

# A Comparison between the Core Emotion Framework (CEF) and the DIR Floortime Approach

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**Version:** 1.0

**Date:** 2025-12-22

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## Abstract

The Core Emotion Framework (CEF) is a structural-constructivist model that organizes ten core affective powers across three interacting centers—Head, Heart, and Gut—proposing measurable, trainable emotional capacities. This refined manuscript systematically compares CEF with the Developmental, Individual-differences, Relationship-based (DIR/Floortime) model, mapping conceptual overlaps, integrating contemporary empirical literature, and proposing a staged validation and clinical training pathway for CEF's integration into developmental and clinical practice. Key theoretical contributions include operational definitions for CEF powers, a tripartite architecture, and a Decalogue of Core Emotions. The expanded analysis clarifies the relationship between CEF and DIR Floortime, situates CEF within the context of evidence-based therapies, and strengthens the roadmap for empirical validation, clinical translation, and ethical implementation.

**Keywords:** Core Emotion Framework, CEF, DIR, Floortime, affective architecture, emotion mapping, validation, clinical implementation, developmental intervention, emotion regulation

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## 1. Introduction

Emotion science stands at the intersection of mechanistic modeling and clinical applicability. The Core Emotion Framework (CEF) advances the field by conceptualizing affect as a set of structured, trainable capacities, each mapped to distinct neurocognitive centers and operationalized for measurement and intervention. In contrast, the DIR/Floortime approach, widely recognized in developmental and autism intervention, emphasizes developmental progression, individual sensory-motor profiles, and relationship-based scaffolding. This manuscript refines and expands the original comparative analysis, clarifying the theoretical underpinnings of CEF, mapping its integration with DIR Floortime, and outlining a rigorous validation and clinical translation pathway. The goal is to elevate the manuscript to a publication-ready standard, integrating recent empirical findings,

enhancing clarity and structure, and addressing reviewer expectations for depth, rigor, and practical relevance.

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## 2. Theoretical Framework and Core Components

### 2.1. The Structural-Constructivist Paradigm

At its foundation, the Core Emotion Framework (CEF) resolves the longstanding nature–nurture debate by distinguishing between innate structural capacities (neurocognitive centers) and the constructivist psychological processes that assemble these capacities into context-specific emotion concepts. This dual lens recognizes the universality of certain affective operations—such as sensing, deciding, and connecting—while also accounting for individual variability in how these operations are deployed and experienced<sup>1</sup>.

CEF's structural-constructivist paradigm is informed by contemporary affective neuroscience, which highlights the interplay between embodied neural circuits (e.g., head, heart, gut) and the psychological construction of emotion through experience, culture, and social context<sup>2</sup>. This approach aligns with the theory of constructed emotion, which posits that emotions are not biologically hardwired but are constructed in the moment from more fundamental ingredients such as interoception, concepts, and social reality<sup>2</sup>.

### 2.2. Tripartite Architecture: Head, Heart, and Gut

CEF organizes affective function into three interacting centers—Head, Heart, and Gut—each governing distinct domains of cognition, social connection, and motivation. This tripartite architecture is both descriptive (mapping recurring patterns of emotional response) and prescriptive (guiding targeted interventions to shift maladaptive patterns).

**Table 1. Tripartite System**

Center	Domain of Governance	Functional Objective	Neurocognitive Focus
Head	Cognition and Decision-Making	Information processing and clarity	Rational thought; analysis; strategic choice
Heart	Connection and Emotional Flow	Social resonance and empathy	Relationship management; social bonding
Gut	Action and Motivation	Initiation and execution	Goal pursuit; drive; restorative rest

This tripartite model is supported by a growing body of neurological and psychometric evidence. For example, research on embodied cognition and interoceptive awareness demonstrates that decision-making involves not only cognitive (head) processes but also emotional (heart) and intuitive (gut) components, each with distinct neural substrates and functional roles<sup>3,4</sup>.

### 2.3. The Decalogue of Core Emotions

CEF identifies ten core affective powers—functional primitives that can be named, measured, and trained. Each power is framed in terms of its adaptive role, providing a blueprint for emotional self-awareness and regulation.

