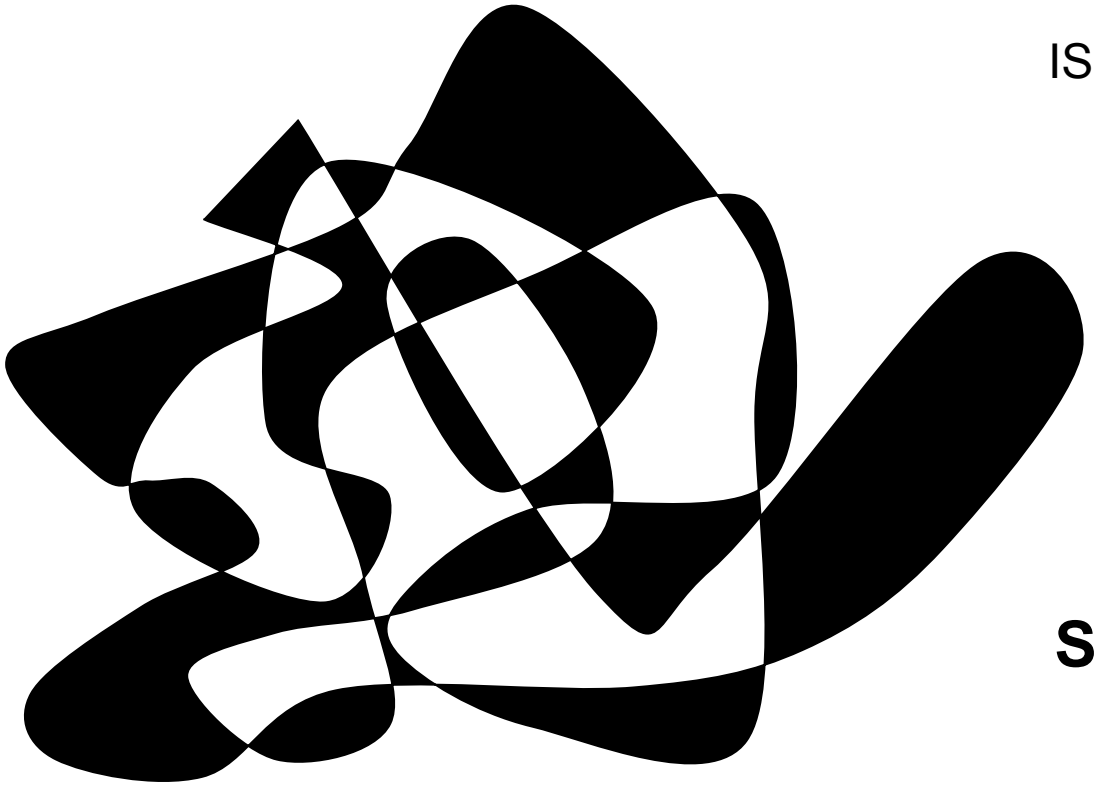
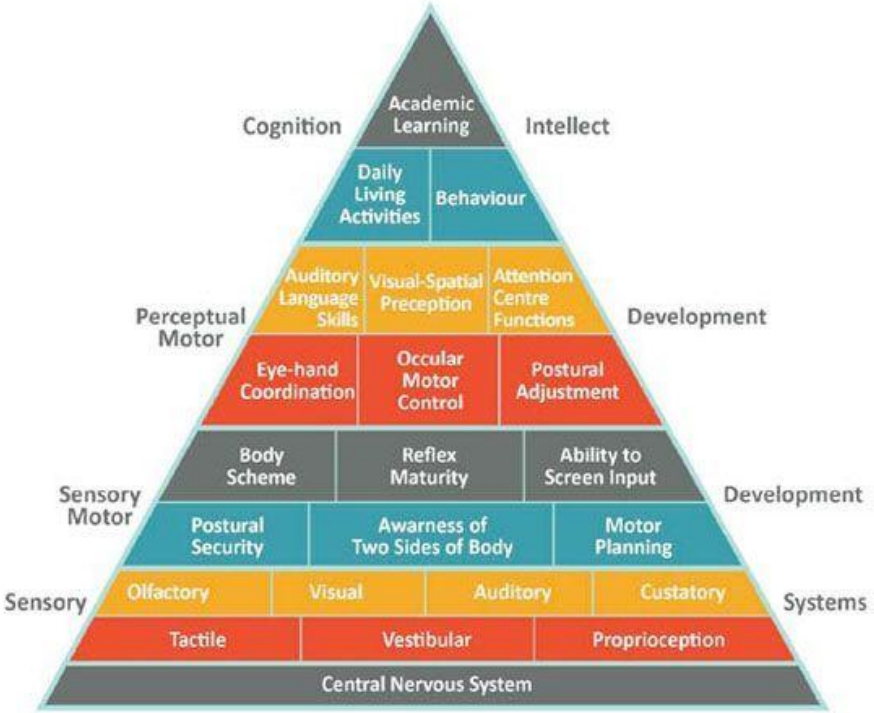
Advanced Project Management

