

Measuring Human Connections for the AI Era

Conceptual Framing and Examples from Healthcare

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Overview

1. Motivation – Measuring Human Connections

- Concept of “Relational Intelligence”

2. Human Connections

- Why Relationships Matter in Medicine
- Studies from Medical Education
- Measurement with Technology and AI

3. Next Steps

Scenario – Algebra Group Project



Group assigned complex
Algebra Modeling Problem

*"A local community garden
wants to **maximize crop
production** using a limited
budget and available land.*

*Develop a **mathematical
model and recommendation.**"*

Importance of Human Connections (Relationships)



Are Human Connections (Relational Intelligence) Measurable?

Impact of Human Connections

Physician-Patient Interaction for Treatment



Physician A

Technically Excellent
Poor Communication
Lacking Interpersonal
Skills

Physician B

Listens carefully,
builds patient trust,
understand patient
concerns



Trust and Relationships → Patient Outcomes

Other Disciplines

- Business/Entrepreneurial Leadership
- Teacher and Principal Education
- Basic Science / Laboratory Research – Team Science

Ability to Form Human Connections (Relationships) → Relational Intelligence (RQ)

What does RQ
Measure?

What are essential
capacities for
human connection?



How to Measure
RQ?

How do we
effectively measure?



Can RQ
Grow/Develop?

Can RQ change
with feedback
and learning?

Domains of Human “Intelligence” – IQ (Intelligence), EQ (Emotional), RQ (Relational)

IQ

Can you
understand and **solve**
this problem?



EQ

Can you understand
emotions and how
people are **feeling**?



