

The background of the slide is a 3D-rendered hallway. The walls and floor are composed of numerous question marks of varying sizes and orientations, creating a sense of depth and complexity. At the far end of the hallway, a bright, glowing light source illuminates the scene, casting long shadows and highlighting the texture of the question marks. The overall color palette is a mix of dark blues, purples, and oranges, with the light at the end providing a warm, golden glow.

# The Intelligence Trap – How To Avoid Poor Decision Making

C-108503

# What is the Intelligence Trap?

01

EXPLORES THE PARADOXICAL RELATIONSHIP BETWEEN INTELLIGENCE AND DECISION-MAKING ERRORS

02

PSYCHOLOGICAL FACTORS THAT CONTRIBUTE TO SMART INDIVIDUALS MAKING POOR CHOICES

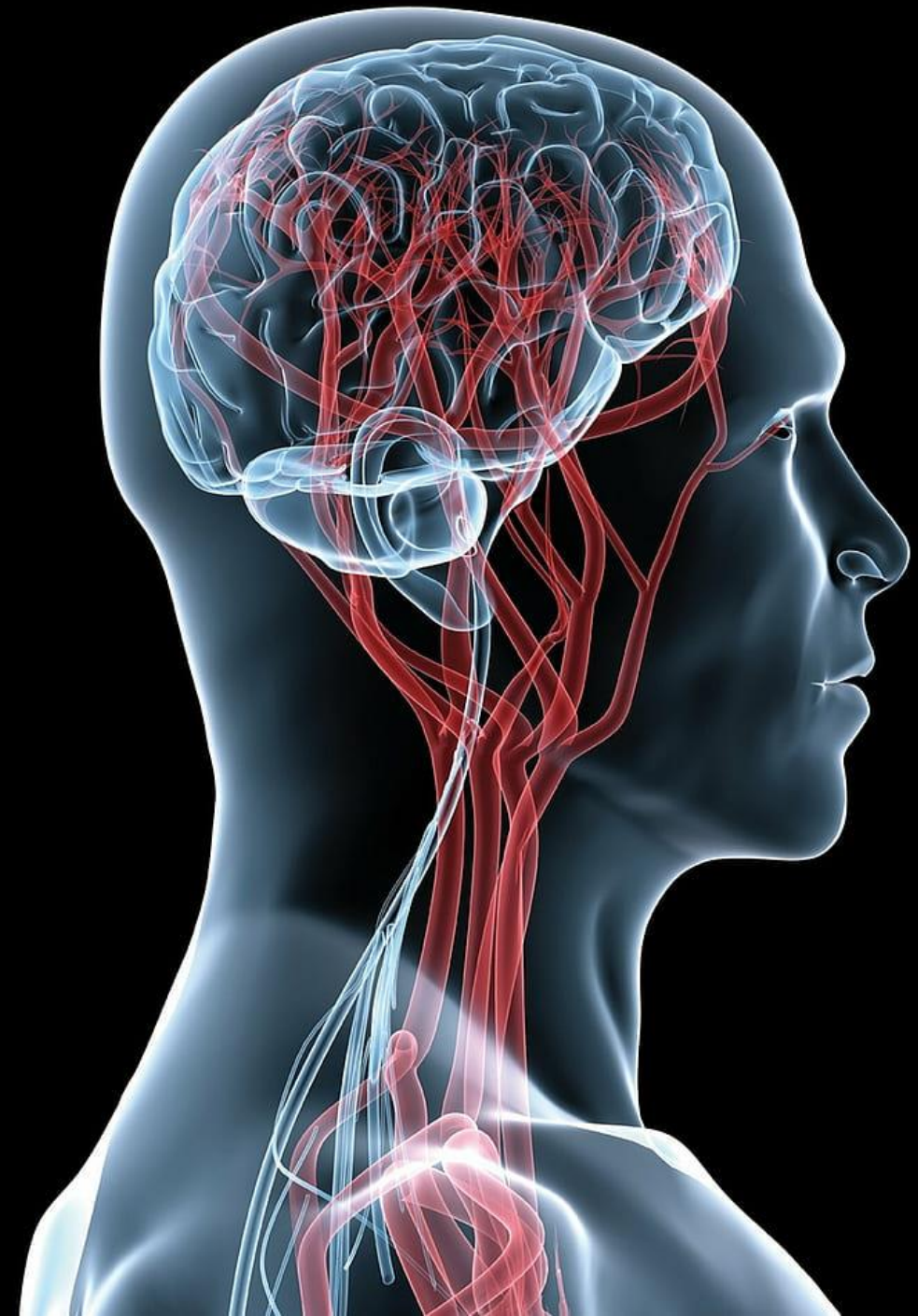
03

OVERCONFIDENCE, COGNITIVE BIASES, AND THE LIMITATIONS OF HUMAN REASONING

# The concept of “Disrationalia”

- Inability of highly intelligent individuals to think and behave rationally
- Particularly when it comes to decision-making
- Intelligence does not always translate into sound judgment or the ability to make wise choices
- Individuals with disrationalia may display irrational behaviours or make decisions that go against their own best interests, despite possessing high intellectual capabilities

