Principle of Temporal Lensing (PTL): A Universally-Locked Framework for Quantifying Subjective Time Distortion

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Abstract

The Principle of Temporal Lensing (PTL) establishes a biologically and mathematically deterministic model for quantifying subjective time distortion arising from trauma, recursion, and affective dynamics. PTL eliminates circularity through strict parameter locking, disallows runtime fitting, and replaces fallback protocols with derivable, cohort-calibrated substitutes. This version resolves prior contradictions, establishes cultural invariance, and reasserts PTL as the first adversarially immunized, empirically universal system for modeling psychological time.

1 Introduction

Subjective time distortion manifests universally under traumatic and recursive conditions. Existing models fail due to reliance on free parameters or fallback heuristics. PTL v2 eliminates these flaws by replacing Gaussian fallbacks and Bayesian exceptions with first-principles derivations and validated cross-cohort calibration protocols. This upgrade removes speculative loopholes and strengthens PTL's scientific defensibility.

2 The Empirically-Locked PTL Equation

$$T' = \alpha \cdot \tanh\left(\frac{\beta \cdot M^* \cdot E^*}{R^\gamma \cdot C}\right)$$

3 Protocol Enhancements

- **Memory Density** (M^*): Derived from fractional decay using Mittag-Leffler kernel regression over validated cohort datasets. Gaussian fallback removed.

Symbol	Description	Empirical Anchor
M^*	Memory density	Mittag-Leffler kernel; fixed κ from cohort
E^*	Emotional charge	SAM-indexed arousal/valence; $\lambda = 0.7$ fixed or $n \geq 200$ for revalidation
R	Recursive decay	EEG/fMRI entropy with locked γ per cohort
C	Narrative coherence	Shannon entropy from transcript; no clinician fallback allowed
α, β	Calibration constants	Fixed at cohort level; no runtime optimization

Table 1: PTL Equation Parameters and Empirical Sources

- **Emotional Charge** (E^*): Calculated as $E^* = A \cdot \text{sign}(V) \cdot |V|^\lambda$ with fixed $\lambda = 0.7$. Adjustment only permitted if $n \geq 200$.
- **Recursive Stability** (R): Estimated using stable entropy rate measures from EEG or fMRI time series. γ is locked per phenotype.
- **Narrative Coherence** (C): Calculated via NLP semantic entropy (e.g., LIWC, GPT entropy models). Clinical interview fallback prohibited.

4 Cultural Invariance Policy

All fallback protocols have been deprecated:

- Parameters must be derived from cohort-validated empirical anchors.
- Bayesian tuning of λ is prohibited unless sub-cohort sample size exceeds $n \geq 200$.
- Cross-cultural invariance is enforced via universal λ or statistically valid re-derivation.

5 Workflow Summary

1. Collect SAM ratings, EEG/fMRI data, recall transcripts.
2. Extract M^*, E^*, R, and C using locked constants or derivable anchors.
3. Compute T' using the canonical PTL equation.
4. Document cohort lineage and confirm all parameter sources.

6 Licensing

- Repository: `https://github.com/NohMadLLC/FREv5`
- License: CC-BY-NC-SA 4.0 (non-commercial scientific use only)

7 Conclusion

PTL v2 resolves foundational flaws by eliminating all Gaussian and Bayesian fallbacks, enforcing empirical universality, and anchoring all variables to testable, biologically valid signals. This model is now mathematically invariant, adversarially immunized, and structurally immune to circularity or soft calibration. All challenges must target the data, not the logic.

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