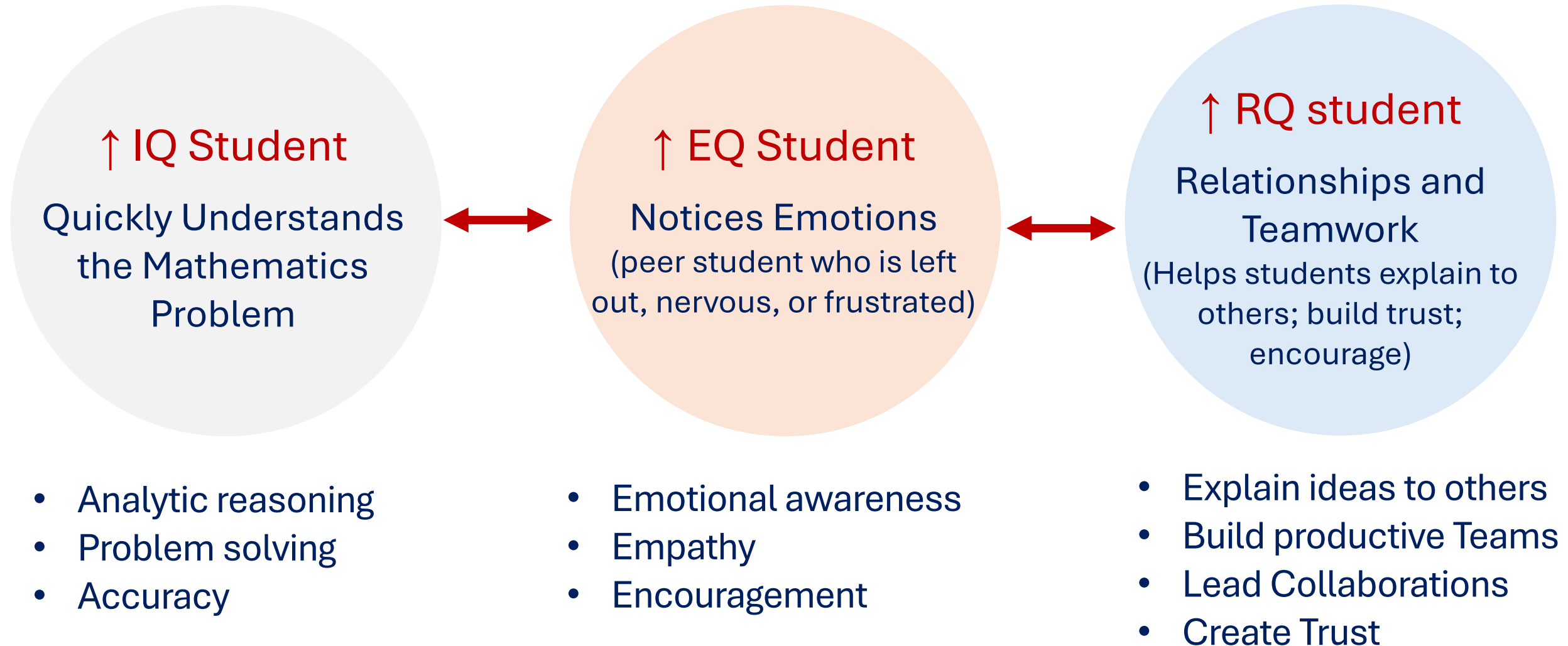
RQ

Can you
build relationships
necessary to solve
problem together?

Evidence from multiple disciplines (medicine, education, business, public health)

- Ability to connect people, build trust, and mobilize collective action → Highest Impact

Domains of Human “Intelligence” – Example from High School Algebra (Group Project)



What is Relational Intelligence (RQ)?

“Individual”
Factors

**Intra-Personal
Foundation**

Self-Awareness
Reflection
Regulation

Relational Infrastructure
Systems, Environments,
Institutions

“Systems”-Level Factors
Impacting Relationships

**Inter-Personal
Engagement**

Empathy
Communication
Trust
Collaboration

**Relational Impact
and Adaptation**

Leadership
Judgment
Adaptability

“Systems”
Level Factors

Relational Intelligence (RQ) in Medical Education



Teaching



Assessing
(Measuring)

Why Medicine?

- Medicine → Most “consequential laboratories” to study human relationships
- Human connections matter in medical training
 - What
 - Why
 - How
- Leverage lessons to other contexts and settings

RQ → Core Skill in Medical Education

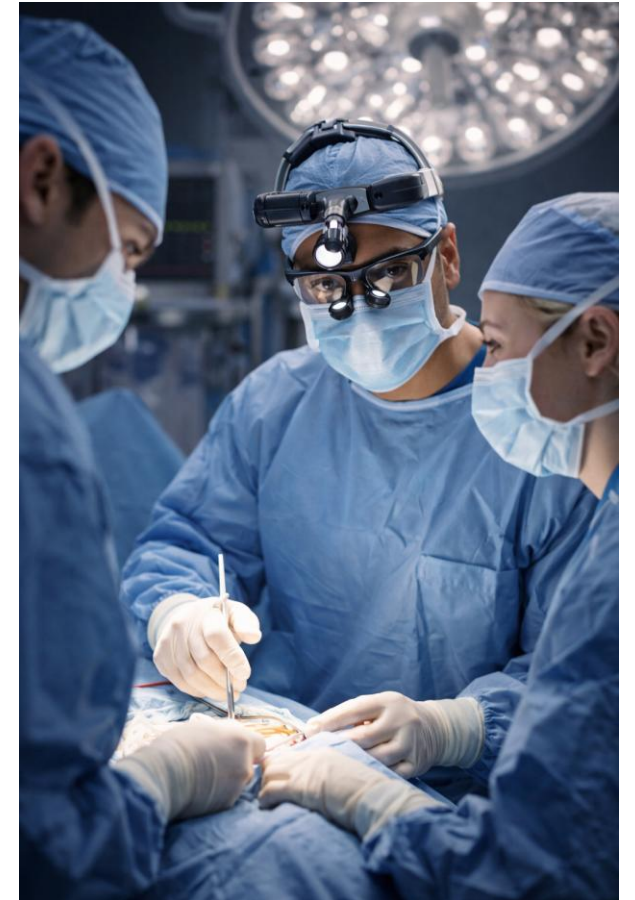
Interpersonal skills in
psychiatrists



Teamwork in
emergency room



Trust built between
patient and surgeon



Medical Competencies

Accrediting Core Competencies (ACGME)

