Flawed Self-Assessment: On the failures of incompetence to recognize itself

With thanks to: Dan Ames, Jeremy Cone, Clayton Critcher, Joyce Ehrlinger, Kerri Johnson, Justin Kruger, Fiona Lee, Oliver Sheldon, & Nora Williams
When Thales was asked what was difficult, he said “To know one’s self,” and what was easy, “To advise another.”

--Diogenes Laertius (c. 200 AD)
Correlation Between Self-, Peer, and Supervisor Ratings with ABSITE scores (Risucci et al., 1989)
Overconfident Self-Views Regarding Competence in Medical Procedures (from Barnsley et al., 2004)
Where in the world is Ukraine?
(Dropp, Kertzer, & Zeitzoff)
The Dunning-Kruger Effect

1. Poor performers do not/cannot recognize shortcomings in their expertise or knowledge.
The Dunning-Kruger Effect

That which makes one believe that only other people are subject to the Dunning-Kruger effect.

--astronautgo (Twitter)
Judging Self-Performance on a Course Exam
(Dunning et al., Current Directions, 2003)
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Dunning-Kruger Effect

Objective Performance Quartile

Percentile

Actual
Mastery
Test Performance
Metacognition at the Gun Club
In the Hospital Lab (Haun et al., 2000)

Fig 6. Plot of mean of quartile score for actual performance with corresponding mean of self-assessment for knowledge of medical terminology. Circles indicate actual performance, squares perceived performance.
No Incentive for Accuracy?
(Ehrlinger et al., OBHDP, 2008, Study 1)
No Incentive for Accuracy?  
(Ehrlinger et al., *OBHDP*, 2008, Study 1)
Copies of a clock and a daisy

Patient A

Patient B
A Boggle Puzzle Based on True Events
Caputo & Dunning (*JESP*, 2005)

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Imagine you are looking straight down at a tube lying on a table. A ball is thrown into the tube where the arrow is. What path will the ball take once it exits the tube? To the right of the tube are depictions of 4 different paths the ball might take. Which is the correct path?
Estimated v. Actual Correct
(Williams et al., 2013, JPSP, Study 2)
Some days it would be enough just to know which side of the *Dunning-Kruger* effect I'm operating under.

--naomib33 (Twitter)
Mediocrity knows nothing higher than itself, but talent instantly recognizes genius.

- Sir Arthur Conan Doyle, Sr.
Cone & Dunning (ongoing)

- Logical Reasoning I
  - Participants Grade 6 Tests
  - Scores: 2, 9, 11, 14, 17, 20
  - $n = 50$

- Logical Reasoning II
  - Participants Grade 5 Tests
  - Scores: 4, 8, 12, 16, 20
  - Roughly half given financial incentives for accuracy (up to $50)$
  - $n = 37$
If Put in IQ Terms

"IQ" Score

- **Actual**
- **Perceived**

**Bottom Target**

**Top Target**
Education

That which discloses to the wise and disguises from the foolish their lack of understanding.

--Ambrose Bierce

(Devil’s Dictionary)
The Problem with Massed Training

- Leads to rapid learning and high initial performance
- Leads also to high satisfaction and feelings of competence
- But … the problem is retention (over time) and transfer (to different situations).
Impact of Massed vs. Distributed Training
(Simons & Bjork, 2002)
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Correlation Between 6th Year Self-Assessments and Some Potential Predictors (Arnold et al., 1985)
Emotional Intelligence

![Graph showing Emotional Intelligence metrics](graph_image.png)
Purchases of Self-Improvement Book after Feedback
Sheldon et al., 2014, *J Applied, Study 2*)
**Benchmarking** *(Martin et al., 1998)*

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### Benchmarking (Martin et al., 1998)

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The only true wisdom is to know that you know nothing.

--Socrates

A man’s gotta know his limitations.

--Inspector Harry Callahan (SFPD)
An education isn’t how much you’ve committed to memory, or even how much you know. It’s being able to differentiate between what you know and what you don’t.

--Anatole France
Problem Habits?

*Jumping to Conclusions*

- One habit is revealed by the following task:

  Two urns are placed in from the the participant. One contains a majority of white balls, the other a majority of black balls. The experimenter draws one ball at a time from the same urn and announces its color.

  The participant is told to stop the experimenter when he or she is ready to state which urn he or she thinks the balls are being drawn from.

- Schizophrenia patients who fall prey to their delusions tend to reach their decision after *only one or two balls* are drawn.
JTC and Belief Bias in Logic

- Example question:
  - A rose needs water
  - Living things need water
  - \( \therefore \) Roses are living things

(belief bias answer: yes; correct answer: we cannot conclude).

\[ t(104) = 4.24, p < .001 \]
Example question:
- A ball and a bat cost $1.10 together, and the bat costs $1 more than the ball. How much does the ball cost?

Actual

\[ t(104) = 3.33, p < .001 \]
JTC and Ratio Bias

- Example question:
  - Can bet to win $10. Prefer to bet on an urn with 1 winning ball and 9 losers, or urn with xx winners and (100-xx) losers?

![Graph showing preference for urns with varying degrees of JTC bias]

- Preference for x/100 Urn
- Degree of JTC Bias
- Non Group
- JTC Group
- $t(104) = 3.56, p < .001$
The Dunning-Kruger Effect

Hey bloggers, knowing about the Dunning-Kruger effect should make you less sure about other peoples' ignorance...not more sure.

--rahkan (Twitter)
On the Failure of Ignorance to Recognize Itself

- Poor performers fail to recognize depths of their shortcomings (Dunning-Kruger effect)
- Confidence flows from misinformation much like it does from accurate information
- We have a collective problem of recognizing the best people (and ideas) among us
- Motivated resistance may lead to paradoxical effects due to feedback
Your answer to the question is in error. But if it is any consolation, many of my academic colleagues have also been stumped by this problem.

Since you seem to enjoy coming straight to the point, I'll do the same. You blew it! Let me explain.

I have been a faithful reader of your column, and I have not, until now, had any reason to doubt you. However, in this matter (for which I do have expertise), your answer is clearly at odds with the truth.

May I suggest that you obtain and refer to a standard textbook on probability before you try to answer a question of this type again?

I am in shock that after being corrected by at least three mathematicians, you still do not see your mistake.

You made a mistake, but look at the positive side. If all those Ph.D.'s were wrong, the country would be in some very serious trouble.

You are the goat!
Regression to the Mean? (Ehrlinger et al., *OBHDP*, 2008, Study 1)
Health Literacy: Asthma Sufferers
(Williams et al., 1998)

- Asthma sufferers asked to operate an inhaler
  - Checked to see if sufferers executed 6 steps correctly (e.g., shake inhaler, exhale before use, wait 30 sec before additional puff).
  - Percentage of those performing 4 or more steps correctly:
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  - Checked to see if sufferers executed 6 steps correctly (e.g., shake inhaler, exhale before use, wait 30 sec before additional puff).
  - Percentage of those performing 4 or more steps correctly:
    - Of those at high school reading level: 52%
    - Of those at only 3rd grade reading level: 12%