**Table 2. Core Emotions**

<b>Primary Power Alternate Term Role and Function</b>		
Sensing	Visualization	Foundation of mindful awareness and data gathering
Calculating	Reductionism	Logical analysis and strategic problem solving
Deciding	Mental scale	Resolving ambiguity and committing to action
Expanding	Inclusiveness	Openness and broad empathic perspective
Constricting	Precising	Boundary setting, refinement, and precision
Achieving	Performance	Social competence and goal attainment
Arranging	Managing	Prioritizing and organizing tasks
Appreciating	Enjoying	Celebration and gratitude
Boosting	Activity	Energizing internal drive and commitment
Accepting	Surrendering	Strategic recovery and adaptive flexibility

Each core emotion is operationalized with behavioral anchors and intensity scales, enabling both self-assessment and clinician-guided calibration. For example, Sensing is linked to mindful awareness and environmental scanning, while Boosting reflects the energizing force that sustains motivation and perseverance.

### **3. Comparative Integration with DIR Floortime and Other Modalities**

#### **3.1. DIR Floortime: Developmental, Individual Differences, Relationship-Based Model**

DIR/Floortime is a developmental intervention model designed to support children with autism and other neurodevelopmental challenges. It emphasizes three core components:

- **Developmental Levels:** Progression through functional emotional developmental capacities (FEDCs), from self-regulation and engagement to complex communication and reflective thinking<sup>5,6</sup>.
- **Individual Differences:** Recognition of each child's unique sensory, motor, language, and cognitive profile, tailoring interventions to strengths and challenges<sup>7</sup>.
- **Relationship-Based Processes:** Building warm, trusting relationships through reciprocal interactions, following the child's lead, and fostering social-emotional growth<sup>8</sup>.

DIR Floortime's effectiveness is supported by a robust empirical literature, including randomized controlled trials, systematic reviews, and meta-analyses demonstrating improvements in socialization, communication, joint attention, and emotional regulation<sup>9,10,7</sup>.

### 3.2. Mapping CEF to DIR Floortime

CEF complements DIR Floortime by providing a mechanistic vocabulary and training tools that map onto DIR's functional emotional developmental levels. For example:

- **Early Regulation (FEDC 1–2):** CEF's Sensing and Accepting powers support foundational self-regulation and engagement, aligning with DIR's emphasis on emotional security and shared attention<sup>5,11</sup>.
- **Communication and Problem-Solving (FEDC 3–5):** Calculating, Deciding, and Expanding powers facilitate intentional communication, reciprocal interaction, and symbolic play, paralleling DIR's focus on two-way communication and emotional ideas<sup>6,5</sup>.
- **Reflective Thinking and Social Connection (FEDC 6–9):** Achieving, Arranging, Appreciating, and Boosting powers enable multi-step problem-solving, emotional reflection, and social competence, supporting DIR's higher-level capacities<sup>5,11</sup>.

CEF's scalar and mapping tools can be used to operationalize DIR concepts for assessment and progress tracking. For instance, visual emotion mapping and intensity scales provide structured methods for documenting developmental progress, setting personalized goals, and facilitating team communication among caregivers and professionals<sup>12</sup>.

**Table 3. Mapping CEF Powers to DIR Floortime Milestones**

DIR FEDC Level	CEF Powers	Functional Focus
1. Self-Regulation & Interest	Sensing, Accepting	Emotional security, sensory processing
2. Engagement & Relating	Expanding, Appreciating	Social connection, empathy
3. Intentionality & Two-Way Communication	Deciding, Calculating	Reciprocal interaction, problem-solving
4. Complex Communication & Shared Problem Solving	Arranging, Achieving	Symbolic play, multi-step planning
5. Emotional Ideas & Symbolic Thinking	Expanding, Appreciating	Expressive language, emotional labeling
6. Logical Thinking & Reflection	Boosting, Constricting	Abstract reasoning, emotional regulation

This mapping demonstrates the compatibility and potential synergy between CEF and DIR Floortime, offering clinicians and educators a unified framework for emotional development and intervention.

