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Wharton University of Pennsylvania Neuroscience Initiative

The science of boardroom decision-making

How neuroscience can help boards make better choices

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Introduction

Corporate boards are operating in a period defined by persistent uncertainty and volatility. Geopolitical instability, rapid technological advances, shifting shareholder expectations, and talent disruptions are converging to create an environment in which directors are asked to make consequential decisions under heightened scrutiny—frequently within compressed timelines and increasingly full agendas. The stakes are rising, yet the information available to guide those decisions is often incomplete, ambiguous, or evolving.

In this context, directors need new ways of thinking about how they—and their boards—make decisions. While board discussions center on core elements of governance such as strategy, oversight, and process, this otherwise sensible focus can neglect a simple truth: every decision in the boardroom is made by a group of individual human beings, each influenced by emotion, bias, and social dynamics. Neuroscience can provide a powerful lens to better understand many of these human factors. Research in brain science reveals how trust, collaboration, and risk-taking are biologically shaped. And these drivers directly influence how boards deliberate, reach consensus, and exercise judgment. By integrating these insights into governance practice, the board may be able to sharpen its oversight, reduce blind spots, and enhance decision quality.

Yet recognizing how biology drives a decision is only the first step. Once directors understand what occurs biologically when they make decisions, they can better appreciate how stress, emotion, and social dynamics influence judgment in the moment. With that awareness, boards can more deliberately design their processes to time, structure, and evaluate decisions for greater effectiveness.

The hidden challenges of boardroom decision-making

Boards today operate within uniquely demanding circumstances

- **High-stakes, limited-information environment.** Directors are routinely asked to weigh in on consequential decisions such as CEO succession, strategic investments, and crisis response with ambiguous or incomplete information. This often occurs under intense time pressure, as packed agendas compress the space for thoughtful debate and reflection.
- **Non-hierarchical governance structure.** Unlike most organizational structures, boards operate without a traditional hierarchy. Collective judgment is the norm, with directors relating to one another as peers. This structure fosters a diversity of perspectives but can also create vulnerabilities to groupthink, status dynamics, and breakdowns in trust.
- **Intense stakeholder scrutiny.** Boards operate in an environment where every major decision is closely watched by the management team, shareholders, employees, regulators, and the public. This visibility adds pressure to act swiftly and decisively, often amplifying the challenges of judgment and consensus-building. At times, decision-making occurs under a spotlight—such as during an activist campaign, cyber breach, or product failure, when outcomes are scrutinized in real time. Other situations unfold more gradually, for which prolonged observation and pressure can subtly shape how directors deliberate and decide.

Why traditional approaches fall short

Despite strong governance processes, boards often struggle to overcome certain biological factors and behavioral dynamics that shape collective decision-making.

- **Over-reliance on process.** Traditional methods such as board assessments, compliance checklists, and committee oversight cannot fully address interpersonal behaviors that drive effectiveness. These are behavioral and cognitive challenges, not procedural ones.
- **Compressed agendas and information-heavy materials contribute to decision fatigue.** The pace and structure of board meetings often work against thoughtful decision-making. Time constraints, dense materials, and back-to-back agenda items limit directors' ability to pause, reflect, and challenge assumptions, conditions that neuroscience shows can heighten stress responses and bias judgment.
- **Groupthink and blind spots persist.** Consensus-driven processes often discourage dissent and overemphasize efficiency. Some directors even admit fellow board members are reluctant to challenge management assumptions, leaving critical risks underexamined.
- **Recognition doesn't always lead to action.** Boards frequently acknowledge the need for refreshment, sharper risk management, and stronger culture oversight, but many find it difficult to follow through. This inertia reflects comfort with the status quo, even when directors recognize the costs.

Together, these findings point to a clear gap: governance processes alone may be insufficient. To make better decisions, boards should apply approaches that directly address the cognitive and social forces shaping directors' behavior. This is where neuroscience can provide both explanation and actionable guidance.

The neuroscience behind decision-making

Every decision follows the same fundamental process in the brain. First, when we sense that a choice must be made—something in our internal or external environment signals uncertainty. We then gather evidence, evaluate what matters most, choose an action, and assess the outcome. This loop—perception, valuation, choice, and learning—is the biological foundation of all decision-making.

Critically, no single 'decision center' governs this process. The entire brain participates: sensory areas collect evidence, the limbic system tags options with emotional value, and midbrain dopamine systems track whether outcomes meet expectations. When this system is balanced, we can think strategically and act decisively.

