Kiss your life goodbye.
Anxiety over Time

Normal physiologic range

Thank you
Throughout the research, we were challenged by the feeling that we were not giving the “big names” in Medical Education their due, but we tried to stick to our analysis plan, and let the evidence take us where it would.

-Margaret Sampson, study lead author
MEDLINE Search
Oct 1, 2012-Sept 30, 2013

MESH headings
Medical student
Medical education

“Medical student”
AND
“Medical education”
[All Fields]

Hand search of Table of Contents

Problems saying ‘no’

YES  MAYBE  NO
Effect of Exposure to Good vs Poor Medical Trainee Performance on Attending Physician Ratings of Subsequent Performances

Peter Yeates, MBBS, M ClinEd
Paul O’Neill, MBChB, MD
Karen Mann, PhD
Kevin W. Eva, PhD

Yeates P et al. JAMA 2012; 308:2226-2232
Well below expectations 2.7

Borderline 3

Well above expectations 6

Good performances

Poor performances

1

3

6

Yeates P et al. JAMA 2012; 308:2226-2232

Good performances

Poor performances

Failed 55%

Failed 24%

Yeates P et al. JAMA 2012; 308:2226-2232
Recruiting practicing physicians who are involved in assessment, when we lacked sufficient budget to pay for their time, was a real challenge. Using a web-based approach allowed us to recruit nationwide, increasing the external validity of our study, and was flexible enough to allow busy people to take part. Also, it removed the potential for any researcher-participant interaction. None the less, recruitment was a very large task which simply required persistence.

-Peter Yeates, study lead author

The view from over there: reframing the OSCE through the experience of standardised patient raters

Jennifer L. Johnston, Gerard Lundy, Melissa McCullough & Gerard J Gormley
Constructivist grounded theory

So often assessment is seen as straightforward and unproblematic when, in fact, it’s a highly complex social process with huge implications for learning!

-Jennifer Johnston, study lead author
Our humanity

Enhancing and sustaining empathy in medical students

MOHAMMADREZA HOJAT, DAVID AXELROD, JOHN SPANDORFER & SALVATORE MANGIONE
Jefferson Medical College of Thomas Jefferson University, USA
248 second year students

Phase 1
- Empathy-enhancing video clips (Experimental group)
- Historical documentary (Control group)

Phase 2
- Empathy lecture and discussion (Reinforced group)
- Movie on racism in medicine (Not reinforced)

Becoming a Doctor: A Qualitative Evaluation of Challenges and Opportunities in Medical Student Wellness During the Third Year
Benjamin Kligler, MD, MPH, Brian Linde, MD, and Nadine T. Katz, MD

173 Student essays
4 themes

(1) Facing time constraints

“Sometimes it is necessary to take care of everything else before there is really a chance to take care of oneself…”

“If not anything else, third year has taught me that I have to pay attention to myself and my well-being even more so than before.”


(2) Becoming a role model

“I felt hypocritical at times preaching to patients about the importance of physical activity and eating well when I did not prioritize them myself.”

“...I have started to expect more from myself. After all, if I’m going to expect it from my patients, I might as well be setting a good example myself.”

(3) Experiencing impact of information

“I always figured an in-depth knowledge of disease and its outcomes would lead a physician to...take extra care with regard to their wellness. However, this is generally as far from reality as can be imagined.”

“Going through clerkships and having patients both younger and older than myself...has made me realize that my own life span is not infinite, and they way I live now is very important.”


(4) Developing a professional identity

“Physicians who show up for work despite being sick...are applauded for their dedication. Those who do not show up are thought to be weak and their quality as a physician is questioned...”

“I’m very proud of the instances where I’ve acknowledged that I wasn’t able to do something...Although it may look bad in the moment, I’ve found that people will eventually show respect for it.

“We’ve begun to **humanize** medicine for the patients. I believe that we should start **humanizing** it for the **health care providers.**”

- Medical student


I thought there would be much more consistent alienation, depression, anger--but although these things were there, there was an amazing amount of strength and awareness of the great potential for learning and personal transformation that comes with the work of becoming a doctor.

-Benjamin Kligler, study lead author
“Something we were withholding made us weak, until we found it was ourselves.”

−Robert Frost
words from 673 students
31 medical schools

Creativity
Love
Compassion
Freedom
Family
Peace
Relationships
Reflection
Balance

Rabow MW et al. Fam Med 2013;45:13-8
I came away from writing our paper concerned about the likelihood that once important values or priorities are repressed, it is going to be very difficult to resurrect them. The learning environment for trainees helps them learn how to think but suggests as well, in powerful ways, who they should be at work.

-Mike Rabow, study lead author
The future of primary care
Payback time: the associations of debt and income with medical student career choice

Martha S Grayson,1,2 Dale A Newton3 & Lori F Thompson4

Chose PC/HPNPC at Year 1; Chose PC/HPNPC at Year 4 (n = 1236)

Year 1
PC 58 %
HPNPC 42 %

Year 4
Sustainers 69 %
Switchers 31 %


This is heart-breaking.

