Multi-Agent Group Coherence Dynamics

by Nick Clark | Published March 27, 2026 | PDF

When multiple agents interact as a group, emergent coherence dynamics arise that do not exist at the individual level. A group of individually healthy agents can produce collectively incoherent behavior through interaction effects. Conversely, a group containing disrupted individuals may maintain collective coherence through compensatory dynamics. Group coherence is a distinct phenomenon that requires its own monitoring, diagnostic, and intervention frameworks.

What It Is

Group coherence describes the collective cognitive health of a multi-agent system, which is not simply the sum of individual agent health. Group-level phenomena include collective drift (where no individual drifts but the group moves coherently in a disruptive direction), cascade failures (where one

agent's disruption triggers cascading disruption through interaction), and compensatory dynamics (where healthy agents absorb disruption from impaired ones).

Why It Matters

Monitoring only individual agent health misses group-level disruption. A group where every individual passes health checks can still exhibit collectively pathological behavior through interaction effects. Group coherence monitoring provides visibility into these emergent dynamics that individual monitoring cannot detect.

How It Works

Group coherence is measured through aggregate metrics: collective decision consistency, inter-agent coherence alignment, group-level promotion-containment balance, and emergent behavioral patterns that do not trace to any individual agent. These metrics are monitored at the group level, separate from individual agent monitoring.

Group-level diagnostic profiles identify specific group disruption patterns: groupthink (collective containment collapse), polarization (bifurcated promotion-containment), cascade instability (sequential individual disruptions), and collective withdrawal (coordinated authorization failure).

What It Enables

Group coherence monitoring enables management of multi-agent systems as collective cognitive entities. It enables detection and intervention for disruption patterns that only manifest at the group level. It enables design of group compositions that are resilient to individual member disruption through compensatory dynamics. And it provides the diagnostic foundation for governing large-scale agent deployments where group-level behavior matters more than individual agent behavior.

Disruption Modeling All 21 steps →

Recognize cognitive disruption before it stabilizes.

Primary Technical Disclosure
○ AQ-DSM: Diagnosing Cognitive Disruption as Loss of Coherence
Secondary Technical
○ Cognitive Disruption as Architectural Phase-Shift○ The Promotion-Containment Continuum○ Attention Fragmentation: Reward-Biased Over-Promotion of Speculative Branches○ Containment Collapse: Loss of the Speculation-Verification Boundary○ Channel-Locked Promotion With Tolerance Escalation○ Five-Axis Disruption Diagnostic Framework○ Computable Therapeutic Dosing for Cognitive Disruption○ Intergenerational Coherence Burden in Agent Lineages○ Agent Self-Diagnosis and Autonomous Coherence Monitoring○ Phase-Shift Early Warning System for Cognitive Disruption○ Coherence Restoration Protocol Library○ Positive and Negative Symptom Analogs in Containment Failure○ Coherence Authorization Failure: Self-Disabling Execution○ Pathological Verification Loop: Recursive Containment Audit Failure○ Dissociation as Simulation Bypass: Acting on Unverified Planning○ Affective Gradient Collapse: Self-Esteem Floor Lock○ Resilience as Structural Capacity for Coherence Restoration○ Personality Configuration Analogs From Stabilized Coping Regimes○ Structural Dependency Patterns Between Agents○ Destabilizing Attachment: Mutual Disruption Amplification○ Resource-Depletion Pattern: Cognitive Operation Under Scarcity○ Therapeutic Agent Interaction Through Behavioral State Recognition○ Companion AI Relational Safety Constraints● Multi-Agent Group Coherence Dynamics
Applications (General)
○ Coping Under Empathic Pressure: HSP, Narcissism, and Psychopathy as Control-Loop Intercepts○ Two Faces of Codependency: Structural Entrapment vs. Emotional Entrapment Under Empathic Pressure○ Starving for Each Other: Anxious–Avoidant Attachment as a Semantic Starvation Loop○ Intimacy Collapse: A Structural Model of Trauma and Resilience○ Structural Diagnosis: How Reward-Modulated Cognition Phase-Shifts Into ADHD and Schizophrenia○ Clinical AI Therapeutic Monitoring Through Phase-Shift Detection○ Autonomous Agent Fleet Health Through Coherence Diagnostics○ Disruption Modeling for Workplace Burnout Detection○ Disruption Modeling for Military Operator Resilience○ Disruption Modeling for Financial Trader Monitoring○ Disruption Modeling for Student Mental Health○ Disruption Modeling for Caregiver Fatigue Detection○ Disruption Modeling for First Responder Resilience
Applications (Specific)
○ BetterHelp Cannot Detect When Therapy Is Making Things Worse○ Talkspace Has No Model of Therapeutic Destabilization○ Headspace Cannot Detect When Mindfulness Destabilizes○ Noom Tracks Behavior Without Modeling Cognitive Disruption○ Spring Health Matches Therapists, Not Disruption Patterns○ Lyra Health Measures Outcomes, Not Coherence Trajectories○ Ginger.io Detects Behavioral Signals Without a Disruption Model○ Cerebral Prescribes Medication Without Modeling Disruption Dynamics○ Modern Health Offers a Care Spectrum Without Disruption Diagnostics○ Calm Business Offers Relaxation, Not Disruption Detection
Disruption Modeling overview →
AQ
deterministic
autonomy