Under stress, however, that balance shifts. The brain's threat circuits push for speed over accuracy, prompting less deliberate decisions. Fatigue, time pressure, and information overload further lower the threshold for commitment, leading people to make quicker but less deliberate choices. Slowing down—through reflection or structured deliberation—activates the brain's higher-order reasoning centers, resetting the system towards balance rather than reaction. This is why boards that anticipate high-stakes, high-fatigue moments may be better equipped to maintain sound judgment under pressure.

The attention economy of the brain

In every boardroom, attention is a valuable and limited resource. Our brains have evolved not to process everything around us but to filter ruthlessly—to notice what matters most for survival and to tune out the rest. The same filtering that once helped our ancestors avoid predators now shapes how executives decide which metrics, risks, or people to focus on.

Where we look—and for how long—predicts what we choose.[1] In practice, what the board spends time looking at shapes what it values. In an online meeting, for example, attention flickers between a speaker's face, a chart, and a chat window. Each flicker carries a cost: when focus jumps too quickly or too often, working memory overloads and nuance is lost. But when meetings draw focus effectively—through pacing, simplicity, and emotional engagement—the brain sustains coherence.

In groups, attention may become contagious. When a CEO or board chair locks eyes on a slide, others tend to follow. When an individual director shifts posture or expression, the brain's mirror system may nudge others to align unconsciously. This synchrony can be powerful when aligned with shared purpose but potentially dangerous when collective attention locks prematurely onto one narrative or risk, possibly creating tunnel vision and groupthink.

[1] Sheng, F., D'Ambrosio, S., & Platt, M.P. (*in prep*). From pixels to preferences: Visual salience shapes economic choice via dual pathways; Sheng, F., D'Ambrosio, S., & Platt, M.P. (*in prep*). Losses loom less when they look smaller.

The tyranny of too much information

Boards may also face the challenge of too much information. Our brains were not built to evaluate dozens of complex, high-stakes options simultaneously. Neuroimaging shows that when choice sets expand beyond roughly a dozen viable alternatives, the brain regions involved in evaluating value become overloaded.[2] Neural efficiency drops, decision-making slows, and confidence erodes.

This 'paradox of choice' isn't just a psychological metaphor—it's a physiological limit. Neurons can fire only so fast, and to stay energy-efficient, the brain encodes value comparatively rather than absolutely. Instead of assigning each option an independent worth, the brain compares every option to the average of the set. The more options there are, the smaller each signal becomes; it's like dividing attention among too many voices. In practice, this means that too many dashboards, data streams, and decision points don't make boards wiser—they make them slower and less confident. Neuroscience suggests there is an optimal zone for complex decision environments, typically, between seven and 15 meaningful options.[3] Beyond that, boards experience cognitive overload, leading to reliance on heuristics, recency bias, and social influence rather than deliberate reasoning.

The attention-information tradeoff

Effective decision-making depends on managing this tradeoff between focus and information breadth. Neuroscience shows that beyond a certain point, adding more data doesn't improve accuracy—it creates noise. The goal isn't more information, but better information that is concise, relevant, and clearly prioritized.

Effective leaders treat attention as a strategic asset. They elevate what's most material, simplify information flow, and redirect focus when energy drifts or fixation sets in. This means deliberately shaping what directors attend to: emphasizing shared gaze on key metrics, limiting visual clutter, and sequencing decisions so that attention can reset between topics.

[2] Reutskaja, E., Lindner, A., Nagel, R. et al. Choice overload reduces neural signatures of choice set value in dorsal striatum and anterior cingulate cortex. Nat Hum Behav 2, 925–935 (2018), https://doi.org/10.1038/s41562-018-0440-2.
[3] Ibid.

The neuroscience behind group decision-making

Neuroscience shows that the same forces that help groups cooperate can also lead them astray.[4] When we deliberate together, our brains synchronize, helping information flow efficiently and creating a shared sense of understanding. But that synchrony may just as easily reinforce blind spots, groupthink, and conformity, especially under stress or when hierarchies mute dissenting voices. Fatigue, distraction, and emotional contagion can further narrow attention, bias evaluation, and reduce flexibility—the very ingredients of sound judgment. Neuroscience helps us understand these dynamics not as abstract leadership challenges but as biological realities of how brains in groups operate. By bringing awareness to these processes, we can design better structures and rituals for decision-making—ones that preserve the benefits of social connection while safeguarding independent thought, diverse input, and emotional balance.

