



THE TRADER CURRICULUM

Supplementary Material — Aug 30th 2026

The Science Behind the Grind

Foundational literature supporting this week's LEARN section

1. Grit

Foundational Paper: *“Grit: Perseverance and Passion for Long-Term Goals”*

Authors: Angela L. Duckworth, Christopher Peterson, Michael D. Matthews, Dennis R. Kelly

Journal & Date: *Journal of Personality and Social Psychology*, 2007

Key Findings: This milestone study introduced the Grit Scale. Across several demanding settings — Ivy League undergraduates, West Point cadets, and National Spelling Bee finalists — grit accounted for meaningful variance in outcomes independent of IQ. In some cohorts, grittier individuals outperformed peers with higher raw intelligence scores.

2. Deliberate Practice

Foundational Paper: *“The Role of Deliberate Practice in the Acquisition of Expert Performance”*

Authors: K. Anders Ericsson, Ralf Th. Krampe, Clemens Tesch-Römer

Journal & Date: *Psychological Review*, 1993

Key Findings: This paper challenged the idea that natural talent alone drives elite skill. It defined deliberate practice as structured, focused training built to target weaknesses, push past comfort, and deliver immediate feedback — rather than mindless repetition. It's also the original source later popularized as the “10,000-hour rule.”

3. The Brain and Effort

Foundational Paper: *“Dopamine Promotes Cognitive Effort by Biasing the Benefits Versus Costs of Cognitive Work”*

Authors: Andrew Westbrook, Roshni van den Bosch, Jussi-Pekka Määtä, Lars Hofmans, Danae Papadopetraki, Roshan Cools, Michael J. Frank

Journal & Date: *Science*, 2020

Key Findings: This study ties dopamine levels in the brain's striatum to willingness to sustain demanding cognitive effort. Dopamine functions as a cost-benefit calculator: higher synthesis capacity signals that the expected reward outweighs the energy cost, pushing persistence through difficult or tedious work. (A widely cited parallel paper on physical effort is Salamone et al.'s “Dopamine and Effort-Based Decision Making.”)

Why It Matters: This landmark study demonstrated that stimulants like methylphenidate (Ritalin) increase a person's willingness to perform difficult mental tasks not by making them smarter, but by changing the



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brain's internal cost-benefit math. Dopamine essentially amplifies the perceived value of the reward while making the “pain” or boredom of the effort feel less daunting.

4. Dual-Process Theory (System 1 vs. System 2)

Foundational Literature: *Thinking, Fast and Slow* by Daniel Kahneman (2011); *foundational papers* by Daniel Kahneman & Amos Tversky

The Connection: Neurobiology defines “slow cognitive processing” as System 2 — effortful, analytical, and easily overwhelmed by stress or financial panic. “High-speed, intuitive pattern recognition” is System 1 — automatic, rapid, and subconscious. For traders, the literature shows that under extreme time constraints and market pressure, System 2 fails, making traders default to emotional panic.

5. Naturalistic Decision Making & Expert Intuition

Foundational Literature: “Conditions for Intuitive Expertise: A Failure to Disagree” by Daniel Kahneman and Gary Klein (2009)

The Connection: This landmark collaborative paper examined when “gut feelings” or intuition can actually be trusted in high-stakes environments — financial trading, firefighting, chess. The authors concluded that true expert intuition is nothing more than highly advanced pattern recognition. It can only develop, however, if the environment is predictable enough to have repeatable cues and provides immediate feedback.

6. Financial Neuroeconomics (“Traders in the Lab” Studies)

Foundational Literature: “The Neurobiology of Individual Risk Management, Semi-Quantitative Analysis, and Trading Performance” by John Coates and Joe Herbert, *Proceedings of the National Academy of Sciences*, 2008; later synthesized in *The Hour Between Dog and Wolf*

The Connection: Coates — a former Cambridge research fellow and Wall Street trader — directly measured the physiology of financial risk-takers. His team found that amateur traders let endocrine fluctuations (cortisol from losses, testosterone from wins) hijack the slow, rational prefrontal cortex. Elite performers, by contrast, use deliberate historical study to build “somatic markers” — subconscious, physiological pattern-matching signals that let them spot market shifts in milliseconds, often before they can articulate why they're taking the trade.

7. The Dreyfus Model of Skill Acquisition

Foundational Literature: “A Five-Stage Model of the Mental Activities Involved in Directed Skill Acquisition” by Stuart and Hubert Dreyfus, University of California, Berkeley, 1980

The Connection: This classic framework outlines how humans progress from Novice to Expert. Novices rely strictly on rigid, slow, rule-based checklists — the “emotional, slow cognitive processing” stage. As a performer



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reaches Mastery, the rules are internalized and they transition to fluid, situational assessment — “intuitive pattern recognition.”

For traders who want to go deeper: search each title directly in Google Scholar or PubMed for full-text access.