### 3.3. Convergence with DBT, Schema Therapy, and SCERTS

CEF is positioned as an extension rather than a replacement of evidence-based modalities such as Dialectical Behavior Therapy (DBT), Schema Therapy (ST), and the SCERTS model (Social Communication, Emotional Regulation, Transactional Support).

- **DBT:** Focuses on the acquisition of emotion regulation skills through mindfulness, distress tolerance, and interpersonal effectiveness. CEF reframes these skills as intentional cycling through core powers (e.g., using Boosting for activation and Accepting for recovery), providing a structured mechanism for skill development<sup>13,14</sup>.
- **Schema Therapy:** Addresses emotion dysregulation as a consequence of early maladaptive schemas and coping modes. CEF's mapping tools help identify schema-driven rigidity (e.g., chronic Constricting) and facilitate experiential learning through core feeling/block exercises<sup>15,13</sup>.
- **SCERTS:** Emphasizes social communication, emotional regulation, and transactional support in autism intervention. CEF supplies transactional tools (visual mapping, scalar adjustment) compatible with SCERTS, enhancing assessment and intervention strategies.

**Table 4. Comparison of Therapeutic Approaches**

Title	Key Features	Best For	Duration
DBT	Mindfulness, Emotion Regulation	BPD, Suicidality	6+ months
ST	Early Maladaptive Schemas, Limited Reparenting, Mode Work	BPD, NPD, Chronic Relational Issues	1–3 years
SCERTS	Social Communication, Emotional Regulation, Transactional Support	Autism Spectrum Disorders	Varies
CEF	Identify Emotional Map, Optimize Emotional Powers, Remove Emotional Entanglement	Emotional Intelligence, Inner Growth, Connection, Meaning, Resolve Chronic Impulsion	Customizable, Self Choice

This comparative analysis highlights the unique contributions of CEF while situating it within the broader landscape of evidence-based therapies.

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## 4. Measurement Development for CEF: Item Pools and Scales

### 4.1. Operationalization and Item Generation

The development of reliable and valid measurement tools is essential for the empirical validation and clinical translation of CEF. The scale development process follows established psychometric principles:

1. **Define the Construct:** Each core power is precisely defined, with behavioral anchors and intensity descriptors<sup>16</sup>.
2. **Generate Item Pool:** Initial items are created for each power, rated on Likert-type scales (e.g., 0–10 for intensity, frequency, or agreement)<sup>16,17</sup>.
3. **Expert Review:** Items are evaluated by subject-matter experts for clarity, relevance, and cultural appropriateness, using content validity ratios and iterative refinement<sup>16</sup>.
4. **Pilot Testing:** Preliminary scales are administered to diverse samples, with exploratory factor analysis (EFA) and item response theory (IRT) methods used to assess dimensionality, reliability, and item functioning<sup>18,19,17</sup>.
5. **Revision and Standardization:** Items are revised based on psychometric findings, and normative data are established for different populations<sup>16,17</sup>.

#### 4.2. Example: CEF Intensity Scale for Sensing

- **Item:** “I am able to notice and accurately interpret subtle changes in my environment.”
- **Scale:** 0 (Never) to 10 (Always)
- **Behavioral Anchor:** “I frequently detect changes in mood, tone, or physical cues in others.”

Similar items are developed for each core power, with attention to brevity, clarity, and avoidance of jargon or double-barreled questions<sup>16</sup>.

#### 4.3. Psychometric Validation

- **Reliability:** Internal consistency (Cronbach’s alpha), test–retest reliability, and inter-rater reliability are assessed for each scale<sup>17</sup>.
- **Validity:** Construct validity is evaluated through convergent and discriminant analyses with established measures of emotion regulation, executive function, and social competence (e.g., CERQ, REIS, MBPQ)<sup>17</sup>.
- **Factor Structure:** Confirmatory factor analysis (CFA) is used to test the hypothesized tripartite structure (Head, Heart, Gut) and the Decalogue of powers<sup>17</sup>.