IS 594, Section PJ

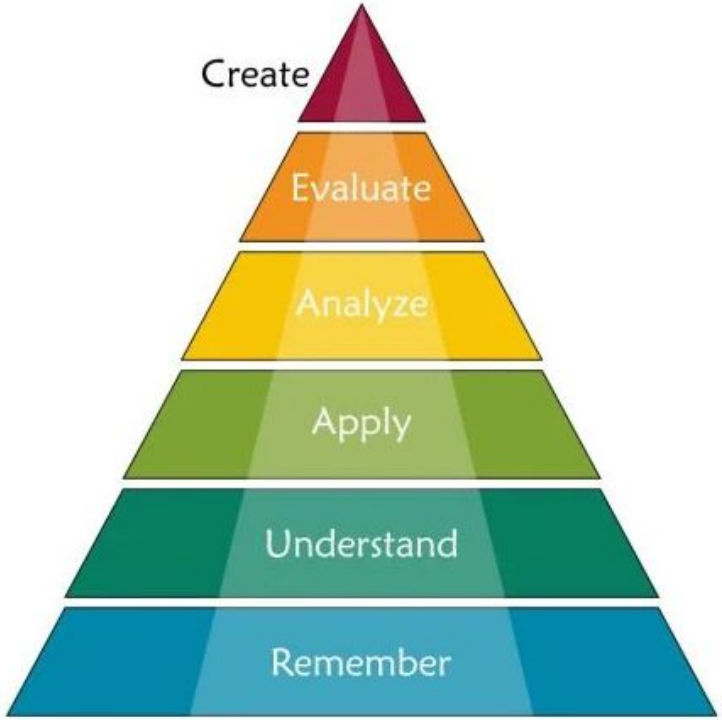


Skill Acquisition and Expertise

Educational Psychology Views of Skill Acquisition



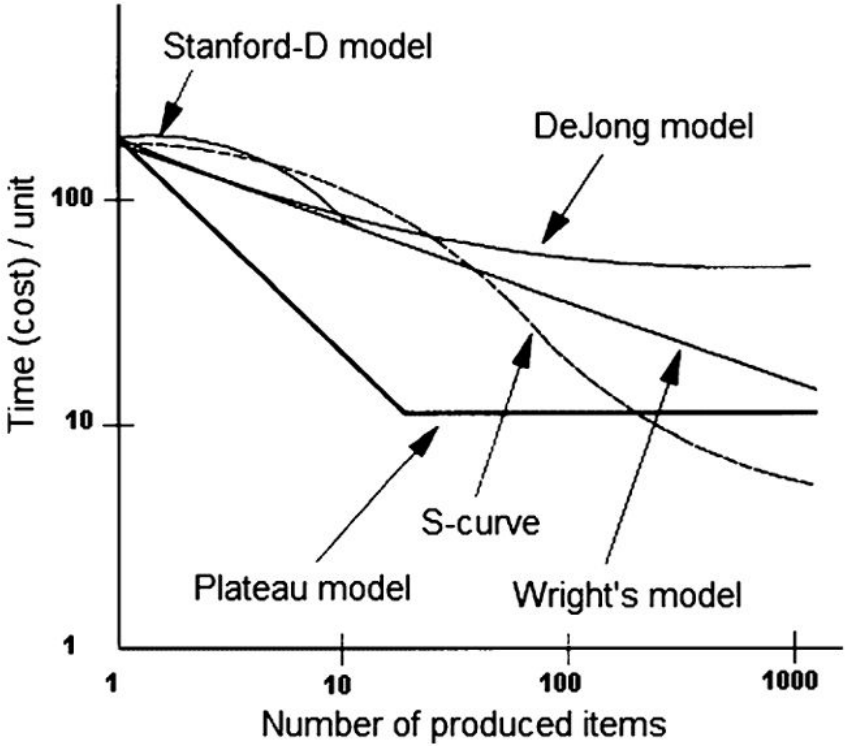
"Learning Pyramid" (National Training Laboratory): remember about 10% of information acquired from text, retain nearly 90% through teaching others.



