Learn the Rules Like a Professional, So You Can Break Them Like an Artist:

守 Shu / 破 Ha / 離 Ri: The Art of Deliberate Practice

Aren Jayanthan (I am not a professional and this has not been proofread, please do your own research.)

***Dedicated to Zak Ruppert**, may he get better at whatever he thinks he's good at, because pretty girls always get what they want. (Love ya dude)*

Unreviewed, Objectively Researched, Subjectively Organized Paper (printer-friendly)

> It's not about breaking rules for the sake of it, but understanding them so deeply that you know when they're serving you and when they're holding you back.
>
> Attribution Unknown

PRIMER

This paper started from a quote I heard from a friend (*cough cough* Zak Ruppert):

Learn the rules like a pro, so you can break them like an artist.

Often attributed to Pablo Picasso, apparently it's not BUT Japanese philosophy[1] has this one thing:

Shu (to obey), Ha (to break), and Ri (to detach):

- **Shu (守): "to keep" or "to protect"** - learn and follow traditional wisdom
- **Ha (破): "to break"** - digress from tradition once fundamentals are mastered
- **Ri (離): "to transcend" or "to depart from"** - create your own approach, moving beyond form

So I just turned it into a creative rendition.

I'll also be covering:

- **Winners focus on winning and make less mistakes than losers, losers focus on winners**
- **Dunning-Kruger Effect:** more emphasis on the popularized version, but I'll reference the original study's findings
- **Do so much that failure becomes obsolete**
- **Be so good the rules don't apply to you**

[1] The concept actually originated in Noh theater and tea ceremony (through Fuhaku Kawakami and Zeami Motokiyo), and was later adopted by martial arts like Aikido.

- **Comparison is the thief of joy** (internal looking external, external looking internal, internal looking internal (perception), external looking external (3rd person omniscient))

- **Ultracrepidarianism** is the habit of giving opinions and advice on matters outside of one's own knowledge or competence.

(This is closely tied to **一心不乱 Isshin Furan** (*one heart without disorder*. The phrase describes a state of complete concentration, single-mindedness, or wholehearted focus where you're intensely absorbed in a task without distraction) and **Mihaly Csikszentmihalyi's flow state**. But that is a whole paper on its own.)

(This is related to Cognitive Load Theory[2], Self-Determination Theory[3], Intrinsic Connectivity Network[4], and neurochemicals like D1/D2/D3/D4 dopamine[5], serotonin[6], and cortisol[7].)

To bring everything into perspective, here are some quotes to start this off:

- *Under-promising and over-delivering is so much better than over-promising and under-delivering.* - **Zak Ruppert**

- *Time is valuable. Your time and other people's time. Don't waste other people's time just like you don't want have yours wasted.* - **Zak Ruppert**

- *A lot of beginners practice until they get it right, but the true professionals practice until they can't get it wrong.* - **David Porter**

- *High standards, low expectations. I have high standards, but I don't expect anything out of anybody. And if they raise to the standard, great, but I don't expect them to.* - **Emily LaFave**

Side tangent: There's this video[8] that popped up while writing this paper: it's someone who played 1000 hours in Ready or Not, a tactical and realistic close-quarters-combat video game, at the hardest difficulty and they get a perfect score on it. If you're familiar with video games and/or first person shooters, this video was soooooo smooth and it almost looked like an art form. Sorry, weird tangent, not super relevant to the rest of the paper.

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[2] **Cognitive Load Theory**: A framework explaining how working memory has limited capacity and learning is optimized when instructional design manages the mental effort required to process information.

[3] **Self-Determination Theory**: A psychological theory proposing that human motivation and well-being depend on satisfying three innate needs: autonomy, competence, and relatedness.

[4] **Intrinsic Connectivity Network:** A term encompassing multiple large-scale brain networks that show coordinated activity at rest, primarily including the **Default Mode Network**, **Salience Network**, and **Central Executive Network**, which work together to support self-referential thought, attention switching, and goal-directed cognition.

[5] **D1/D2/D3/D4 Dopamine Receptors**: Protein receptors in the brain that respond to dopamine and regulate motivation, reward, movement, and cognitive functions through different signaling pathways.

[6] **Serotonin**: A neurotransmitter that regulates mood, sleep, appetite, and digestion, with low levels linked to depression and anxiety while maintaining emotional well-being and various bodily functions throughout the central nervous system and gut.