Patient Care

Medical
Knowledge

Practice-Based
Learning
Improvement

Systems-Based
Practice

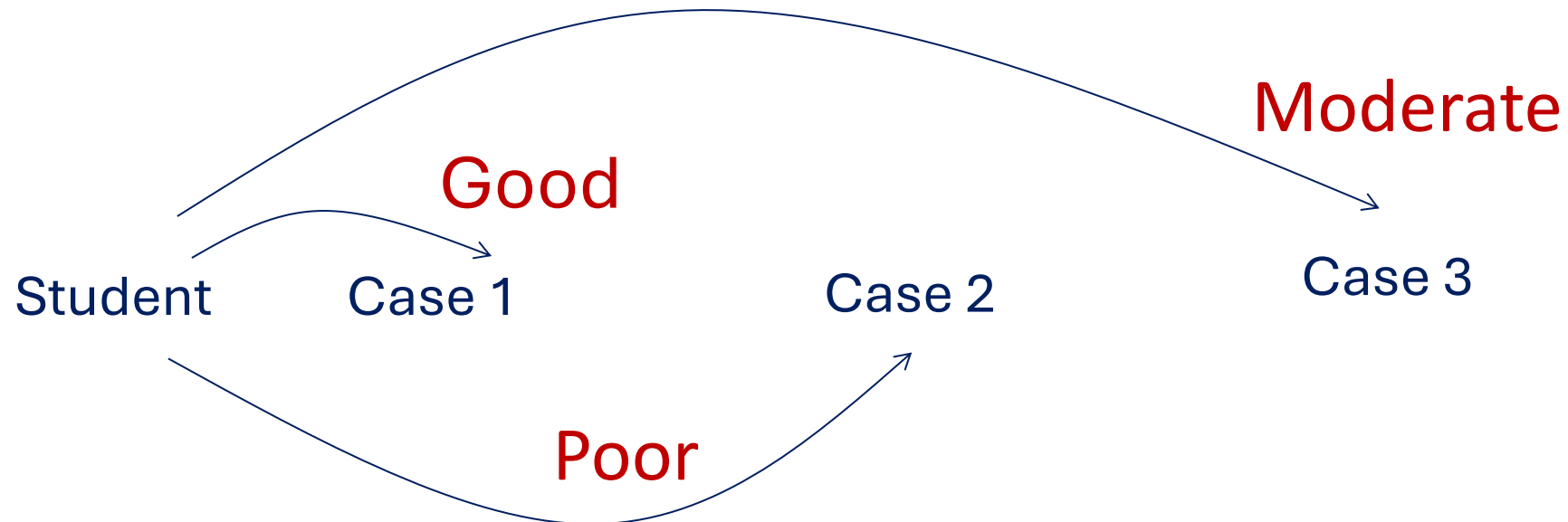
Interpersonal
Communication
Skills

Professionalism



Human Connections → Context Specific

- Difference in trainee performance by case
- Inter-case correlation: $r = 0.10$ to 0.20
- Sampling problem → Need many cases



Measures of Professionalism → Patient Care

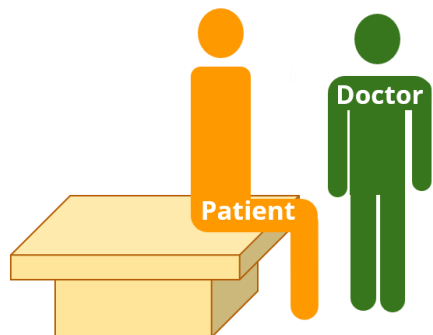
Education “Futures” Index



$$\beta = .34$$

Patient Care
(Future)

Standardized Patient
Encounter



Pediatrics Case Examples – Sampling

- Reticent mother who refuses care
- Explanation of error concerning vaccination of the patient
- Parental pressure to prescribe medication
- Difficulty discharging patient due to parent’s difficult social situation

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**A Meaningful and Actionable Professionalism
Assessment: Validity Evidence for the
Professionalism Mini-Evaluation Exercise (P-MEX)
Across 8 Years** FREE

Nadia M Bajwa, MD, MHPE, PhD ✉, Mathieu R Nendaz, MD, MHPE, Klara M Posfay-Barbe,
MD, MS, Rachel Yudkowsky, MD, MHPE, Yoon Soo Park, PhD [Author Notes](#)

