Probe" (Observed). Below this is a "Coach Guidance" section with a message from the coach: "Nice job getting Sarah to speak. Remember to pause a bit longer after asking a question. This gives learners time to gather their thoughts and feel more comfortable speaking up." There is a text input field for asking the coach for guidance and a "Chat" section with a message input field. At the bottom, there are buttons for "Mute Microphone", "Show Whiteboard", and "End Simulation".

Tutors interact with “students”, like a live video tutoring session

Students talk back to the tutor in real time, creating “feedback”

Idea: Simulator worked on common issues

Example of “Get them talking” simulator

Prompt: You're leading a brand-new session—practice welcoming them, setting participation norms, and get everyone to talk in the first 5 minutes.

Simulation Goals

- Set Participation Norms Not yet observed
- Everyone Talks Observed
- Pause & Probe Observed

Coach Guidance

Coach - 01:51 PM

Nice job getting Sarah to speak. Remember to pause a bit longer after asking a question. This gives learners time to gather their thoughts and feel more comfortable speaking up.

Ask the coach for guidance...

Chat

No messages yet. Start the conversation!

Type a message...

Mute Microphone Show Whiteboard End Simulation

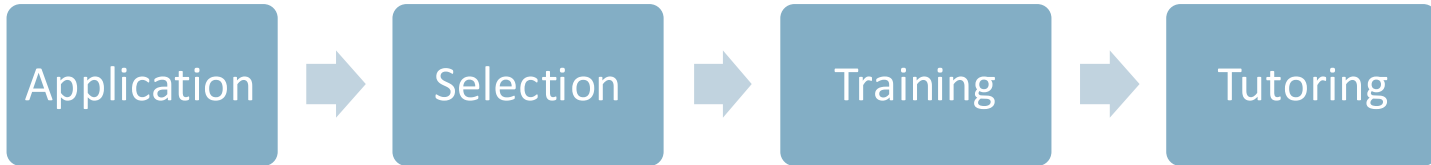
Two basic skills

1. Get students talking
2. Use student names

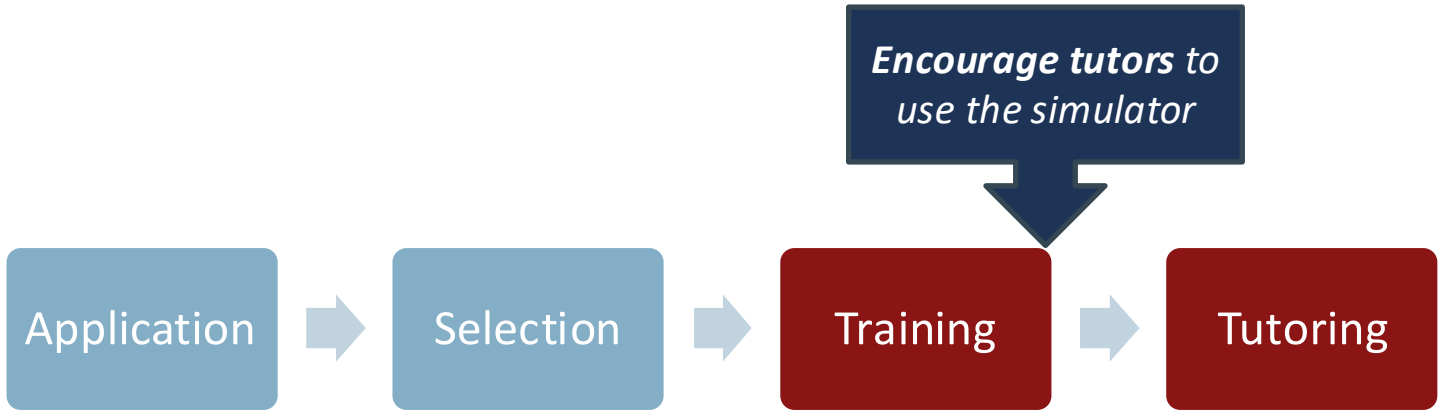
Among others

- Explain concepts
- Interactively teach

Randomizing interventions on *volunteers*...



Randomizing interventions on *volunteers*...



