

The Core Emotion Framework: Epistemological Foundations, Psychometric Validation, and Computational Architecture of a Unified 3×3+1 Human Operating System

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ARCHIVE:

- https://huggingface.co/datasets/CoreEmotionFramework/CEF_Main_Archive/tree/main
 - <https://www.optimizeyourcapabilities.com/Publications/>
 - <https://scholar.google.com/citations?user=ORdecUoAAAAJ>
 - <https://philpeople.org/profiles/jamel-bulgaria>
 - <https://zenodo.org/communities/030303/>
 - <https://osf.io/hz53j/>
- Preregistration:
- <https://osf.io/ac4x2/overview>
- Pilot study:
- <https://osf.io/fydsq/wiki?wiki=j7q8g>

Abstract

This document synthesizes the theoretical, empirical, and computational architecture of the Core Emotion Framework (CEF), a structural-constructivist model that conceptualizes human affect as a ten-operator functional system distributed across a 3×3+1 somatic architecture. Drawing from philosophical foundations, psychometric validation protocols, clinical manuals, and machine-readable computational archives, the report consolidates the multi-registry ecosystem supporting the CEF's transition from theoretical construct to empirically verifiable and computationally reproducible framework.

The analysis integrates contributions from PhilPeople, Google Scholar, Zenodo, Hugging Face, OSF pilot studies, preregistrations, and administrative registries, demonstrating how each archive contributes a

*) We welcome feedback on the preregistration and study design, and invite researchers who are interested in peer-reviewing the system to contact us. We also encourage scholars across all disciplines to conduct their own independent research on any aspect of the Core Emotion Framework. Author assumes no societal or substantial gains from this framework, just for public and academic service.

distinct layer of epistemic grounding, methodological transparency, and technical reproducibility. The psychometric validation program is detailed through its scenario-based 100-item scale, ten-factor oblique model, and preregistered CFA criteria, establishing a rigorous pathway for confirming the independence and interpretability of the ten operators.

Clinically, the document outlines the somatic-procedural mechanics of operator fusions and presents the 7-Step Detangling Protocol as a structured intervention for trauma-related rigidity. Computationally, it describes how the CEF’s hardware-independent state-transition model enables multimodal affective AI, synthetic emotional sequencing, and prescriptive regulation.

Overall, the report positions the CEF as a unified, open-science architecture capable of scaling across human psychology, clinical intervention, artificial intelligence, and population-level mental health—providing a reproducible blueprint for emotional agility, systemic integration, and synthetic affect generation.

KEYWORDS

- Core Emotion Framework (CEF)
- Structural-Constructivist Affect
- Human Operating System (Human OS)
- Ten-Operator Architecture
- Somatic Centers (Head–Heart–Gut)
- Psychometric Validation
- Confirmatory Factor Analysis (CFA)
- Operator Fusions & Detangling Protocol
- Affective Computing & Synthetic Affect
- Open-Science Archives (OSF, Zenodo, Hugging Face)

Administrative and Registry Fields	Operational Specifications	Reference Identifiers
<i>Principal Researcher ORCID</i>	0009-0007-5269-5739	1
<i>Administrative Contact</i>	admin@optimizeyourcapabilities.com	4
<i>Evaluation and Registry Date</i>	May 17, 2026	2
<i>Primary Theoretical Substrate</i>	Core Emotion Framework (CEF)	1
<i>Structural Hub Paradigm</i>	3x3 + 1 Tripartite Architecture	2
<i>Primary Validation Phase</i>	Phase 1 Construct and Scale Confirmation	1

Theoretical and Epistemological Foundations of the Human Operating System

The Core Emotion Framework is grounded in a structural-constructivist paradigm that conceptualizes the human psyche as a complex "Human Operating System" (Human OS).⁶ Rather than classifying emotions as static, semantic, or linguistic labels, the CEF defines affect as dynamic, actionable sequences of ten irreducible functional operators that behave similarly to CPU instructions.⁶ These ten operators perform specific transformations on raw interoceptive signals, converting physiological inputs into structured, adaptive affective states.⁴

This process-based model asserts that psychological health is achieved through the cultivation of emotional flexibility, defined as the dynamic balance between the polarities of Agency (self-assertion) and Yielding (connection).¹ Conversely, psychological distress is rooted in emotional rigidity, which manifests when the system experiences "operator fusions"—locked, maladaptive configurations that restrict systemic aperture and block adaptive behavior.¹