The term is often used in discussions about cognitive biases, emotional influences on decision-making, and the limitations of human reasoning. The recognition of disrationalia emphasizes that intelligence alone does not immunize individuals from making irrational choices, and it highlights the importance of understanding and addressing cognitive biases to improve decision-making skills.



## **Discussion Point:**

**How can  
disrationalia affect  
professionals  
working in  
practice?**



# How can disrationalia affect professionals working in practice?

- Misdiagnosis and Delayed Treatment
- Incorrect Prescription and Poor Vision Correction
- Ineffective Management of Ocular Health Issues
- Neglect of Patient Safety and Consent
- Failure to Follow Professional Standards and Guidelines
- Impact on Public Health and Healthcare System



The Dunning-Kruger Effect -  
The cognitive bias where  
individuals with low ability at  
a task overestimate their  
ability

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Two components of the Dunning-  
Kruger Effect:

- Lack of metacognitive skills:  
Inability to accurately assess  
one's own competence
- Lack of task-specific  
knowledge: Insufficient  
knowledge to recognize one's  
own errors

"He is thus the all-time record-holder of  
the Dunning-Kruger effect, **the  
phenomenon in which the incompetent  
person is too incompetent to understand his  
own incompetence.** Trump thought he'd be  
celebrated for firing James Comey.

He thought his press  
coverage would grow  
wildly positive once he  
won the nomination.  
He is perpetually  
surprised because  
reality does not  
comport with his  
fantasies."