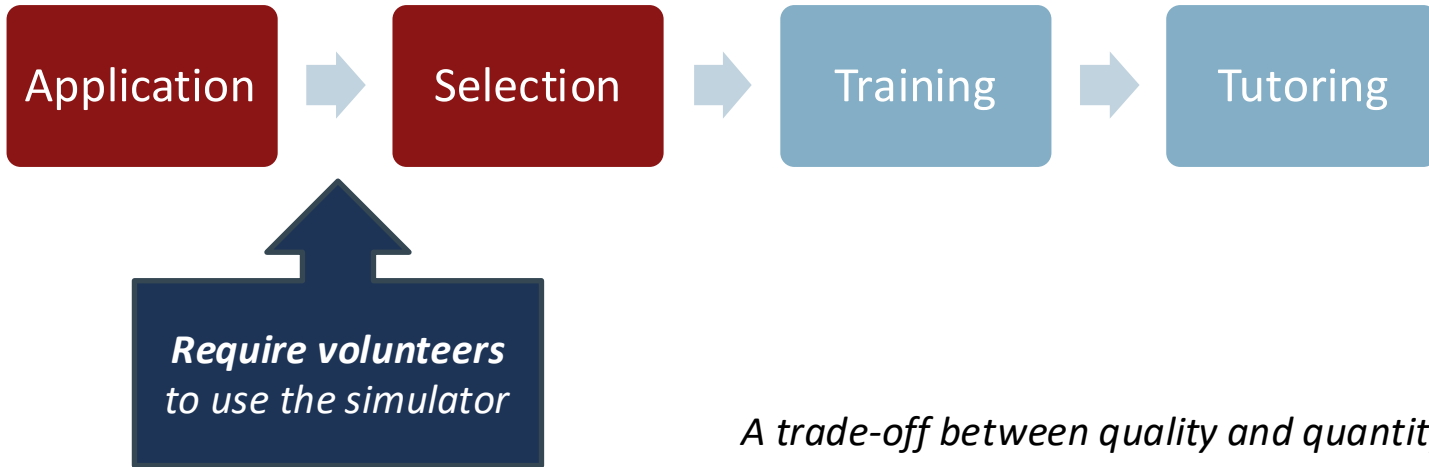
Hypothesis 1

Encouraging simulator use
improves tutor practice

Randomizing interventions on *volunteers*...