[7] **Cortisol**: A steroid hormone released during stress that mobilizes energy resources and regulates metabolism, immune function, and the body's stress response.

[8] https://www.youtube.com/watch?v=Ke-M9V6SwcE (lol, this could be a rickroll)

Deliberate Practice

Paper: The Role of Deliberate Practice in the Acquisition of Expert Performance[9]

The researchers found that achieving expert-level performance requires approximately 10 years[10] of intense preparation across virtually all domains: music, sports, chess, sciences, and arts.

In their studies of violinists and pianists, **they discovered a direct correlation between skill level and accumulated practice hours**.

- Deliberate practice differs fundamentally from regular practice or performance, as it focuses specifically to overcome weaknesses, requires full attention and effort, provides immediate feedback, and is generally not enjoyable in itself.

- Elite performers typically limit deliberate practice to about 4 hours per day because it's mentally and physically exhausting.

They distribute this practice strategically throughout the day in sessions lasting 60-90 minutes, **with substantial rest periods in between.** The goal isn't simply repetition but focused improvement on specific aspects of performance.

Consider three general types of activities, namely, work, play, and deliberate practice.

- *Work includes public performance, competitions, services rendered for pay, and other activities directly motivated by external rewards.*

- *Play includes activities that have no explicit goal and that are inherently enjoyable.*

- *Deliberate practice includes activities that have been specially designed to improve the current level of performance.*

The goals, costs, and rewards of these three types of activities differ, as does the frequency with which individuals pursue them.

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We rely on Bloom's (1985b) characterization of the period of preparation in three phases:

- *The first phase begins with an individual's introduction to activities in the domain and ends with the start of instruction and deliberate practice.*

- *The second phase consists of an extended period of preparation and ends with the individual's commitment to pursue activities in the domain on a full-time basis.*

- *The third phase consists of full-time commitment to improving performance and ends when the individual either can make a living as a professional performer in the domain or terminates full-time engagement in the activity.*

During all three phases the individual requires support from external sources, such as parents, teachers, and educational institutions.

- *This framework needs to be extended with a fourth phase to accommodate eminent performance. During this fourth phase the individuals go beyond the knowledge of their teachers to make a unique innovative contribution to their domain.*

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Three Critical Constraints:

[9] Ericsson, K. A., Krampe, R. T., & Tesch-Römer, C. (1993)

[10] Ericsson himself later clarified that the "10,000 hours" figure was an average (not a requirement), and that half the best violinists hadn't reached 10,000 hours by age 20. He also criticized how his research was misinterpreted by Malcolm Gladwell's popularization of the **10,000-Hour Rule**. Deliberate practice matters, but a large amount of variance in performance remains unexplained — meaning other factors (genetics, opportunity, starting age, quality of instruction, cognitive abilities, etc.) play significant roles. (Macnamara, B. N., Hambrick, D. Z., & Oswald, F. L. (2014))

- *Effort constraint limits how much deliberate practice can be sustained daily without exhaustion or burnout - typically around 4 hours maximum.*

- *Motivational constraint requires sustained commitment over years to engage in activities that aren't inherently rewarding.*

- *Resource constraint demands access to qualified teachers, training facilities, financial support, and extensive time commitment from families and supporters.*

(Please read *The Role of Deliberate Practice in the Acquisition of Expert Performance* for more information about this. It is a fantastic topic and they covered it really well.)

Winning vs Losing

(Side note: this section is more for argument sake but my personal belief is that there is no winning or losing but rather lessons and opportunities. This way, no matter what, success in inevitable and resistance is futile.)

Winners focus on winning and make less mistakes than losers, losers focus on winners

Have you ever seen those videos of the spectators at a tennis match and you just see their heads moving left to right to left to right to left to right to left (you get the point). I'm not saying they are losers,

however,

every second that is used towards someone else is a second that can be used towards improvement. Sure, spectating and see how the best perform is a part of the development process but secondary to actually being on the court and getting reps/applying those techniques.

One of my favorite quotes from **Nikola Tesla**[11]:

I do not think there is any thrill that can go through the human heart like that felt by the inventor as he sees some ***creation of the brain unfolding to success.***

Such emotions make a man forget food, sleep, friends, love, everything. Let the future tell the truth, and evaluate each one according to his work and accomplishments.