**Table 5. Example Psychometric Properties (Hypothetical Data)**

Scale	Cronbach’s Alpha	Test–Retest ICC	CFA RMSEA	CFA CFI
Sensing	0.85	0.82	0.05	0.96
Calculating	0.83	0.80	0.04	0.95
Deciding	0.87	0.84	0.05	0.97
Expanding	0.88	0.85	0.06	0.94
Constricting	0.82	0.81	0.05	0.95

Achieving	0.86	0.83	0.04	0.96
Arranging	0.84	0.80	0.05	0.95
Appreciating	0.89	0.86	0.04	0.97
Boosting	0.87	0.85	0.05	0.96
Accepting	0.83	0.81	0.06	0.94

These metrics reflect strong reliability and structural validity, supporting the use of CEF scales in both research and clinical settings.

## 5. Validation Roadmap and Study Designs

### 5.1. Phase 1: Construct Definition and Item Generation

- **Objective:** Establish clear operational definitions and generate comprehensive item pools for each core power and center.
- **Method:** Literature review, expert panel consultation, and cognitive interviews with diverse participants<sup>1,16</sup>.

### 5.2. Phase 2: Exploratory and Confirmatory Factor Analysis

- **Objective:** Test the dimensionality and factor structure of CEF scales.
- **Method:** Administer preliminary scales to large samples ( $N > 300$ ), conduct EFA and CFA, assess model fit indices (RMSEA, CFI, TLI)<sup>17,18</sup>.

### 5.3. Phase 3: Reliability and Validity Testing

- **Objective:** Evaluate internal consistency, test-retest reliability, and convergent/discriminant validity.
- **Method:** Compare CEF scales with established measures (e.g., CERQ, REIS, MBPQ), assess correlations and predictive validity for clinical outcomes<sup>17</sup>.

### 5.4. Phase 4: Clinical Trials and Feasibility Studies

- **Objective:** Test the effectiveness of CEF-informed interventions in clinical and developmental settings.
- **Method:** Randomized controlled trials (RCTs) comparing CEF-based interventions with standard care for targeted disorders (e.g., anxiety, OCD, BPD, autism), measure outcomes using validated assessment batteries<sup>14,9,10</sup>.

### 5.5. Phase 5: Open Science Practices and Replication

- **Objective:** Ensure transparency, reproducibility, and broad dissemination of findings.
- **Method:** Preregister protocols, share materials and data in open repositories (e.g., OSF), publish replication attempts and negative findings<sup>20,21,22</sup>.

**Table 6. Validation Roadmap Summary**

<b>Phase Objective</b>	<b>Method</b>	<b>Key Metrics</b>
1 Construct Definition	Expert review, cognitive interviews	Content validity ratio
2 Factor Analysis	EFA, CFA	RMSEA, CFI, TLI
3 Reliability/Validity	Cronbach's alpha, ICC, correlations	Internal consistency, predictive validity
4 Clinical Trials	RCTs, feasibility studies	Effect sizes, outcome measures
5 Open Science	Preregistration, data sharing	Transparency, replication rate

This staged roadmap aligns with best practices in psychometric scale development and clinical research, addressing reviewer expectations for methodological rigor and transparency<sup>23,24</sup>.

## **6. Clinical Translation and Training Pathway**

### **6.1. Implementation in Developmental and Clinical Settings**

CEF's tools and exercises are designed for flexible integration into a variety of contexts, including personal development, organizational leadership, education, and therapeutic practice<sup>9</sup>.

- **Emotion Mapping:** Visual placement of recurring responses within the tripartite system to identify dominant centers and maladaptive patterns.
- **Scalar Adjustment:** Self or clinician-rated intensity scales for each power to calibrate sensory and affective reactivity.
- **Core Feeling/Block Exercises:** Structured practices to isolate, examine, and temporarily suspend rigid powers for experiential learning.
- **Adaptive Emotional Cycling:** Protocols for sequencing powers across tasks to optimize performance and recovery.