-Martha Grayson, study lead author
Primary Care, the ROAD Less Traveled: What First-Year Medical Students Want in a Specialty

Kimberly L. Cline, Shalini T. Reddy, MD, Stephanie M. Kazantsev, MA, Jennifer R. Kogan, MD, Steven J. Durning, MD, PhD, Terri Blevins, MD, Calvin L. Chou, MD, PhD, Gretchen Diemer, MD, Dana W. Dunne, MD, Mark J. Fagan, MD, Paul J. Hartung, PhD, Hillit F. Mechaner, MD, Douglas S. Paauw, MD, Jeffrey G. Wong, MD, and Kent J. DeZee, MD, MPH
1020 1st year students

LIFESTYLE
- Enjoy type of work (4.8)
- Enjoy work environment (4.6)
- Have enough time off (4.0)
- Control over schedule (3.9)
- Financial compensation (3.2)

Financial compensation
- PC-1st: 2.8
- PC-least: 3.7

Clinite KL et al. Acad Med 2013;88
SPECIALTY-SELECTION

Being satisfied with job (4.7)
Time to spend with family (4.5)
Work-life balance (4.5)

Research opportunities (2.6)
Perceived prestige (2.4)
Rural practice locations (2.0)

Work with underserved
Effect size 0.98

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<th>PC-1st</th>
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<td>3.8</td>
<td>2.6</td>
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Rural practice locations
Effect size 0.64

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<th>PC-1st</th>
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Clinite KL et al. Acad Med 2013;88
What is encouraging about our results is that most students enter medical school wanting to find meaning in their work...Ultimately, we want to harness the passion, enthusiasm, and idealism of students for the medical profession.

-Kim Clinite and Shalini Reddy, study authors
No Time for Teaching? Inpatient Attending Physicians' Workload and Teaching Before and After the Implementation of the 2003 Duty Hours Regulations

Lisa M. Roshetsky, MD, MS, Ainoa Coltri, MA, Andrea Flores, MS, Ben Vekhter, PhD, Holly J. Humphrey, MD, David O. Meltzer, MD, PhD, and Vineet M. Arora, MD, MAPP

482 attending physicians

2001-2008

Workload

- Mental demand
- Physical demand
- Temporal demand
- Effort
- Performance
- Frustration

Workload * season

Time for Teaching

The most surprising feedback that I felt that we’ve received was from a subsequent blog on Acad Med where Dr. Ende noted,

‘And third, what about burnout? Maybe that’s a good thing too. Everyone, at times, feels burned out. The sense of burnout is life’s egg timer, letting you know you are about to get hard boiled. For me, two weeks and I’m done. But burnout is also a stimulus to think about what you value most in teaching students and residents on the wards, i.e. why you chose to do this in the first place.

That’s how we refine what Brookfield refers to as our organizing vision of teaching, which is a fancy way of reminding us why we chose to be an attending physician in the first place.’

It could be interesting to ask if new, innovative ways of teaching are more intellectually stimulating and pleasurable ...thus alleviating perceptions of unmanageable workload and symptoms of burnout independent of actual patient census.

-Lisa Roshetsky, study lead author
Outcomes of Different Clerkship Models: Longitudinal Integrated, Hybrid, and Block
Arianne Teherani, PhD, David M. Irby, PhD, and Helen Loeser, MD, MSc

2006-2010
Longitudinal Integrated
Hybrid
Block


Knowledge Acquisition

Clinical skills

Satisfaction

Role-models

Course evals

Patient-centered behaviors

C3

C3

CPX

More continuity

More continuity

Less continuity
When we embarked on this study, we had an inclination that the continuity might be better but we were not sure: after all learners with little or no continuity continue to learn and seem to do perfectly fine. However learning through our study that increased continuity lead to greater benefits to students was a very poignant affirmation of what we intuitively guessed all along.

-Arienne Teherani, study lead author

Mentors and teachers
More Is Better: Students Describe Successful and Unsuccessful Experiences With Teachers Differently in Brief and Longitudinal Relationships

Karen E. Hauer, MD, Bridget C. O’Brien, PhD, Lori A. Hansen, MD, David Hirsh, MD, Iris H. Ma, MD, Barbara Ogur, MD, Ann N. Poncelet, MD, Erik K. Alexander, MD, and Arianne Teherani, PhD

54 third year students

Semi-structured Interviews

3 themes

Time/Continuity
Power
Purpose

Definition
Time/continuity

Days to weeks → Definition → Months to a year

Relationship Development
Respect

Interest in student as person
Common interests
Supervisor defines success

Respect

Relationship Development

Time / continuity

Definition

Shared responsibility for patients
Based on mutual goals


Supervisor recognizes, acknowledges student, knows name
“They don’t always say hi to you when you see them in the hall.”

Supervisor confident in student ability
“He respects me as a person and thinks I’m capable.”