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**Can Professionalism Mini-Evaluation Exercise
Scores Predict Medical Residency Performance?
Validity Evidence Across Five Longitudinal Cohorts**

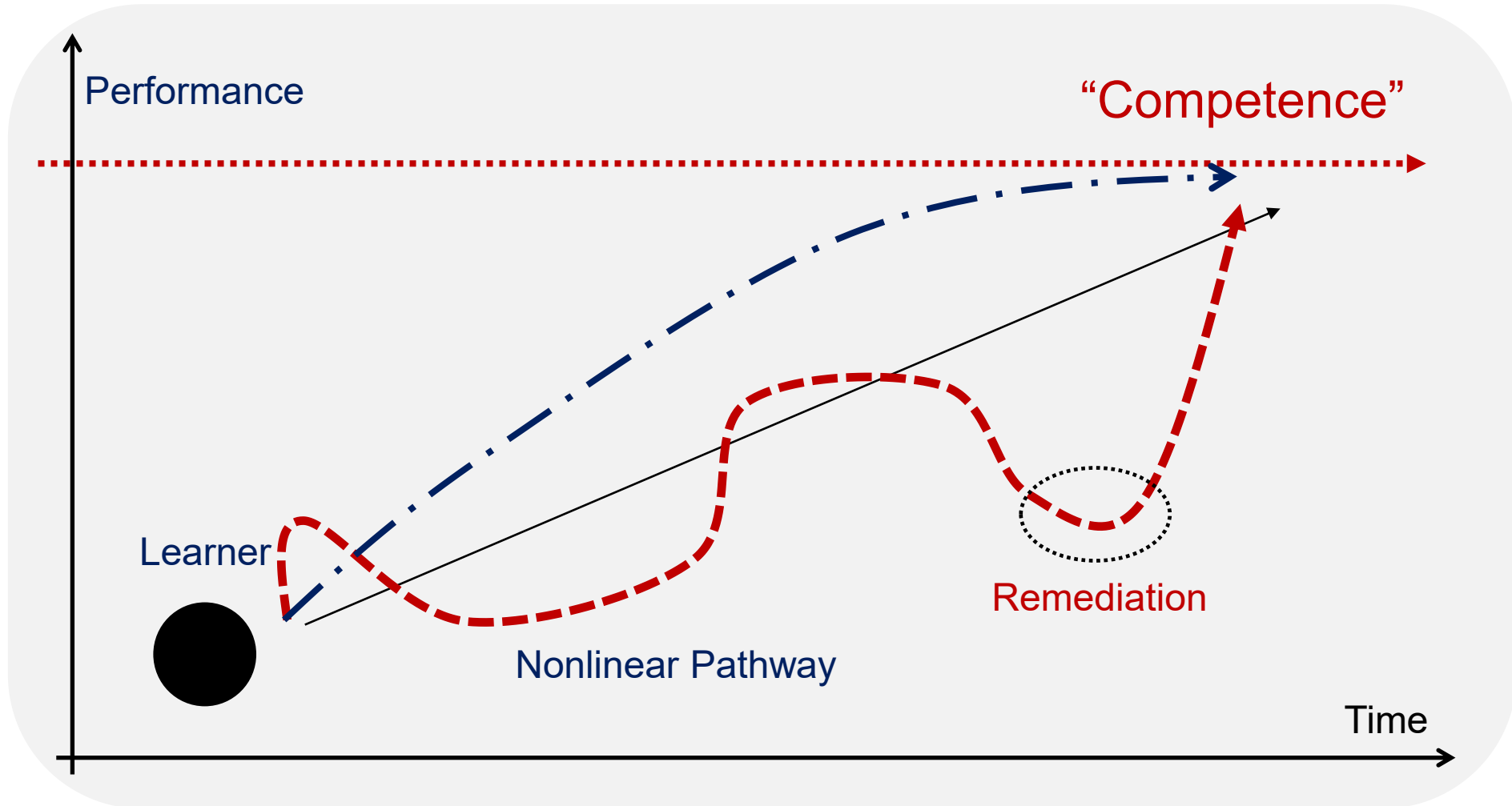
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Nadia M Bajwa, MD, MHPE ✉, Mathieu R Nendaz, MD, MHPE, Annick Galetto-Lacour, MD,
Klara Posfay-Barbe, MD, MS, Rachel Yudkowsky, MD, MHPE, Yoon Soo Park, PhD

