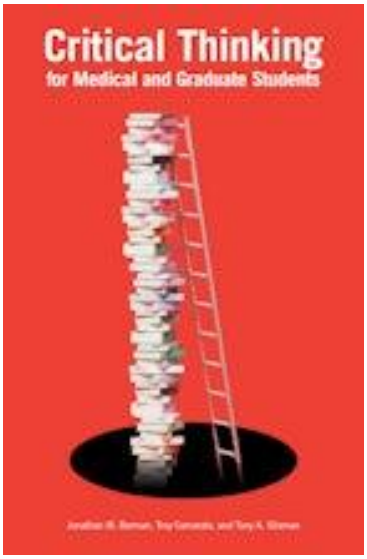
Education Review
Reseñas Educativas Resenhas Educativas

July 29, 2026 ISSN 1094-5296

Berman, J. M., Camarata, T., & Slieman, T. A. (2025). *Critical thinking for medical and graduate students*. The MIT Press.

274 pp. **ISBN 9780262553209**

Reviewed by Manouchehr Madani Civi
University of British Columbia (UBC)
Canada



Critical Thinking for Medical and Graduate Students by **Jonathan M. Berman**, **Troy Camarata**, and **Tony A. Slieman** looks at a classic problem in medical training: the gap between memorizing facts and using them well in unpredictable, high-stakes moments. Traditional medical education usually focuses on memorization, recognizing patterns, and learning procedures. While these skills are vital, the authors argue they aren't enough on their own. What really sets safe and effective doctors apart is how they think, not just what they know. Because of this, the book treats critical thinking as a core professional skill that must be practiced, rather than just an optional add-on.

Berman and his co-authors build their approach on a famous model from cognitive psychology: the difference between fast, intuitive thinking and slow, analytical thinking. They define critical thinking as a type of deliberate, reflective reasoning known as "System 2." In contrast, "System 1" covers intuitive responses that are quick, automatic, and based on past experience. This framework fits perfectly with the dual-process theory of cognition described by Daniel Kahneman (2013). However, the authors do not see these two systems as opposites. Instead, they believe that becoming an expert requires both systems to work together. Intuition becomes more reliable when it is backed by well-organized knowledge, and critical thinking is what helps build and polish that knowledge base.

A major theme in the book is that learning isn't just about piling up facts. It is about creating "schemata," mental models that organize information into patterns that make sense. These models are stored in our long-term memory and guide how we reason later on. Over time, they allow experienced doctors to recognize patterns and react efficiently in familiar situations. However, the authors warn that once these mental models are formed, they can become very rigid. They might resist change even

Madani Civi, M. (2026, July 29). Review of *Critical thinking for medical and graduate students,* by J. M. Berman, T. Camarata & T. A. Slieman. https://doi.org/10.14507/er.v33.4640

when new evidence proves them wrong. This is why critical thinking is so important; it gives people the tools to check their own logic, spot mistakes, and update their mental models.

This perspective on learning ties in closely with research on how expertise develops. Studies show that expertise is not just about having years of experience; it's about how you process and reflect on that experience. Without reflection, experience can make you more confident in the wrong assumptions. By focusing on evaluating and updating these mental models, the authors highlight "metacognition," thinking about your own thinking, as a vital part of growing as a professional.

The book is organized in a clear, step-by-step fashion. It starts with fundamental questions about knowledge and truth before moving on to the social side of science, cognitive biases, logic, and probability. It concludes with practical learning strategies. This layout is anything but random; it follows the natural journey of a student moving from basic concepts to complex reasoning. This makes the book feel like a solid, connected framework rather than just a collection of random topics.

One of the highlights is the section on cognitive biases. The authors explain how common mental shortcuts like availability, hindsight, and confirmation biases, impact our decisions. Rather than keeping these ideas abstract, they show how they create real-world problems for clinicians. For instance, availability bias might cause a doctor to over-diagnose a disease simply because it has been in the news lately. Hindsight bias can make a past decision look more obvious than it was at the time. These examples prove that while mental shortcuts are useful, they can lead to systematic mistakes.

