The Structural-Constructivist Architecture of Human Affect: A Comprehensive Research Roadmap for the Core Emotion Framework

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Abstract

The historical evolution of affective science has long been constrained by a binary struggle between discrete and dimensional models of emotion. This "century-long conflict" has historically prevented a unified understanding of how biological necessity interfaces with cognitive flexibility and social construction. The Core Emotion Framework (CEF), conceptualized and developed by Jamel Bulgaria, emerges as a rigorous, structural-constructivist resolution to this crisis, redefining emotional life not as a series of static, reactionary labels, but as a sophisticated "Human Operating System" governed by ten irreducible functional operators. For individual researchers, the CEF provides a definitive roadmap for advancing psychological science, offering a functional ontology that unifies representational, affective-regulatory, and somatic-inferential processes into a single, cohesive system.

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*) *We welcome feedback on the preregistration and study design, and invite researchers who are interested in pre-reviewing the system to contact us.*

The Theoretical Resolution of the Affective Science Crisis

To understand the utility of the CEF for modern research, one must first recognize the limitations of the historical paradigms it seeks to synthesize. Early physiological theories, such as the James-Lange model, correctly identified the somatic origins of affect, positing that emotion is the interpretation of physiological arousal.[1] However, these models lacked the cognitive depth to explain complex social emotions or the top-down modulation of affective states. Conversely, cognitive appraisal theories, which underpinned the rise of Cognitive Behavioral Therapy (CBT), emphasized the mind's role in interpreting stimuli but often treated the body as a secondary recipient of cognitive directives.[1]

The Core Emotion Framework resolves this fragmentation by proposing a structural-constructivist architecture where emotions are viewed as "composable psychological operations".[1] This shift in ontology—from "emotions as things one has" to "emotions as powers one executes"—is the foundational pillar of the roadmap for researchers.[1] By applying the CEF, researchers gain access to a granular mapping of the human affective system that is both machine-readable and clinically rigorous.[1]

Theoretical Paradigm	**Primary Focus**	**CEF Integration and Resolution**
Physiological Theories	Stimulus $\rightarrow$ Arousal $\rightarrow$ Emotion	Integrated via Gut-center somatic-inferential mechanisms and the vagus nerve communication pathway.[1]
Cognitive Appraisal	Interpretation as the driver of affect	Integrated via Head-center operators (Sensing, Calculating, Deciding) that process

		data before activation.[1]
Dimensional Models	Valence and Arousal as axes	Integrated via the scalar modulation system (0-10 activation) and multidimensional activation vectors.[1]
Discrete Models	Innate, universal categories	Resolved by viewing categories as high-density regions within a 10-dimensional operator space.[1]
Psychological Construction	Social/Conceptual assembly of feelings	Resolved by modeling the "internal transformations" that process information and regulate relational aperture.[1]

The framework posits that what we colloquially term "fear" or "anger" are not irreducible atoms of experience but rather complex molecules formed by the specific activation and composition of underlying operators.[1] This perspective allows researchers to deconstruct complex emotional states into their constituent functional parts, facilitating a more precise investigation into the mechanics of human behavior.[1]

The Decalogue of Operators: A Functional Anatomy of the Human OS

The Core Emotion Framework identifies exactly ten foundational operations, collectively known as the Decalogue of Operators.[1] This set is mandated as authoritative; it is the "absolute source of truth" within the framework, where no operators may be added, removed, or substituted.[1] Each operator functions as a specific "CPU instruction" for the human psyche, determining what information enters the system, what is filtered out,

and what actions become available.[1]

The Head Center: Cognitive-Analytical Strata

The Head center is responsible for the intake of information, the analysis of risks and rewards, and the definitive commitment to a path of action.[1] It represents the "thinking" center of the tripartite architecture, and researchers applying the CEF to cognitive science can utilize these operators to model executive function with greater granularity.[1]

1. **Sensing**: This operator handles the most fundamental level of data acquisition. It is the raw intake of environmental and internal stimuli, acting as a sensory buffer before complex evaluation begins.[1]
2. **Calculating**: Once data is acquired, Calculating performs the analytical work of risk assessment, benefits analysis, and strategic forecasting. It is the engine of simulation, allowing the system to project potential outcomes.[1]
3. **Deciding**: Deciding is the operator of Boolean resolution. It transforms the multifaceted data of Calculation into a singular commitment. It is the completion of the Head center's cycle, allowing the system to transition from thought to execution.[1]

