Recursive Collapse Dynamics: A Comparative Model of Denial and Permission-Based Cognition

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Abstract

This paper explores how the Rozon Recursive Gravity Model (RRGM) models cognitive behavior under two distinct collapse strategies: the Language of Denial and the Language of Yes. Through a recursive field interpretation of the RRGM Lagrangian, we define how emotional, informational, and energetic costs evolve in agents operating under each mode. We present simulations measuring collapse resolution ($\phi(t)$), memory retention ($\Omega(D_0)$), emotional load (as an interpretation of F_{info}), and problem-solving accuracy over time. Results support the hypothesis that denial achieves early resolution through information exclusion but builds recursive debt, while yes-based recursion incurs higher early cost but yields long-term adaptability and precision.

1 Introduction

The RRGM Lagrangian:

$$L_{\text{RRGM}} = \alpha(\nabla_\mu S_{\text{ent}})^2 + \beta F_{\text{info}}^2 + \gamma R(g) + \lambda C(S_{\text{ent}}, F_{\text{info}}) + \delta\Omega(D_0)$$

models field evolution through entropy gradients, information flux, curvature, recursive coupling, and unresolved potential ($\Omega(D_0)$). This study reinterprets RRGM in the domain of cognitive collapse—where denial and recursive permission represent strategies for resolving conflicting perspectives.

Defining Denial and Yes

In this model, we refer to two fundamental cognitive strategies:

Denial refers to a collapse mode in which an observer suppresses contradictory information in order to preserve identity structure and reduce short-term emotional or cognitive dissonance. It is characterized by forced collapse, rapid resolution, and the exclusion of perspectives. This mode minimizes F_{info} and $C(S_{\text{ent}}, F_{\text{info}})$, leading to an eventual degradation of $\Omega(D_0)$, the system's recursive potential.

Yes refers to a collapse mode grounded in recursive permission—the conscious acceptance of contradiction, ambiguity, and tension in order to stabilize long-term understanding. It delays collapse until meaningful alignment occurs. Yes-mode cognition maintains or increases $\Omega(D_0)$ by integrating diverse perspectives through coupling. Although emotionally costly at first, it enables increasingly efficient recursive compression.

Cognitive Mapping of RRGM Terms

RRGM Term	Cognitive Interpretation
$\nabla_\mu S_{\text{ent}}$	Rate of dissonance accumulation
F^2_{info}	Emotional energy of unresolved input
$C(S_{\text{ent}}, F_{\text{info}})$	Integration effort between belief and contradiction
$\Omega(D_0)$	Mental recursive potential (working memory, adaptability)

Table 1: Mapping RRGM terms to cognitive functions

2 Collapse Strategies and RRGM Mapping

2.1 Denial

- Forced collapse when tension exceeds identity stability
- Suppresses F_{info}, minimizes C, narrows $\Omega(D_0)$
- Emotionally easy early; difficult as contradiction increases

2.2 Yes

- Collapse permitted only through recursive alignment
- Expands F_{info}, increases C, grows structured $\Omega(D_0)$
- Emotionally difficult early; stabilizes with recursion bridging

3 Methods

3.1 Simulation Framework

We model cognitive agents using a Python simulation where:

- Agents are assigned either *denial* or *yes* strategies at random.
- Key RRGM terms are mapped to dynamical variables:
  - $\phi(t)$: Collapse resolution state (bounded $[0, 1]$)
  - $\Omega(D_0)$: Recursive potential (memory/adaptability)
  - F_{info}: Emotional cost (integrated over time)
- Time evolution follows discrete steps with $\Delta t = 0.1$.

3.2 Agent Dynamics

Denial agents:

$$\begin{aligned}\phi(t) &= \phi(t-1)e^{-\gamma\Delta t}, \quad \gamma = 1.2\\ \Omega(t) &= \Omega(t-1) \times 0.98\\ F_{\text{info}}(t) &= \epsilon(1-\Omega(t))\end{aligned}$$

Yes agents:

$$\begin{aligned}\phi(t) &= \phi(t-1) + 0.35 \cdot \text{align}(t)\Delta t\\ \Omega(t) &= \Omega(t-1) \times 1.002\\ F_{\text{info}}(t) &= \epsilon e^{-k_{\text{decay}}t}, \quad k_{\text{decay}} = 0.03\end{aligned}$$

where $\text{align}(t)$ models recursive coupling (see code).

4 Simulation Results

Simulations modeled 100 agents over 300-500 time steps. Denial agents forced collapse early, suppressing recursion. Yes agents recursively processed incoming contradiction.