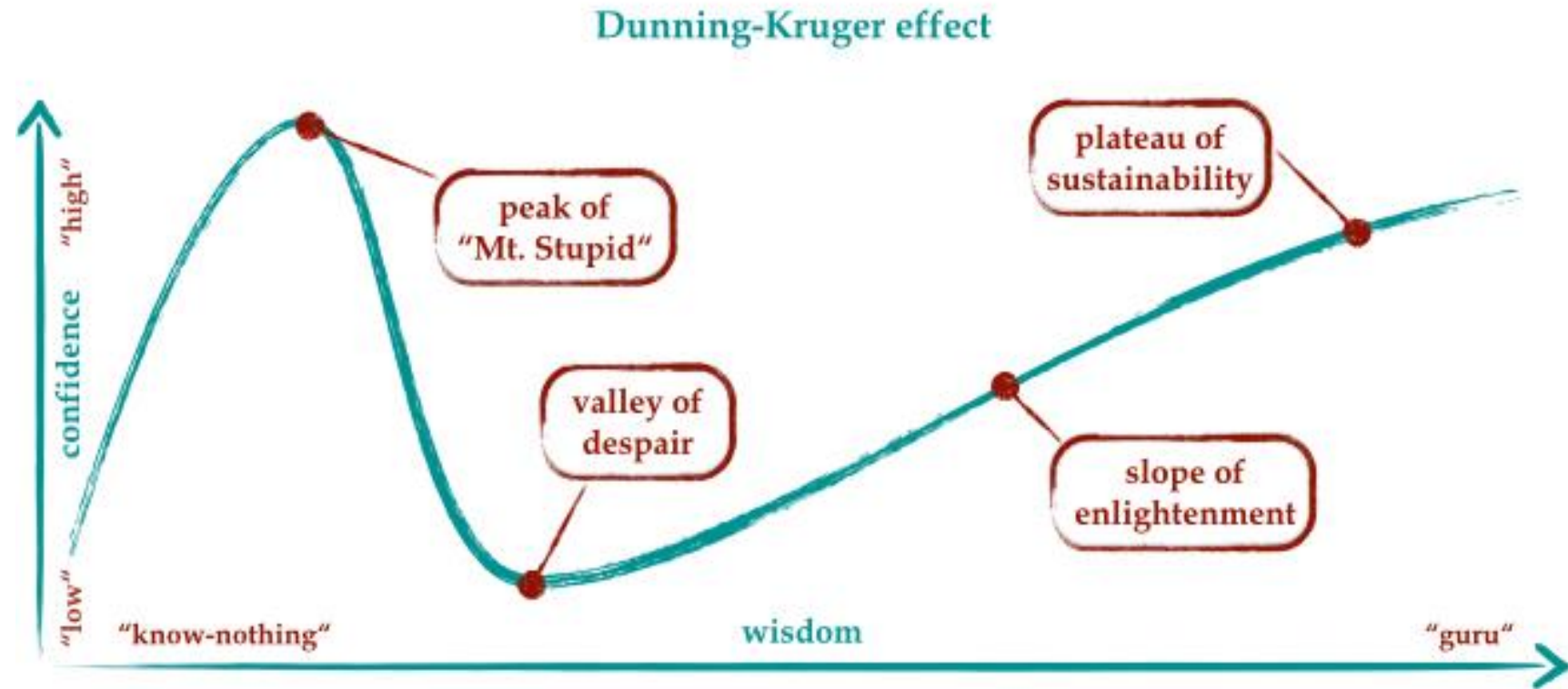
-David Brooks,  
New York Times



- Individuals may resist acknowledging their incompetence due to a desire for self-enhancement
- The discomfort of realizing one's limitations contributes to cognitive dissonance