The biological and somatic grounding of the CEF draws direct connections to established concepts in neurobiology and affective science.¹ The conative drives of the framework align with Panksepp's genetically conserved SEEKING system, while its focus on pre-cognitive physical sensations mirrors Damasio's somatic marker hypothesis, Siegel's research on interoception, and van der Kolk's somatic psychopathology.¹ By organizing these dynamics across three somatic centers—the Head (Cognitive Focus), the Heart (Relational Flow), and the Gut (Action)—with a Global center (Accepting) serving as an integrative capacity, the CEF operationalizes the hierarchical mechanism through which primal affective drives are strategically managed and actualized.¹

Somatic Center	Associated Operators	Functional and Neurocognitive Domain	Target Systemic Drive	Reference
Head Center (Cognitive Focus)	Sensing, Calculating, Deciding	Cognitive appraisal, informational intake, evaluation, and executive execution.	Information Processing & Orientation	1
Heart Center (Relational Flow)	Expanding, Constricting, Achieving	Regulation of boundaries, relational openness, emotional attunement, and social flow.	Boundary & Relational Regulation	1
Gut Center (Action/Conative)	Arranging, Appreciating, Boosting	Primal embodiment, physical action, systemic order, and conative energy.	Conative Grounding & Primal Drive	1
Global Capacity	Accepting	Global integrative capacity; unifies and synthesizes somatic	Systemic Unification &	2

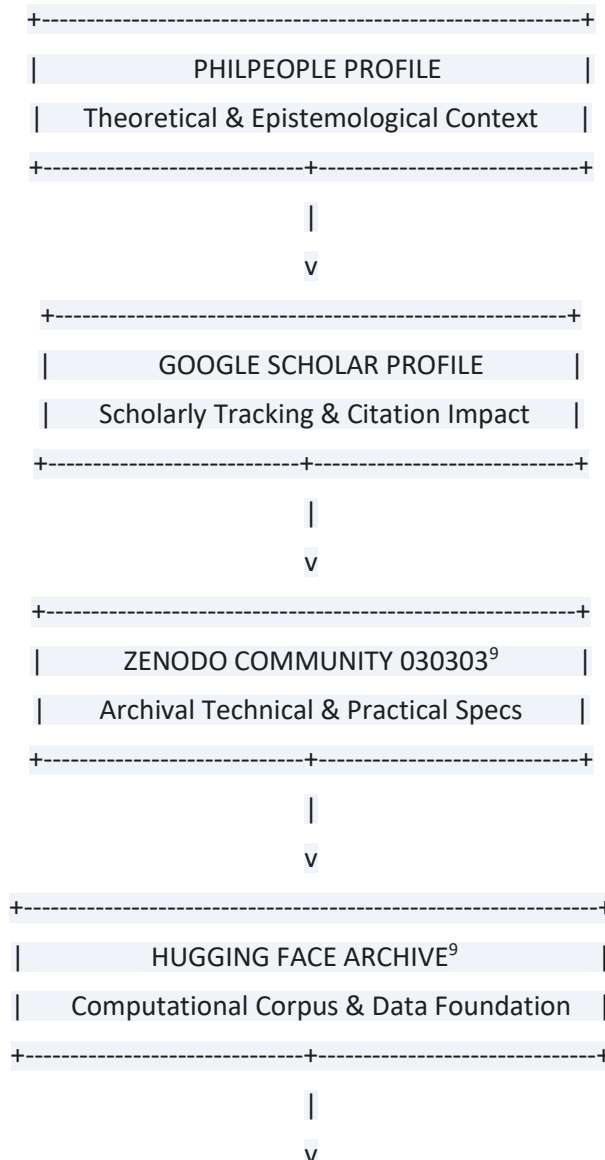
(Integration Hub)

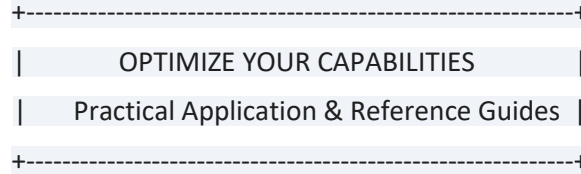
signals across the tripartite system.