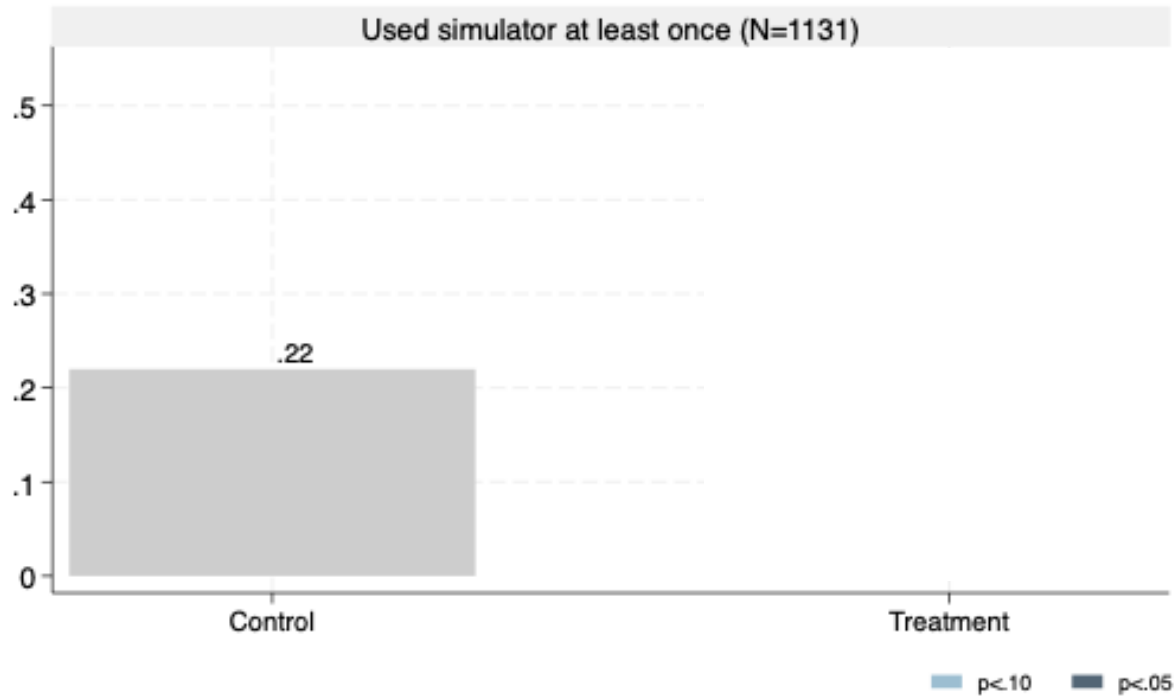
Hypothesis 2

Requiring a simulator adds barriers and *decreases* sign-up

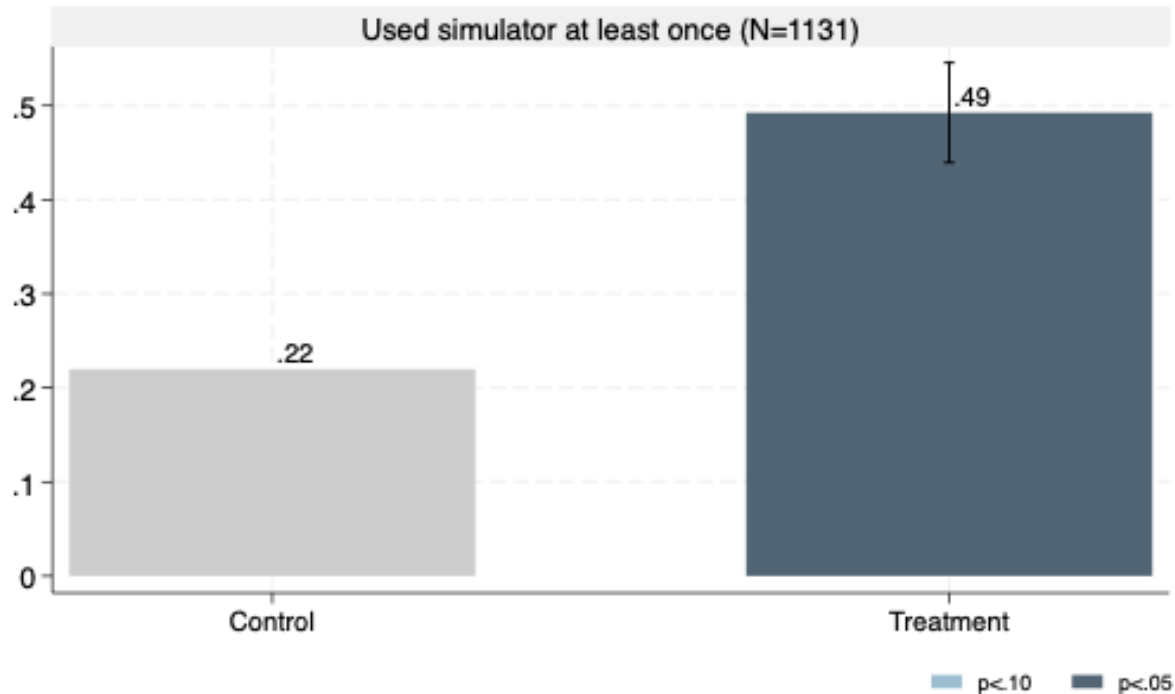


A trade-off between quality and quantity...?