The Heart Center: Relational-Aperture Strata

The Heart center regulates the "aperture" of human interaction, managing the balance between connection and protection.[1] It is the seat of relational flow and the enforcement of personal boundaries, offering researchers in social psychology a new lexicon for describing interpersonal dynamics.[1]

4. **Expanding**: This operator facilitates relational dilation. It allows for openness, connection, and the intake of social/relational resources. It is associated with states of vulnerability and communal bonding.[1]
5. **Constricting**: As the necessary counterweight to expansion, Constricting facilitates relational contraction. It is the operator of protection, boundaries, and the preservation of internal resources, ensuring the system is not overwhelmed by external stimuli.[1]
6. **Achieving**: Achieving represents the fulfillment of relational or internal goals. It is the realization of value and the successful completion of an "aperture movement,"

marking a state of state-goal congruence within the Heart center.[1]

The Gut Center: Somatic-Motoric Strata

The Gut center drives the readiness for action and the regulation of the somatic baseline.[1] It is deeply integrated with the gut-brain axis and the motoric drive of the individual, providing a bridge between affective science and neurobiology.[1]

7. **Arranging**: This operator focuses on the organization of the immediate context—both internal and external—to facilitate effective action. It is the seat of spatial and conceptual order.[1]
8. **Appreciating**: In the CEF, Appreciating is a functional audit of value and alignment. It is not merely aesthetic but is a mechanism for determining if current actions and environments are aligned with the system's core requirements.[1]
9. **Boosting**: Boosting is the energetic engine of the framework. It provides the drive, motivation, and somatic "fuel" required to execute tasks and maintain engagement. It is often compared to the SEEKING system identified by Jaak Panksepp.[1]

The Baseline: Accepting

10. **Accepting**: Serving as the universal baseline, Accepting is the state of non-reactive presence. It is the "zero-point" of the system that allows for recalibration and the reduction of internal entropy.[1]

Center	**Functionality**	**Regulatory Goal**	**Operators**
Head	Cognitive/Perceptual	Predictability and Commitment	Sensing, Calculating, Deciding
Heart	Relational/Affective	Connection and	Expanding, Constricting,

		Protection	Achieving
Gut	Motoric/Somatic	Readiness and Motivation	Arranging, Appreciating, Boosting
Baseline	Integrative	Stability and Recalibration	Accepting

Scalar Modulation and the Mechanics of Emotional Transitions

The CEF utilizes a scalar modulation system to quantify the activation of each operator, typically measured on a 0-10 scale.[1] An activation of 0 represents a state of "quieting" or stabilization, while 10 represents peak intensification or activation.[1] This mathematical approach allows researchers to model emotional intensity as a continuous variable, which is crucial for developing precise diagnostic tools and computational models.[1]

Emotional Transition Mastery (PM-6)

One of the framework's most critical insights for researchers is that emotional health is governed by the ability to transition lawfully between operators.[1] The Practitioner Manual PM-6 details the "Canonical Transition Architecture," which defines the healthy pathways of movement within and across centers.[1]

- **Head Center Pathway**: Sensing $\rightarrow$ Calculating $\rightarrow$ Deciding.[1]
- **Heart Center Pathway**: Expanding $\rightarrow$ Constricting $\rightarrow$ Achieving.[1]
- **Gut Center Pathway**: Arranging $\rightarrow$ Boosting $\rightarrow$ Accepting.[1]

Failures in these pathways result in "Transition Distortions," which researchers can use to categorize and study psychological dysregulation.[1] These distortions include:

- **Blocked**: Inability to move to the next operator in a sequence.[1]
- **Forced**: Premature activation of an operator without completing the previous step.[1]
- **Skipped**: Bypassing a necessary functional step, such as Deciding without prior Calculating.[1]
- **Reversed**: Attempting to move backward through a canonical sequence in a way that causes system friction.[1]
- **Oscillation**: Rapid, uncontrolled switching between two operators, preventing stabilization.[1]

The "Mastery Protocol" provides a five-step sequence for practitioners and researchers to restore canonical flow: Stabilizing the current operator, Identifying the canonical successor, Preparing the modulation pathway, Activating the successor, and Re-establishing modulation reciprocity.[1]