This focus on bias aligns with current clinical research. Corrao and Argano (2022) found that many diagnostic errors stem from these biases rather than a lack of knowledge. Similarly, Norman et al. (2024) noted that human judgment is often shaped by heuristics that lead to predictable errors. By bringing these topics into medical education, the book helps students see how their own minds might trip them up during a diagnosis.

Another key theme is how persons handle uncertainty. Since medical information is rarely perfect, clinicians must weigh risks and interpret probabilities. The book introduces Bayesian reasoning, which is the process of updating what you believe as new evidence comes in. This is a vital skill for evidence-based medicine, as it helps doctors combine general research with a specific patient's needs. Since many students struggle with abstract statistics, Brooks et al. (2024) point out that making these concepts accessible is essential, and that is exactly what the authors aim to do.

The authors also acknowledge that science doesn't happen in a vacuum; it has social and institutional layers. They explore scientific misconduct, publication bias, and the "hidden curriculum" in medical schools. By doing this, they encourage students to look beyond their own thoughts and question the systems they work in. The chapter on pseudoscience and alternative medicine is equally valuable. Instead of just dismissing these topics or accepting them blindly, the book encourages readers to use evidence and logic to evaluate claims. This approach promotes "scientific skepticism," being open-minded but requiring proof rather than relying on tradition or authority.

The authors also touch on self-assessment and professional identity, specifically the Dunning-Kruger effect. This is the tendency for people with less experience to overestimate their skills. As Gabbard and Romanelli (2021) suggest, accurate self-reflection is hard for beginners but crucial for patient safety. Therefore, the authors emphasize that constant feedback and reflection are essential parts of becoming a professional.

The book is highly practical. It doesn't just stick to theory; it offers advice on how to study and organize information. A great example is information triage. Just as a doctor prioritizes patients in an ER, a student must prioritize which information is most important to learn. This addresses the huge amount of data medical students have to handle. This focus on active learning fits perfectly with modern education theory regarding cognitive load, which suggests that because our working memory is limited, we need smart strategies to connect new facts to what we already know.

The book has many strengths, but important questions must be raised. One major point is the balance between breadth and depth. The volume covers an impressive range of topics—including logic, statistics, ethics, bias, and study strategies. While this makes it an excellent introduction, such a wide scope might limit how deeply each subject is explored. Another concern is the level of abstraction in certain sections. Even though the authors use examples, some concepts might still feel a bit disconnected from daily clinical practice, particularly for students just starting their training. There is also a broader debate about how critical thinking should be taught. The book treats it as a set of skills that can be learned and practiced. However, some research in medical education suggests that these skills are often context dependent. This means a student might think critically in one situation but struggle to transfer that same logic to a different scenario (Choi et al., 2023; Norman et al., 2024). This is a vital point for anyone designing a medical curricula.

Overall, the opening section of the book builds a solid foundation. It positions critical thinking as a core part of medical expertise and provides a clear framework for how these skills develop. By blending cognitive psychology, education theory, and clinical practice, the authors have created a text that is both easy to read and intellectually deep. Ultimately, the book encourages readers to move past passive learning and examine their own thought processes. In doing so, it sets the stage for a much deeper discussion on reasoning and decision-making in the medical field.

Cognitive Bias, Clinical Reasoning, and Self-Awareness

The discussion of cognitive bias is particularly effective because it connects directly to clinical reasoning research. The authors don't just list different biases; they show how these tendencies are part of everyday medical decisions. This represents a major shift in how we look at medical education. In older views, diagnostic errors were usually explained as a simple lack of knowledge. However, more recent studies show that many mistakes happen even when a doctor has the right information. These errors are often about how that information is processed (Corrao & Argano, 2022). The book aligns with this view, showing that failures in reasoning often follow predictable patterns in the human mind.

One of the book's main strengths is how it links theory with practical examples. For instance, availability bias is presented as a real clinical risk. A physician might

over-diagnose a condition just because it is recent, memorable, or emotionally vivid, even if the the probability of encountering it is low. This is a serious issue for patient care, especially when media coverage or a recent case distorts a doctor's perception. Hindsight bias is also highlighted as a key problem. It can lead clinicians to judge past decisions unfairly, assuming an outcome was more predictable than it really was. This hurts the learning process because it ignores the true uncertainty that existed during the original decision.