The present is theirs. The future, for which I have really worked, is mine.

Do so much that failure becomes obsolete.

Quantity with incremental improvements will guarantee results. **Alex Hormozi** has so much content on this but one of my favorite quotes from him:

If necessity is the mother of invention, repetition is the father of results.

From **Theodore Roosevelt**[12]**:**

We do not admire the man of timid peace, we admire the man who embodies victorious effort. It is hard to fail, but it is worse never to have tried to succeed.

In this life we get nothing save by effort. *Freedom from effort in the present merely means that there has been stored up effort in the past.*

(Lol, I didn't intend for this section to be a quote extravaganza but here we are.)

Paper: Identifying the performance characteristics of a winning outcome in elite mixed martial arts competition[13]**.**

(Analysis of 234 UFC fights from July-December 2014.)

Quality beats quantity: Accurate strikes matter more than throwing lots of strikes.

[11] Petković, D. L. (1927, April)

[12] Roosevelt, T. (1899, April 10)

[13] James, L. P., Robertson, S., Haff, G. G., Beckman, E. M., & Kelly, V. G. (2017)

The decision tree partitioning also reveals the highly technical nature of MMA activity across both modes of combat.

Decision tree partitioning is a statistical method that splits data into groups based on which variables best predict an outcome.

How it works in this study:

- **Start at the top (Node 0):** All 234 fights.
- **First split:** The algorithm identifies which performance indicator best separates winners from losers (in this case: significant ground strikes landed).
- **Creates branches:** Splits fighters into groups based on that indicator (example: ≤4 ground strikes vs. >4 ground strikes).
- **Continues splitting:** Each branch splits further based on the next most important indicator (like takedown accuracy, strike accuracy).
- **Stops when** further splits don't improve prediction accuracy.

In particular, the accuracy of strikes and takedowns, in addition to strikes landed per minute, which are representative of successfully executed techniques, were featured in the model.

This is in contrast to attempted, but not necessarily successful strikes, significant strikes and takedowns, which did not meaningfully impact the result.

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Alongside increasing the likelihood of victory, training strategies that consider this would also have the desirable effect of potentially reducing the physical stress on the athlete, resulting in lowered opportunities for injury, increased recovery and the strategic reprioritisation of alternate training tasks (conditioning, strength and power development and tactics) based on the principles of periodisation[14] and the individual athlete's window of adaptation.

Window of Adaptation Context[15]: *As an athlete attempts to maximize his or her explosive performance, the time over which he or she can apply force and accelerate the body decreases.*

Therefore two mechanical properties of muscle are paramount:

- *1) The ability to develop much force in a short period of time, termed the rate of force development;*
- *[and] 2) The muscle's ability to continue producing high force output as its velocity of shortening increases.*

Window of adaptation: *As an athlete develops one component to a high level (e.g., strength), the potential for that component to contribute to power output diminishes.*

Thus each component can be thought of as a "window of adaptation" in the larger window of adaptation in explosive power.

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The better developed a single component, the smaller that component's window of adaptation and thus potential to develop explosive power.

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*The findings of this present study suggest that it is the **accuracy of a manoeuvre**, rather than the volume executed, that is of greatest importance in determining a winning outcome.*

I'm gonna mention this from the same paper, since my inner critic is popping out:

Victory at the elite level of MMA competition is impacted by the accuracy of the technique, while

[14] "The essence of periodized program design is to skillfully combine different training methods in order to yield better results than can be achieved through exclusive or disproportionate use of any 1 of them." (Plisk, S. S., & Stone, M. H. (2003))

[15] Newton, R. U., & Kraemer, W. J. (1994)

executing an increased volume of attempts does not contribute to a winning result.

My earlier comment, *do so much that failure becomes obsolete*, would still apply with the given context: *doing the same thing expecting a different result*. Repetition is still important, just user discretion is needed.

From **Roosevelt's autobiography**[16]:

The commoner type of success in every walk of life and in every species of effort is that which comes to the man who differs from his fellows not by the kind of quality which he possesses but by the degree of development which he has given that quality.

Anterior Midcingulate Cortex

(For more information about the cingulate cortex as a whole, please refer to the corresponding subsection in the Context section.)