4.1 Cognitive Collapse Dynamics

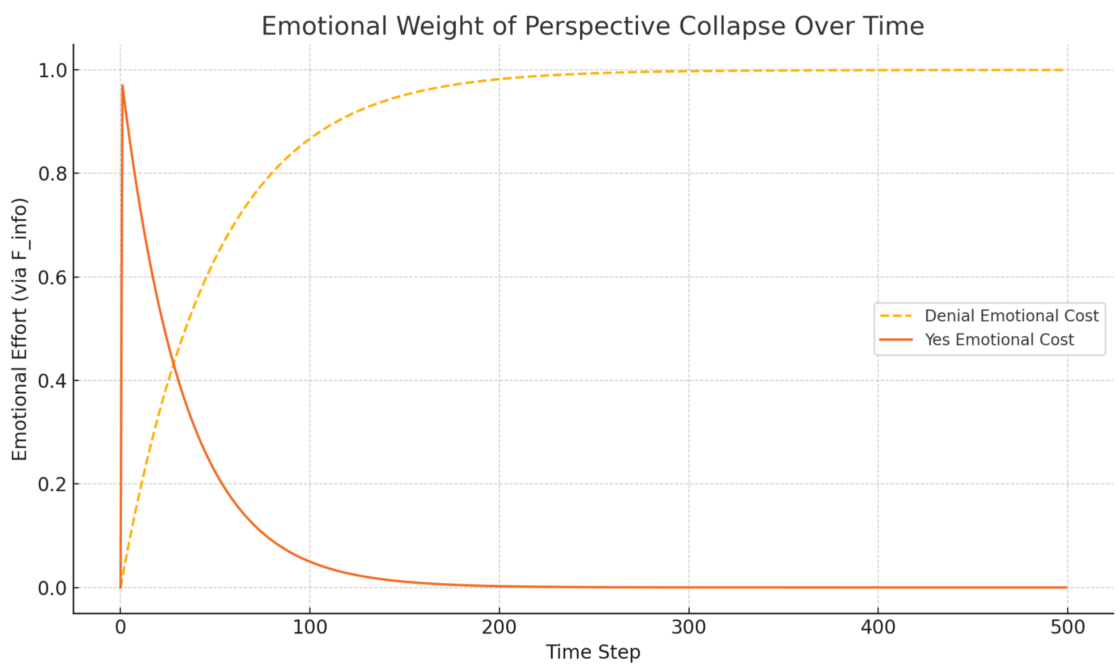

Figure 1: Emotional cost (mapped from F_{info}) over time. Denial remains low early but spikes as $\Omega(D_0)$ depletes. Yes begins high, then stabilizes.

4.2 Problem Solving Accuracy

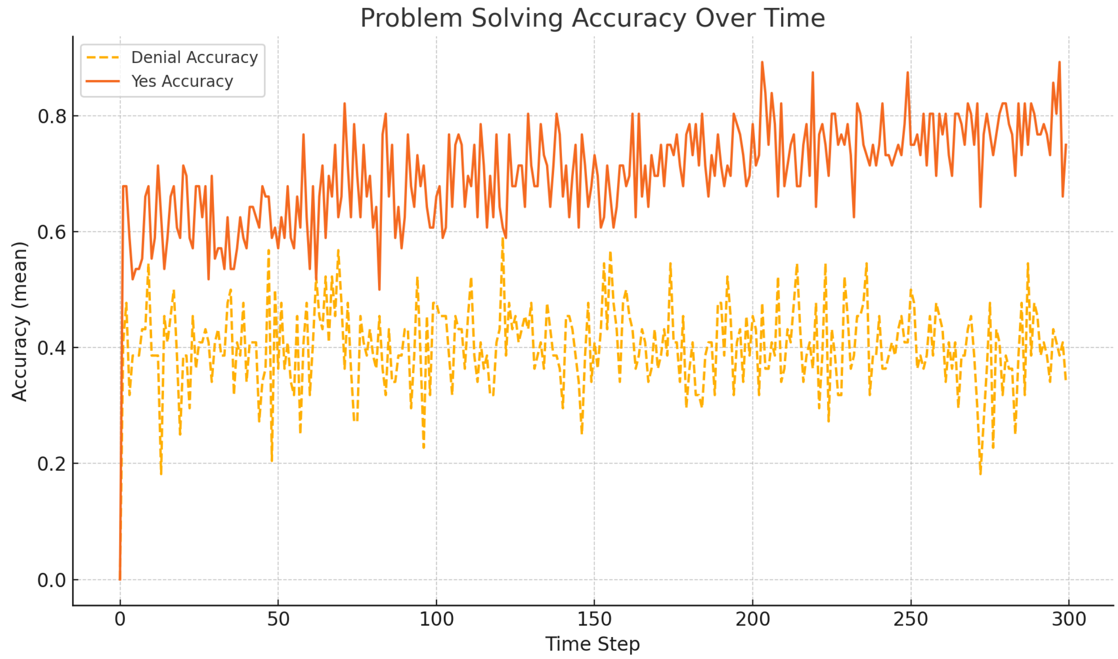

Figure 2: Accuracy over time. Denial plateaus; Yes grows recursively.

5 Interpretation

Denial maintains early effectiveness through exclusion but lacks adaptability. As $\Omega(D_0)$ contracts, emotional and structural cost rise. Yes incurs high early effort but amortizes cost through recursion retention.

Collapse Trajectory Insight

- **Denial:** Local stability, global brittleness
- **Yes:** Local instability, global coherence

6 Conclusion

This model demonstrates that recursive permission (Yes) is not merely a philosophical posture—it is a structurally superior collapse strategy under RRGM. Denial accelerates entropy decay and suppresses recursion, while Yes enables long-term stability through informational compression.

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