The authors also provide a vital look at confirmation bias, i.e., the tendency to search for evidence that supports what we already believe while ignoring facts that challenge it. In a clinic, this often leads to premature closure, which is when a diagnosis is accepted too quickly before all the evidence is in. Corrao and Argano (2022) identify this as a leading cause of diagnostic errors. The authors tackle this head-on by encouraging students to look for alternative explanations and question their first impressions. This approach is very similar to the idea of "diagnostic timeouts," which are intentional pauses to rethink a case and reduce cognitive errors.

At the same time, they do not fully dive into the debate regarding the role of bias in medical training. Some scholars argue that focusing too much on bias might oversimplify why diagnostic errors happen. Norman et al. (2024) and Choi et al. (2023) suggest that mistakes aren't just the result of "flawed" thinking. Instead, they reflect the sheer complexity of clinical environments where information is often missing and time is short. From this perspective, bias is just one piece of a much larger puzzle that includes the physical context, workload, and how a team communicates. While the book mentions context, its primary focus is on individual cognition. This is great for teaching fundamental concepts, but it might limit the analysis of more messy, high-pressure clinical situations.

Another valuable contribution is the discussion of heuristics. These are mental shortcuts that help us make decisions quickly. In familiar situations, they are often incredibly useful and lead to the right call. However, they can cause systematic errors if they are applied in the wrong context. The authors treat heuristics as tools to be understood and managed, rather than eliminated. This balanced view aligns with research showing that heuristics are essential for expert performance, provided they are fine-tuned through experience and feedback (Brooks et al., 2024). By doing this, the book avoids labeling intuition as simply "good" or "bad." Instead, Berman and his colleagues present intuition as a skill that must be developed with care and precision.

Dual-process thinking is at the heart of this discussion. The authors describe System 1 as fast and intuitive, while System 2 is slower and more analytical. They explain that both are necessary but serve different roles. In routine, everyday situations, System 1 allows for quick and efficient decisions. However, in complex or uncertain cases, System 2 becomes much more important. While this distinction is a staple of cognitive psychology, its role in medical education is still a hot topic. Some researchers argue that it is difficult to teach students how to switch between these two systems because the processes aren't always under one's conscious control (Choi et al., 2023). Even so, the book argues that simply being aware of these systems can significantly improve a clinician's reasoning.

A particularly helpful part of the text focuses on self-awareness. The authors suggest that knowing your own limits is a hallmark of expertise. This is backed by research on metacognition, which shows that students who can monitor and adjust their own thinking usually get better results (Gabbard & Romanelli, 2021). The inclusion of the Dunning-Kruger effect reinforces this, showing that people with less competence often fail to recognize their own mistakes. This is a vital lesson in medical training, where being overconfident can lead to serious real-world unfortunate consequences. However, this focus on self-awareness brings up a practical teaching question. While the book recommends reflection and feedback, it doesn't go into much detail on *how* a student develops an accurate sense of their own abilities. Research indicates that internal reflection is not enough; external feedback is crucial for truly improving self-assessment (Gabbard & Romanelli, 2021). The book might have been even stronger if it provided more specifics on how feedback systems can be designed to support critical thinking.

Finally, the section on logical reasoning adds another important layer. The authors introduce common logical fallacies—such as appeals to tradition, appeals to nature, or arguments from ignorance—and show how they impact medical decisions. In a healthcare setting, these fallacies can lead people to accept treatments that lack strong evidence or dismiss new ideas without a fair trial. By teaching students to spot these patterns, the book helps them build a foundation for much more careful and balanced reasoning.

Even though the section on logic is helpful, it is pitched at an introductory level. This works well for the book's target audience, but it doesn't quite capture the full complexity of reasoning in a clinical setting. In the real world, doctors often deal with incomplete information, competing theories, and conditions that change by the minute. While formal logic is a great tool, it isn't enough on its own. Research suggests that narrative reasoning, illness scripts, and pattern recognition are just as important (Norman et al., 2024). Connecting these different approaches more clearly would have given the book a stronger theoretical foundation.