The **Anterior Midcingulate Cortex (aMCC)** sits at the intersection of the anterior cingulate cortex and midcingulate cortex, occupying portions of both BA24 and BA32, depending on the exact boundaries used by different researchers. Some neuroanatomists also reference BA24' (BA24 prime) for specific subregions.

From the abstract: *The tenacious brain: How the anterior mid-cingulate contributes to achieving goals.*[17]

We review evidence from non-human primate neuroanatomy and structural and functional neuroimaging in humans suggesting that the anterior mid cingulate cortex (aMCC) is an important network hub in the brain that performs the cost/benefit computations necessary for tenacity [covered later].

Specifically, we propose that its position as a structural and functional hub allows the aMCC to integrate signals from diverse brain systems to predict energy requirements that are needed for attention allocation, encoding of new information, and physical movement, all in the service of goal attainment.

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When faced with a difficult challenge, such as mastering complex equations or training for a marathon, many individuals will find the effort too costly, and withdraw.

Others, however, will marshal their resources, and persist in their efforts against the same challenges, even in the absence of immediate reward.

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Positioned at the intersection of systems involved in autonomic processing, interoception[18]*, executive function, motor planning,* [allostasis[19]] *and sensory integration, the aMCC receives the information necessary to perform domain-general computational functions to mobilize physiological and cognitive resources to meet task needs.*

Such processes may include the

- *(a) prediction of behavioral outcomes,*
- *(b) assessment of the energetic costs of task performance,*
- *(c) monitoring the internal state of the body,*
- *(d) adjusting to prediction errors,*

[16] Theodore Roosevelt (1913)

[17] Touroutoglou, A., Andreano, J., Dickerson, B. C., & Barrett, L. F. (2020)

[18] **Interoceptive:** of, relating to, or being stimuli arising within the body and especially in the viscera (internal organ or tissue) (Merriam Webster)

[19] **Allostiatsis**: the process by which a state of internal, physiological equilibrium is maintained by an organism in response to actual or perceived environmental and psychological stressors (Merriam-Webster)

- *and (e) modulation of the internal state of the body to prepare for action.*

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We will argue that this uniquely connected position allows aMCC to weigh predicted energy requirements against predicted rewards and allocate physiological and attentional resources to achieve desired goals.

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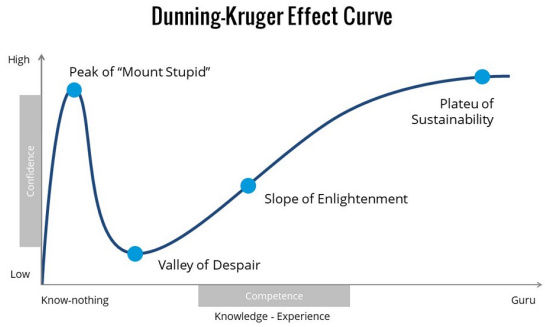
We propose that tenacity can be understood as a kind of bias in aMCC computations: a tendency to maintain the representation of expected rewards, devalue the cost of effort and to judge one's available physiological resources as meeting or exceeding task demands even in the face of negative affect.

Tenacity: Tenacious[20] *has adhered closely to its Latin antecedent: tenāx, an adjective meaning "holding fast," "clinging," or "persistent.*

By definition: *aggressively persistent in maintaining, adhering to, or seeking something valued or desired; enduring especially when challenged; retentive[21] (having the power, property, or capacity of retaining).*

Dunning-Kruger Effect

For the purposes of this paper, the Dunning-Kruger Effect refers to this:

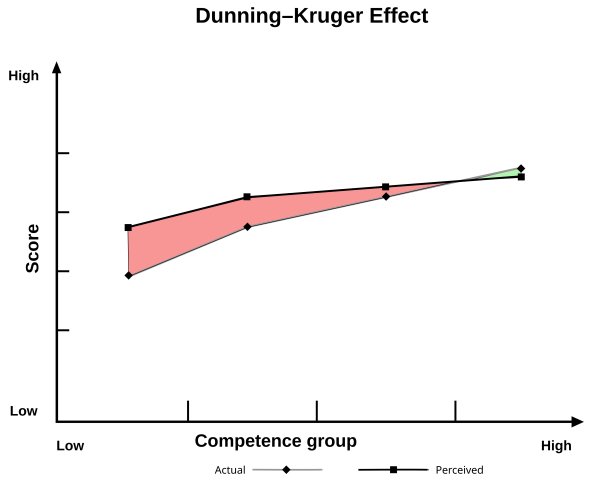


[Bracketed terms are popularized terms that don't exist in the original paper by Dunning/Kruger.]