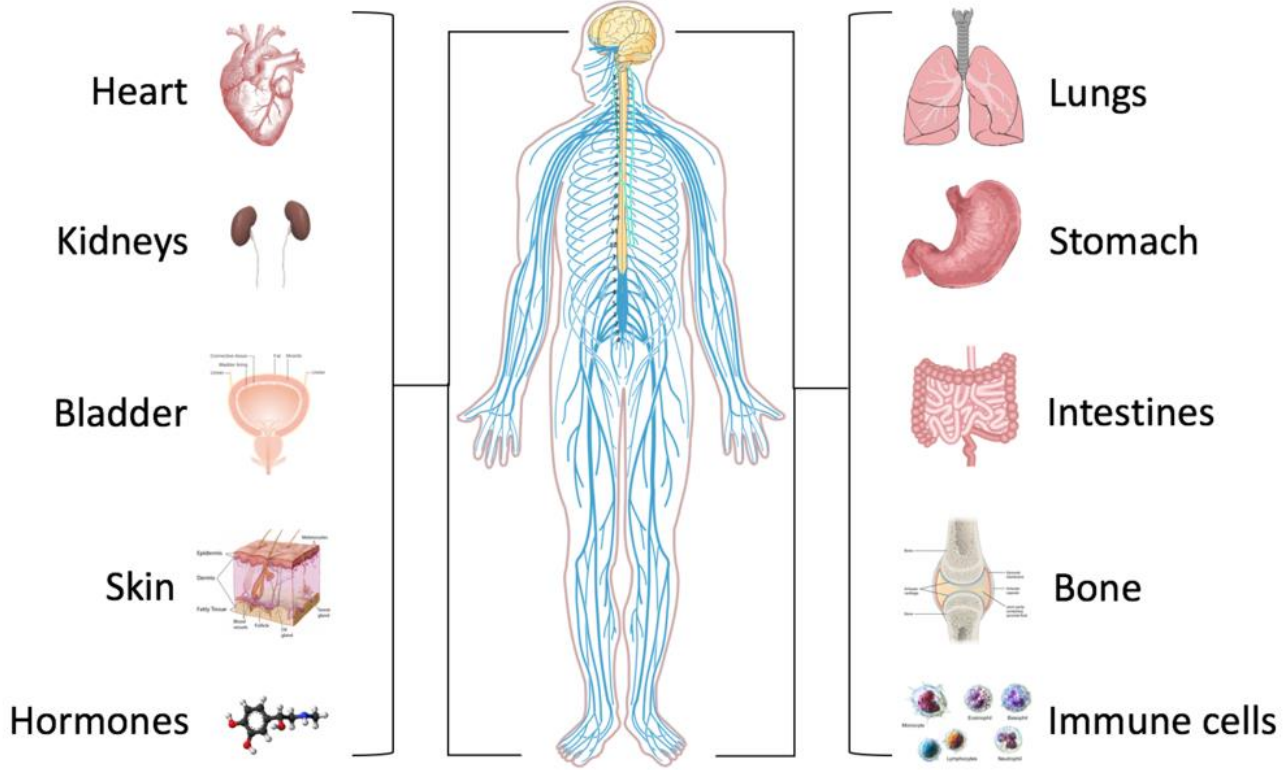
Impact on practice:

- Individuals with low competence may make suboptimal decisions due to overconfidence
- Communication and collaboration challenges
- Difficulty in accepting feedback and constructive criticism
- Potential conflicts in team settings due to inaccurate self-perceptions



<http://www.understandinginnovation.wordpress.com>

## Interoception



- Perception and awareness of the body's internal physiological states
- Sensations related to organs, tissues, and other internal processes
- Ability to sense and interpret signals from within the body, providing information about aspects such as heart rate, breathing, temperature, hunger, and other visceral sensations
  
- Nervous system plays a crucial role in interoception
- Receives signals from various internal organs and conveys them to the brain
- Brain processes this information and generates a sense of the body's internal state
- Interoception is considered an essential aspect of self-awareness and is linked to emotional experiences, decision-making, and overall well-being.

Research suggests that interoception is associated with various mental health conditions. For example, individuals with conditions like anxiety, depression, or certain eating disorders may exhibit altered interoceptive awareness. Therapeutic practices, such as mindfulness and body-focused interventions, often aim to enhance interoceptive awareness as part of improving overall mental and emotional health.



# Interoception & Somatic Markers

Somatic markers are physiological and emotional signals that the body experiences in response to various situations or stimuli. Coined by neuroscientist Antonio Damasio, the concept of somatic markers is an integral part of his somatic marker hypothesis, which suggests that emotional processes play a crucial role in decision-making.



- **Emotional Signaling:** Somatic markers serve as a kind of emotional shorthand, helping individuals quickly evaluate situations and make decisions based on past experiences. These markers are often associated with gut feelings or intuitive responses.
- **Physiological Responses:** Somatic markers involve bodily sensations or physiological changes that accompany emotions. For example, increased heart rate, sweating, or a feeling of warmth may be associated with positive or negative emotions, influencing decision-making.
- **Learning and Memory:** Somatic markers are learned through experience and are stored in memory. Positive experiences may lead to positive somatic markers, signaling that a particular decision or action is likely to be beneficial. Conversely, negative experiences create markers that signal potential risks or drawbacks.
- **Influence on Decision-Making:** According to Damasio's hypothesis, when faced with a decision, individuals subconsciously access these somatic markers associated with different options. The emotional signals help guide decision-making by influencing the perceived value or risk of each choice.