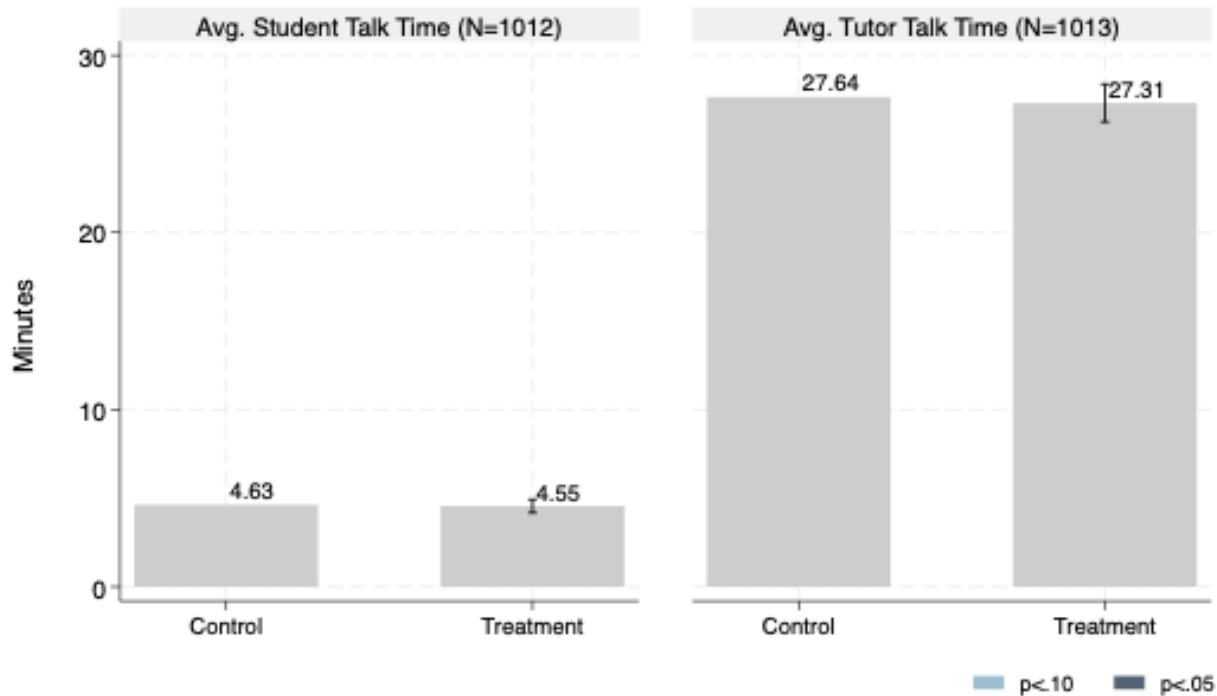
RCT-1: Encouraging tutors to use the simulator