When people acquire a bit of knowledge about a discipline, their overconfidence leads to arrogant ignorance [Peak of Mount Stupid]*, a state where beginners think they know more than they actually do.*

As the complexity and confluence becomes apparent, their confidence often drops at or below the initial state of understanding [Valley of Despair] *before gradually rising again* [Slope of Enlightenment] *as genuine expertise develops* [Plateau of Sustainability].

This is different from the **actual Dunning and Kruger's findings** in their 1999 paper[22]*:*



People tend to hold overly favorable views of their abilities in many social and intellectual domains.

The authors suggest that this overestimation occurs, in part, because people who are unskilled in these domains suffer a dual burden:

Not only do these people reach erroneous conclusions and make unfortunate choices, but their incompetence robs them of the metacognitive ability to realize it.

[20] Merriam-Webster. (n.d.). Tenacity

[21] Merriam-Webster. (n.d.). Retentive

[22] Kruger, J., & Dunning, D. (1999)

(Metacognition[23] will be the topic of a future paper.)

Across 4 studies, the authors found that participants scoring in the bottom quartile on tests of humor, grammar, and logic grossly overestimated their test performance and ability.

Although their test scores put them in the 12th percentile, they estimated themselves to be in the 62nd. Several analyses linked this miscalibration to deficits in metacognitive skill, or the capacity to distinguish accuracy from error.

Paradoxically, improving the skills of the participants, and thus increasing their metacognitive competence, helped them recognize the limitations of their abilities.

The original Dunning-Kruger study found that people with low ability in a domain (logic, grammar, humor) significantly overestimated their performance, while those with high ability slightly underestimated theirs.

Comparison is the Thief of Joy

(Briefly covered.)

- **Internal looking internal:** Self-acceptance and self-comparison. Do you see yourself as you are (with compassion)? Are you constantly measuring against who you should be?
- **Internal looking external:** Classic comparison of measuring yourself against others
- **External looking internal:** The anxiety of imagined judgment from others. What do they think of me?
- **External looking external:** Depersonalized self-judgment: evaluating yourself as if you were a stranger, by abstract standards (kindness, worthiness, basic human value)
- The most poignant distinction is between the two internal perception interpretations:
  - Internal looking internal is comparative (past me vs. present me vs. ideal me)
  - External looking external is accepting and seeing the whole self without the added complexity of knowing everything about you

Ultracrepidarianism

Ultracrepidarianism is the habit of giving opinions and advice on matters outside of one's own knowledge or competence.

It comes from an ancient Latin phrase "ne sutor ultra crepidam," which translates to "let the cobbler stick to his last" (a "last" being the shoemaker's model of a foot).

From Pliny's Natural History, Book 35[24]:

It was a custom with Apelles, to which he most tenaciously adhered, never to let any day pass, however busy he might be, without exercising himself by tracing some outline or other; a practice which has now passed into a proverb.

It was also a practice with him, when he had completed a work, to exhibit it to the view of the passers-by in some exposed place; while he himself, concealed behind the picture, would listen to the criticisms that were passed upon it; it being his opinion that the judgment of the public was preferable to his own, as being the more discerning of the two.

It was under these circumstances, they say, that he was censured by a shoemaker for having represented the shoes with one shoe-string too little.

The next day, the shoemaker, quite proud at seeing the former error corrected, thanks to his advice, began to criticize the leg; upon which Apelles, full of indignation, popped his head out, and reminded him that a shoemaker should give

[23] **Metacognition:** awareness or analysis of one's own learning or thinking processes. (Merriam-Webster)

[24] Pliny the Elder. (77 CE)

no opinion beyond the shoes, a piece of advice which has equally passed into a proverbial saying.

Procrastination

From Steven Nowlin's episode:

Steven Nowlin*: You have to most certainly trust yourself. So, you can't lie to yourself. You have to* [do it]. *You just have to. If you tell yourself that's what you're going to do, you got to* [do it]. *You got to do everything to make strides toward doing [and] what it is you said you're going to do.*

Quitting and procrastination are self-sabotagers.