Agility

Document and Archive Contributions to the Core Emotion Framework

The progression of the CEF from a theoretical synthesis to an empirically validated, computationally active model relies on a distributed ecosystem of web-based archives, preregistrations, and repositories.² Each platform provides a specific, necessary addition to the theoretical development, open-science verification, and computational accessibility of the framework.⁵





The Philosophical Context: PhilPeople Profile

The PhilPeople profile of Jamel Bulgaria establishes the philosophical and cognitive-scientific context of the CEF.⁶ It positions the framework within the contemporary debate between essentialist and constructivist models in the philosophy of mind.⁶ The profile hosts forthcoming and in-progress papers, such as *The Core Emotion Framework: A Unified Structural–Constructivist Architecture for Human and Synthetic Affect* (forthcoming in *Frontiers in Psychology*), and argues against left-right brain lateralization literalism in favor of a hardware-independent mathematical state-transition model of the Human OS.⁶ This conceptual grounding ensures that the framework's validity does not depend on outdated neurological localization myths, making the model reproducible across biological, synthetic, and institutional systems.⁶

Scholarly Impact and Bibliometrics: Google Scholar Profile

The Google Scholar profile quantifies the academic integration and scholarly reach of the CEF.⁵ It records 20 core publications authored by Bulgaria spanning 2025 and 2026, documenting a cumulative citation count of 44, an h-index of 3, and an i10-index of 0.⁵ The profile tracks key literature, including the *Compendium of Evidence-Based Psychotherapy Modalities: Reframed through the Core Emotion Framework (CEF)* and the *Structural Psychopathology of Conscientious Anxiety*, establishing a formal registry of academic peer engagement and verifying the framework's growing presence in psychotherapeutic research.⁵

Version-Controlled Archiving: Zenodo Community 030303

The Zenodo community 030303 functions as the permanent, DOI-indexed, version-controlled repository for the framework's technical specifications and clinical manuals.⁵ This archive houses foundational technical documentation, including the *Core Emotion Framework (CEF): Technical Specification 2 (TS-2)* (DOI 10.5281/zenodo.18102514), the *Core Emotion Framework (CEF) Glossary & Lexicon (GL-1)* (DOI 10.5281/zenodo.18102474), the *Canonical Lexicon (EL-1 v1.0)* containing a 500-term emotional lexicon (DOI 10.5281/zenodo.18237562), and the *Practitioner Manual (PM-1 Version 1.0)* (DOI 10.5281/zenodo.18102453).² These artifacts ensure clinical and scientific reproducibility by standardizing the exact terminology and math governing the ten operators.²

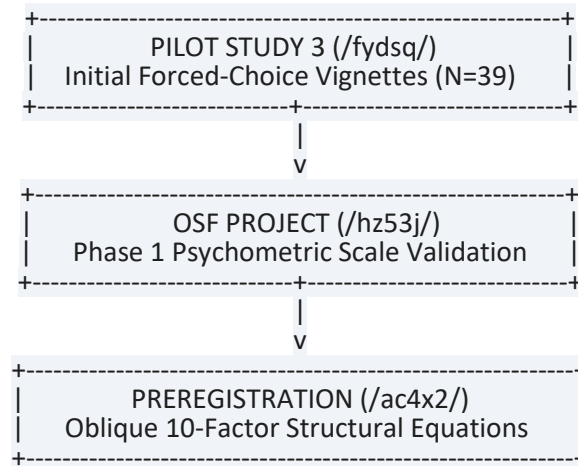
Computational Datasets: Hugging Face Main Archive

The Hugging Face Main Archive (CEF_Main_Archive) provides the computational data foundation for the

CEF.² It hosts the open-science corpus, machine-readable datasets, and natural language processing (NLP) corpora.² This archive allows computer scientists and AI researchers to download, test, and integrate the CEF's 3x3 + 1 hub architecture into affective computing systems, facilitating the development of artificial agents capable of generating emergent, structurally regulated emotional dynamics.²