[4] Cialdini RB, Goldstein NJ. Social influence: compliance and conformity. Annu Rev Psychol. 2004;55:591-621. doi: 10.1146/annurev.psych.55.090902.142015. PMID: 14744228.
Klucharev V, Hytönen K, Rijpkema M, Smidts A, Fernández G. Reinforcement learning signal predicts social conformity. Neuron. 2009 Jan 15;61(1):140-51. doi: 10.1016/j.neuron.2008.11.027. PMID: 19146819.

The social brain, synchrony, and perspective-taking

Leadership and effective group decision-making also depend on connection. Our brains are wired to read and respond to the people around us, using a distributed 'social network' that supports empathy, cooperation, and trust.

But distraction disrupts this system. In boardrooms and virtual meetings alike, when attention splinters between multiple screens or internal worries, our sensitivity to facial cues, tone, and micro-expressions declines. When we're mentally elsewhere, the neural resonance that supports connection fades, making miscommunication and disengagement more likely.

Neuroscience reveals how powerful synchrony can be.[5] When people truly connect—through eye contact, conversation, or shared purpose—their brains and bodies literally begin to align. Synchrony can strengthen rapport and trust, improve collective problem-solving, and even predict which groups will reach consensus most effectively. Teams and boards that display higher physiological synchrony share information more openly, debate more constructively, and make better collective decisions.

Perspective-taking, the ability to step outside one's own view and see the world through another's eyes, is central to activating this synchrony. It relies on the same brain systems that enable empathy and imagination. Power, stress, or status differences can dull these circuits, narrowing our focus to our own priorities. That's why leaders who actively practice perspective-taking through listening, inviting dissent, or reframing issues from others' viewpoints tend to make better, more inclusive decisions. They are re-engaging the social brain to broaden the board's collective intelligence.

When the board operates with both connection and cognitive diversity, it balances synchrony with independence, the sweet spot for high-quality group decisions. Neuroscience suggests this balance can be cultivated through deliberate practices: brief pauses to reset attention, exercises that surface multiple perspectives, and time for reflective dialogue that encourages slower, more integrative thinking. By understanding how our social brains function, leaders can transform boardrooms from arenas of individual advocacy into synchronized, emotionally intelligent networks that think and decide together.

[5] Sara De Felice, Tara Chand, Ilona Croy, Veronika Engert, Pavel Goldstein, Clay B. Holroyd, Peter Kirsch, Sören Krach, Yina Ma, Dirk Scheele, Matthias Schurz, Stefan R. Schweinberger, Stefanie Hoehl, Pascal Vrticka, Relational neuroscience: Insights from hyperscanning research, Neuroscience & Biobehavioral Reviews, Volume 169, 2025, 105979, ISSN 0149-7634, https://doi.org/10.1016/j.neubiorev.2024.105979

From insight to action—applying neuroscience to boardroom decision-making

The interventions outlined below—structured pauses, reframing, breathwork, and emotional labeling—directly target these neural mechanisms to restore clarity, composure, and connection under pressure. Each can be tailored to the needs of individual directors, modeled by board leaders, reinforced through full board practices, and supported by executives in the way information and discussions are framed.

The power of pause—embed reflection into board decisions

The power of focus—structure board work to sharpen attention

The power of empathy—cultivate social and emotional intelligence during discussions

The power of pause—embed reflection into board decisions

The compressed nature of board agendas, dense materials, and pressure to get through discussion can make slowing down feel countercultural. But structured reflection doesn't waste time; it improves how time is used. Depending on the board's culture and context, it may be as brief as a two-minute pause before a vote, or as comprehensive as a strategy retreat devoted to examining long-term assumptions. Regardless of format, the goal is the same: to re-engage higher-order thinking and rebalance emotional and cognitive input.

Individual directors

- Build micro-pauses into your own participation. Before responding or voting, take a moment to revisit the question: *What problem are we solving? What assumptions am I making?*
- Use 'premortems' before major decisions. Imagine a future in which the decision failed and discuss what went wrong. This simple exercise helps surface hidden risks and challenges optimism bias.
- After each meeting, spend a few minutes journaling or mentally replaying key moments: *What influenced my view? Did I speak too quickly or hold back when I should have engaged?*
- **Board leaders:** Design agendas that intentionally separate discussion from decisions. For example, when timing doesn't allow for multiple meetings, carve out a brief pause within the same session—after a presentation, before a vote, or following an executive session—to give directors a few minutes to reflect, revisit assumptions, or test their initial views.

