

# Pressure Reduction and the Reproduction of Suffering: A Structural Model of Behavioral Persistence

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## Abstract

Prevailing accounts of maladaptive behavior are commonly organized around reward maximization, hedonic regulation, or deficits in executive control. Although these frameworks explain important forms of behavioral reinforcement, they do not fully capture the recurrence of structurally similar maladaptive patterns across individual, interpersonal, institutional, and ecological domains. This paper advances a conceptual framework centered on pressure reduction rather than reward pursuit.

The core claim is that suffering often persists not because harmful outcomes are intentionally pursued, but because responses that rapidly reduce perceived pressure are preferentially selected when their downstream consequences are delayed, distributed, or insufficiently visible. To formalize this dynamic, the paper introduces the Suffering Reproduction Index (SRI) as a structural abstraction linking perceived pressure, immediate suppression efficiency, habituation history, response cost, temporal delay to relief, and visibility of downstream consequences.

$$SRI = \frac{(P \times S \times H)}{(C \times T \times V)}$$

In this formulation, P denotes perceived pressure, S immediate suppression efficiency, H habituation history, C response cost, T temporal delay to relief, and V visibility of downstream consequences.

The SRI is not presented as a finalized psychometric or computational instrument, but as a conceptual model that formalizes how immediate relief can stabilize responses that reproduce future pressure. The framework is compatible with reinforcement learning, temporal discounting, predictive processing, and active inference accounts, while extending them by foregrounding the structural invisibility of delayed consequences.

Because the model is scale-independent, similar dynamics can be identified in addiction, compulsive consumption, affect regulation, interpersonal conflict, institutional control, and

ecological exploitation. Across these contexts, local pressure reduction coexists with the distributed reproduction of suffering over time. The paper concludes by outlining the framework's theoretical implications, limits, and potential pathways for empirical operationalization.

**Keywords:** suffering reproduction, maladaptive behavior, pressure reduction, predictive processing, reinforcement learning, temporal discounting, active inference

## 1. Introduction

Dominant explanatory models of maladaptive behavior commonly emphasize reward-based reinforcement, hedonic regulation, or failures of executive control. Reinforcement models explain how repeated behavioral selection stabilizes through reward association and conditioning mechanisms (Skinner, 1953). Temporal discounting accounts describe systematic preference asymmetries that favor immediate outcomes over delayed consequences (Ainslie, 1975; Kahneman, 2011). Predictive processing and active inference frameworks, in turn, describe biological systems as minimizing uncertainty and prediction error under changing environmental conditions (Friston, 2010; Clark, 2016).

These approaches explain important dimensions of behavioral persistence, but they do not fully capture a broader structural phenomenon: suffering can be reproduced through the very responses that temporarily reduce it. Comparable dynamics appear across domains typically treated separately, including addiction, compulsive consumption, interpersonal escalation, institutional rigidity, and ecological degradation. What is missing is a framework that makes these cross-domain similarities conceptually explicit.

This paper proposes such a framework by centering pressure reduction rather than reward pursuit. Its central argument is that suffering persists not because harmful outcomes are intentionally sought, but because responses that reduce immediate pressure are repeatedly selected under conditions in which downstream consequences remain delayed, distributed, or weakly visible. The paper's main contribution is therefore conceptual: it introduces a scale-independent model of behavioral persistence that links immediate relief, response stabilization, and the recursive reproduction of future pressure.

## 2. Suffering as Experienced Pressure

Suffering is approached here as experienced pressure rather than as a purely evaluative or narrative construct. This pressure may appear in acute forms such as pain, fear, withdrawal, or anxiety, but also in diffuse forms such as boredom, uncertainty, tension, incompleteness, or affective imbalance. Its defining characteristic is functional rather than semantic: it generates a tendency toward reduction.

From this perspective, pressure operates prior to reflective interpretation. Response selection frequently occurs before explicit conceptualization or deliberate evaluation. Biological and cognitive systems preferentially orient toward states that reduce experienced tension, particularly under conditions of uncertainty or limited processing capacity.

This account is compatible with predictive regulation and allostatic models in which organisms continuously attempt to minimize instability and maintain adaptive regulation across changing environmental conditions (Sterling & Eyer, 1988; Friston, 2010). However, the present framework shifts emphasis from uncertainty minimization itself toward the structural consequences generated by specific forms of pressure reduction.

### 3. Response Selection and Stabilization

Responses to pressure are not selected from an unlimited field of possibilities. Systems preferentially recruit pathways that are accessible, historically reinforced, and immediately effective. When a response successfully reduces experienced pressure, the probability of future selection increases.

Over time, repetition stabilizes the response. What initially emerges as a contingent strategy gradually becomes a default pathway requiring progressively less reflective intervention. Stabilization therefore does not necessarily depend on pleasure or sustained reward. Immediate reduction of pressure may itself be sufficient to reinforce behavioral repetition.

This distinction is significant because many maladaptive behaviors persist despite producing limited long-term satisfaction. Substance dependency, compulsive avoidance, emotional suppression, and repetitive consumption patterns frequently continue even when their harmful consequences are recognized. Their persistence may therefore be explained more effectively through immediate pressure reduction than through classical reward maximization alone.

### 4. Formal Model: Suffering Reproduction Index (SRI)

The proposed dynamics can be represented through a minimal structural abstraction:

$$SRI = \frac{P \times S \times H}{C \times T \times V}$$

Within this framework:

P represents perceived pressure

S represents the immediate effectiveness of a response in reducing pressure

H represents habituation history or prior reinforcement

C represents response cost

T represents temporal delay to relief  
V represents visibility of downstream consequences

The model is not intended as a validated psychometric equation or predictive computational metric. Rather, it functions as a conceptual formalization of relational dynamics governing response stabilization and suffering reproduction.

