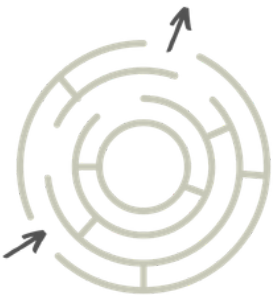


Research Study of 100 CEOs

NEUROCHEMICAL PATTERNS
IN CEO DECISION-MAKING



NEURO-BASED
LEADERSHIP CENTRE

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Study Introduction

Every CEO in this study had made decisions they couldn't fully explain in hindsight. Not reckless ones — considered ones. The process felt thorough, the logic was sound, and the direction felt right. Yet at some point after the outcome, it became clear that something had shaped the decision before the analysis was complete.

This report examines what that something is.

It presents findings from a study of 100 CEOs and senior executives in the UK technology sector, examining how internal reward and discomfort signals distort decision-making, daily execution, and recovery and rest, with a specific focus on the negative impact of dopamine and cortisol feedback loops.

The objective was to identify recurring patterns in how conviction forms before the evidence is complete, how contradictory signals are overlooked or removed, how execution deviates from strategic priority, and how incomplete recovery carries these distortions forward into the next decision-making cycle.



Profile of Participants

The study was conducted with 100 high-performing CEOs and senior executives in the UK technology sector, each with extensive experience building and running successful businesses. Company turnover within the sample ranged from £2 million to £40 million annually.

The majority of decisions made by this group are effective. This study focused specifically on the subset that weren't — those with significant financial consequences, often in the range of hundreds of thousands to millions of pounds, including failed initiatives and lost businesses. The objective was not to examine poor leadership. It was to examine what happens inside high-performing leaders when decisions that should have worked didn't — and to identify the neurochemical patterns that shaped those outcomes.

What these decisions had in common was not a lack of experience, capability, or information. The patterns that shaped them were operating beneath all of these — invisible to the leaders making them.



High Performance & Neurochemical Impact

The executives in this study were selected because of their track record, not despite it. High performance and high neurochemical impact are not coincidental. The speed of conviction, the ability to maintain direction under pressure, and the capacity to execute at pace are all expressions of the same dopamine and cortisol systems this study examines.

What the findings identify is not a weakness in these leaders. It is what happens when systems that drive exceptional performance operate without regulation. The higher the impact of these loops, the greater the capacity in both directions — for decisive, high-quality leadership and for the compounding distortions this study documents. The patterns that follow should be read in that context.

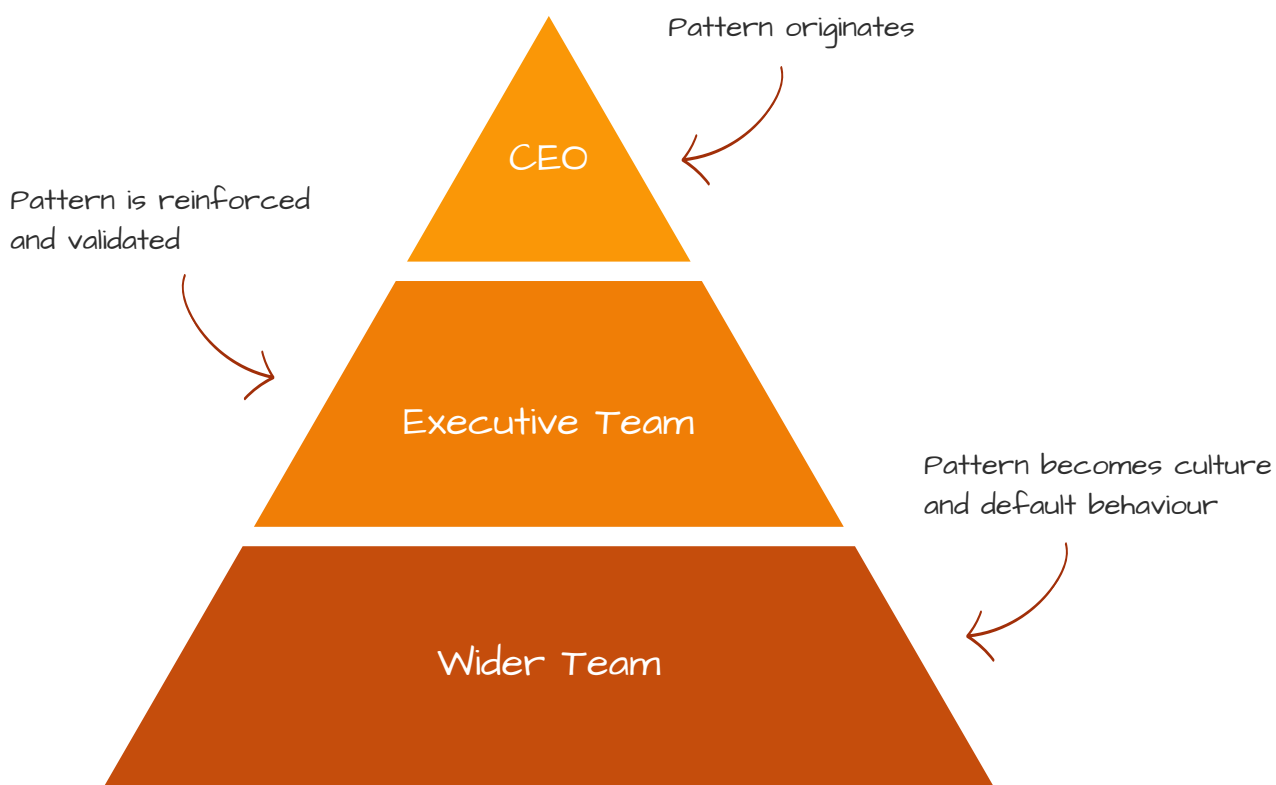
Organisational Pattern Replication

These patterns do not stay at the individual level. That is one of the most significant findings in this study.

CEOs naturally build executive teams of people who think in similar ways — those who align quickly, identify the same opportunities, and reach conclusions with speed and confidence. From the outside, this looks like strong leadership alignment. In practice, it often means the same neurochemical patterns that shape the CEO's decisions are being replicated and validated across the most senior level of the business.

From there, the pattern spreads further. Teams learn — without being told — what gets reinforced, what gets moved past, and how fast direction is set. They adapt to it. Over time, it stops being one leader's pattern and becomes the organisation's default way of thinking, deciding, and executing.

What began as an internal chemical response in one person becomes the culture of an entire business.



DECISION MAKING

Key Findings



MAKE THE
RIGHT
CHOICE



Dopamine-Driven Momentum

67%

of CEOs (67 out of 100) fall into the **Mid-High** range of dopamine-driven momentum in decision-making.