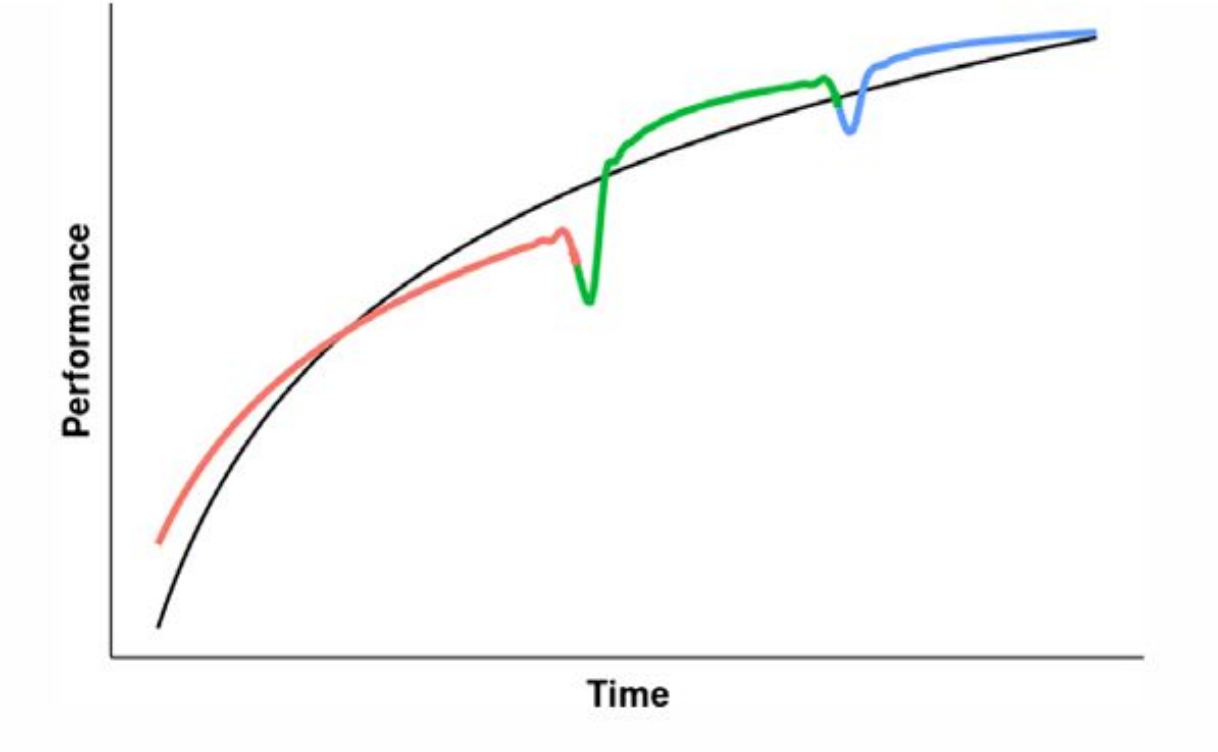
Bloom's Taxonomy: Taxonomy of Educational Objectives (circa 1956). Knowledge is the necessary precondition for putting skills/abilities into practice.