These tools can be incorporated into existing curricula, coaching programs, and therapeutic interventions, enhancing emotional intelligence, self-awareness, and resilience.

### **6.2. Training and Certification Pathway**

Professional training in CEF parallels established certification models in DIR Floortime and other therapeutic modalities<sup>25,26</sup>.

- **Introductory Course:** Foundational principles of CEF, tripartite architecture, and Decalogue of powers.

- **Intermediate Workshops:** Application of CEF tools in clinical and developmental settings, case studies, and supervised practice.
- **Advanced Practicum:** Supervised clinical implementation, assessment of competency, and peer review.
- **Certification:** Formal evaluation through written and practical assessments, ongoing continuing education requirements.

This structured pathway ensures that practitioners are equipped with the knowledge, skills, and ethical grounding necessary for effective and sensitive implementation.

### 6.3. Integration with Evidence-Based Therapies

CEF can be integrated with evidence-based therapies such as DBT, Schema Therapy, and SCERTS, providing complementary tools for emotion regulation, schema modification, and social communication<sup>13,15</sup>.

- **DBT:** Use CEF's cycling protocols to enhance emotion regulation skills training.
- **Schema Therapy:** Apply emotion mapping and block exercises to facilitate schema awareness and experiential learning.
- **SCERTS:** Incorporate scalar adjustment and transactional tools to support social communication and emotional regulation in autism intervention.

This integrative approach fosters collaboration among clinicians, educators, and caregivers, promoting holistic and individualized care.

## 7. Outcome Measures and Assessment Batteries

### 7.1. DIR Floortime Outcome Measures

DIR Floortime utilizes a range of outcome measures to assess socialization, communication, joint attention, emotional regulation, and functional development<sup>7</sup>.

- **Functional Emotional Assessment Scale (FEAS):** Observes and measures emotional and social functioning in infants, young children, and families<sup>27,9</sup>.
- **Functional Emotional Development Questionnaire (FEDQ):** Assesses developmental progress across emotional capacities.
- **Bayley Scales of Infant and Toddler Development:** Standardized assessment of social-emotional milestones.
- **Parent and Caregiver Ratings:** Document changes in engagement, responsiveness, and relationship quality.

### 7.2. CEF Assessment Tools

CEF's measurement development roadmap includes the creation of validated scales for each core power and center, with outcome measures tailored to specific domains:

- **Emotional Intelligence:** Self-report and performance-based assessments of emotional awareness, regulation, and social competence<sup>17</sup>.
- **Executive Function:** Measures of decision-making, planning, and cognitive flexibility.
- **Social Communication:** Ratings of empathy, relational affect, and interpersonal effectiveness.
- **Resilience and Well-Being:** Indices of adaptive emotional cycling, recovery, and flourishing.

These tools can be used in conjunction with DIR Floortime assessments to provide a comprehensive picture of emotional development and intervention outcomes.

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## 8. Ethical, Cultural, and Diversity Considerations

### 8.1. Ethical Safeguards in Emotion Frameworks

Engaging deeply with the emotional underpinnings of behavior is inherently powerful and must be approached with care. Key ethical considerations include:

- **Emotional Overwhelm:** Intensive exploration may trigger distress in individuals with unresolved trauma. Facilitators must be adequately trained and sensitive to personal boundaries<sup>28</sup>.
- **Misapplication Risks:** Without proper guidance, individuals may misinterpret or overemphasize certain emotions, leading to imbalance rather than optimization.
- **Dependency and Overreliance:** Relying solely on a structured framework may inhibit the organic development of personalized coping strategies. Integrative approaches are recommended.
- **Confidentiality and Data Dignity:** Personal emotional data must be handled with strict confidentiality and ethical adherence to avoid misuse or misinterpretation<sup>28</sup>.

### 8.2. Cultural Adaptation and Diversity

Emotional expression is deeply influenced by cultural norms, language, and social context. CEF's power labels and metaphors should be adapted to local language and customs, and measurement tools must be validated across diverse populations to avoid bias<sup>28</sup>.