Gives student responsibility in patient care
It is shocking that students feel valued just because an attending recognizes them in the hall or knows their names; as educators we should set the bar higher.

-Karen Hauer, study lead author
“A Good Career Choice for Women”: Female Medical Students’ Mentoring Experiences: A Multi-Institutional Qualitative Study

Rachel B. Levine, MD, MPH, Hillit F. Mechaber, MD, Shalini T. Reddy, MD, Danelle Cayea, MD, MS, and Rebecca A. Harrison, MD

8 Focus Groups
4 Institutions
48 Female medical students

4 themes

(1) Optimal mentoring relationships highly relational

(2) Relational mentoring more important than gender concordance

(3) Gender-based assumptions, stereotypes matter for mentoring relationships

(4) Gender-based power dynamics influence students

When gender starts to drive the conversation, I can’t even tell you the number of times I’ve heard the phrase, “It’s a good career choice for women” which just drives me up the wall...phrases that would never be spoken to my male counterparts.”

I was struck by how students identified and articulated the issue of “access to networks and sponsors.” Students recognized that certain faculty were in positions of power and influence and that these faculty were very important for their careers as people who could write letters of recommendation and make calls at residency application time. The students clearly stated that the faculty in positions of power were more often men and that even though women might make great mentors (listening, providing advice and support) they often could not provide sponsorship.

Rachel Levine, study lead author

The science of learning
Teaching for understanding in medical classrooms using multimedia design principles

Nabil Issa,1 Richard E. Mayer,2 Mary Schuller,1 Edward Wang,3 Michael B. Shapiro1 & Debra A. DaRosa1

37 third year students (traditional condition)

43 third year students (modified condition)

Pretest

Immediate

1 week

4 weeks

Oxygen Delivery vs. Consumption

☐ You can increase your delivery but you cannot control your consumption as it is a function of tissue physiology
☐ You have to meet your tissue's requirements or else you will accelerate lactic acid production and tissue ischemia
☐ Critical DO2 is that point were DO2 meets VO2 and tissues are utilizing aerobic metabolism
☐ Up till that point there is an inverse relation between DO2 and VO2, a state we call flow dependent

Relation between DO2, VO2 and O2 extraction by tissues

VO2

Flow independent

Flow dependent

DO2
What was most challenging about conducting the study?

Ensuring that the lecturer used a consistent and comparable presentation delivery style, regardless of the multimedia design format. This was done through repeated practice prior to the lecture and having an educational specialist attend and observe the lectures in real time.

-Nabil Issa, study lead author
Intrinsic

Extraneous

Germane

Cognitive Load

Fraser K et al. Med Educ 2012;46:1055-62

Symptomatic aortic stenosis scenario

Rating of emotion, cognitive load

Acute pulmonary embolism scenario

Chest pain with AS (trained murmur)

Chest pain with MR (novel murmur)

Fraser K et al. Med Educ 2012;46:1055-62
Tranquility
(-) tense / calm (+)
(-) nervous / relaxed (+)
(-) stressed / serene (+)
(-) upset / content (+)
(-) sad / happy (+)

Invigoration
(-) depressed / elated (+)
(-) lethargic / excited (+)
(-) bored / alert (+)

Cognitive load and emotion

Fraser K et al. Med Educ 2012;46:1055-62
The importance of emotional engagement in simulation training has received much attention. We believe that the time has come to balance this view with the knowledge that emotional content can actually impair learning through cognitive overload. The practical message for medical instructors is to carefully consider both the yin and the yang of emotion when designing simulation activities.

-Kristin Fraser, study lead author
Does the think-aloud protocol reflect thinking? Exploring functional neuroimaging differences with thinking (answering multiple choice questions) versus thinking aloud

STEVEN J. DURNING¹, ANTHONY R. ARTINO JR.¹, THOMAS J. BECKMAN², JOHN GRANER³, GEES VAN DER VLEUTEN⁴, ERIC HOLMBOE⁵ & LAMBERT SCHUWIRTH⁶

Durning SJ et al. Med Teach 2013;35:720-6

17 physicians

Think-aloud training

Phase 1: Reading

Phase 2: Answering

Phase 3: Think-aloud

fMRI

Formal think-aloud protocol

Durning SJ et al. Med Teach 2013;35:720-6
We were thankful that internists had measurable brain activity while answering high stakes multiple choice questions.

-Steve Durning, study lead author
Doing something different (like this line of work) is really challenging and requires “thick skin” and patience. Albert Einstein said ‘We cannot solve our problems with the same thinking we used when we created them.’ Are we giving investigators the needed time and other resources to try new things to “solve” the problems that are important to us, our trainees, and most importantly, our patients?

-Steve Durning, study lead author
## Background

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## Assessment

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## Our humanity

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<td>Hojat M, Axelrod D, Spandorfer J, Mangione S</td>
<td>Enhancing and sustaining empathy in medical students. Med Teach 2013; June 11 (early online)</td>
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## Future of primary care

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## The clinical environment

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## The science of learning

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