The focus on probabilistic thinking is another highlight. The authors introduce Bayesian reasoning to update what you believe whenever new evidence pops up. This is a cornerstone of evidence-based medicine, as clinicians are constantly interpreting tests and assessing risks. However, probability is notoriously difficult for many people, especially when the data is presented in abstract ways (Brooks et al., 2024). The authors do a good job of making these tough ideas more understandable through simple explanations, even if the subject remains a challenge for most learners.

There is a natural tension here between simplicity and accuracy. The authors clearly want to make complex ideas accessible, but oversimplifying can sometimes lead to a loss of precision. This is a classic hurdle in education writing: students need clear explanations, but they also need to be prepared for the messy reality of complex problems. Generally, the authors strike a good balance, though a few sections might have benefited from a bit more depth.

The book also touches on the emotional side of reasoning. It is acknowledged that decision-making isn't just about logic; it’s also influenced by stress, fatigue, and feelings. While this theme is not explored in detail, it does come up during the

discussions on bias and error. As Corrao & Argano (2022) point out, emotional factors can heavily impact judgment, particularly in high-pressure environments. Expanding on this would have made the treatment more complete.

Another important theme is the learning environment and the "hidden curriculum," i.e., the unwritten values and norms that shape medical training. For example, if a hospital culture prizes speed over reflection, students are less likely to take the time to think critically. This suggests that teaching critical thinking isn't just about the "what," but also the "where." The culture needs to support reflection, questioning, and a certain level of comfort with uncertainty.

When compared to other academic literature, this book sits somewhere between a beginner's guide and an advanced textbook. It provides a solid foundation while remaining easy to read. However, it does not fully jump into some of the bigger academic debates such as whether critical thinking is a general skill that can be used anywhere or if it is mostly domain-specific (Araújo et al., 2024; Châlon & Lutaud, 2024). The book assumes these skills can be developed across different contexts, but it doesn't address the opposing arguments directly.

The relationship between knowledge and reasoning is a key point of discussion. Some researchers believe that having strong domain knowledge such as deep expertise in a specific subject is the most important factor in good reasoning. Others place more emphasis on general thinking skills that can be applied to any situation. The authors take a balanced stance, suggesting that both are necessary. However, a more direct look at the research in this area would have made the argument even stronger.

Despite these few limitations, the book achieves one of its biggest goals: it makes thinking visible. By breaking down mental processes and giving readers the right vocabulary to discuss them, the book helps students reflect on their own logic. This is a vital step in becoming an expert. Without this level of self-awareness, mistakes can stay hidden and a student's progress might stall.

This part of the book deepens the reader's understanding of how our mental processes shape medical decisions. It emphasizes that awareness, reflection, and deliberate practice are the building blocks of critical thinking. It also raises important questions about how we should teach and evaluate these skills in a medical setting.

Statistics, Evidence-Based Medicine, and Scientific Literacy

The discussion of statistics and scientific reasoning is one of the most ambitious sections of the book. While medical practice depends on evidence, many students struggle to interpret research findings. The authors address this gap by linking statistical thinking directly to clinical decisions. Rather than focusing on formulas, they present statistics as a way of thinking about uncertainty, probability, and evidence.

Bayesian reasoning is the core of this section. The authors explain that clinicians must update their beliefs as new information becomes available. A diagnosis isn't a final, fixed label; it changes as more data is gathered. This aligns with the principles of evidence-based medicine, where decisions are a mix of clinical expertise, patient values, and the best available evidence (Châlon & Lutaud, 2024). The strength of this

approach is its flexibility, helping doctors adjust their judgment instead of sticking to fixed assumptions.

However, applying Bayesian reasoning in a busy clinic isn't easy. Even experienced doctors can struggle with probability, especially when the data are presented in abstract formats (Brooks et al., 2024). The authors try to bridge this gap with simple explanations and clear examples. While this makes the topic more accessible, it also highlights a deeper challenge: probability isn't just a technical skill; it requires a complete shift in how one views evidence. Many students look for certainty, but clinical reasoning usually involves dealing with degrees of probability.

The authors also introduce essential concepts for diagnostic testing, such as sensitivity, specificity, and predictive value. The book correctly emphasizes that these numbers do not mean much on their own. Their true value depends on the context, including how common a disease is and the specific characteristics of the patient. This matches research showing that misunderstanding these statistics is a common cause of poor clinical decisions (Brooks et al., 2024). By focusing on context, the book encourages a much more careful and accurate understanding of evidence.