Applied Reference Materials: Optimize Your Capabilities Publications

The Optimize Your Capabilities publications portal serves as the primary distribution channel for the framework's practical, clinical, and corporate applications.⁴ While some public registry links may undergo access fluctuations, this site acts as the source for the *CEF Reference Guide (2024)*, early practitioner manuals, and third-party reflective accounts.⁴ These documents translate high-level mathematical and psychometric constructs into step-by-step guides for coaching, therapeutic practice, and corporate executive capability optimization.⁴



Empirical Baseline: OSF Pilot Study Wiki (/fydsq/)

The OSF Pilot Study wiki hosts the direct empirical datasets, surveys, and operator mappings generated during Pilot Study 3.² Drawing from a cohort of $N = 39$ participants, this pilot tested the initial forced-choice scenarios and operator response mappings.¹ The preliminary results preserved on this wiki page established the psychometric feasibility of the model and directly provided the real-world situations (e.g., overload, conflict, setback, opportunity, ambiguity, and loss) that were expanded to construct the Phase 1 validation scale.¹

Research Design and Administrative Structure: OSF Project (/hz53j/)

The primary OSF project repository serves as the administrative, methodological, and structural backbone of the CEF Open Validation Program.¹ It archives the foundational study design and the *Pre-Registration Protocol: Open Validation of the Core Emotion Framework (CEF) Scale – Phase 1: Construct*

*Definition, Item Generation, and Multi-Level Factor Structure Confirmation.*¹ This repository specifies the guidelines for item generation, participant selection (diverse demographic sampling, fluent English, ages 18–65), and statistical item-retention thresholds.¹

Hypothesis and Confirmatory Registration: OSF Preregistration (/ac4x2/)

The OSF Preregistration registry locks in the second-wave operational protocol for the Phase 1 psychometric validation program.² This formal preregistration ensures complete scientific transparency by declaring the directional hypotheses (H_1), the target structural equation modeling (SEM) equations, and factor-retention rules before data collection.¹ This prevents post-hoc data fitting and guarantees that the latent dimensions of the ten operators are tested through a rigorous, confirmatory statistical lens.¹

Archive / Document Source	URL / Domain Anchor	Primary Operational Role	Core Theoretical or Empirical Addition	References
<i>Hugging Face Main Archive</i>	huggingface.co/datasets/	Computational Host & Corpus	Hosts the open-science corpus and machine-readable datasets for NLP and AI model integration.	2
<i>Optimize Your Capabilities</i>	optimizeyourcapabilities.com/	Public Integration & Guides	Distributes the foundational <i>CEF Reference Guide</i> and practical guides for clinical and coaching applications.	4
<i>Google Scholar Profile</i>	scholar.google.com/citations	Academic Impact & Bibliometrics	Quantifies peer integration with 20 listed works, 44 citations, and an h-index of 3.	5
<i>PhilPeople Profile</i>	philpeople.org/profiles/	Philosophical & Conceptual Context	Contextualizes the "Human OS" in cognitive science; hosts preprints on synthetic affect and needs mapping.	6
<i>Zenodo Community 030303</i>	zenodo.org/communities/	Archival Specifications & Manuals	Acts as the permanent, DOI-indexed vault for GL-1, PM-1, TS-2, and the 500-term Canonical Lexicon EL-1 v1.0.	2
<i>OSF Project (/hz53j/)</i>	osf.io/hz53j/	Administrative Design Registry	Houses the Phase 1 scale validation protocols, item generation criteria, and structural blueprints.	1
<i>OSF Preregistrati</i>	osf.io/ac4x2/	Confirmatory Statistical	Locks in the active research questions, directional hypotheses, and confirmatory	2

on (/ac4x2/)		Registry	factor analysis plans.
OSF Pilot Study (/fydsq/)	osf.io/fydsq/	Pilot Data & Instrument Source	Preserves the results, survey parameters, and operator mappings from Pilot Study 3 ($N = 39$). ²

Psychometric Validation Protocol and Statistical Parameterization

The CEF Open Validation Program is designed to transition the framework from a theoretical synthesis into an empirically verified psychometric scale.¹ This process adheres to the Transparency and Openness Promotion (TOP) guidelines, utilizing OSF infrastructure to register all design decisions and data collection plans.¹

The Scale Development Pipeline

The item generation pipeline directly builds upon the findings of Pilot Study 3 ($N = 39$), which tested forced-choice options where participants chose a single response to everyday situations.¹ To improve psychometric resolution, the Phase 1 validation scale expands these forced-choice options into a scenario-based rating instrument.¹