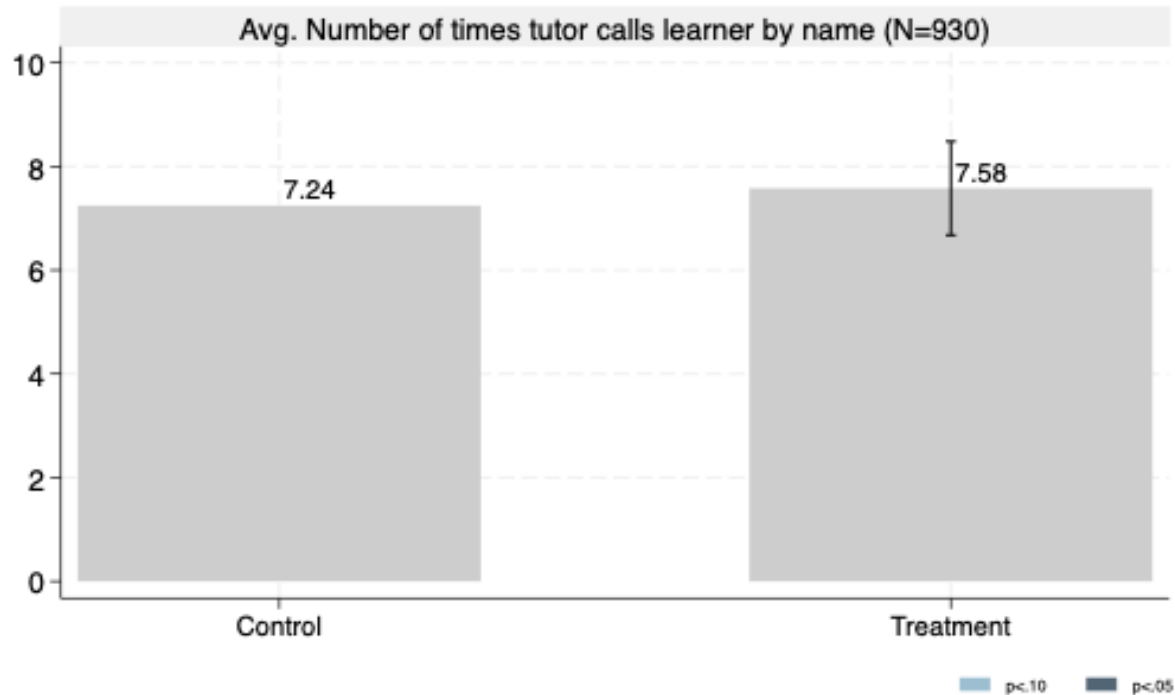
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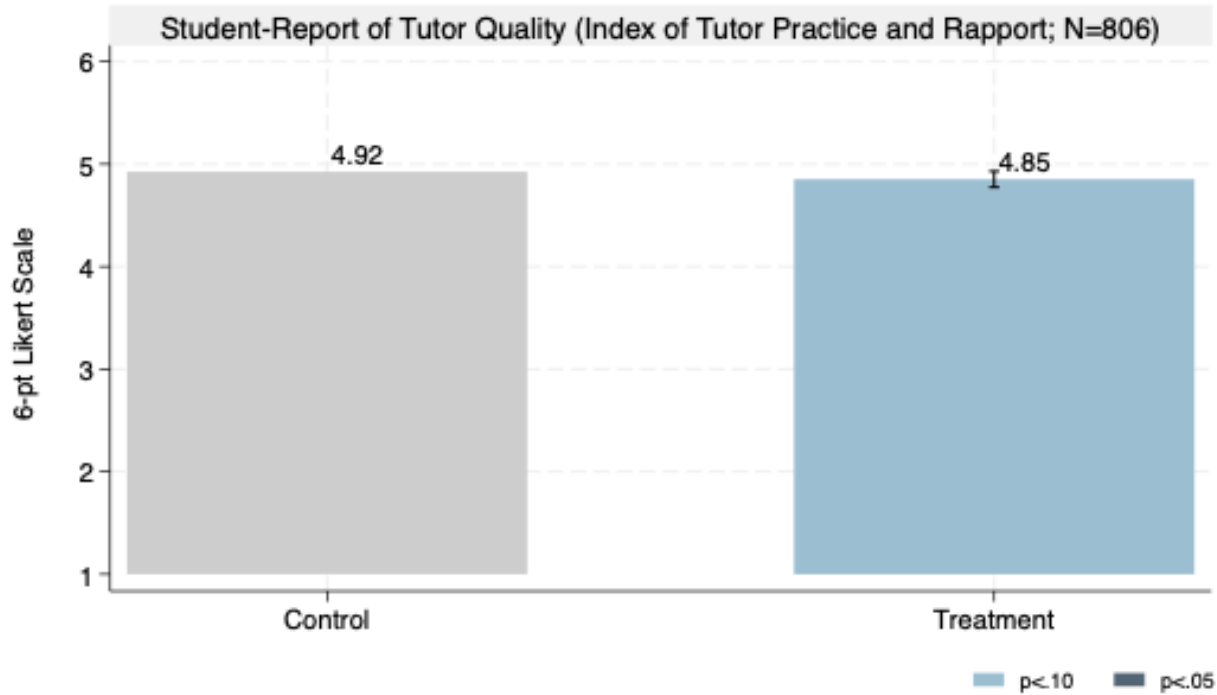
RCT-1: Encouraging tutors to use the simulator