Another key theme is the vital difference between correlation and causation. The authors explain that while many studies show links among different variables, they don't necessarily prove that one causes the other. This distinction is critical in medical research. Assuming causality where it doesn't exist can lead to treatments that are ineffective or even harmful. The authors provide clear examples of how "confounding variables" —as hidden factors that influence both the cause and the effect—can produce misleading results. This is especially relevant today, as we rely more on large datasets and observational studies.

The book's approach to scientific literature is also a major strength. The authors teach readers how to look at research articles with a critical eye, focusing on study design, sample size, and potential sources of bias. This mirrors the process of critical appraisal, which is a cornerstone of evidence-based medicine (Châlon & Lutaud, 2024). Instead of just reading passively, students are encouraged to question assumptions, check the methods used, and look for alternative explanations of the findings.

At the same time, the book touches on a significant challenge: accessing and understanding scientific literature. Many research papers are filled with technical jargon that can be difficult for students to navigate. While the book provides tools to help interpret these papers, it doesn't quite tackle the "structural" barriers to knowledge. These include things like expensive paywalls, publication bias—where only positive results are published—and overly complex statistical reporting. These barriers don't just change how one uses knowledge, they shape how that knowledge is created in the first place.

A strength of this section is its practical application. The authors avoid treating statistics as an abstract subject, presenting it instead as a tool for making better decisions. Learners are encouraged to apply statistical reasoning to real clinical situations, such as interpreting test results or evaluating different treatment options.

This approach aligns with the growing focus on applied learning in medical education, where theory and practice are closely linked.

Once again, there is a natural tension between simplicity and depth. To keep statistics accessible, the book sometimes reduces the level of complexity. While this is reasonable for beginners, it might limit a deeper understanding of the subject. For instance, topics like confidence intervals, regression analysis, and statistical power are not explored in detail. Introducing these concepts, even at a basic level, could provide students with a more complete foundation.

Berman, Camarata, and Slieman also emphasize the role of skepticism in scientific thinking. Here, skepticism isn't shown as a negative attitude, but as a disciplined way to evaluate claims. It involves questioning assumptions, carefully examining evidence, and considering alternative explanations. This perspective connects with the philosophy of science, which views knowledge as something provisional and always open to revision. By encouraging this mindset, the book supports an approach that is vital for both medical research and daily clinical practice.

The discussion also addresses the issue of information overload. Today's medical students are faced with a massive amount of data, including research papers, clinical guidelines, and patient records. To help manage this complexity, the authors offer strategies like prioritization and selective attention. The idea of information triage is especially useful here, as it gives learners a practical way to decide what information is most important. This accurately reflects the real-world challenges of medical education.

Compared to the wider academic literature, this section aligns well with evidence-based medicine (EBM) while maintaining a strong educational focus. It effectively builds a bridge between theory and practice, helping students understand not only what evidence is but also how to apply it. However, the book does not fully dive into some of the more critical views of EBM. For example, some scholars argue that evidence-based medicine can become too narrow if it focuses solely on measurable outcomes while ignoring a patient's unique context (Châlon & Lutaud, 2024). Including these concerns would have provided readers with a more balanced perspective.

Another minor drawback is the limited discussion of communicating uncertainty. While clinicians need to understand probabilities themselves, they also must explain those risks to their patients. This requires clear language, a solid grasp of numbers, and interpersonal sensitivity. Since research shows that risk communication is a complex skill (Brooks et al., 2024), expanding on this topic would have made the book even more useful for daily clinical practice.

Despite these points, the section on statistics and scientific literacy is a strong contribution. It provides learners with the tools they need to navigate medical evidence and promotes a thoughtful, reflective approach to research. By linking statistical reasoning with critical thinking, the book reinforces its main message: good decision-making requires both deep knowledge and careful reflection.

Educational Implications and Final Evaluation

As the book shifts from basic explanations to its broader implications, both its strengths and its limitations become more obvious. The text successfully provides a clear and accessible framework for medical thinking, blending cognitive psychology, logic, and scientific reasoning into a format that students can use. However, when you compare it to the wider body of research in medical education and cognitive science, a few tensions start to emerge. These points do not make the book less valuable; instead, they highlight where there is room for further discussion.