Academic Medicine, Volume 94, Issue Supplement_1, November 2019, Pages S57–S63,
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Human Connections – Measurable and Developmental



Family Medicine (US National Data)

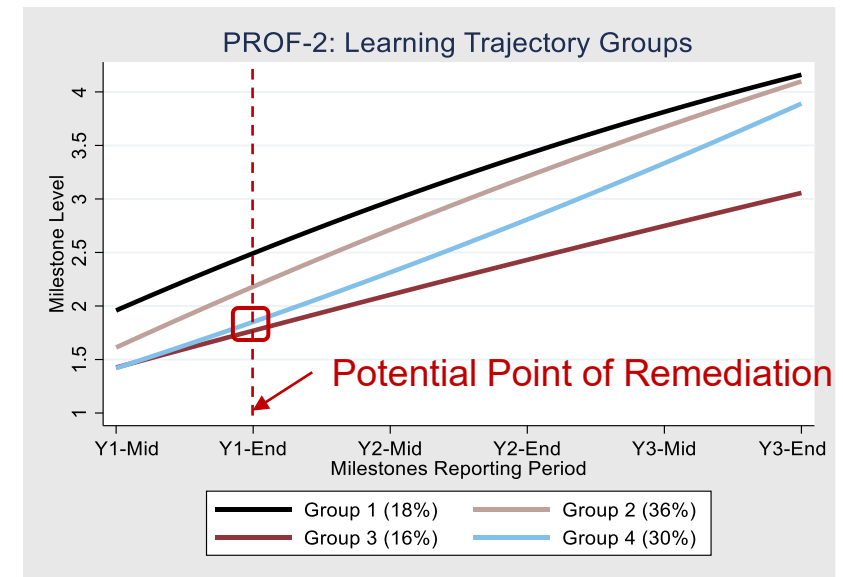
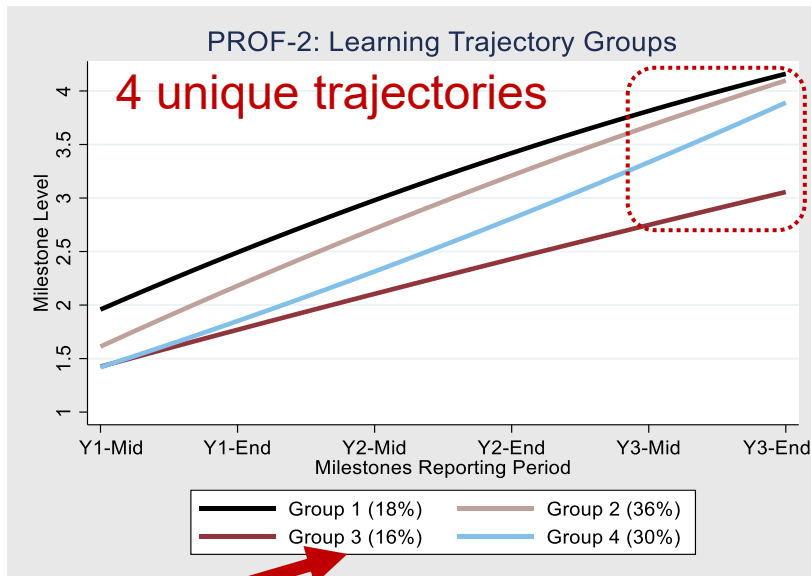
$n = 514$ programs and 3,872 residents

JAMA
Network | **Open**™

Original Investigation | Medical Education

Longitudinal Reliability of Milestones-Based Learning Trajectories in Family Medicine Residents

Yoon Soo Park, PhD; Stanley J. Hamstra, PhD; Kenji Yamazaki, PhD; Eric Holmboe, MD