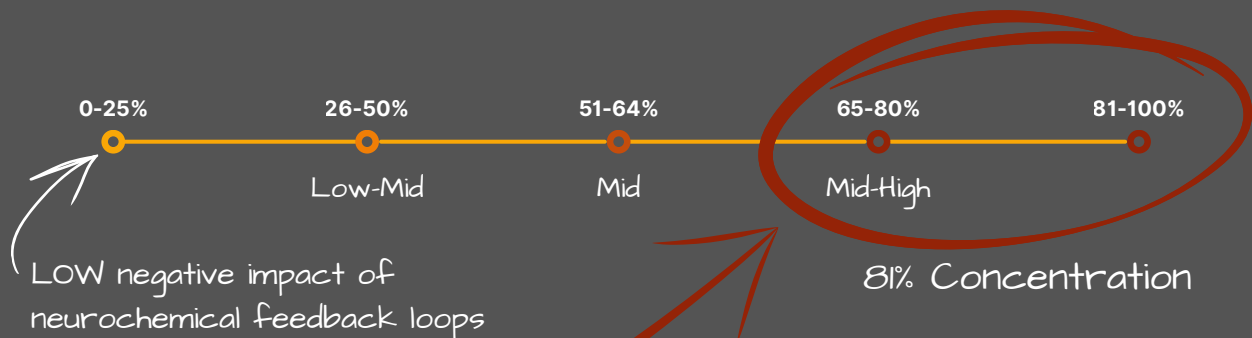


In practice, this is where many significant mistakes begin — not in the analysis, but in the moment a decision first feels right. A few signals align with an existing instinct, confidence rises quickly, and the mind locks onto a direction. The CEO moves fast, commits, aligns the team, and pushes forward. At every stage, it feels like decisive leadership.

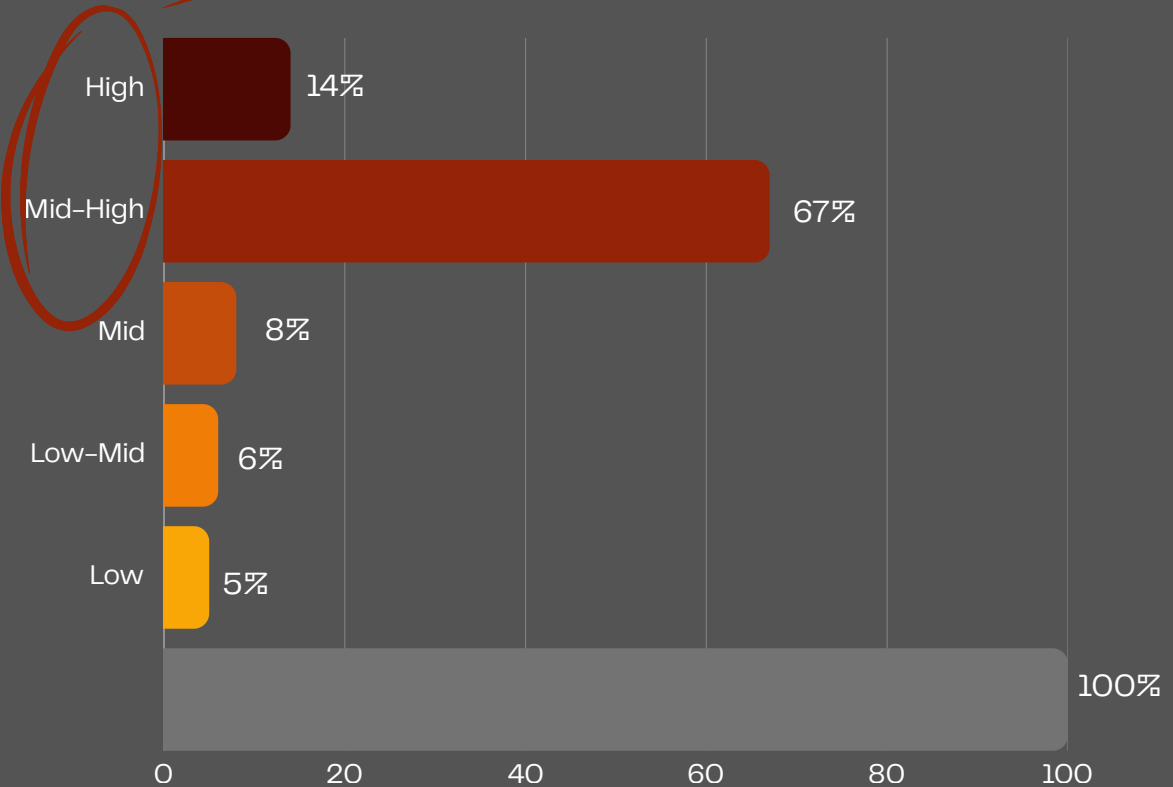
What is harder to see is that conviction arrived before the evidence was complete. It was a chemical response to early alignment — not a conclusion reached through scrutiny. The reasoning that followed was real, but it was organised around a direction that had already been internally set. The logic explains the decision. It did not form it.

This is why the pattern is so consequential. It does not feel like bias. It feels like experience, clarity, and good judgment. That is precisely why it goes unnoticed — and why it repeats.

Distribution



Negative impact of dopamine and cortisol feedback loops.



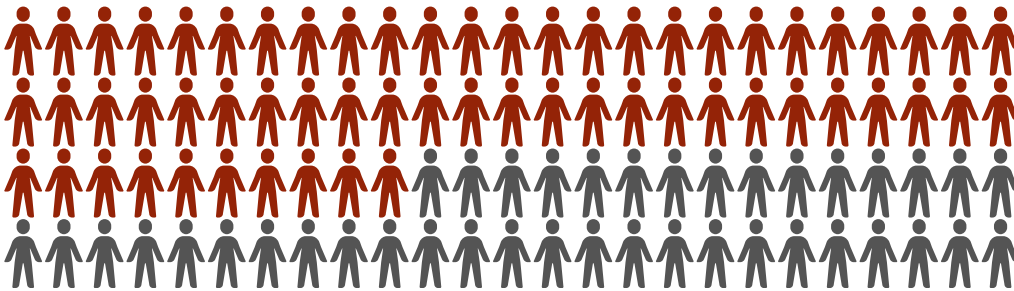
The number of CEOs falls in the range.

The distribution is heavily concentrated in the upper range. In this sample, decision-making was most often shaped at the point where early alignment created conviction — before full scrutiny had begun.

Cortisol-Driven Discomfort

60%

of CEOs (60 out of 100) fall into the **Mid-High** range of cortisol-driven discomfort in decision-making.