One major question is about the nature of critical thinking itself. The authors treat it as a set of skills that can be taught, practiced, and improved through reflection, a very common view in education. Yet, cognitive psychology suggests that these skills are often domain-specific rather than general (Araújo et al., 2024; Châlon & Lutaud, 2024). Essentially, being a critical thinker in one field doesn't mean you will automatically be such in another. This is a big deal for medical schools. If critical thinking relies heavily on specific subject knowledge, then teaching general logic isn't enough on its own. Students also need deep, well-organized knowledge in specific clinical areas to apply that logic effectively.

The book acknowledges that knowledge is important, but it doesn't quite dive into the conflict between general skills and specific expertise. It suggests that critical thinking can help sharpen a doctor's intuition, but it doesn't fully explain how knowledge and reasoning work together as a student gains experience. For example, Norman et al. (2024) argue that medical expertise is built mostly on pattern recognition through years of practice. In routine cases, slow, analytical reasoning might play a smaller role. From this perspective, deliberate critical thinking is most useful when a case is complex, unfamiliar, or full of uncertainty. While the book seems to lean toward this idea, it doesn't address the debate head-on.

The role of bias in clinical reasoning also deserves a closer look. The authors place a heavy emphasis on spotting and reducing cognitive biases, which aligns with the work of Corrao and Argano (2022). They have linked numerous diagnostic mistakes to predictable patterns in how we think. However, there is an ongoing debate about the best way to teach this. Some researchers argue that simply learning *about* biases doesn't necessarily stop them, mainly because many of our mental processes are unconscious (Norman et al., 2024). Others suggest that more practical tools, like checklists, structured reflection, and case-based discussions, might be more effective.

While the book gives general advice on being more aware and reflective, it doesn't provide much detail on specific teaching methods. This feels like a missed opportunity. For instance, simulation-based training and case-based learning allow students to practice their reasoning, get immediate feedback, and reflect on their choices in real-time (Choi et al., 2023). Including these hands-on approaches would have significantly boosted the book's practical value.

The discussion on dual-process theory also raises some questions. While the distinction between intuitive (System 1) and analytical (System 2) thinking is helpful, it can sometimes oversimplify how our brains work. Recent research suggests these two processes aren't entirely separate; they interact constantly and dynamically (Norman et al., 2024). The authors explain the theory clearly, but a more nuanced look would help

readers understand its boundaries. Without that, students might assume that slow, analytical thinking is always superior to intuition. In reality, a well-trained expert's intuition is often both accurate and highly efficient.

The section on statistics and evidence-based medicine (EBM) is open to some critique. The authors do a great job introducing Bayesian reasoning and diagnostic accuracy, but they tend to present EBM primarily as a technical "how-to" framework. It doesn't quite explore the philosophical or practical limits of this approach. Critics often argue that EBM can focus too narrowly on numbers and data, sometimes overlooking the patient's individual experience or unique context (Châlon & Lutaud, 2024). While the book encourages critical evaluation, it could have engaged more deeply with these important perspectives.

Another limitation is the brief look at the social side of knowledge. While it is acknowledged that science is shaped by social and institutional factors, the discussion doesn't go very deep. Important issues like power dynamics, inequality, and cultural bias in medical research are not explored in detail. This is a significant point in modern healthcare, where equity and representation are major concerns. Expanding on these topics would make the text feel more relevant to the current debates happening in medical schools.

The hidden curriculum is a perfect starting point for this conversation. It refers to the unwritten values and norms that shape how professionals behave. Although the book mentions this, it doesn't fully examine how it impacts critical thinking. For example, if a training program prizes speed and efficiency over reflection, students have fewer opportunities to question their own assumptions. Similarly, if a strict hierarchy discourages students from speaking up, critical dialogue can't happen. These issues prove that institutions shape the way we think just as much as individuals do.