Structural Psychopathology: A New Paradigm for Clinical Research

The Core Emotion Framework offers a "Structural-Constructivist Mapping of Human Experience" to deconstruct psychological disorders into specific functional failures.[1] This moves beyond symptom-based diagnosis toward a "structural psychopathology" that identifies the mechanistic cause of dysregulation, providing a profound advantage for clinical researchers.[1]

Modeling Anxiety and Depression

A primary example of this approach is the modeling of the GoodPerson Anxiety Pattern (GPAP). In the CEF, GPAP is viewed as an over-activation of the Calculating operator in the Head center that has become fused with a desire for relational approval in the Heart center.[1] The individual becomes stuck in an infinite "Calculating loop," unable to transition to the Deciding operator because the "risks" of relational misalignment are perceived as catastrophic.[1]

Similarly, Major Depressive Disorder (MDD) is modeled as a collapse of the Boosting operator in the Gut center, leading to an energetic deficit.[1] This is often coupled with a chronic activation of the Accepting operator that has drifted into a pathological state of "Shutdown" or "Dissociation".[1] Researchers can use these models to develop targeted interventions that focus on restoring specific operator functions rather than merely suppressing symptoms.[1]

Deconstructing OCD

Obsessive-Compulsive Disorder (OCD) is reframed as a functional failure in the Deciding operator.[1] The system fails to "resolve" a cognitive task, leading to repetitive Sensing or Calculating behaviors (compulsions) in a futile attempt to reach a state of completion.[1] By identifying the specific operator failure, researchers can investigate the neurocognitive underpinnings of OCD with greater precision.[1]

Structural Failure	**CEF Deconstruction**	**Resultant Phenomenon**
Fusion	Involuntary merging of operators (e.g., Sensing fused with Calculating).	Cognitive confusion and loss of emotional granularity.[1]
Rigidity	Operator activation becomes fixed at a high scalar value, resistant to modulation.	Emotional "stuckness" and inability to adapt to context.[1]
Inversion	Activating the opposite operator required for a task (e.g., Constricting during a moment requiring Expansion).	Chronic social and internal friction.[1]

Collapse	A center or operator's inability to reach an activation level above 0.	Emotional numbing or loss of specific functional powers.[1]

The Researcher's Arsenal: Manuals, Protocols, and Lexicons

The CEF ecosystem provides a comprehensive library of practitioner manuals (PM-series) and technical specifications (TS-series) designed to move the framework from a theoretical model to practical application.[1]

PM-1 and the 7-Step Detangling Protocol

The PM-1 manual serves as the foundational guide for practitioners acting as "architectural stabilizers".[1] It trains four core competencies: Activation, Detangling, Agility, and the implementation of the Emotion Utilization Model (EUM).[1] The EUM treats emotion as a resource to be harnessed rather than a problem to be solved.[1] A central tool in clinical application is the 7-Step Detangling Protocol, used when a practitioner detects "fusion"—the involuntary merging of operators or centers.[1]

1. **Identification**: Detecting the presence of fusion through behavioral or somatic cues of imbalance.[1]
2. **Locating the Primary Center**: Determining where the dominant dysregulation is occurring (Head, Heart, or Gut).[1]
3. **Differentiation**: Explicitly naming the operators involved in the fusion to break the conceptual "knot".[1]
4. **Sequential Activation/Quieting**: Using modulation to isolate one operator ($0 \rightarrow 10$) while actively quieting its fused counterpart.[1]
5. **Stabilization**: Bringing the activation of the first operator to 0 to ensure the system is "quiet" before addressing the second operator.[1]
6. **Agility Training**: Training the system to move between the previously fused states without merging them, reinforcing functional boundaries.[1]
7. **Integration**: Re-establishing whole-system coherence after the structural separation is complete.[1]

PM-3: Structural Disassembly Protocols

When emotional structures become so rigid that they impede functioning, researchers and practitioners use Structural Disassembly.[1] This is a systematic process of breaking down complex, dysfunctional architectures to allow for rebalancing and reintegration.[1] It involves six stages, including stabilization, isolation of operators, and the rebuilding of center clarity through "Choreography" and "Meditation".[1]

Computational Affective Science and the ECM Roadmap

The Core Emotion Framework is unique in its deliberate design for computational relevance.[1] Jamel Bulgaria's development of the Emotional Cycling Machine (ECM) blueprints illustrates the framework's application to synthetic emotion architecture and AI training.[1] The ECM reframes the human psyche as a computational system where emotional states are predictable computational events.[1] By representing the ten operators as activation vectors, the framework allows AI systems to simulate nuanced human affect with structural integrity.[1]

