"Knowing Just Enough to Be Certain"

"The Dunning–Kruger Effect" Across Training, Practice, and Leadership in Radiology

Mohammad Malik, MD[1] • Nicholas Martinez, MD[1] • Ioannis Babatsikos, MD[1] • Abraham Resnick, MD[1] • Jong Heun Kim, MD[1] • Perry Gerard, MD, MBA, FACR[1] • Jared Meshekow, MD, MPH[2] • Shekher Maddineni, MD, FSIR[1]
[1]Westchester Medical Center, Department of Radiology. [2]Lewis Katz School of Medicine at Temple University, Department of Radiology.

BACKGROUND

Radiology depends on accurate self-assessment, calibrated confidence, and continuous learning to support:

- Diagnostic accuracy
- Patient safety
- Professional development

The Dunning–Kruger effect describes a cognitive bias where individuals with limited expertise overestimate their competence, while more experienced individuals may underestimate their relative skill.

Cognitive biases that distort self-perception may undermine these foundational objectives.

PURPOSE

We examine the relevance of the Dunning–Kruger effect in radiology across three domains:

- Trainee education (medical students & residents)
- Independent practice (attending-level performance)
- Leadership and credentialing decision-making

METHODS / MATERIALS

Study design: Descriptive review of the Dunning–Kruger effect as defined in cognitive psychology literature.

Framework applied conceptually to radiology-specific contexts, including:

- Medical student and resident training
- Transition to independent practice
- Attending-level performance variability
- Peer learning and discrepancy review
- Leadership activities: credentialing, privileging, and remediation

RESULTS

01 Early Training — Overconfidence & Knowledge Gaps

In early training, the Dunning–Kruger effect may manifest as:

- Overconfidence in image interpretation before foundational skills are established
- Resistance to feedback from senior radiologists or attendings
- Under-recognition of knowledge gaps during case conferences and rotations

These dynamics can negatively influence learning behaviors, diagnostic accuracy, and receptiveness to formative assessment during residency.

02 Independent Practice — Calibration Across Experience Levels

At the attending level, confidence and competence may diverge in both directions:

- Mid-career radiologists may harbor unrecognized blind spots from years of unchallenged habits
- Highly experienced radiologists may paradoxically underestimate their relative skill

Structured peer review, discrepancy conferences, and CME participation serve as mechanisms to recalibrate confidence and surface knowledge gaps.

03 Leadership & Credentialing — Scope-of-Practice Decisions

In leadership and administrative contexts, unrecognized overconfidence may affect:

- Scope-of-practice and privileging decisions for complex subspecialty procedures
- Remediation planning and quality improvement initiatives
- Communication style and openness to dissenting clinical opinions

Conversely, under-confidence among experienced radiologists may limit professional growth, mentorship, and leadership participation.

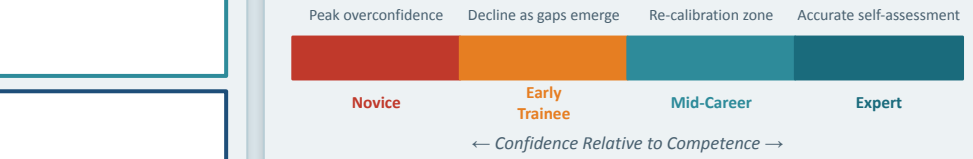
CONCLUSIONS

- The Dunning–Kruger effect offers a valuable lens for understanding confidence variability across the radiology professional continuum.
- Awareness of this bias supports more effective:
  - Resident and trainee education
  - Peer learning and quality assurance
  - Leadership and credentialing practices
- Integrating structured feedback, reflective processes, and objective performance measures may improve calibration between confidence and competence.
- Stronger calibration strengthens diagnostic accuracy, professional development, and patient safety in radiology.

KEY TAKEAWAY

"The most dangerous radiologist is not the one who knows too little — it's the one who doesn't know what they don't know."

CONFIDENCE–COMPETENCE SPECTRUM



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