Despite these critiques, the book makes several valuable contributions. One of its greatest strengths is the emphasis on metacognition, i.e., thinking about your own thinking. By encouraging students to reflect on their mental processes, the book promotes self-awareness and lifelong learning. Research shows that these metacognitive skills are closely linked to both academic success and professional growth (Gabbard & Romanelli, 2021). The book provides practical strategies for this reflection, even if there is room for those strategies to be developed further.

Another high point is how it integrates different fields of knowledge. The book successfully brings together cognitive psychology, logic, statistics, and education theory. This interdisciplinary approach reflects the true complexity of medical practice and helps students see the connections among different subjects. Because of this, the book remains a useful resource for students, teachers, and working clinicians alike.

The book's practical focus is another of its strengths. By including study strategies, reading techniques, and self-assessment tools, the authors make the content immediately useful for students. This approach aligns with modern education, which emphasizes active engagement and self-directed learning. While some sections could offer more detail, the overall framework successfully encourages effective learning habits.

There are also clear educational implications to consider. Critical thinking should not be treated as a one-off subject or an isolated course; instead, it should be woven into every stage of medical training. Case-based learning, simulations, and reflective practice provide students with essential opportunities to apply these skills in realistic settings. Assessment methods should also reflect this goal by evaluating a student's reasoning process, not just their ability to recall facts.

Finally, the book highlights the vital role that educators play in modeling critical thinking. Teachers who demonstrate reflection, remain open to uncertainty, and show a willingness to change their minds help create a culture that supports these skills. This is backed by research showing that learning is deeply influenced by social interaction and role models. By focusing on the role of the educator, the authors look beyond the individual student and highlight the importance of the entire learning environment.

Compared to other books in the field, this one sit somewhere between a practical guide and a theoretical analysis. It is more thorough than most short manuals but doesn't go quite as deep as specialized research texts. This balance makes it particularly useful for students who are just starting to study critical thinking in a structured way. While more advanced readers might look for a deeper dive into certain topics, the book still serves as a very strong starting point.

Overall, *Critical Thinking for Medical and Graduate Students* makes a significant contribution to medical education. It provides readers with a clear, accessible framework for understanding how we think. It highlights the importance of reflection, evaluating evidence, being aware of bias, and remaining open to uncertainty. Most importantly, it encourages learners to take an active role in their own professional growth. Although some sections could be expanded, the book achieves its main goal: promoting a thoughtful and reflective way of working.

The true value of this book is not just the information it shares, but the mindset it encourages. It asks readers to question assumptions, weigh evidence, and be willing to change their minds. In medicine, where decisions carry heavy consequences, these skills are essential. The book reminds us that expertise isn't defined by having all the answers or being 100% certain. Instead, it is defined by the ability to think carefully and clearly when certainty simply isn't possible. This message is both timely and important, making the book a great resource for the medical community.

References

Araújo, B., Gomes, S. F., & Ribeiro, L. (2024). Critical thinking pedagogical practices in medical education: A systematic review. *Frontiers in Medicine, 11,* 1358444. https://doi.org/10.3389/fmed.2024.1358444

Brooks, J. S., Muller, D., Campbell, P., Yu, A., Southwell, B., & Korin, M. (2024). Teaching medical students to communicate risks like military intelligence analysts. *Journal of Medical Education and Curricular Development, 11,* 23821205241278182. https://doi.org/10.1177/23821205241278182

Châlon, B., & Lutaud, R. (2024). Enhancing critical thinking in medical education: A narrative review of current practices, challenges, and future perspectives in

context of infodemics. *La Presse Médicale Open, 5,* 100047. https://doi.org/10.1016/j.lpmope.2024.100047

Choi, J. J., Gribben, J., Lin, M., Abramson, E. L., & Aizer, J. (2023). Using an experiential learning model to teach clinical reasoning theory and cognitive bias: An evaluation of a first-year medical student curriculum. *Medical Education Online, 28*(1), 2153782. https://doi.org/10.1080/10872981.2022.2153782

Corrao, S., & Argano, C. (2022). Rethinking clinical decision-making to improve clinical reasoning. *Frontiers in Medicine, 9,* 900543. https://doi.org/10.3389/fmed.2022.900543

Gabbard, T., & Romanelli, F. (2021). The accuracy of health professions students' self-assessments compared to objective measures of competence. *American Journal of Pharmaceutical Education, 85*(4), 275-280. https://doi.org/10.5688/ajpe8405

Jay, R., Davenport, C., & Patel, R. (2024). Clinical reasoning - the essentials for teaching medical students, trainees and non-medical healthcare professionals. *British Journal of Hospital Medicine, 85*(7), 1-8. https://doi.org/10.12968/hmed.2024.0052

Kahneman, D. (2013). *Thinking, fast and slow*. Farrar, Straus and Giroux.