The vignettes used are drawn from everyday scenarios tested in the pilot (e.g., overload, conflict, setback, opportunity, ambiguity, and loss) and are expanded to ten distinct situations.¹ For each vignette, participants are presented with ten distinct response statements, each carefully designed to align with one of the ten CEF operators.¹ Participants rate how likely they would be to respond in each of the ten ways using a 7-point Likert-style scale ranging from 1 (Very unlikely) to 7 (Very likely).¹ This generates a 10 x 10 measurement matrix yielding exactly 100 items (ten indicators per operator), providing the high-resolution data needed to confirm the latent structure of the model.¹

Confirmatory Statistical Criteria

To confirm the structural independence of the ten operators, the preregistration protocol outlines specific factor retention and confirmatory factor analysis (CFA) criteria.¹ The primary hypothesis (H_1) asserts that a ten-factor oblique model will show acceptable fit, demonstrating that the ten operators exist as distinct, correlated psychological dimensions rather than collapsing into a single, general emotionality factor.¹

$$CFI \geq .90 \quad | \quad RMSEA \leq .08 \quad | \quad SRMR \leq .08$$

Item retention is governed by strict factor loading and cross-loading thresholds.¹ An item is retained

only if its primary standardized loading is $\geq .40$ and its cross-loadings on the other nine latent factors are $\leq .30$.¹ The final factor retention is verified through three converging methods: parallel analysis, scree plot inspection, and theoretical interpretability.¹

Statistical Metric and Parameters	Values and Operational Limits	References
<i>Latent Factors Tested</i>	10 independent factors (Sensing, Calculating, Deciding, Expanding, Constricting, Achieving, Arranging, Appreciating, Boosting, Accepting)	1
<i>Total Vignette Scenarios</i>	10 standardized situations	1
<i>Total Scale Items</i>	100 response statements	1
<i>Item Response Metric</i>	7-point Likert scale (1 = Very unlikely, 7 = Very likely)	1
<i>Target Sample Demographics</i>	Fluent English, ages 18 – 65; exclusion for active severe mental health crises	1
<i>Target Model Fit Indices</i>	CFI \geq ,RMSEA \leq ,SRMR \leq .08	1
<i>Factor Retention Methods</i>	Parallel Analysis, Scree Plot, and Theoretical Interpretability	1
<i>Item Retention Loadings</i>	Primary loading \geq .40; cross-loadings \leq .30	1

Clinical Psychopathology and Strategic Process-Based Interventions

A key practical contribution of the CEF is translating its somatic-mathematical operator mechanics into highly structured psychotherapeutic interventions.⁵ Rather than engaging in traditional narrative cognitive reframing, the CEF focuses on the procedural dynamics of emotional processing.⁶