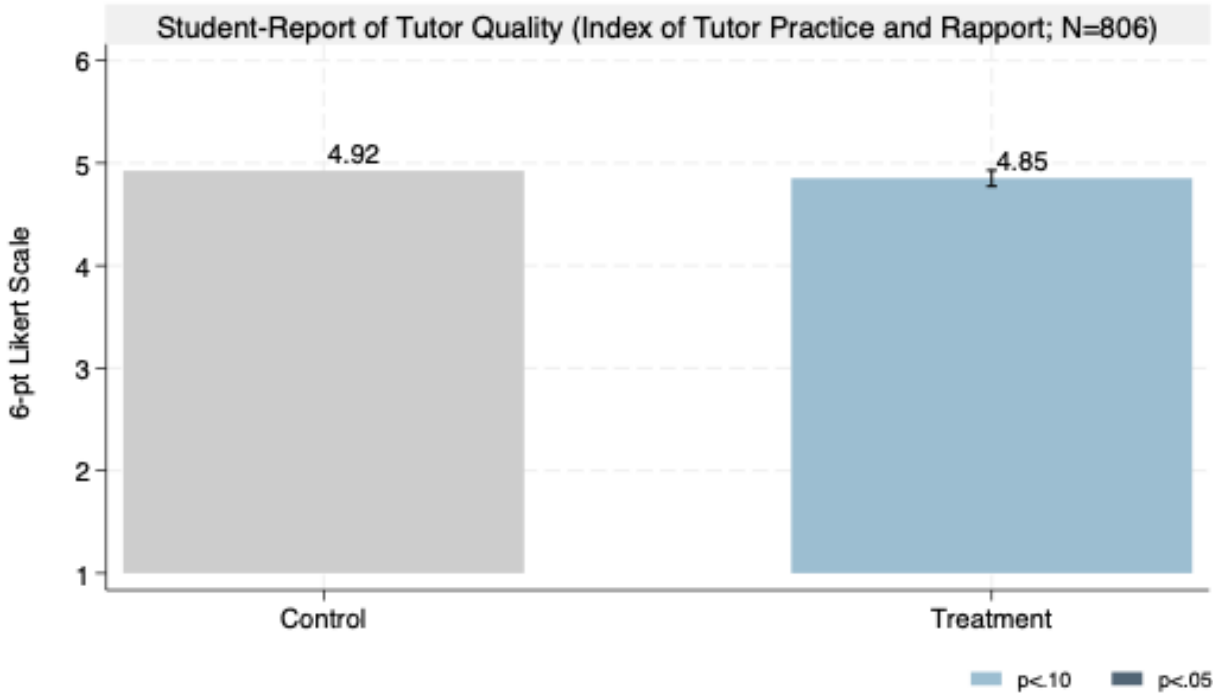
RCT-1: Encouraging tutors to use the simulator



RCT-1: Encouraging tutors to use the simulator



RCT-1: Encouraging tutors to use the simulator



Important Caveat

80% of tutors have at least one student with surveys, but only 40% of students filled out surveys.