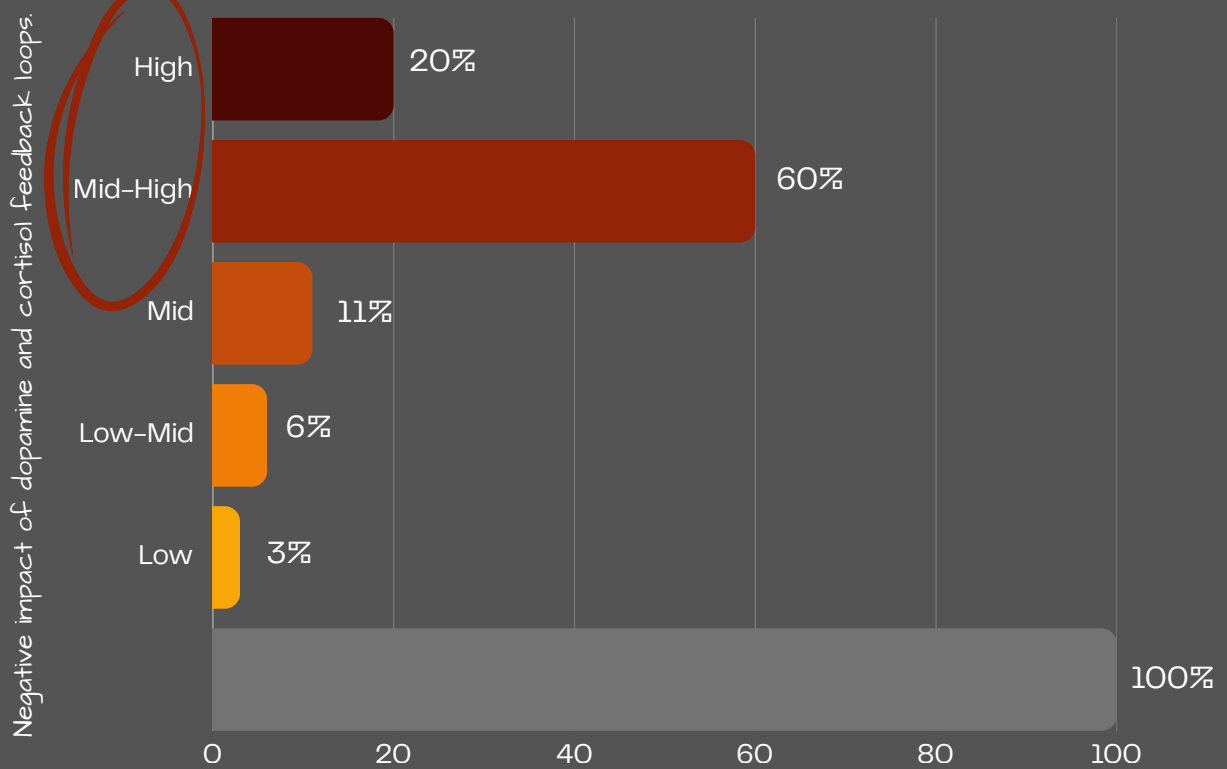
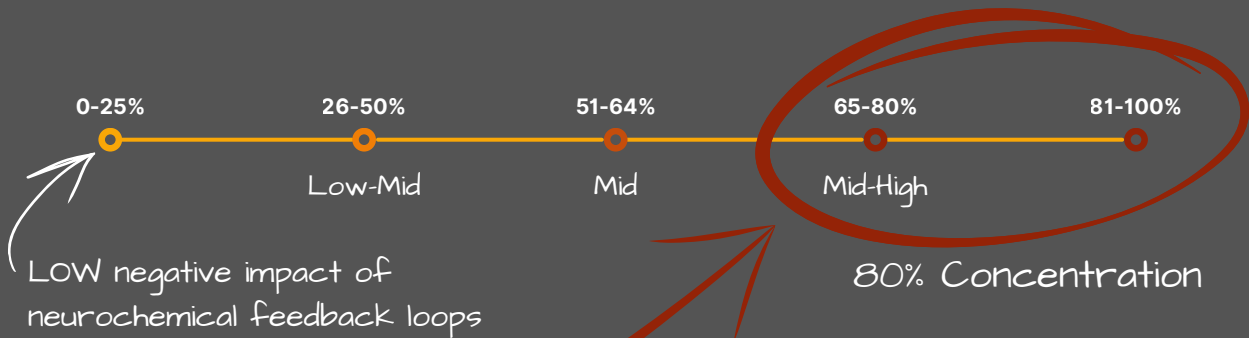


In practice, this pattern operates as the other side of the same process. When information contradicts an existing direction — a number that doesn't fit, a red flag in the data, feedback that challenges the plan — it creates a subtle internal tension. That tension is uncomfortable. And it is resolved quickly. The signal gets reframed, softened, or moved past. The direction continues unchanged.

What is harder to see is that the discomfort arrived first, before any conscious evaluation of whether the contradictory signal was worth examining. It was a chemical response to information that threatened an existing position. The reasoning that followed was not designed to assess the signal. It was organised to remove the tension it created.

This is why the pattern is difficult to catch. It does not feel like avoidance. It feels like maintaining confidence, momentum, and focus. The decision continues to feel fully justified — because the information that would have challenged it was dismissed before it could be fully examined.

Distribution



The number of CEOs falls in the range.

The distribution is again concentrated in the upper range. In this sample, contradicting signals were frequently resolved before they could be fully examined — allowing decisions to progress without complete exposure to risk.

Combined Effect

When both patterns are active simultaneously, they form a closed loop.

One pattern strengthens everything that fits the direction. The other reduces the weight of everything that doesn't. Together, they build momentum that feels increasingly compelling and becomes progressively harder to interrupt. By the time structured analysis is applied, the direction is already internally fixed. The analysis that follows is thorough and convincing — but it is examining a version of reality where confirming signals have been amplified and contradicting ones quietly removed.

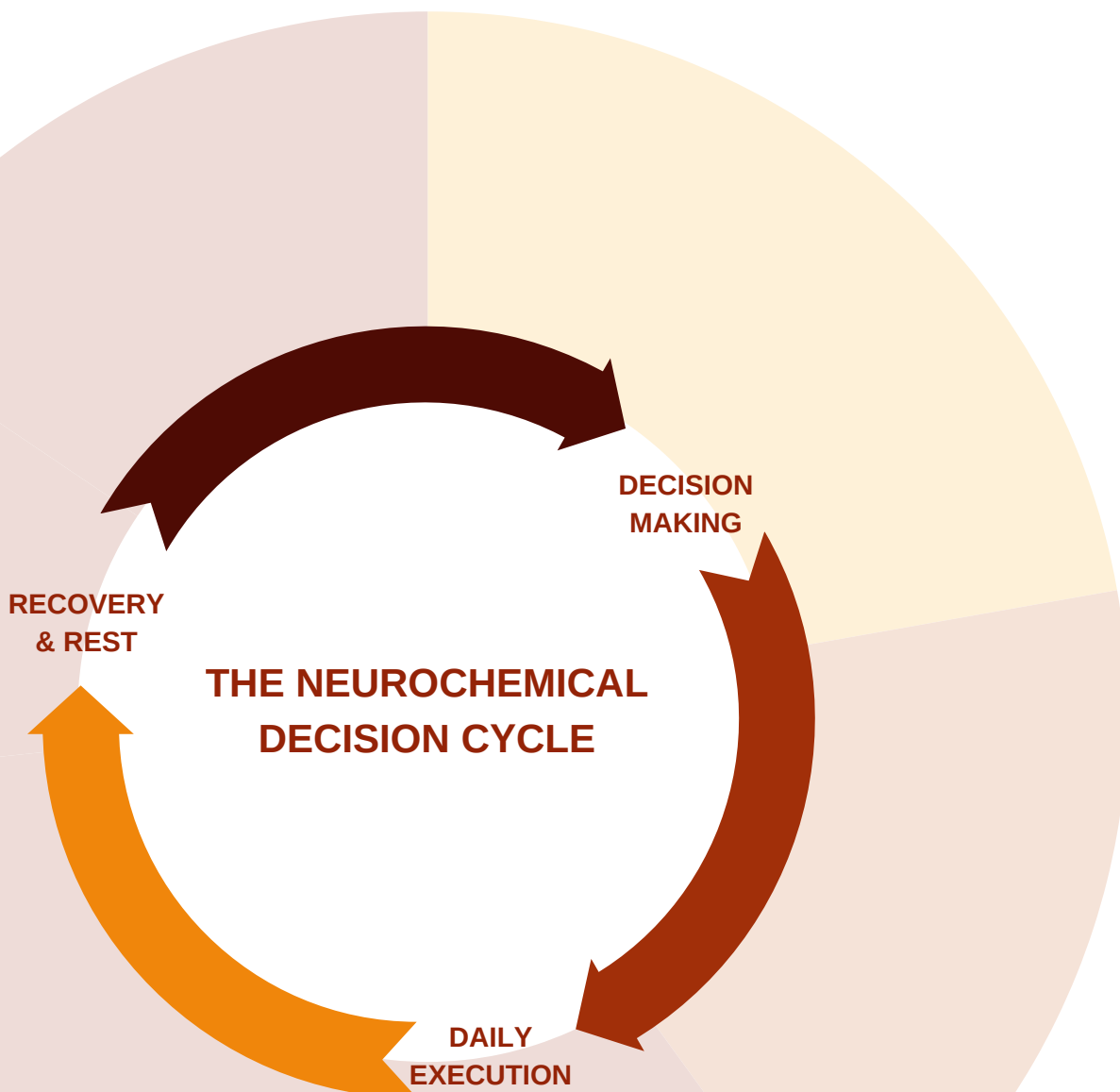
For the majority of CEOs in this study, this is not an occasional occurrence. It is the standard process through which high-stakes decisions are made.