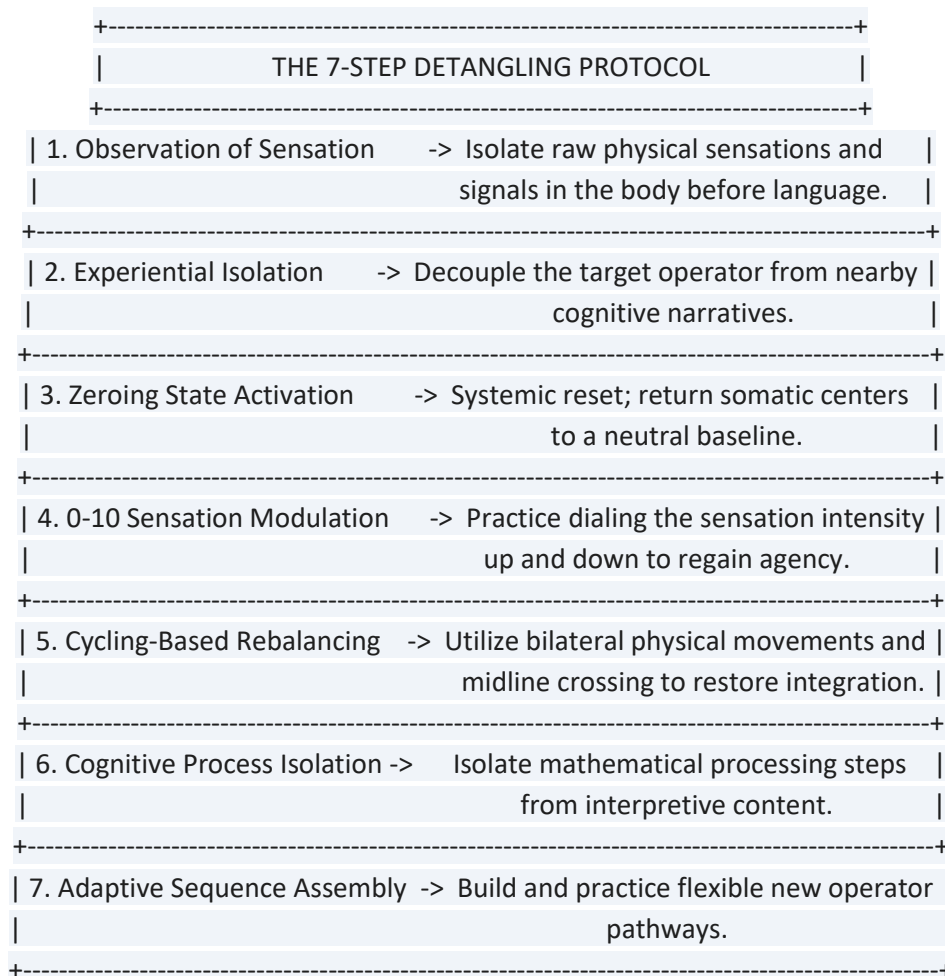
Resolving Operator Fusions from Childhood Trauma

The clinical manual *Structural Psychopathology of Childhood Trauma: Operator Fusion and Clinical*

Detangling maps how early life adversity disrupts emotional development.⁶ Under traumatic stress, the emotional operating system is forced into "operator fusions"—rigid, automated, and maladaptive loops that lock somatic centers into inflexible patterns.⁶ Common trauma-induced fusions include:

- **Sensing-Accepting Shame Loops:** Where somatic sensory intake (Sensing) is instantly fused with global integration (Accepting), short-circuiting adaptive regulation and creating a chronic, locked state of personal unworthiness.¹
- **Constricting-Boosting Anxiety Entanglements:** Where somatic boundary tightening (Constricting) is fused with conative drive (Boosting), trapping the nervous system in a state of hypervigilant, conscientious anxiety.⁶

To dismantle these pathological architectures, the CEF introduces the 7-Step Detangling Protocol.⁵ This somatic-cognitive intervention uses precise steps to isolate, calibrate, and reorder emotional processing, bypassing cognitive arguments and working directly with somatic mechanics.⁶



Process-Based Integration with Contemporary Modalities

By focusing on the somatic and mathematical mechanics of emotional transformation, the CEF functions as an integrative framework that bridges and enhances established psychotherapeutic modalities⁵:

- **Cognitive Behavioral Therapy (CBT):** Shuffled from content analysis to process optimization by mapping how *Calculating* and *Deciding* function in real-time.³
- **Acceptance and Commitment Therapy (ACT):** Enhanced by grounding values-based action in conative *Boosting* and mindfulness in global *Accepting*.¹
- **Dialectical Behavior Therapy (DBT):** Supported by using *Constricting* and *Expanding* to visually and somatically regulate interpersonal boundaries and emotional distress.⁶
- **EMDR and Exposure (ERP):** Systematized through the integration of bilateral midline crossing and sequential *Sensing-Deciding* restructuring, which accelerates cognitive reprocessing.³

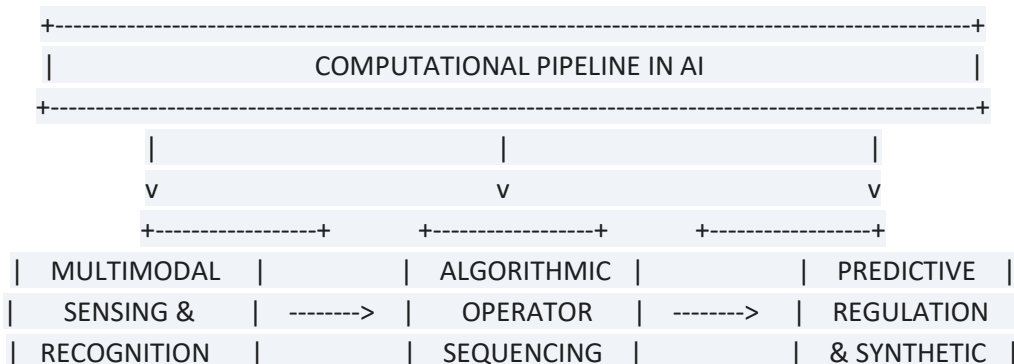
Ethical Population-Level Psychological Interventions