# Interoception Test

- Person 1: sit in a relaxed position
- Person 2: find the pulse on the wrist of Person 1
- Person 1: try and feel your heart beating in your chest (don't touch it!)
- The timer will run for 1 minute, Person 2 will count the pulse of Person 1, Person 1 will count how many times they feel their heart beat in their chest
- Make a note of the numbers, swap over and repeat....

# How did you do?

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Studies show that:

- Most people's estimates are out by approx. 30%
- Higher accuracy indicates higher scores on tests such as the Iowa Gambling Test
- Scores were used to predict profits made by hedge fund traders – those with higher scores made the best deals
- Accuracy also determines social skills – our physiology often mirrors the signals we see in others – higher scorers were often more empathetic
- Accuracy also helps you to read your memories by using somatic markers to signal confidence in what you think you know

The Iowa Gambling Task (IGT) is a psychological test designed to assess decision-making abilities, particularly under conditions of uncertainty and risk. It was developed by Antoine Bechara, Antonio Damasio, Hanna Damasio, and Steven Anderson at the University of Iowa in the 1990s.

The IGT is widely used in research and clinical settings to evaluate various populations, including patients with brain injuries, neurological disorders, and psychiatric conditions such as addiction and impulse control disorders.

### **1.Task Structure:**

1. The IGT typically involves a computerized card game where participants are instructed to choose cards from one of four decks labeled A, B, C, and D. The decks are associated with different probabilities of winning and losing money.

### **2.Outcome Probabilities:**

1. Two of the decks (A and B) are "disadvantageous" because they provide large immediate rewards but also carry high losses over time, resulting in a net loss. The other two decks (C and D) are "advantageous" because they yield smaller immediate rewards but have lower losses over time, resulting in a net gain.

### **3.Decision-Making Strategy:**

1. Successful performance on the IGT requires participants to learn through trial and error to preferentially select cards from the advantageous decks (C and D) while avoiding the disadvantageous decks (A and B).
2. The task is designed to mimic real-life decision-making scenarios where individuals must weigh immediate rewards against long-term consequences and adjust their behaviour based on feedback.

### **4.Clinical Applications:**

1. The IGT has been used to study decision-making deficits in various clinical populations, including patients with frontal lobe lesions, traumatic brain injury, substance use disorders, gambling addiction, and other psychiatric conditions.
2. It provides valuable insights into the neural and cognitive processes underlying decision-making and risk-taking behaviour and can inform interventions and treatment strategies for individuals with impaired decision-making abilities.

## **Discussion Point:**

**What measures can you put in place to prevent the impact of the Dunning-Kruger effect in practice & how can you improve your interoception?**



# Dual Process Theory - Unveiling the Two Systems of Cognitive Processing

- Dual-process models propose two distinct cognitive systems operating in human thinking.
- Originating from psychology, the theory characterizes System 1 (intuitive) and System 2 (analytical) thinking.