Neurochemical Decision Cycle

These patterns do not stay contained within decision-making. Once activated, they carry forward.

Each new decision does not begin from a neutral position. It begins from a nervous system already shaped by what was reinforced, what was avoided, and what was left unresolved in the previous cycle. Over time, these compound, influencing not just individual decisions, but the sustained direction of the business itself.

The following sections examine how these same patterns continue to operate through daily execution, and recovery and rest.



DAILY EXECUTION

Key Findings



MAKE THINGS HAPPEN!

Dopamine-Driven Activity

64%

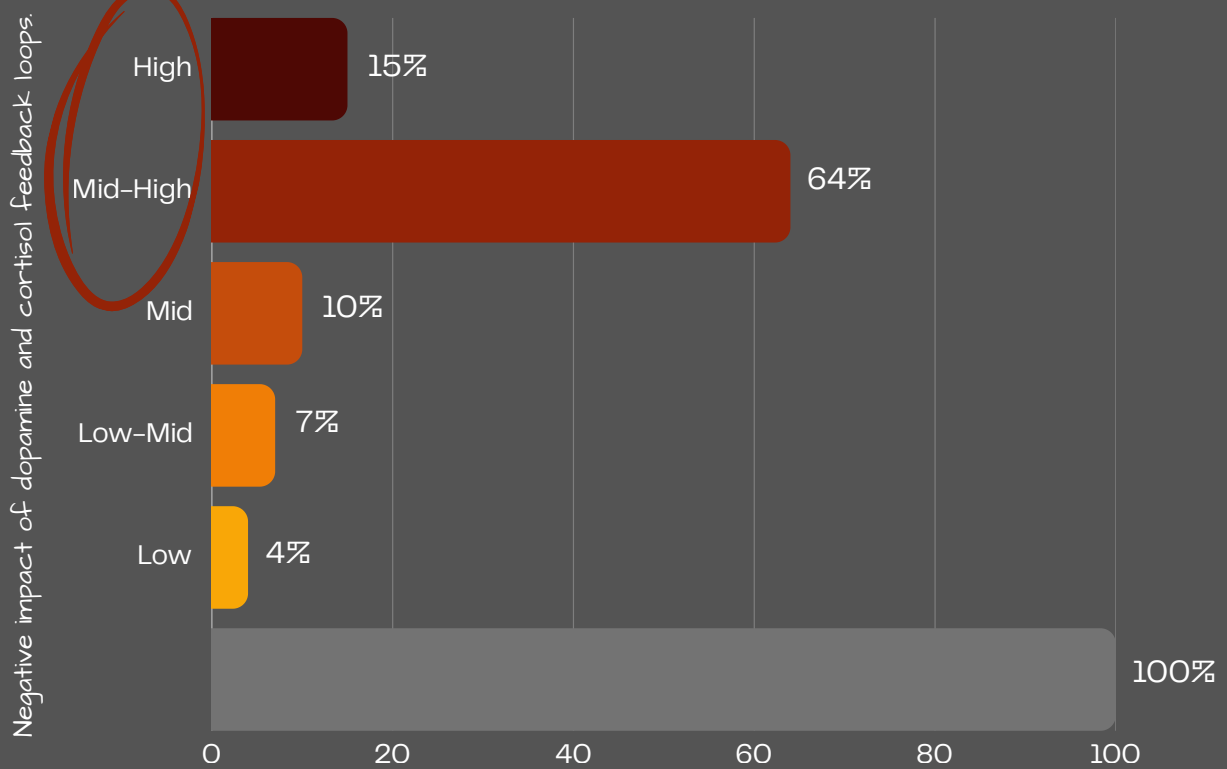
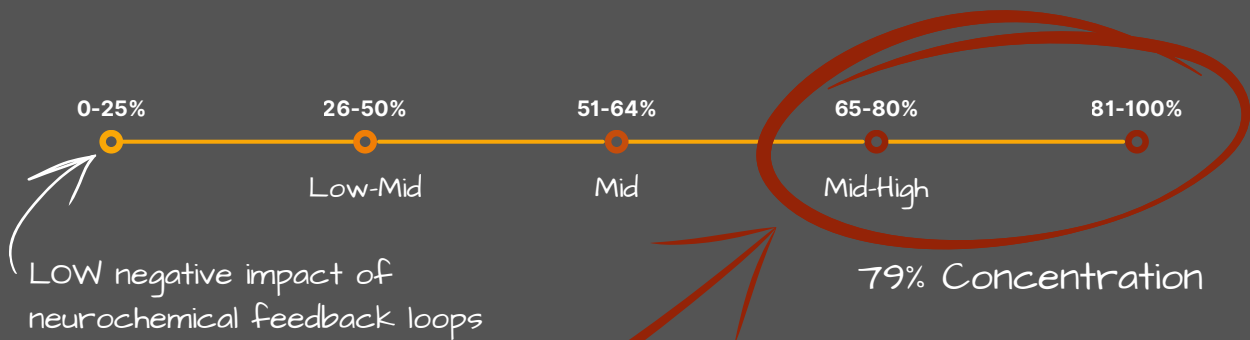
of CEOs (64 out of 100) fall into the **Mid-High** range of dopamine-driven activity in daily execution.



In practice, execution is not directed by strategic priority — it is directed by what feels rewarding in the moment. A new idea appears, an opportunity surfaces, or early signs of progress create momentum, and attention shifts toward it immediately. The work feels fast-moving, productive, and completely justified. The day fills up. But the driver is a reward, not a priority.

What is actually happening is that energy is being allocated by the nervous system before conscious judgment engages. Tasks that trigger a reward response expand and attract more time. Work that requires sustained focus, depth, or delayed payoff gets pushed back — not because it is unimportant, but because it does not produce the same internal response. Throughout the day, the direction of effort shifts — not through any conscious decision, but through a sequence of chemical responses that feel like natural judgment.

Distribution



The number of CEOs falls in the range.

The distribution is concentrated in the upper range. In this sample, daily execution was most often shaped by what felt rewarding rather than by what carried the highest strategic importance.

Additional Finding

Dopamine Hijack

A consistent pattern observed across this study is what can be described as Dopamine Hijack — moments where attention shifts suddenly to a new idea that feels energising, compelling, and immediately actionable.