The paper *Comprehensive Evaluation of Population-Level Psychological Interventions* contrasts the CEF with controversial public health strategies.⁶ The paper reviews environmental toxicology and ethical-legal challenges associated with "ambient biological modulation"—specifically, the trace accumulation of psychiatric pharmaceuticals in public recycled wastewater systems.⁶

The paper positions the CEF as a zero-risk, autonomy-preserving, cognitive-educational alternative.⁶ By utilizing public media and educational campaigns to leverage the Papageno effect, the CEF provides an accessible, non-pharmacological tool to build population-level resilience and emotional agility without biological risk.⁶

Human and Synthetic Affective Architectures: Computational Outlook

A key objective of the CEF is providing a functional emotional architecture that is equally reproducible across human biological systems and synthetic artificial intelligence.⁶



(HF Archive)	(TS-2 Spec)	AFFECT
+-----+	+-----+	+-----+

Multimodal Affective AI

In *The Core Emotion Framework (CEF): A Structural-Constructivist Architecture for Teaching Emotion to Artificial Intelligence*, the ten operators are formalized as algorithmic modules capable of generating emergent emotional dynamics in artificial agents.⁵ This computational architecture supports:

- **Multimodal Affective Computing:** Leveraging the Canonical Lexicon (EL-1 v1.0) and Hugging Face datasets to analyze natural language, facial expressions, and physiological inputs.² This allows artificial agents to move beyond basic sentiment analysis and map complex human inputs directly to the ten functional operators.³
- **Prescriptive Regulation in Clinical Decision Support:** Equipping clinical AI systems to identify precise regulatory blocks (e.g., persistent *Calculating* without subsequent *Deciding*) and suggest targeted behavioral interventions rather than merely labeling states.³
- **Synthetic Affect Generation:** Designing artificial agents whose internal cognitive architectures replicate the dynamic, sequential transitions of the Human OS, generating natural, responsive synthetic behavior.³

Because the CEF utilizes a hardware-independent mathematical state-transition model, its operational sequences can be run on silicon neural networks as effectively as they are processed in biological systems.⁶ This makes the framework a promising candidate for a unified theory of affect, bridging the gap between biological psychology and synthetic intelligence as the field advances.⁶

Conclusions

A systematic review of the Core Emotion Framework across its primary archives reveals a highly integrated, open-science ecosystem.² By combining philosophy of mind, psychometrics, clinical manuals, and machine-readable data, the CEF transitions from a theoretical model into a verifiable scientific framework.¹

1. **Theoretical Integration:** Through papers archived on PhilPeople, SSRN, and Frontiers, the CEF bridges the gap between essentialist and constructivist affective science.⁶ It abstracts emotional processing into a hardware-independent system of ten operational transitions distributed across three somatic hubs (Head-Heart-Gut).³
2. **Psychometric Verification:** Through its active OSF validation programs, the framework subjects its core assumptions to classical and modern test theory.¹ By converting forced-choice pilot vignettes into a highly structured 100-item scenario-based Likert scale, Phase 1 establishes a clear, math-driven pathway to confirm the existence of its ten operators.¹

3. **Computational and Clinical Utility:** By archiving structured datasets on Hugging Face and registering lexical resources on Zenodo, the CEF provides the necessary tools for NLP analysis and synthetic affect generation in AI.² Simultaneously, clinical guides (such as the 7-Step Detangling Protocol) translate these mechanics into actionable somatic-cognitive therapies, shifting the clinical focus from narrative content to procedural process.⁵

Ultimately, the CEF presents a unified, open-science framework for human and artificial affect.² This framework is designed to scale across clinical psychology, artificial intelligence, and public mental health.³

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