Cognitive Science Views of Skill Acquisition and Expertise

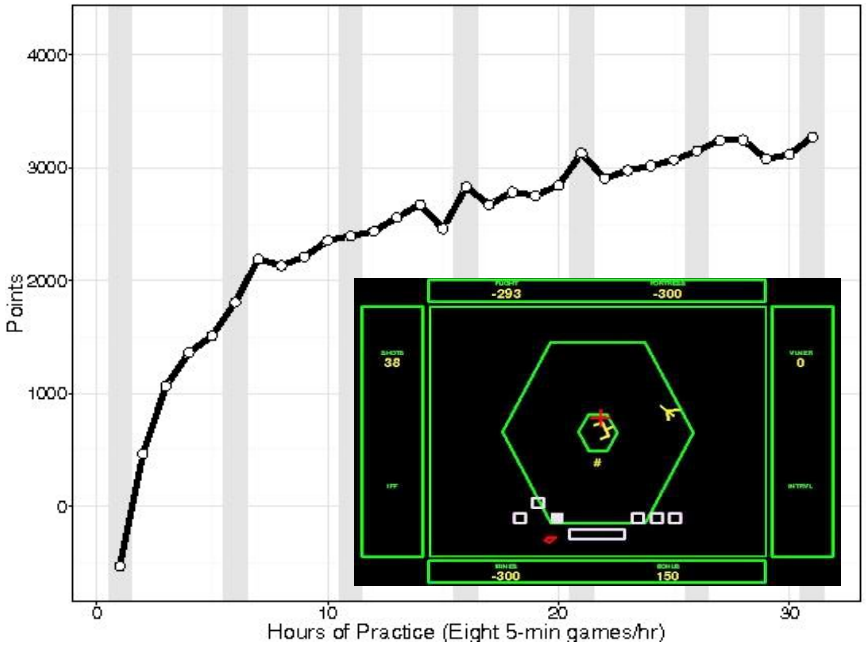
Anzanello, M.J. and Fogliatto, F.S. (2011). Learning curve models and applications: Literature review and research directions. *International Journal of Industrial Ergonomics*, 41, 573-583.

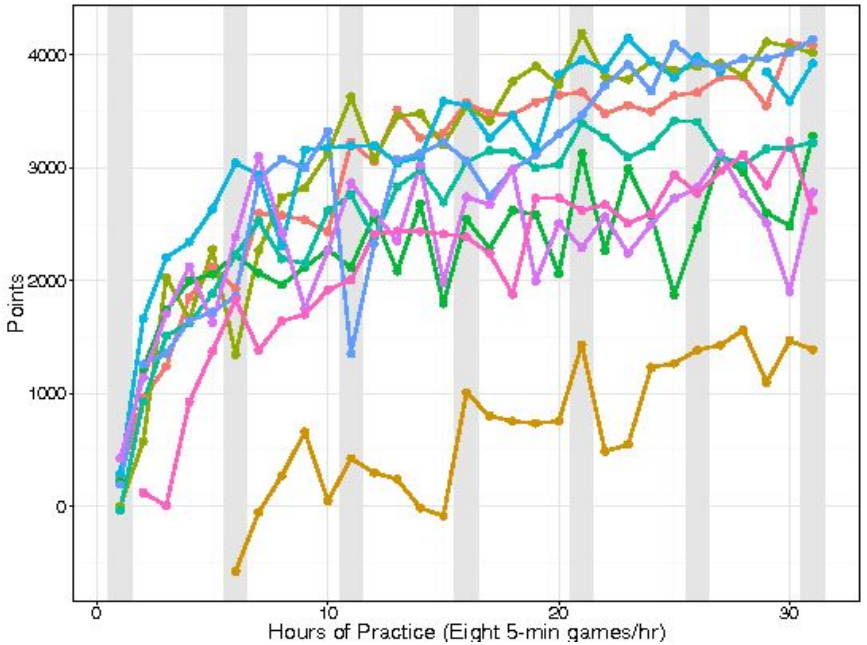


Gray and Lindstedt (2017). Plateaus, Dips, and Leaps: Where to Look for Inventions and Discoveries During Skilled Performance. *Cognitive Science*, 41, 1838–1870.