ECM Version	Designation	Technological Goal
v1.2	Canonical Edition	Establishing the modernized protocol for structural modeling.[1]
v2	Next Generation	Developing advanced transition algorithms between operator states.[1]
v3.0	Autonomous ECM	Engineering self-regulating feedback loops for synthetic affect.[1]

v3.1	Engineering Blueprint	Formalizing specifications for hardware and software implementation.[1]
v4.0	System Integrated	Creating comprehensive emotional environments for AI-human interaction.[1]

The INTIMA Benchmark and EL-1 Lexicon

To support the computational layer, the CEF includes the Core English Emotional Lexicon (EL-1), a canonical dataset of 500 terms.[1] Each term is mapped to its corresponding operators and activation scalars, providing a bridge between natural language and structured emotional semantics.[1] This mapping is tested and refined through the INTIMA (Integrated Neuro-Affective Synchronizer) benchmark, which evaluates an AI system's ability to handle the framework's granular emotional data.[1] AI researchers can utilize the EL1 Lexicon for structured data integration, using EL1_v1.0.json to integrate granular emotional mappings into AI models.[4]

Empirical Validation: The Open Science Roadmap

The Core Emotion Framework is offered as a falsifiable working hypothesis, with a clear roadmap for empirical validation.[1] While the framework is technically dense, its creator emphasizes that its empirical status remains "entirely open," awaiting further systematic research.[1]

Pilot Study Results and Reproducibility Benchmarks

An exploratory behavioral pilot study involving 39 participants provided early data on the framework's conceptual viability.[1] The findings suggested that individuals are capable of distinguishing between "reflexive" emotional responses (unconscious activation) and "idealized" responses (intentional structural alignment).[1] While these results do not constitute a full validation of the ten operators, they support the framework's premise that emotional states can be intentionally modulated and

structurally analyzed.[1]

The CEF establishes boundary conditions for its future measurement based on short-term test-retest reproducibility patterns reported by Amano et al. (2026).[1] These benchmarks are essential for ensuring that any future "CEF Scale" or assessment tool provides consistent results across time and contexts.[1] The "Open Validation" roadmap encourages independent researchers to use these benchmarks to test operator independence, operator agility, and the validity of the tripartite architecture.[1]

Phase 1 Validation of the CEF Scale

Current research efforts are focused on the Phase 1 validation of the Core Emotion Framework Scale, as documented in OSF preregistrations.[1] This phase is designed to examine the internal consistency of the ten operator scales and their discriminant validity across the Head, Heart, and Gut centers.[1]

The study uses a scenario-based rating method directly adapted from Pilot Study 3, where participants read brief everyday situations and rate the likelihood of responding in each of ten operator-specific ways.[5] The primary research question is whether these ten operators form ten distinct but correlated factors in scenario-response data, rather than collapsing into a single general emotionality factor.[5] The full item set consists of 100 items (10 vignettes $\times$ 10 operators), and data will be randomly split into two independent samples ($N \geq 400$ each) for Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA).[5]

Validation Phase	Objective	Methodology
Phase 1	Construct Definition and Item Generation	Scenario-based rating instrument (100 items).[5]
Phase 1	Factor Structure Confirmation	EFA (Sample 1) and CFA (Sample 2) with MLR extraction.[5]

Continuous	Operator Independence Testing	Investigating if the ten operators function as distinct units.[1]
Continuous	Operator Agility Validation	Testing the system's ability to move between states.[1]
Continuous	Tripartite Architecture Validation	Validating Head, Heart, and Gut center divisions.[1]

Gain for the Individual Researcher: Applications and Insights

Individual researchers stand to gain significant advantages by applying and researching the Core Emotion Framework within their respective fields. The framework's versatility allows for cross-disciplinary applications ranging from clinical psychology to artificial intelligence.[1]

In Clinical and Behavioral Science

Researchers in clinical psychology gain a transdiagnostic model for psychological health, where "wellness" is defined as operator agility and "pathology" is defined as structural failure.[1] The CEF provides a granular, functional language that moves beyond vague emotional labels, allowing for the development of highly specific therapeutic protocols.[1] The 7-Step Detangling Protocol and the Structural Disassembly protocols offer researchers a methodology for studying and intervening in rigid emotional patterns with unprecedented precision.[1]