Norman, G., Pelaccia, T., Wyer, P., & Sherbino, J. (2024). Dual process models of clinical reasoning: The central role of knowledge in diagnostic expertise. *Journal of Evaluation in Clinical Practice, 30*(5), 788-796. https://doi.org/10.1111/jep.13998

Zheng, B., & Sun, T. (2025). Self-regulated learning and learning outcomes in undergraduate and graduate medical education: A meta-analysis. *Evaluation & the Health Professions, 48*(4), 430-450. https://doi.org/10.1177/01632787241288849

About the Reviewer

Manouchehr Madani Civi, MD, MHSc, MET, is an accomplished physician and educator with over two decades of experience in university-level teaching and academic mentorship. Currently a Lecturer at the University of British Columbia (UBC), he plays a vital role in the MD Undergraduate Program. His work primarily involves small-group instruction, Case-Based Learning (CBL) facilitation, and the supervision of FLEX scholarly projects. Through these roles, he focuses on fostering critical thinking, research proficiency, and reflective learning within structured academic settings. These efforts are designed to prepare future healthcare professionals for the demands of modern medical practice. His academic background is extensive, holding both a Doctor of Medicine (MD) and a Master of Health Science (MHSc). He is further advancing his expertise by pursuing a Master of Educational Technology (MET) at UBC, focusing on innovative teaching strategies. He has authored numerous articles

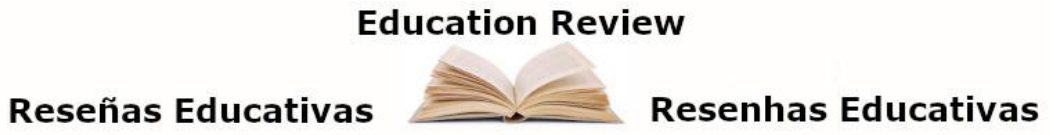
in medical research and education, specifically exploring how digital tools can enhance health sciences learning. Ultimately, he remains dedicated to improving professional training environments through evidence-based pedagogy and the thoughtful integration of technology.

About the Authors

Jonathan M. Berman is an assistant professor in the Department of Basic Sciences at NYITCOM–Arkansas at Arkansas State University. He studies hypertension, using tools that address all levels of biological organization from populations to molecules. In January 2017, he created the first social media, website, and mailing-list to recruit people for the "Scientists' March on Washington," which would later become the March for Science. The March occurred on April 22, for which he served as a national co-chair and a lead organizer. He has taught critical thinking, genetics of hypertension, kidney endocrinology, human development, and cognitive biases.

Troy Camarata is an associate professor in the Department of Basic Sciences at New York Institute of Technology College of Osteopathic Medicine (NYITCOM) at Arkansas State University. Dr. Camarata earned both bachelor's and master's degrees in biology from the University of Central Florida before attending Northwestern University, where he earn a Ph.D. in developmental biology and genetics. After receiving his doctorate, Dr. Camarata pursued post-doctoral training in the Nephrology Division at Massachusetts General Hospital. He joined NYITCOM in 2014 and is a member of the inaugural faculty that opened the NYITCOM at Arkansas State University site in 2016.

Tony A. Slieman earned a doctoral degree in pathobiology and microbiology from the Department of Veterinary Sciences and Microbiology at the University of Arizona in Tucson; a master's degree in medical microbiology from the American University of Beirut; and a teaching diploma in education and a BS in biology from the Lebanese American University. His bench research was mostly on the spores of the genera Bacilli and their resistance to environmental conditions. Slieman has 19 years of full-time teaching experience in microbiology, anatomy, physiology, histology, biochemistry, and genetics.



Disclaimer: The views or opinions presented in book reviews are solely those of the author(s) and do not necessarily represent those of *Education Review*.