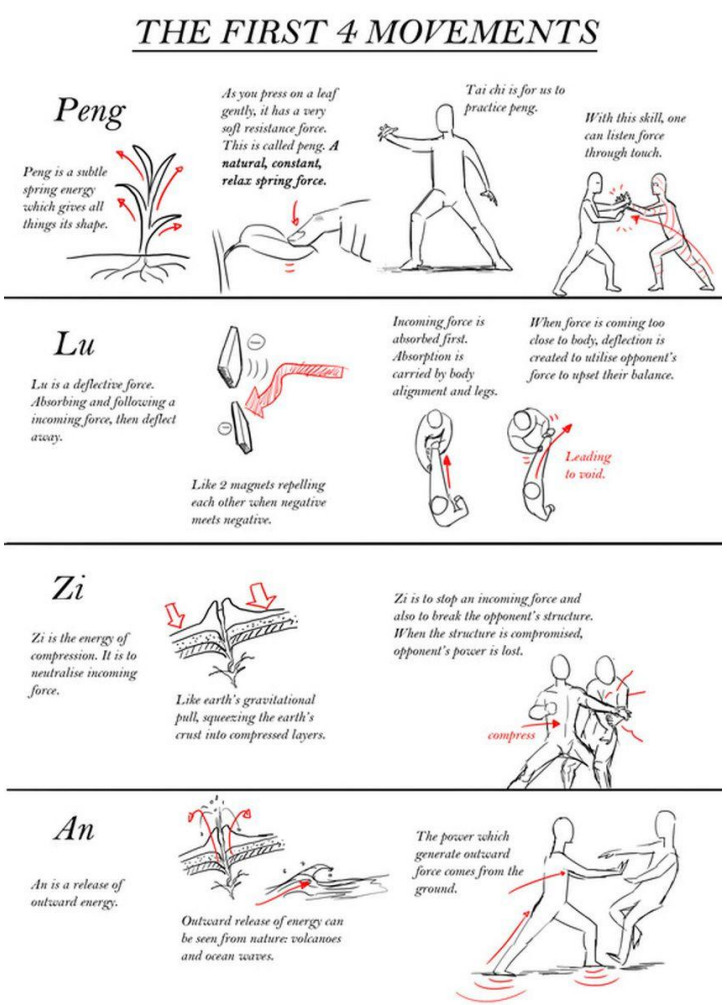
Train novices on video game *Space Fortress*





Gray and Lindstedt (2017). Plateaus, Dips, and Leaps: Where to Look for Inventions and Discoveries During Skilled Performance. *Cognitive Science*, 41, 1838–1870.

Novice Learning of Tai Chi movements (procedural)



What Happens When you Stop Learning (intentionally and unintentionally)?