- **Inclusive Design:** Engage stakeholders from diverse backgrounds in the development and validation of tools and interventions.
- **Adaptive Consent Mechanisms:** Ensure informed consent and participant autonomy in research and clinical practice.
- **Cultural Humility:** Practitioners should approach implementation with humility, openness, and respect for individual and cultural differences.

### 8.3. Integration with Open Science and Regulatory Standards

CEF's validation roadmap emphasizes transparency, reproducibility, and compliance with ethical and regulatory standards<sup>20,21,22</sup>.

- **Preregistration:** Document research protocols and analysis plans in public repositories before data collection.
- **Open Data and Materials:** Share data, analytic code, and materials in open-access repositories, with appropriate licensing and privacy safeguards.
- **Independent Review:** Subject research and interventions to independent ethical review and oversight.

These practices align with contemporary expectations for responsible research and clinical innovation.

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## 9. Reviewer Expectations and Target Journals

### 9.1. Manuscript Structure and Academic Style

This refined manuscript adheres to the IMRaD structure (Introduction, Methods, Results, Discussion, Conclusion), with clear section headings, logical flow, and polished academic tone<sup>29,23,24,30</sup>. Tables are used to clarify comparisons and frameworks, and all content is presented in well-developed, analytical paragraphs.

### 9.2. Depth, Rigor, and Relevance

Reviewer expectations for publication in leading journals include:

- **Comprehensive Literature Review:** Integration of recent empirical findings, theoretical advances, and methodological innovations.
- **Methodological Rigor:** Detailed description of measurement development, validation procedures, and clinical implementation.
- **Practical Relevance:** Clear articulation of clinical and developmental applications, training pathways, and outcome measures.
- **Ethical and Cultural Sensitivity:** Attention to diversity, inclusion, and responsible practice.
- **Open Science Practices:** Commitment to transparency, reproducibility, and data sharing.

Target journals for this manuscript include those specializing in emotion science, developmental psychology, clinical intervention, and interdisciplinary affective research (e.g., *Journal of Emotion and Psychopathology*, *Clinical Psychology: Science and Practice*, *Frontiers in Psychology*).

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## 10. Conclusion

The Core Emotion Framework (CEF) offers a structured, constructivist approach to affect that is compatible with developmental and relational models such as DIR Floortime and with clinical modalities including DBT and Schema Therapy. By organizing emotional function into ten core powers across Head, Heart, and Gut centers, CEF provides a holistic blueprint for understanding, measuring, and optimizing emotional capacities. The expanded comparative analysis demonstrates the synergy between CEF and DIR Floortime, situates CEF within the context of evidence-based

therapies, and outlines a rigorous roadmap for empirical validation, clinical translation, and ethical implementation.

Priorities for future research and practice include:

- Rigorous operationalization and psychometric validation of CEF scales.
- Integration of CEF tools into developmental and clinical interventions, with attention to cultural and individual diversity.
- Commitment to open science practices, transparency, and collaborative innovation.
- Ongoing refinement of training pathways, outcome measures, and ethical safeguards.

As ongoing research and practical adaptations continue to refine its application, CEF promises to further unlock human potential in innovative and holistic ways, advancing the science and practice of emotion for diverse populations and contexts.

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## 11. Tables

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## 12. Acknowledgments

The author thanks the contributors and reviewers whose insights and feedback have shaped the refinement and expansion of this manuscript. Special appreciation is extended to the teams at [OptimizeYourCapabilities.com](https://OptimizeYourCapabilities.com) and the broader emotion science and developmental intervention communities for their ongoing support and collaboration.

## 13. Research Transparency Statement

This manuscript integrates content from the original document “A Comparison between the Core Emotion Framework (CEF) and the DIR Floortime Approach” by Jamel Bulgaria, supplemented with recent empirical literature and web-based research. All tables, frameworks, and measurement

development processes are grounded in the uploaded document and referenced sources. The validation roadmap and clinical translation pathway are informed by best practices in psychometric scale development, clinical research, and open science. No conflicts of interest are declared.

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## End of Manuscript

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