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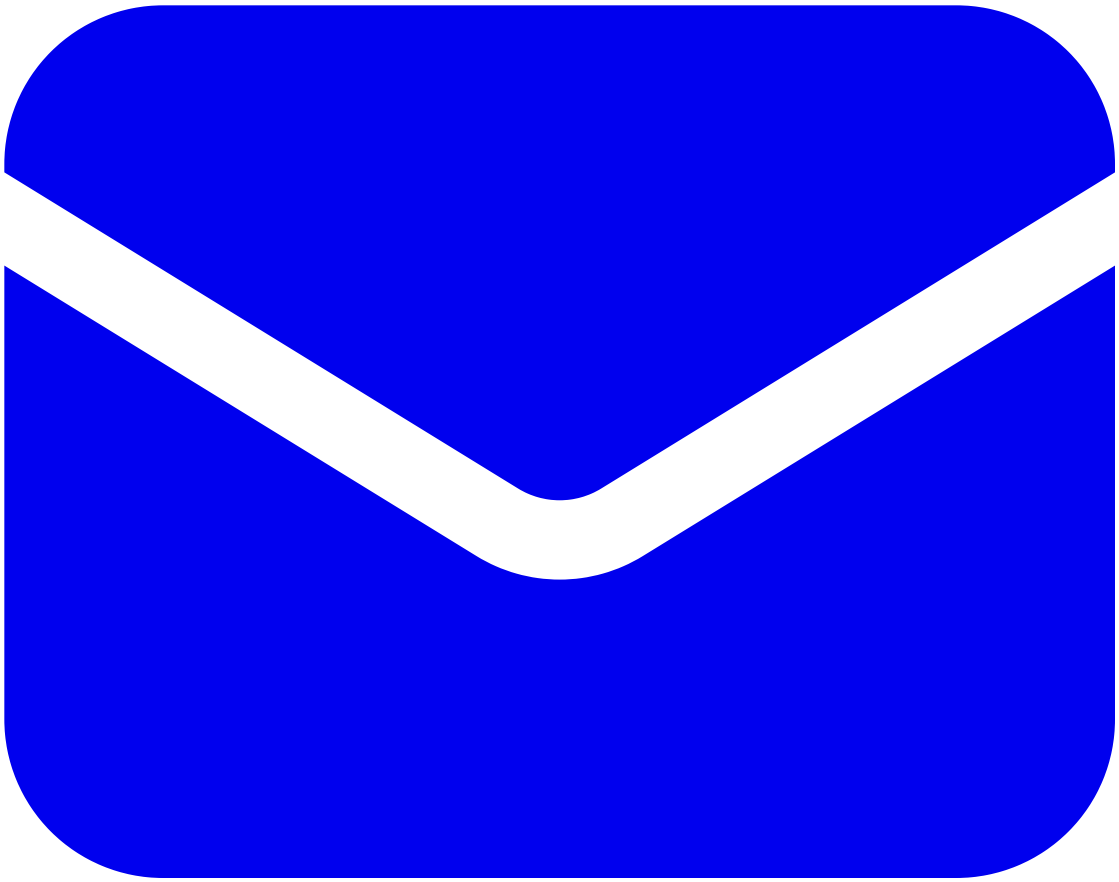

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