RQ → Surgery Board Certification

(Years: 2015 – 2021; $n = 1,118$ residents)

ANNALS
OF
SURGERY

ORIGINAL STUDY

The Association of ACGME Milestones with Performance on American Board of Surgery Assessments A National Investigation of Surgical Trainees

Weaver, M. Libby MD^{*}; Carter, Taylor MD[†]; Yamazaki, Kenji PhD[‡]; Hamstra, Stanley J. PhD^{§||}; Holmboe, Eric MD[‡]; Chaer, Rabi
MD[¶]; Park, Yoon Soo PhD[#]; Smith, Brigitte K. MD^{**}

Author Information ☺

Annals of Surgery ():10.1097/SLA.0000000000005998, July 13, 2023. | DOI: 10.1097/SLA.0000000000005998

Comparison (Rowe et al, 2022)
Medical Knowledge (MCQ) –
OR = 1.02

Interpersonal
Communication
Skills
(during training)

OR = 3.83, $P < .001$

American Board of
Surgery (ABS)
Vascular Surgery
Certifying Exam
(in practice)

Technology and AI



Virtual
Learning



Immersive
Technology

AI-Based Measurement – “Virtual Learning”

Clinical Assessment Platform

SIGN IN

Username

Password

Sign in

Don't have an account? [Register here.](#)

Scenarios

Validated Cases ▾ ☒ Subfolders

- Aaron/Erin Lennon**
30yo with Bad Headache and ...
- Blanca**
18yo with Ongoing Fevers
- Carlos Santos**
68yo with Belly Pain and Weig...
- Maria Oliveira**
55yo with Ongoing Back Pain
- Post-survey**
Post-survey
- Pre-survey**
Pre-survey
- Welcome!**
Welcome!

Blanca 18yo with Ongoing Fevers

SCENARIO INTRODUCTION

Blanca, an 18-year-old college student, presents with a month of intermittent fevers and fatigue that have progressed to daily fevers with worsening shortness of breath, chest pain, swelling, and joint pain.

USER INSTRUCTIONS

- Speak to the patient the way you would in a real visit: introduce yourself, ask what's going on, and respond empathetically.
- Ask a few clear questions at a time to gather the story (symptoms, timing, severity, exposures, relevant past history/meds), and clarify anything unclear.
- Don't make up exam findings or test results—if you want them, tell the patient what you'd examine or order and why.

Supervisor Auto Rate →

No supervisor messages yet.

Talk to the virtual patient...

Start voice RT voice English



A Candidate's Experience

1 Select Scenario

2 Interact

3 Get Feedback

The candidate sees ratings against **RELATE competencies** alongside narrative feedback for the whole encounter.

An integrated reflection prompt asks them to articulate their reasoning before they move on.

Professionalism

Patient Care

Medical Knowledge

Practice-Based Learning and Improvement

Systems-Based Practice

Interpersonal and Communication Skills

Uses open-ended questions and pacing that support patient storytelling (avoids s... Score: 4
Rates the learner's question technique and pacing in a sensitive oncology conversation.

- Before we get into that, can you tell me a little bit about what's been going on and how you've been feeling?
- How are you doing with the news so far?

Uses clear visit structure and agenda-setting Score: 3
Rates whether the learner organizes the conversation (agenda, signposting) in a way that supports understanding during a high-stakes results visit.

- I understand you've had some recent testing done and wanted to talk through the results and next steps.
- Before we get into that, can you tell me a little bit about what's been going on and how you've been feeling?

Uses plain language and defines unavoidable medical terms Not yet applicable
Rates whether the learner avoids jargon or explains it clearly (metastatic, stage IV, chemotherapy regimens, molecular testing) in patient-friendly language.
No opportunity for this item yet (per applicability pass).

Summarizes key information and aligns on shared understanding Score: 3
Rates whether the learner provides brief, accurate summaries of what was discussed (diagnosis, goals, next steps) to keep the patient oriented.

- I understand you've had some recent testing done and wanted to talk through the results and next steps.
- Before we get into the medical details, I want to make sure we have the time and space to talk through this properly.

Close

Thank You

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