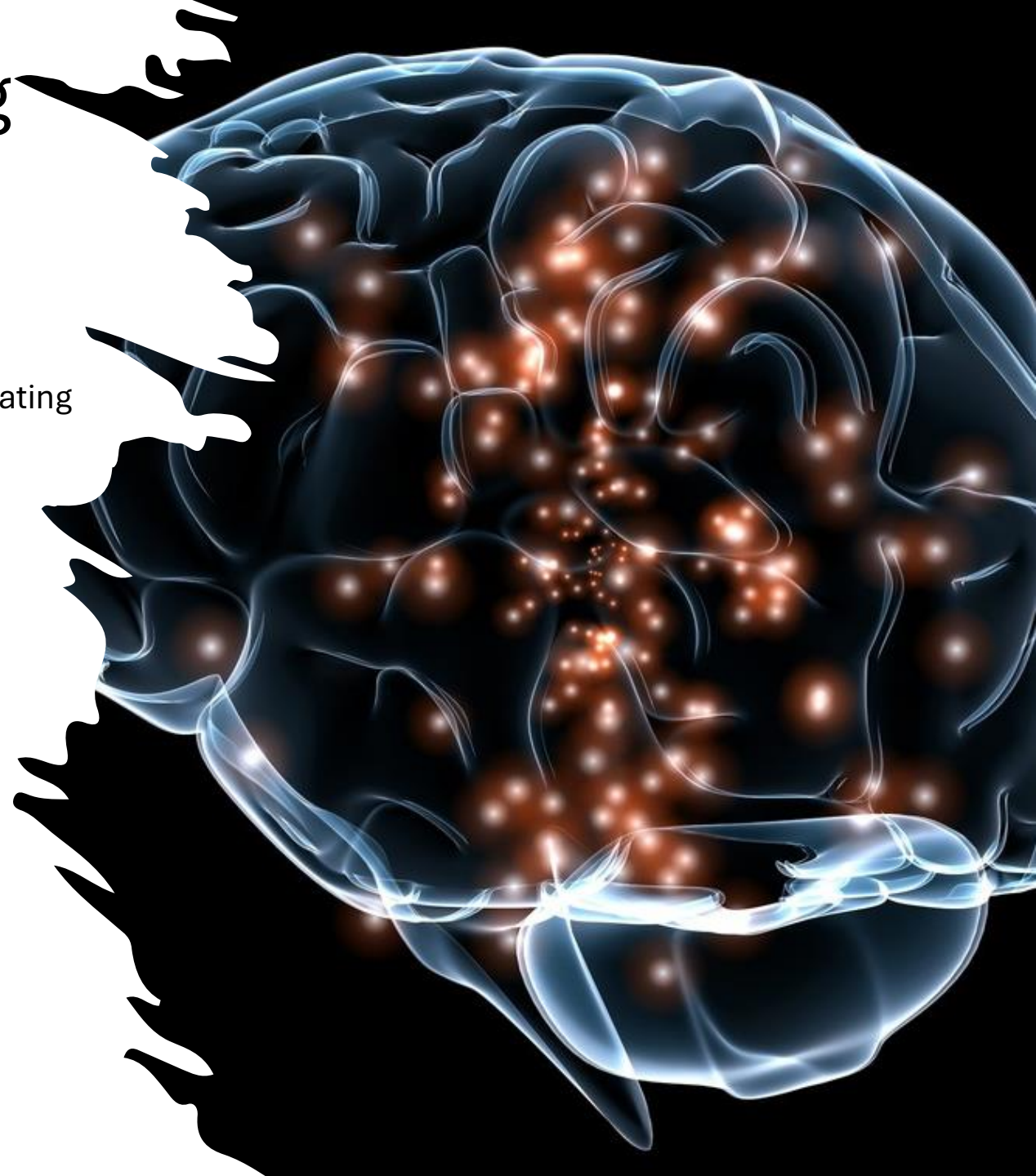
## Dual-Process Model Components

### System 1: Intuitive Thinking

- Automatic, fast, and effortless
- Based on heuristics, intuition, and associative processes
- Prone to cognitive biases and influenced by emotions

### System 2: Analytical Thinking

- Deliberate, slow, and effortful
- Involves logical reasoning, critical analysis, and problem-solving
- Requires conscious cognitive effort and attention



Dual process theory can be applied in optometry to mitigate the effects of the Dunning-Kruger effect, which is the tendency for individuals with low competence to overestimate their abilities.