On average, each executive lost the equivalent of 2.3 days per month to these shifts. Across a team of 10, this compounds to approximately 23 days of lost progress every month.

What makes this pattern particularly difficult to identify is how convincing it feels as it happens. The idea feels urgent, important, and worth full attention — sometimes consuming an entire day, sometimes longer. Yet when revisited later — often even the next day — it no longer makes sense. What felt like decisive action and clear judgment loses coherence the moment the chemical response settles.

2.3 days

lost per executive per month

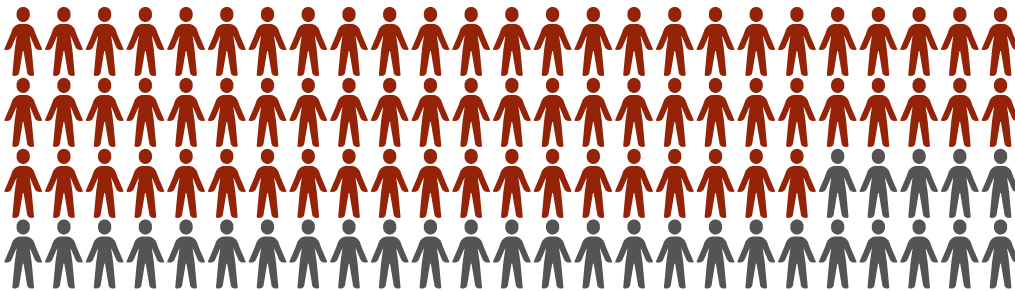
23 days

lost per team of 10 per month

Cortisol-Driven Resistance

70%

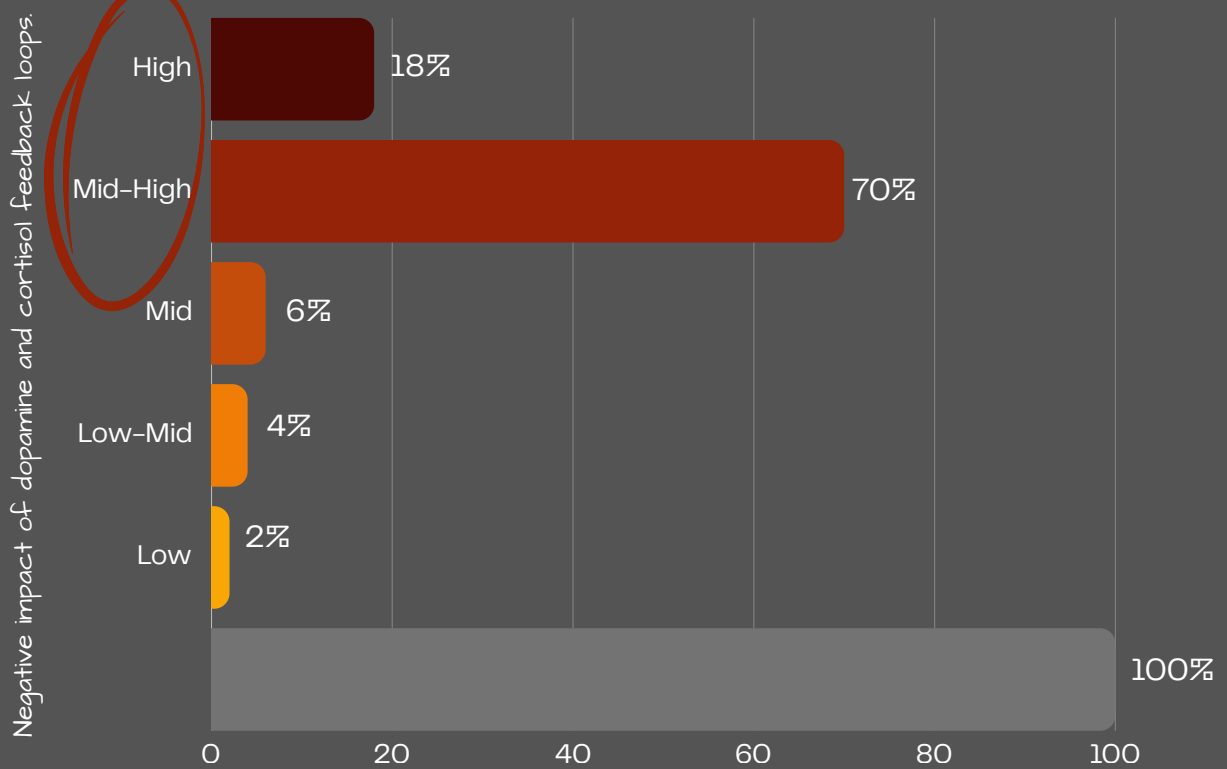
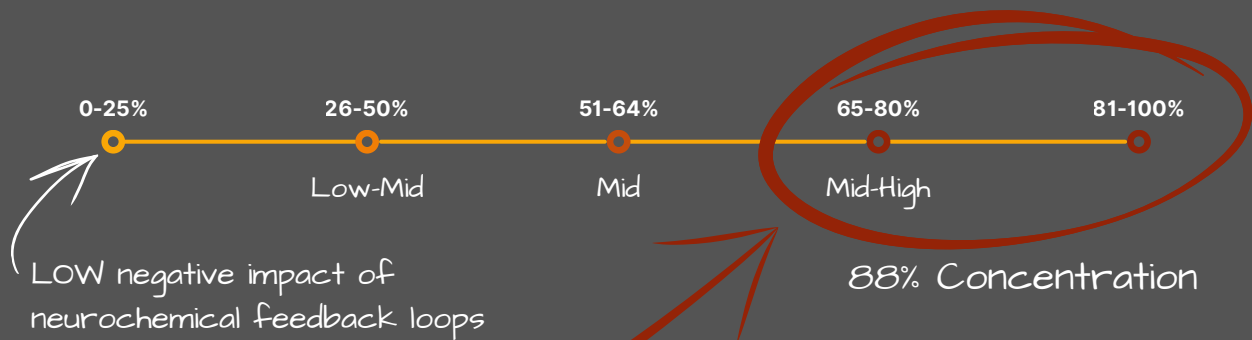
of CEOs (70 out of 100) fall into the **Mid-High** range of cortisol-driven resistance in daily execution.



In practice, when a task introduces uncertainty, complexity, or sustained pressure, it produces discomfort. Attention moves toward work that is more familiar, more contained, or easier to complete. The shift feels reasonable. It often feels like good judgment about where to spend time best. The day feels productive, output remains visible, and the effort feels justified. But the sequence in which work actually gets done has already changed.

What is actually happening is that discomfort is directing execution. The moment internal tension appears, the nervous system organises to reduce it. The most demanding, highest-leverage tasks are consistently delayed until external pressure forces engagement — while lower-friction work expands to fill the space they left. The day was full. But it was not directed by priority.

Distribution



The number of CEOs falls in the range.

The distribution is strongly concentrated in the upper range. In this sample, execution was frequently shaped by the need to reduce discomfort — influencing not just what got done, but when and in what order.

Additional Finding

Cortisol Hijack

Alongside Dopamine Hijack, the study identified a complementary pattern — Cortisol Hijack.