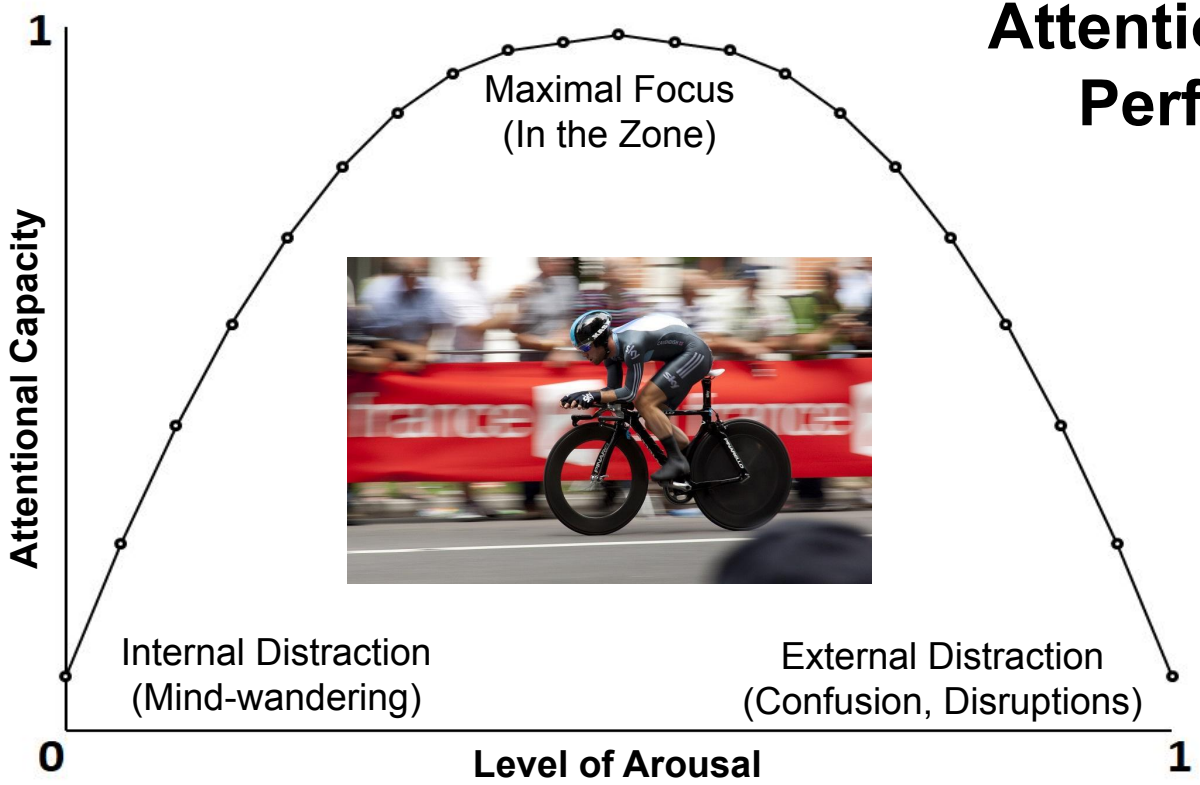
Rational Badger (2024). Overcome Learning Plateaus – And Reignite Your Progress. *Medium*, May 13.

https://medium.com/@RationalBadger/overcome-learning-plateaus-8729b622fa4a

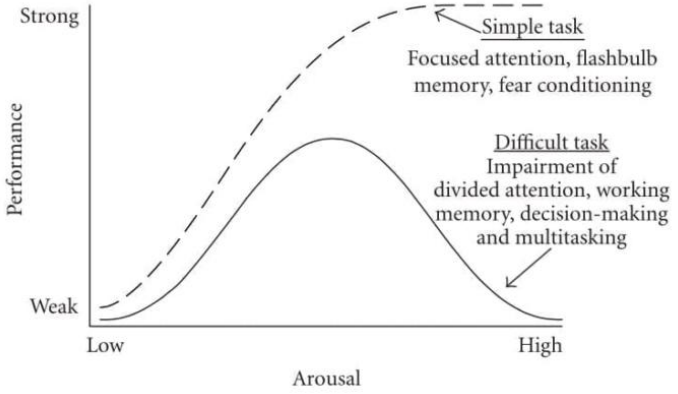
Hitting a learning plateau: point at which you stop making progress (lose confidence, demotivational).