Furthermore, the framework's focus on the "Human Operating System" concept allows for the study of autonomous structural governance, empowering individuals to move beyond reactive states toward intentional psychological functioning.[1] This has profound implications for researchers interested in psychological flourishing, character development, and emotional intelligence.[3]

In Computational Affective Science and AI

For researchers in AI and synthetic affect, the CEF offers a structured, machine-readable ontology of human emotion.[1] The Emotional Cycling Machine (ECM) blueprints provide a roadmap for developing emotion-aware AI systems that can simulate human affect with structural integrity.[1] The INTIMA benchmark and the EL-1 Lexicon provide the necessary tools for evaluating AI systems and ensuring they adhere to a human-structural foundation.[1]

AI researchers can also leverage the framework's expansion library for technical integration, utilizing technical analyses to interface the CEF with digital systems.[4] The CEF Wikidata Review supports ontology integration and structured-data mapping, facilitating machine-readable indexing and alignment with existing knowledge bases.[4]

In Neurodiversity and Personalized Calibration

The CEF's granularity makes it particularly relevant for research into neurodiversity.[1] For individuals who experience traditional emotional labels as confusing or non-applicable, the CEF provides a "bottom-up" functional language that focuses on specific cognitive and motoric powers.[1] Researchers can use the framework to develop personalized calibration tools that respect the unique structural configurations of neurodiverse individuals, moving toward more inclusive and effective psychological support.[1]

Interdisciplinary Implications and the Human OS Concept

The ultimate goal of the Core Emotion Framework is the democratization of emotional intelligence through the concept of the "Human Operating System".[1] By providing a machine-readable and clinically rigorous model of affect, Bulgaria seeks to empower individuals toward autonomous structural governance.[1]

Integration with Neurobiology and Physics of Mind

The CEF's tripartite hub system and its integration with the gut-brain axis and neurochemical signaling provide a bridge to neurobiology.[1] Researchers can explore how specific neurochemical fluctuations correspond to scalar modulation of operators,

potentially leading to a "unified physics of mind".[8] For instance, researchers might investigate whether intranasal oxytocin shifts the "dignity cliff" or how "semantic turbulence" characterizes conditions like psychosis.[8] While these concepts are at the frontier of research, the CEF provides the structural foundation required for such ambitious interdisciplinary investigations.[1]

Ethical AI and Human-Structural Foundations

In the field of AI ethics, the CEF offers a structured method for ensuring that synthetic emotional systems are built on a "Human-Structural" foundation.[1] This potentially prevents the development of AI that lacks functional emotional alignment with human users, a critical consideration as AI becomes more integrated into social and emotional domains.[1] The framework's universality and cross-cultural considerations further support its application in developing globally accessible and ethically aligned AI systems.[4]

Conclusion: Navigating the Structural-Constructivist Frontier

The Core Emotion Framework represents a paradigm shift in the study of human affect, synthesizing physiological necessity, cognitive appraisal, and structural modeling into a cohesive solution for the historical "Affective Science Crisis".[1] Its rigorous architecture—from the Decalogue of Operators to the Emotional Cycling Machine—positions it as a vital bridge between the biological reality of the human body and the computational future of artificial intelligence.[1]

For individual researchers, the CEF provides a comprehensive roadmap for exploring the mechanics of the human psyche. By engaging with open science initiatives, utilizing the PM-series manuals, and contributing to the Phase 1 validation of the CEF Scale, researchers can play a pivotal role in transitioning the framework from a powerful theoretical synthesis to an empirically grounded practice.[1] The "Open Validation" program offers an unparalleled opportunity for independent investigation into the framework's foundational claims, ensuring that the CEF remains a falsifiable and evolving scientific tool.[1]

As researchers continue to apply the CEF to diverse fields—from clinical structural psychopathology to synthetic emotion architecture—the framework stands as a testament to the power of structural-constructivist thinking. It offers not just a new taxonomy of feeling, but a comprehensive manual for the Human Operating System, turning the "war" of emotion research into a structured path toward human optimization, psychological flourishing, and computational synergy.[1] The roadmap is clear: by applying the CEF, researchers gain a granular, machine-readable, and clinically rigorous model that unlocks new frontiers in our understanding of what it means to be human in an increasingly digital and complex world.[1]

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