Exploratory

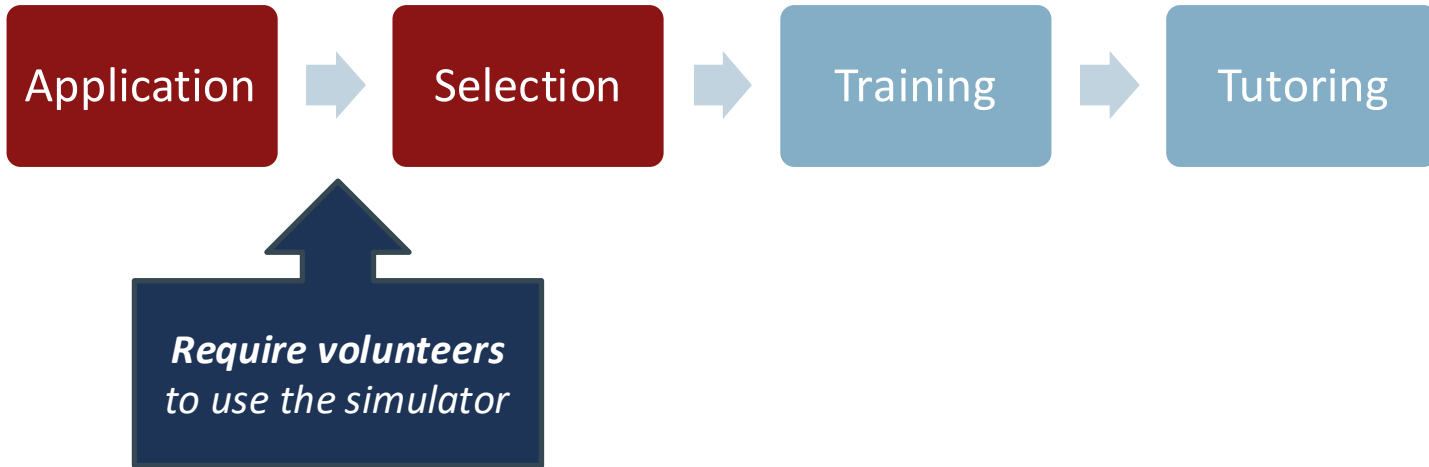
Appears negative on all 4 items

- cares about me
- knows if something bothers me
- explains concepts another way
- encourages discussion

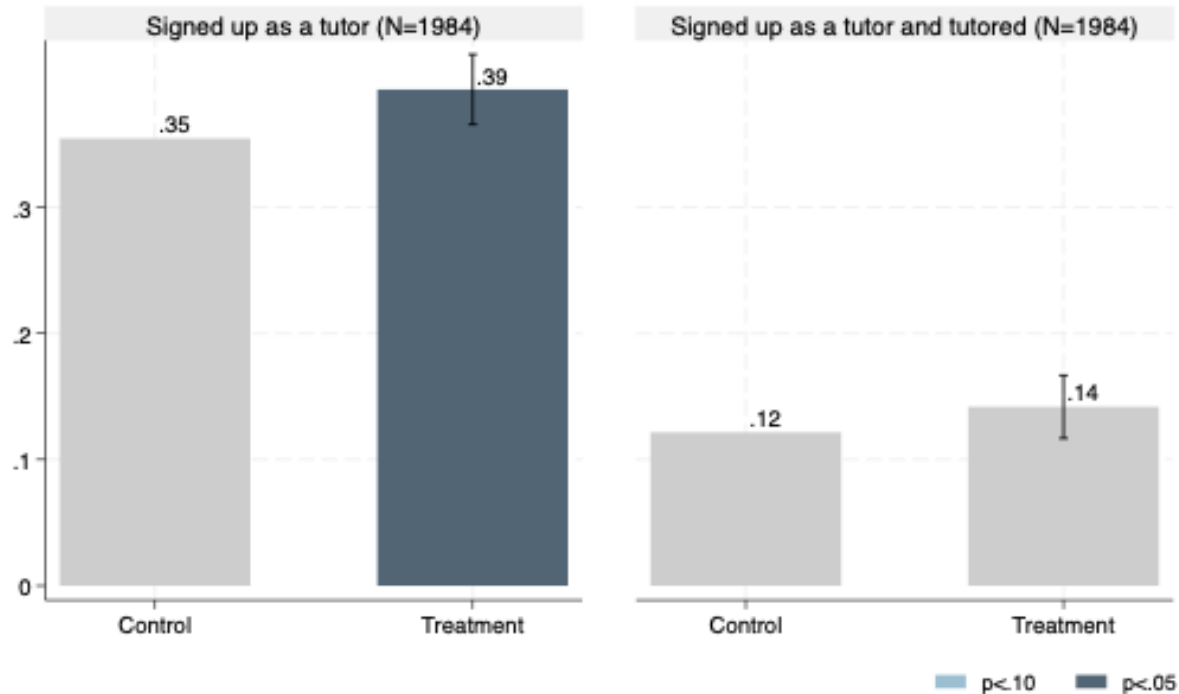
RCT-2: Requiring volunteers to complete simulator

Hypothesis 2

Requiring a simulator adds barriers and *decreases* sign-up



RCT-2: Requiring volunteers to complete simulator



Some cautious takeaways (from preliminary results)

1. Too early to tell if a light-touch AI tutor-training simulator can change tutor practice
2. However, volunteer tutors may **not** be turned away by additional training requirements, **and instead be drawn in**
3. It's possible that an AI simulator can draw in more tutors, but those needing more support than other recruits