In this case, attention does not shift to something else. The task remains the stated priority. But beginning it generates strong internal resistance. The executive remains with it — aware that it needs to be addressed before anything else — yet unable to engage. Time passes in hesitation, repeated attempts, and delay.

On average, each executive lost the equivalent of 2.8 days per month to this pattern. Across a team of 10, this compounds to approximately 28 days of lost progress every month.

Entire blocks of time — sometimes full working days — are consumed by resistance while the task itself remains untouched.

2.8 days

lost per executive per month

28 days

lost per team of 10 per month

Combined Effect

Reward–Avoidance Pattern

When both patterns operate simultaneously, they form a self-reinforcing loop. Discomfort pushes attention away from the work that matters most. Reward pulls it toward something more stimulating, more familiar, or easier to complete. One loop initiates the shift. The other determines where attention settles. Together, they redirect time and energy continuously throughout the day — without any single moment that feels like a loss of control or focus.

In practice, the most important work is repeatedly delayed while other activities fill the day. Execution continues, decisions are made, and progress appears visible. But across this study, this combined pattern accounts for an average of 51 days of lost progress per team of 10 every month — 23 days from Dopamine Hijack and 28 days from Cortisol Hijack.

What makes this pattern so difficult to identify is that it does not present as a distraction or poor discipline. The activities that replace high-priority work are often genuinely valuable. The day feels full and productive. But the sequence driving it is not strategic judgment — it is the cycle of discomfort, shift, relief, and reward, repeating without interruption.

51 days

of lost progress per team of 10, every month

Dopamine Hijack (23 days) + Cortisol Hijack (28 days)

RECOVERY & REST

Key Findings

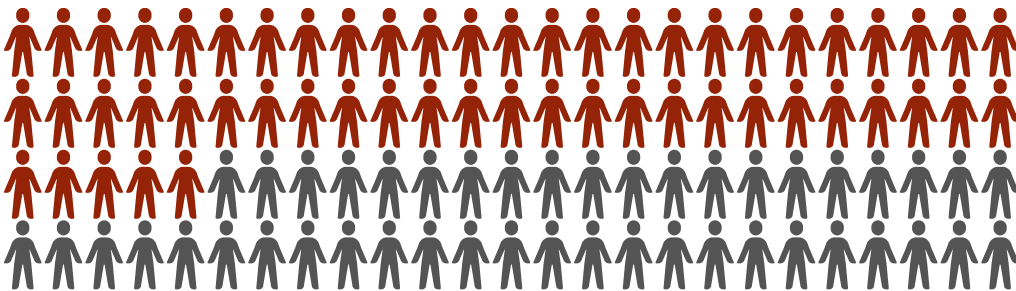


THE ROAD TO
RECOVERY

Dopamine-Driven Continuation

55%

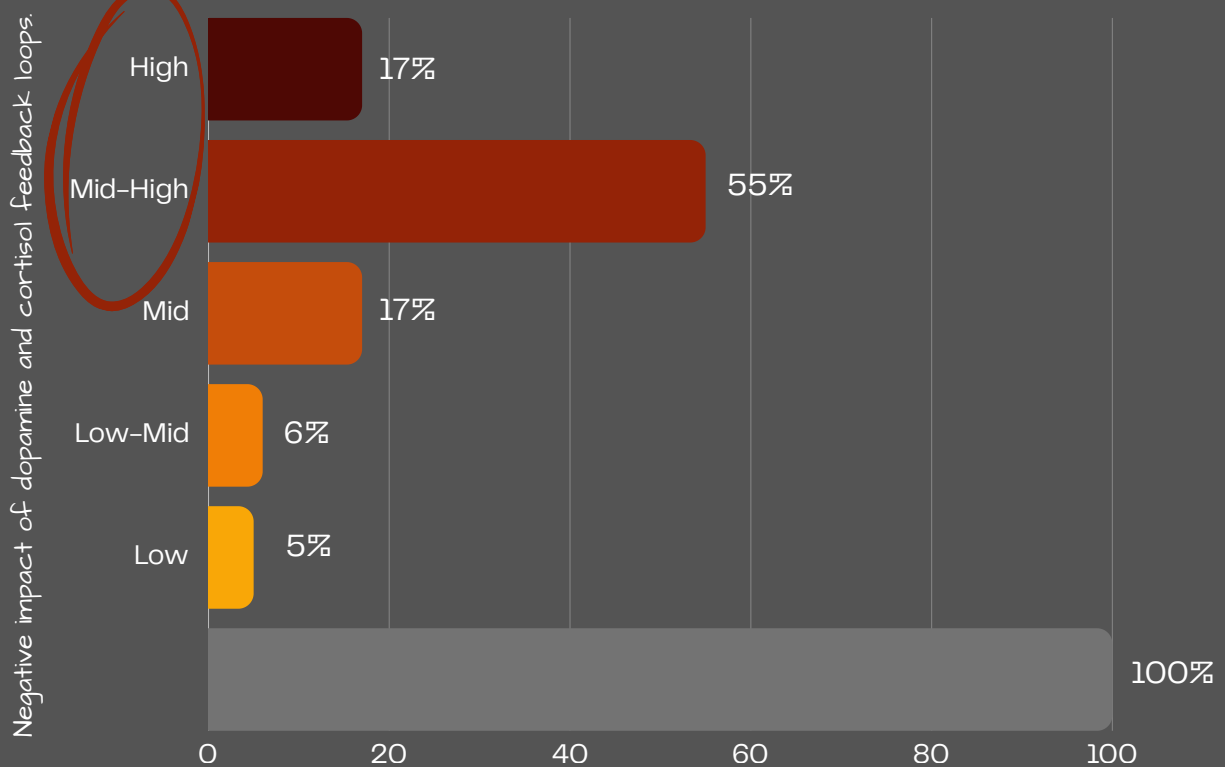
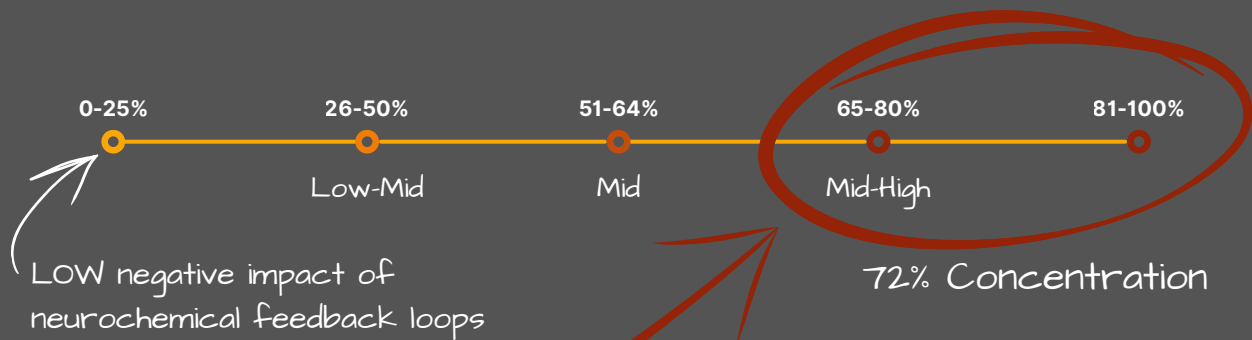
of CEOs (55 out of 100) fall into the **Mid-High** range of dopamine-driven continuation in recovery and rest.