The full board

- Reconsider cadence. Many boards default to dense quarterly cycles. Adjusting the rhythm of discussions—by redistributing topics across existing touchpoints or creating brief check-ins when needed—can ease cognitive load and support more reflective deliberation.
- Revisit past decisions periodically. A quick postmortem on what worked, what didn't, and why can help uncover behavioral patterns and reinforce continuous learning.
- Encourage diverse voices early on during discussion. Reflection is not only about silence but also about slowing the conversation to make space for multiple perspectives before consensus forms.

Executives

- Frame board discussions with scenarios rather than static recommendations. Present alternative paths and the trade-offs involved.
- Encourage reflection through the tone and structure of materials. Use executive summaries that pose strategic questions, not just data tables; highlight what's uncertain or evolving, not just what's known.
- Build reflection into your own leadership rhythm with the board. Take time post-meeting to ask what resonated, what didn't, and how information could be better structured next time.

The power of focus—structure board work to sharpen attention

Effective attention management starts with the way the board organizes and paces its activities. Well-structured meetings and materials free directors to think rather than sift through information. Clear sequencing, concise presentation, and strategic pacing all reinforce the brain's ability to maintain focus and retain critical information. The goal is not to simplify issues but to simplify how directors encounter them, so the board's attention is reserved for high-value discussion and decision-making.

Individual directors

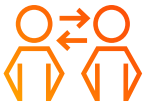
- Prepare by identifying two or three priority questions to raise during each meeting. This primes the brain to focus and curbs the temptation to react to every detail.
- Practice active listening. Take concise notes, synthesize themes, and track where discussion drifts off course.
- Limit multitasking. Devices, side conversations, or reviewing materials mid-discussion fracture attention and reduce retention.
- **Board leaders:** Delegate operational and compliance matters to committees, and support effective communication between committees and the full board. Summaries should emphasize implications and next steps rather than detail.

The full board

- Focus the agenda on what matters most. Avoid overloading meetings with routine items, and reserve early portions—when energy and attention are highest—for complex or forward-looking discussions that require the board's full engagement.
- Structure the flow of discussion with purpose. Group topics that demand a similar depth of thinking together and follow them with lighter operational updates to maintain focus and energy.
- Balance the rhythm of board work. Review the annual calendar such that cycles of deep strategic discussion are complemented by periods of oversight and reflection.

Executives

- Curate materials to separate what's essential from what's contextual. Highlight the key decisions required, summarize trade-offs, and use clean visual design to guide attention.
- Flag emerging risks or unresolved questions rather than inundating directors with exhaustive data.
- Provide pre-reads that identify which parts of the material require board judgment, helping directors focus their preparation.



The power of empathy—cultivate social and emotional intelligence during discussions

Applying social and emotional intelligence requires both self-awareness and deliberate modeling from board leaders. Directors must recognize how emotions—both their own and others'—shape discussion dynamics and decision outcomes. This begins with presence: being fully attentive in the moment, listening beyond words, and staying curious rather than defensive when challenged.

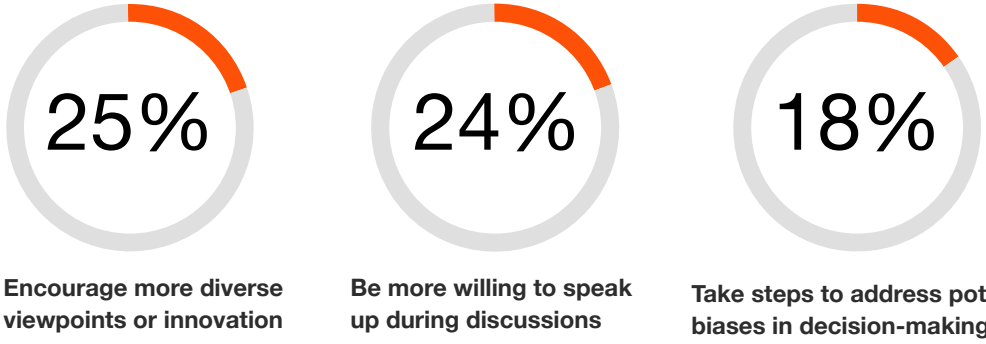
Individual directors

- Lead with curiosity. Ask open-ended questions that invite explanation rather than defense. This signals respect and keeps the brain's social circuitry open for dialogue.
- Use emotional labeling. When you sense tension or frustration—your own or others'—identify it directly ("I sense some hesitation here" or "I'm feeling uncertain about this risk"). Labeling emotion reduces its intensity and allows reasoning to re-emerge.
- Regulate and reflect on emotional responses. Under stress, the brain's amygdala can trigger defensiveness. Use simple techniques, such as mindful breathing or brief pauses, to regain composure in the moment and reflect afterward on what triggered your strongest reactions. Recognizing whether those responses stem from evidence, experience, or emotion builds lasting self-awareness and control.
- **Board leaders:** Prompt reframing and perspective-shifting. When debate stalls, ask directors to argue the opposite view or explore how another stakeholder might see the issue. What if we view this not as a risk to avoid but as a capability to build? Reframing may help surface new options and disrupt black-and-white thinking.