### **Training and Education:**

Conduct training that emphasizes metacognitive skills, such as self-awareness, self-assessment, and self-reflection. By developing a better understanding of their own strengths and limitations, optometrists can mitigate the risk of overestimating their abilities.

Education programs can incorporate principles of dual process theory to teach optometrists about the cognitive biases that may influence decision-making, including the Dunning-Kruger effect. By raising awareness of these biases, optometrists can be better equipped to recognize and overcome them in their practice.

### **Clinical Decision-Making Guidelines:**

Optometry practices can develop clinical decision-making guidelines that encourage systematic and evidence-based approaches to patient care. By relying on established protocols and guidelines, optometrists can reduce the likelihood of making errors due to overconfidence or lack of competence.

These guidelines should incorporate both intuitive (System 1) and analytical (System 2) processes, allowing optometrists to balance gut feelings with careful consideration of evidence and reasoning.



## Encouraging Humility and Openness:

Optometry practices can promote humility and openness among practitioners, encouraging them to acknowledge their limitations and seek assistance when needed.

By fostering a culture where optometrists feel comfortable admitting uncertainty and seeking advice from colleagues and specialists, practices can reduce the risk of errors resulting from overconfidence or reluctance to ask for help.



## 6. Recognise, and work within, your limits of competence

- 6.1 Recognise and work within the limits of your scope of practice, taking into account your knowledge, skills and experience.
- 6.2 Be able to identify when you need to refer a patient in the interests of the patient's health and safety, and make appropriate referrals.
- 6.3 Ensure that you have the required qualifications relevant to your practise.
- 6.4 Understand and comply with the requirements of registration with the General Optical Council and the legal obligations of undertaking any functions restricted by law, i.e. sight testing and the sale and supply of optical devices.



**UK vs Japan –  
Which of these is a  
WEIRD country?**

**WESTERN  
EDUCATED  
INDUSTRIALISED  
RICH  
DEMOCRATIC**



# Study by Grossman et al: “Ageing & Wisdom: Culture Matters”

- Participants answered questions about news articles and agony aunt columns
- Scored on various aspects of wise reasoning, such as intellectual humility, the ability to take on board another viewpoint and their ability to suggest a compromise
- Participants ranged from 25 to 75 years old
- In the USA wisdom grew steadily with age
- In Japan there was no steep increase with age
- 25 year old Japanese participants were already as wise as 75 year old Americans

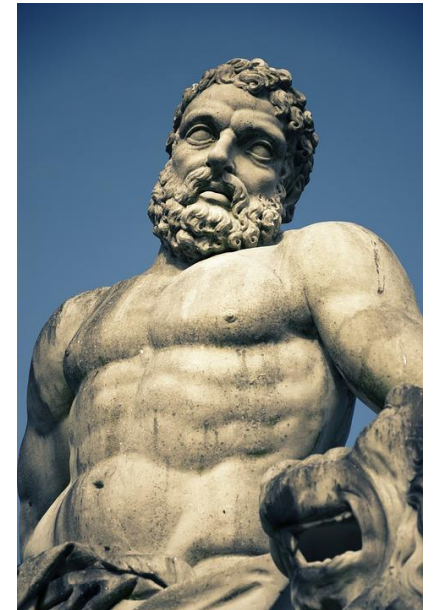
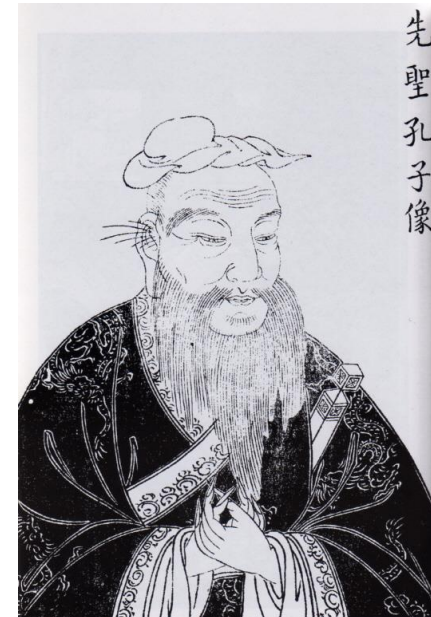
Task:

Draw a quick diagram of your social network, representing your family & friends and their relationships to yourself....