The structural asymmetry represented by the model is central. Pressure is directly experienced in the present, whereas many consequences remain temporally delayed, spatially distributed, or cognitively inaccessible. Under such conditions, systems preferentially select responses that are rapidly effective, low-cost, and historically reinforced.

Potential operationalization of the model remains open for empirical development. Perceived pressure may be approximated through subjective stress measures or physiological indicators. Temporal delay may be operationalized through measurable intervals between response and relief. Consequence visibility may be explored through attentional accessibility, future consequence awareness, or cognitive salience measures. The present paper does not attempt full operational validation, but proposes a structural framework intended to support future empirical refinement.

## **5. Mechanism of Reproduction**

Suffering reproduction emerges from the coupling between immediate reduction and delayed consequence. A response reduces pressure locally while simultaneously altering the conditions that contribute to future pressure generation.

This future pressure may emerge in transformed or displaced forms. Physiological dependency may follow substance use. Emotional avoidance may intensify long-term instability. Institutional suppression may generate broader social fragmentation. Ecological extraction may reduce immediate economic pressure while reproducing environmental destabilization over longer timescales.

Because the response remains effective in the short term, it continues to be selected despite its delayed consequences. Systems therefore stabilize around recursive loops in which reduction and reproduction become functionally interconnected.

The persistence of suffering is not explained here as irrationality, moral failure, or intentional self-destruction. Rather, it emerges as a structurally generated outcome of asymmetrical response conditions.

## **6. Illustrative Structural Examples**

In nicotine addiction, smoking may rapidly reduce withdrawal tension, stress, or affective discomfort. However, repeated reduction simultaneously reinforces physiological dependency

and increases the probability of future withdrawal states. Immediate pressure reduction contributes directly to the reproduction of future pressure.

A structurally similar dynamic appears in digital compulsive consumption. Rapid engagement with algorithmically optimized media may reduce boredom, uncertainty, or affective discomfort in the short term while simultaneously reducing attentional stability and increasing future sensitivity to low-stimulation states.

At ecological scales, resource extraction may temporarily reduce economic or infrastructural pressures while simultaneously contributing to environmental degradation, instability, and future systemic vulnerability. The delayed and distributed nature of ecological consequences weakens their influence on immediate response selection.

These examples differ in scale and content, yet preserve the same structural organization: local reduction coexists with distributed reproduction.

## 7. Relation to Existing Frameworks

The present model remains compatible with reinforcement learning, predictive processing, active inference, and temporal discounting accounts, but differs in explanatory emphasis.

Reinforcement learning models explain how behaviors become stabilized through repeated selection and reward prediction dynamics. However, these models do not explicitly formalize how local reduction strategies may recursively regenerate the conditions sustaining future behavioral dependence.

Predictive processing and active inference frameworks describe biological systems as minimizing uncertainty and maintaining regulatory stability through prediction updating and action selection. Yet these frameworks do not directly model how locally successful minimization strategies may contribute to delayed instability distributed across broader temporal, social, or ecological scales.

Temporal discounting accounts explain systematic preference for immediate outcomes over delayed rewards or punishments. The present framework extends this logic by emphasizing not only valuation asymmetry, but also the structural invisibility of distributed downstream consequences.

The primary contribution of the SRI framework therefore lies not in explaining why immediate responses are selected, but in modeling how such responses participate in recursive reproduction loops that sustain suffering over time.

## 8. Discussion

The proposed framework shifts explanatory emphasis away from individual failure and toward structural asymmetry. Behaviors often described as irrational or maladaptive may instead be understood as expected outcomes in systems where immediate pressure is highly salient while delayed consequences are weakly represented. This reframing has implications for psychological theory, intervention design, and cross-scale analysis.

From this perspective, effective intervention depends less on moral instruction alone than on altering the parameters that govern response selection. Increasing the visibility of downstream consequences, changing temporal contingencies, reducing the accessibility of maladaptive responses, and redesigning environments so that adaptive responses become more available may all reduce the likelihood that immediate relief is purchased at the cost of future instability.

The framework also suggests that suffering reproduction should not be treated exclusively as an individual-level phenomenon. Analogous dynamics may emerge in organizations, technological systems, economic arrangements, and ecological processes, where local optimization can generate distributed long-term costs. In that sense, the model offers a conceptual bridge between behavioral science and broader system-level analyses of persistence and instability.

## 9. Limitations

Several limitations should be made explicit. First, the present framework does not claim that all forms of suffering emerge through pressure-reduction dynamics alone. Reward, pleasure, social learning, symbolic meaning, and deliberate reasoning remain relevant to many forms of behavioral persistence. Second, the SRI is offered as a conceptual model rather than a validated measurement instrument; its variables require clearer operational definitions and empirical testing before predictive claims can be justified.

Third, the framework currently prioritizes structural generality over domain-specific precision. Its usefulness may therefore vary across clinical, social, institutional, and ecological contexts unless it is paired with more detailed models tailored to each level of analysis. Future work should test whether the proposed variables can be operationalized reliably, whether they improve explanation beyond existing models, and under what conditions the framework fails to add meaningful predictive value.

## 10. Conclusion

Suffering need not be consciously pursued in order to persist. It can persist because the responses that most effectively reduce pressure in the present also help reproduce the conditions of its return.

The Suffering Reproduction Index is proposed not as a finished empirical instrument, but as a conceptual model for formalizing this recursive dynamic. By making explicit the asymmetry between immediate relief and the delayed visibility of consequences, the framework offers a unified way to interpret behavioral persistence across multiple scales of analysis and provides a basis for future theoretical refinement and empirical investigation.

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