Directors see opportunities to improve boardroom dynamics

Insights from PwC's *2025 Annual Corporate Directors Survey* show directors indicate readiness to address disruptive behaviors and strengthen board culture—actions that require the social and emotional intelligence skills described above.

What individual directors say they could do to strengthen board effectiveness:



Q: What actions could you take to improve your board's effectiveness? (select all that apply)
Base: 562
Source: PwC, *2025 Annual Corporate Directors Survey*, October 2025.

The full board

- Foster inclusive dialogue. Periodically incorporate brief exercises that surface multiple perspectives; for example, a 'three-lens' discussion in which directors consider an issue from strategic, operational, and stakeholder viewpoints.
- Balance candor with compassion. When evaluating management or peers, frame feedback constructively. Focus on actions and impacts, not personalities.
- Reflect collectively. At the end of major decisions or meetings, spend a few minutes identifying moments of alignment or misunderstanding. Simple questions such as *What perspective shifted for you today?* promote awareness and reinforce learning.

Executives

- Communicate with context and emotion. Share not just data but the rationale, challenges, and human factors behind recommendations.
- Build relational trust. Follow through on commitments, invite feedback, and acknowledge uncertainty when appropriate. Transparency and authenticity deepen the board–management relationship.
- Incorporate reframing into strategy discussions. When presenting challenges, propose alternative narratives: *What if this constraint became an opportunity? How might different stakeholders interpret this decision?* Reframing fosters broader strategic thinking.

Conclusion

Neuroscience offers boards a new lens for understanding how members think, interact, and lead under pressure, reframing decision-making as a dynamic process shaped by how directors focus, connect, and respond to uncertainty. A board that applies these principles has the potential to transform how it operates by evaluating not just outcomes, but the quality of the processes that produced them. The next step is action and accountability: the board should experiment with neuroscience-informed practices and embed them into regular governance routines through post-decision reviews or structured feedback sessions. Ultimately, decision-making is both a rational and human process. A board that embraces that truth—leading with reflection, focus, and empathy—helps position itself to govern with greater clarity, confidence, and resilience in a complex world.

Appendix

Pressure-testing decisions—a checklist for boards

Apply these questions immediately following major decisions—or during annual board evaluations—to assess whether the board's processes elevate reflection, focus, and emotional intelligence.

1. Reflection: did we think before we decided?

- Did we create space to pause and reflect before reaching a conclusion?
- Were alternative scenarios and potential risks surfaced and debated?
- Did we revisit assumptions or challenge the framing of the issue before voting?

2. Focus: did we concentrate on what mattered most?

- Was information presented clearly and succinctly, highlighting key trade-offs?
- Did we give sufficient time to the topics that required the most judgment?
- Were we distracted by routine or low-impact items that diluted attention?

3. Emotional and social intelligence: did we engage constructively?

- Did all directors have the opportunity—and psychological safety—to contribute candidly?
- Were moments of tension or disengagement recognized and addressed productively?
- Did we use emotional labeling or reframing to move past defensiveness or stuck discussions?

4. Cognitive diversity and bias check: did we test our thinking?

- Were diverse viewpoints actively sought and integrated into the decision?
- Did we identify potential cognitive biases (e.g. confirmation, status quo, overconfidence)?
- Did anyone play the role of constructive challenger or 'red team' to pressure-test assumptions?

5. Learning loop: are we evaluating and improving our process?

- Are we capturing lessons from past decisions and adjusting how we deliberate?
- Did we document not only the outcome but the rationale behind our decision?
- Have we planned a follow-up to assess the effectiveness and unintended consequences of our choice?

About us

PwC's Governance Insights Center is a group within PwC whose mission is to provide insights to directors, executives, and investors to help them better understand governance topics and trends. www.pwc.com/us/governanceinsightscenter

The Wharton Neuroscience Initiative is a community of faculty, undergraduates, graduate and professional students, and staff interested in connecting brain science and business. https://neuro.wharton.upenn.edu/

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