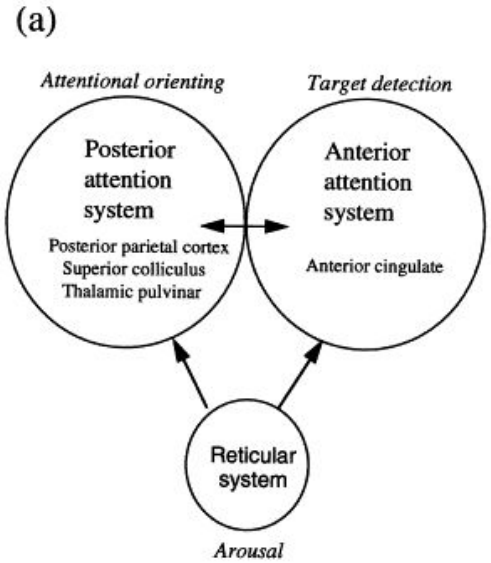
- Beginner → advanced beginner: next step (separating practice from performance) takes more effort.
- “more time invested in skill development, less progress per unit time”.
- Needs: targeted feedback, professional training, systems of daily activities, break skill into smaller components.

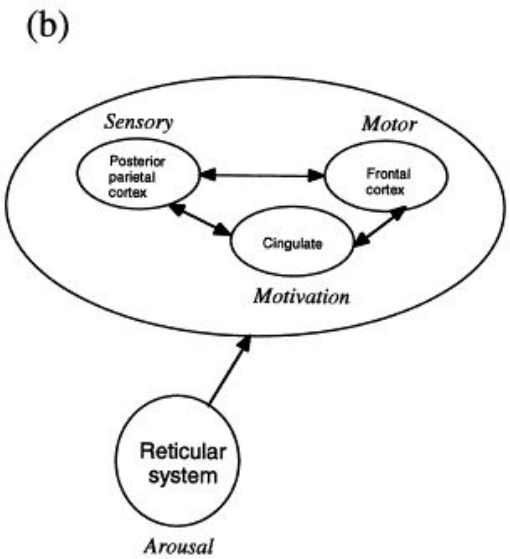
Attention and Task Performance



Nieuwenhuis (2024). Arousal and performance: revisiting the famous inverted-U-shaped curve. *Trends in Cognitive Science*, 28(5), 394-396.