In practice, stepping away from work does not deactivate the system that was driving it. The environment changes — the laptop closes, the commute begins, the evening starts — but the internal state does not follow. The same chemical process that was directing focus and decision-making during the day continues running. There is no external demand left, but the nervous system remains engaged, carrying momentum forward into time that should be dedicated to recovery.

This is not a thinking problem or a lack of discipline. It is a chemical one. Dopamine remains elevated, sustaining a state of engagement and stimulation that has no remaining purpose. The nervous system stays active because the chemical process driving it has not been interrupted.

Distribution



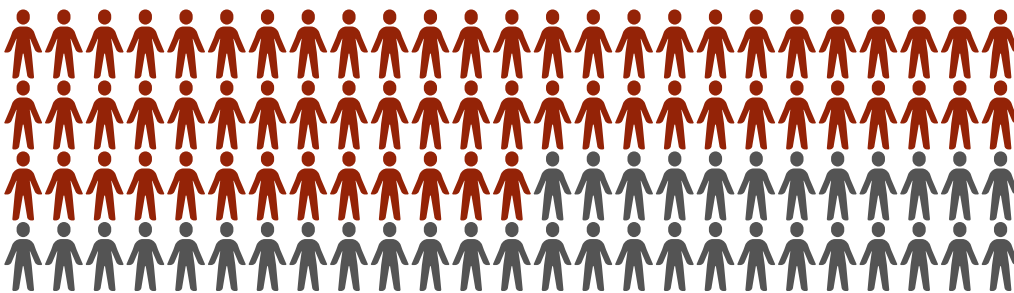
The number of CEOs falls in the range.

The distribution is concentrated in the upper range. In this sample, recovery was frequently limited by continued mental engagement — preventing the nervous system from fully resetting between cycles.

Cortisol-Driven Alertness

63%

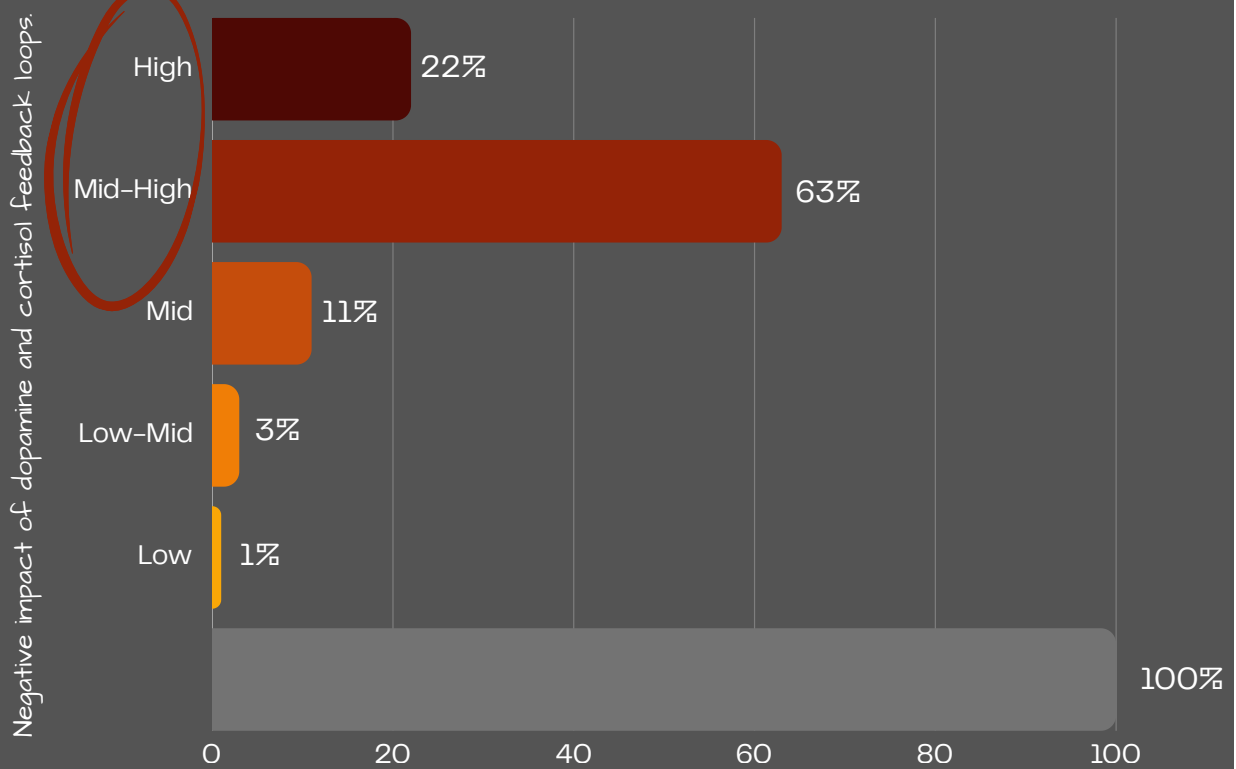
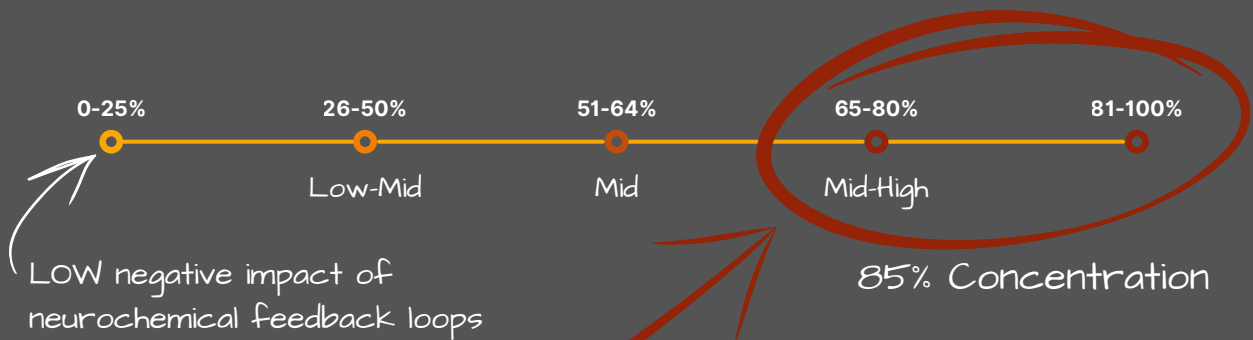
of CEOs (63 out of 100) fall into the **Mid-High** range of cortisol-driven alertness in recovery and rest.



In practice, stepping away from work does not deactivate the state of alertness that has built throughout the day. The meetings are over, the decisions have been made, the pressure has no immediate source — but the internal state that was managing all of it remains. The nervous system holds a background level of tension and readiness that has nowhere to direct itself.

Cortisol remains elevated, sustaining vigilance without a target. What was a necessary and functional response during the working day continues running beyond it — replaying decisions, scanning for problems that have not yet surfaced, and anticipating the demands of tomorrow. Without full deactivation, the nervous system cannot reset, and incomplete recovery carries directly into the quality of the following day's decisions.

Distribution



The number of CEOs falls in the range.

The distribution is heavily concentrated in the upper range. In this sample, recovery was consistently shaped by continued internal alertness — reducing the depth and quality of reset between periods of execution.