Aren: *You see procrastination as a form of failure?*

Steven: *Yes. When I was in the military, we had this thing called pace count. Pace count is how many steps it takes you to go this amount of distance and how however much time.*

I pride myself on knowing my pace count figuratively and physically, right? We may agree to do something [and] w*e may have a deadline on it.*

In your mind you're like, "Hey, man. Let's just get it done. Let's get it done. Let's get it done."

And in my mind I'm like, "Man, I know my pace count. I know it's only going to take me 10, 15 minutes to get it done."

But most people ain't like that. Most people procrastinate. Procrastination leads to never doing, because you're constantly in your own head. You created this barrier to just get in your own way.

It's like the new year, new me resolutions. Every year, January 1st, that first week of January, the gym is going to be packed, right? The first weeks leading up to that, you already knew you were trying to lose weight.

Why didn't you just start then? You wait till January 1st. Now you got in here. You may did a week and then all of a sudden you're sore. You're tired. And now you procrastination setting in.

"Oh, I'm sore today, so I'm not going to go today." And then not going today turn into not going to tomorrow. Not going tomorrow turns to not going the rest of the month. Before you know it, we in December again.

Random quote: *Procrastination is the arrogant assumption that God owes you another opportunity to do what you had time to do.*

— Context Section —-

The following section consists of contextual knowledge.

Cingulate Cortex (CC)

The **cingulate cortex** is located on the medial surface of the cerebral hemisphere and is part of the limbic system/limbic lobe.

From the American Psychological Association's Dictionary of Psychology (updated on 04/19/2018)[25]:

The cingulate cortex arches over and generally outlines the location of the corpus callosum[26], from which it is separated by the callosal sulcus[27]. It is a component of the limbic system[28] and has a

[25] American Psychological Association. (n.d.). Cingulate cortex.

[26] **Corpus Callosum:** a large tract of nerve fibers running across the longitudinal fissure of the brain and connecting the cerebral hemispheres: It is the principal connection between the two sides of the brain. (APA Dictionary)

[27] **Calloway Sulcus:** a fissure or groove that separates the corpus callosum from the cingulate cortex along the medial side of each cerebral hemisphere. (APA Dictionary)

[28] **Limbic System**: a loosely defined, widespread group of brain nuclei that innervate each other to form a network that is involved in autonomic and visceral processes and mechanisms of emotion, memory, and learning. (APA Dictionary)

role in emotion and memory; it also has a role in motor planning.

From *Functional and anatomical connectivity-based parcellation of human cingulate cortex*[29]:

The CC was divided into six functional subregions, including the

- *anterior cingulate cortex,*
- *dorsal anterior midcingulate cortex,*
- *ventral anterior midcingulate cortex,*
- *posterior midcingulate cortex,*
- *dorsal posterior cingulate cortex,*
- *and ventral posterior cingulate cortex.*

The CC was also divided into ten anatomical subregions, termed Subregion 1 (S1) to Subregion 10 (S10). Each subregion showed specific connectivity patterns, although the functional subregions and the anatomical subregions were internally consistent.

I'm not a fan of using Wikipedia as a source but the sources used for the definition of the anterior cingulate cortex looked legit:

It is involved in certain higher-level functions, such as attention allocation, reward anticipation, decision-making, impulse control (e.g. performance monitoring and error detection), and emotion.[30]

The **dorsal anterior cingulate cortex (dACC)**, often considered the "cognition" division, is implicated in a range of executive functions, such as attention allocation, error and novelty detection, working memory modulation, cognitive control, response conflict, and response selection.

The **ventral anterior cingulate cortex (vACC)**, often considered the "emotion" division, is thought to be involved in mediating anxiety, fear, aggression, anger, empathy, and sadness; in perceiving both physical and psychological pain; and in regulating autonomic functions (e.g., blood pressure, heart rate, respiration).

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Related topics

- Metacognition
- 一心不乱 Isshin Furan: one heart without disorder. The phrase describes a state of complete concentration, single-mindedness, or wholehearted focus where you're intensely absorbed in a task without distraction
- Mihaly Csikszentmihalyi's flow state
- The Inner Critic and comparison is the thief of joy

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