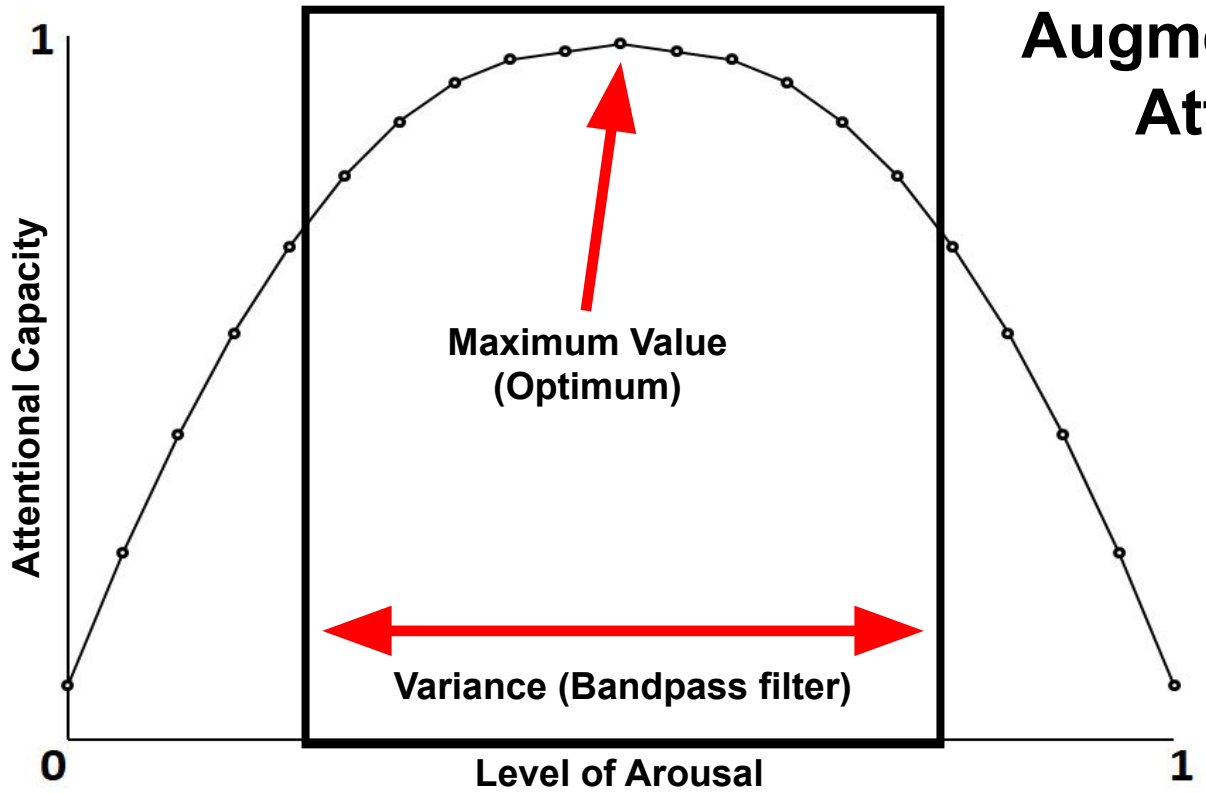




Connection between Attention and Arousal

Posner and Petersen (1990). The attention system of the human brain. *Annual Reviews in Neuroscience*, 13, 25-42.

Mesulam (1981). A cortical network for directed attention and unilateral neglect. *Archives of Neurology*, 10, 304-325.



Nieuwenhuis (2024). Arousal and performance: revisiting the famous inverted-U-shaped curve. *Trends in Cognitive Science*, 28(5), 394-396.

Environmental Approaches to Enhancing Performance

Natural Elements and Productivity

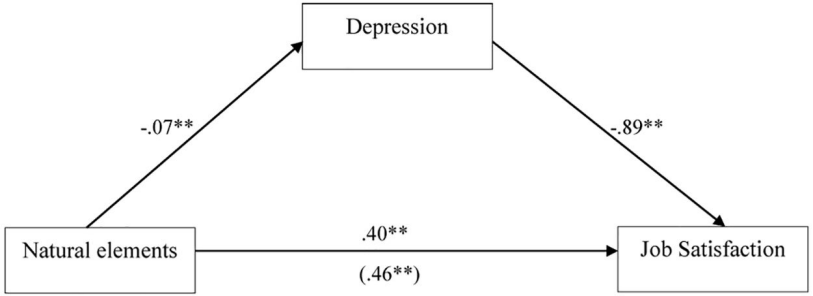
https://blog.turningart.com/how-to-use-natural-elements-to-create-a-productive-office-space

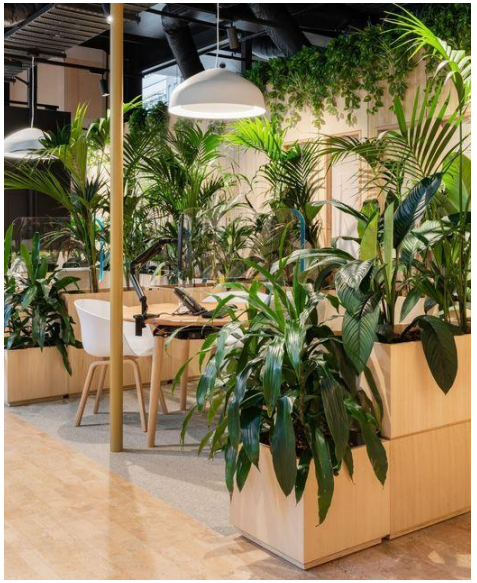
https://www.hermanmiller.com/research/categories/white-papers/nature-based-design-the-new-green/#source3

Biophilic Design Principles for work spaces (office space, workshop)

- reduces stress, increases productivity and creativity (improved attention, learning, cognitive function).

- encourage gardens, walkways, sources of natural light, gurgling water fountains, presence of plants and animals.





An et.al (2016). Why We Need More Nature at Work: Effects of Natural Elements and Sunlight on Employee Mental Health and Work Attitudes. *PLoS One*, 11(5), e0155614.