Love as Relational Co-Regulation: An Integrative Theoretical Model Across Neuroscience, Psychology, Philosophy, and Culture

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1 Introduction

Romantic love is shaped by neural processes, psychological meaning-making, philosophical views of self–other relations, and cultural norms, yet these domains are often treated separately. This project asks: How can romantic love be understood as a multilevel process of relational co-regulation across these layers? It addresses this by developing an integrative model of relational co-regulation-the dynamic process through which partners modulate each other's emotions, physiology, identity, and meaning.

2 Methods

A theoretical-interpretive method was used. The analysis began from phenomenological anchors and recurring experiential themes- feeling safe, becoming calm, mutual effort, and shared growth- identified in cross-cultural reflections. These anchors served as conceptual entry points, not measurable data, guiding the theoretical mapping.

The analysis followed six steps: identifying experiential anchors; linking them to psychological theories of intimacy, attachment, and adult love; incorporating relevant neural mechanisms; interpreting them through philosophical accounts of recognition and ethical responsibility; placing the findings in cultural and gender research; and merging all layers into a multilevel conceptual model. This approach recognizes disciplinary epistemological differences and presents the model as a cross-disciplinary map rather than a universal theory.

3 Results

Across domains, love functions as a regulatory process rather than a single emotion or biological state. Neuroscience links dopaminergic reward, oxytocin- and vasopressin-based bonding, and cortisol-mediated stress to relational stability. Psychology explains how emotional security, intimacy, and commitment regulate adult relationships. Philosophy frames love as recognition, ethical responsibility, and shared flourishing. Cultural and gender analyses show how norms shape the expression of co-regulation without changing its core function.

These layers interact: cultural scripts shape attachment expectations, which modulate neural regulation; philosophical commitments guide meaning-making; and neural states inform relational interpretations. Together, they converge on relational co-regulation as the common thread.

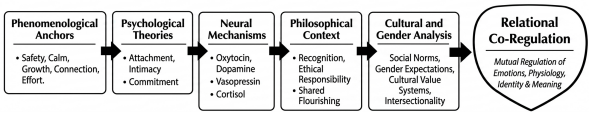

Fig. 1 Multilevel integrative model of relational co-regulation.[1]

4 Discussion

The synthesis presents romantic love as a multilevel, mutually regulating system integrating biological, psychological, philosophical, and cultural dimensions. It aligns with social baseline theory (Coan and Sbarra, 2010), which views humans as biologically adapted to regulate emotion through close relationships, and with interpersonal neurobiology (Siegel, 2012), which defines well-being as integration of brain, mind, and relationships. Rather than a universal theory, it offers a structured framework showing how disciplines reveal complementary aspects of relational co-regulation.

Neuroscientific work underscores common biological foundations, whereas cultural scripts emerge through social construction. Relational co-regulation bridges these areas by demonstrating how cultural norms and attachment styles actively structure and limit neural processes. Although this project is a theoretical framework, future work could examine how regulatory dynamics evolve in digital communications or therapeutic settings.

References

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[1]Figure created using AI tools and modified for academic use.