Combined Effect

This study identifies a consistent mechanism operating across all three stages of leadership performance — decision-making, daily execution, and recovery and rest. In each stage, the same process is at work. The CEO's internal chemical state organises attention, shapes interpretation, and directs action before conscious reasoning engages.

The dopamine feedback loop strengthens what aligns with an existing direction and builds conviction ahead of evidence. The cortisol feedback loop reduces exposure to contradiction and delays engagement with what is demanding or uncertain. Together, they determine what feels correct, what gets done, and whether the nervous system fully resets or carries the accumulated weight of the day forward into the next cycle.

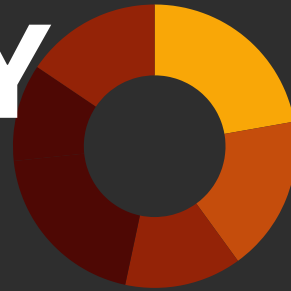
Over time, this compounds. Decisions are built on a perception that was already shaped before the analysis began. Execution follows reward and avoidance rather than strategic priority. Recovery fails to return the nervous system to baseline — preserving the distortions of one cycle and carrying them directly into the next.

The mechanism does not stay contained at the individual level. As CEOs build teams that think and respond in similar ways, these patterns replicate across the organisation — embedding themselves in how reality is interpreted, how effort is directed, and how strategic decisions are made at every level.

What presents as leadership judgment, execution discipline, and organisational alignment is, at a deeper level, the repeated and compounding expression of these underlying patterns.

SUMMARY

Core Findings



$\sin 300^\circ =$
 $= \sin(3 \cdot 90^\circ + 30^\circ)$
 $= \cos 30^\circ = -\frac{\sqrt{3}}{2}$

$\frac{P_N}{\pi \cdot r^2} = \frac{\alpha}{360^\circ}$

$\frac{L}{2 \cdot \pi \cdot r} = \frac{\alpha}{360^\circ}$

$L = \frac{\alpha}{360^\circ} \cdot 2\pi r$

$\frac{a^2 + b^2}{c^2} = \cos x \cos y$

$\frac{\tan x + \tan y}{\cos x \cos y} = \frac{\sin(x+y)}{\cos x \cos y}$

Core Findings

This study identifies a consistent mechanism shaping decision-making, execution, and recovery: the CEO's internal state is continuously shaped by neurochemical feedback loops that act before reasoning and structure what follows.

Across all three stages, the same pattern operates. The dopamine feedback loop strengthens what aligns and creates early conviction, while the cortisol feedback loop reduces exposure to contradiction and delays engagement with what is difficult. These signals organise attention, interpretation, and action before reasoning is applied — shaping what feels correct, what gets done, and whether the nervous system resets or carries momentum and tension forward.

Over time, this compounds into a stable pattern. Decisions are formed on pre-shaped perception, execution follows reward and avoidance rather than priority, and recovery fails to neutralise the system, preserving and reinforcing those distortions.

The mechanism does not stay at the individual level. It scales. As CEOs build teams that think and respond in similar ways, these patterns become embedded across the organisation — shaping how reality is interpreted, how effort is allocated, and how direction is sustained.

What appears as leadership judgment, execution discipline, and organisational alignment is, at a deeper level, the repeated expression of these underlying patterns.

Study Author



Tomasz Drybala is the founder of the Neuro-Based Leadership Centre and the architect of a neuroscience-based regulatory framework designed for CEOs, founders, and senior executives.

His work focuses on measuring and regulating the neurochemical feedback loops that shape executive decision-making, daily execution, recovery cycles, internal rank, and relational dynamics. Rather than working at the behavioural surface, he operates at the level where perception is formed — stabilising the biological systems that influence conviction, timing, direction, and follow-through before logic engages.

Alongside building his executive framework, Tomasz pursued targeted programs through institutions including Harvard, Cambridge, Oxford, and the University of California, Berkeley, while developing an applied research body examining how dopamine, cortisol, oxytocin, serotonin, and testosterone feedback loops influence judgment, timing, and execution inside real organisational environments.

Research Methodology

Study Design

This study was designed as an applied behavioural research project examining how neurochemical feedback loops influence executive decision-making, daily execution, and recovery patterns in real-world business contexts. Rather than relying on hypothetical scenarios or laboratory conditions, the study focused on lived executive decisions with material business impact, capturing how internal signals shaped perception and action in practice.

The design combines structured self-assessment with quantitative scoring, pattern identification across repeated decision cycles, and cross-case qualitative validation through executive discussions.

Participant Selection

The study sample consisted of 100 CEOs and senior executives operating within the UK technology sector, selected against the following criteria:

- Active leadership role — CEO, Founder, or senior executive
- Company turnover between approximately £2 million and £40 million annually
- Direct responsibility for strategic decision-making and execution
- Minimum fifteen years of leadership experience in scaling or operating a business

Participants were sourced through direct executive outreach and professional networks. The sample is purposefully selected, not random — reflecting a high-performance executive population rather than the general business population.



Data Collection

Each participant completed a standardised assessment measuring the intensity of specific internal responses, rather than the frequency of behaviour. The assessment covered three domains — decision-making, daily execution, and recovery and rest — using a 1–10 scale, where 1 indicated no resonance, and 10 indicated a strong, hard-to-resist internal response.

This approach captures moment-of-activation intensity, which more accurately reflects neurochemical influence than behavioural frequency. Responses were grouped into six core categories, aggregated within each category, normalised to percentage ranges, and categorised into five bands:

- Low (0–25%)
- Low–Mid (26–50%)
- Mid (51–64%)
- Mid–High (65–80%)
- High (81–100%).

To complement quantitative scoring, selected participants engaged in structured executive discussions focused on specific past decisions with significant financial impact, moments of perceived clarity versus later realisation, and recovery patterns. These discussions were used to validate whether identified patterns appeared in real decisions and to ensure alignment between reported experience and measured signals.

Statistical Approach

The study is based on descriptive statistical analysis, not inferential modelling. Analysis focused on distribution across score bands, percentage concentration within each category, and identification of dominant ranges. Given the applied nature of the study and the targeted sample, no claims are made about general population inference. The focus is on pattern consistency within a defined executive cohort.



Limitations

As with any applied research of this type, several limitations apply:

- Self-reported data: Responses reflect subjective internal experience, though the focus on intensity reduces behavioural bias
- Non-random sample: Participants are drawn from a specific high-performance executive group, limiting generalisability
- Context-specific: Findings are most relevant to decision-making under real business pressure, not controlled environments
- No external physiological measurement: Neurochemical activity is inferred through behavioural and experiential proxies, not directly measured

Research Positioning

This study is positioned as applied executive research, not academic neuroscience. Its objective is not to isolate variables in laboratory conditions or produce generalised population models, but to identify repeatable, real-world patterns, make invisible decision drivers visible, and provide a practical framework for executive application.



Your Position Within This Research

The patterns documented in this study were identified across 100 CEOs and senior executives. The findings show what these patterns look like at the group level — how frequently they appear, where they concentrate, and what they cost.

What this report cannot tell you is where you sit within it.

The Decision Excellence Assessment maps your own neurochemical patterns across the same three domains examined in this study — decision-making, daily execution, and recovery and rest. It identifies the specific patterns that are active in your leadership, the intensity at which they are operating, and where the negative impact is highest. It takes five minutes to complete. The report is 29 pages and is personalised to your results. It is free.

neurobasedleadershipcentre.com/assessment



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