# In WEIRD countries...

- People tend to represent themselves as bigger than their friends (6mm on average)
- People from Japan & China tend to draw themselves slightly smaller
- Western people are also more likely to describe their own personality traits and achievements
- East Asian people describe their position in the community

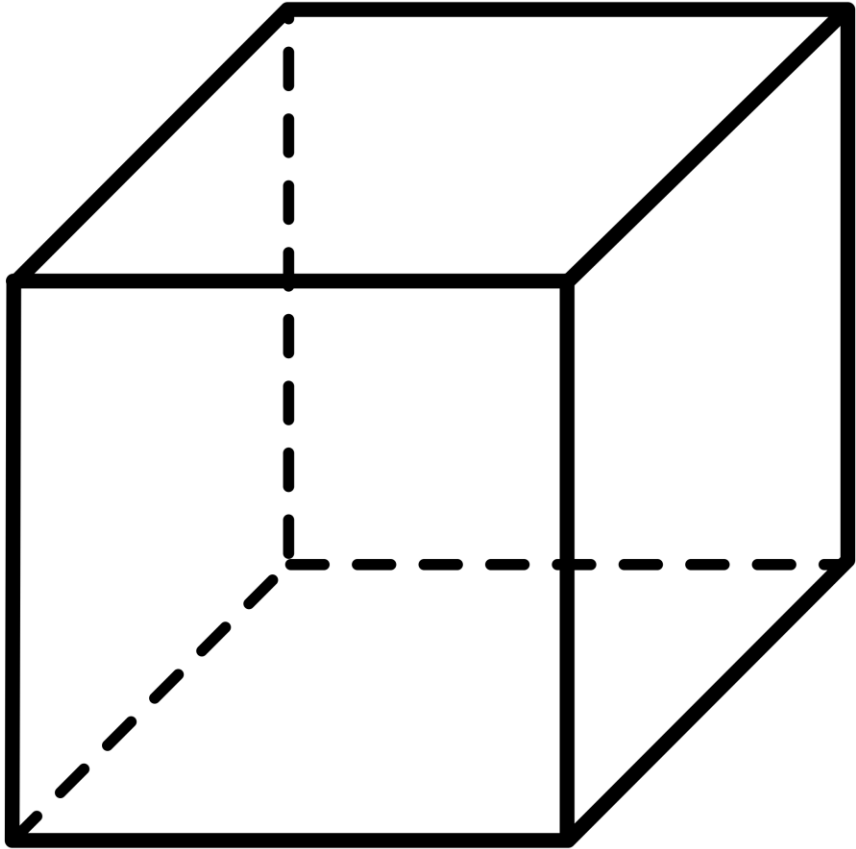


# Japanese Education Methods

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# Desirable Confusion or Productive Failure



- Educational concept that challenges the traditional notion of success as the primary measure of learning
- Emphasizes the value of learning through failure and struggle
- Productive failure involves deliberately designing learning experiences that allow students to grapple with complex problems, make mistakes, and learn from their errors before receiving instruction or guidance
- Through this process, students develop a deeper understanding of concepts, problem-solving skills, and resilience
- Productive failure encourages critical thinking, creativity, and perseverance, preparing students to tackle real-world challenges where there may not be a clear solution. By reframing failure as an integral part of the learning process, productive failure promotes a growth mindset and fosters a culture of exploration, experimentation, and continuous improvement in education

## **Discussion Point:**

**Could these methods be implemented into Optics? What benefits could they have?**



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