

If (Critical) Love is an Answer, What is the (Research) Question?

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Research in math education calls upon “love” more and more, but rarely with careful theoretical development. Hence we offer a theory of “critical love” here, drawing upon pedagogy scholarship, activist writing, and queer theory. Critical love calls us beyond a superficiality of knowing in our minds to a deeper knowing in our beings and actions. We elucidate the theory by identifying its essential components, organized along four horizontal frames: change, power, connection, and practice. We conclude with implications of critical love as an orientation in mathematics classrooms, teacher professional development, and pedagogy research.

Keywords: love, critical, embodiment, transformation, queer

In this report we develop a theory of critical love, which we offer as a theoretical framework for our community’s exploration of new ways of being as mathematics teachers, researchers, and learners. Critical love calls us beyond a superficiality of knowing in our minds to a deeper knowing in our beings and actions. Indeed, we affirm that “knowing differently reaches its deepest and most meaningful level when we are able to use this knowledge in service of living differently” (Ahluwalia, 2022, p. 313). We offer critical love as a conceptual resource for guiding transformation of knowledge into action. In this way, we endeavor partial work toward Green & Lopez’s (2025) recent call for the development of “love as a grounding for STEM education” (p. 2) and Clingan’s (2015) older call for us to “consider what might be possible if love were intentionally and specifically identified as a methodology, pedagogical practice, and value in... education” (p. 1). After a review of additional literature, we highlight sources of theoretical motivation – especially queer theory and the *Revolutionary Love Project* – before then moving into the $3 + 1 + 3 + 2 = 9$ components of our conceptualization of critical love. We conclude with some implications for practice and potential uses of the theory.

Literature Review

Our suggestion of love as a potentially powerful force in pedagogy is not a new one (Freire, 1970; hooks, 1994; Anderson, 2002). However, in a mathematics culture which values logic and precision (Ernest, 2016), many folks shy away from the term for its perceived emotionality and imprecision. We acknowledge a key peril in the use of ambiguous and weighted terms like love: the potential harm of dual meanings. Johnson et al. (2018) highlight this risk of misnaming, saying that “when teachers embody fake love, it produces this bogus relationship... [that is] pretentious and masquerading” (p. 54). For example, in a study of STEM preservice teachers Green & Lopez (2025) note that “[the preservice teachers] rehearsed the dominant discourses in the United States which work to reproduce social injustice... while [also] giving strong commitments to social justice in terms of radical love” (p. 22). Rather, Johnson et al. (2018) call for a “practice of humanizing love... that is bounded in action” (p.48), a call echoed by social justice educator Brooks (2017) who states that “a critical theory of love... reunite[s] and rehumanize[s]” (p. 108). Tran and Pierre (2025) argue likewise, drawing upon hooks (2000) to state “when love is oriented purposefully, it becomes an anchor that empowers us to humanize each other” (p. 5). Thus, to love critically must be an act of humanization.

We therefore find resonance between the fact that a growing body of scholarship calls for (re)humanization of mathematics (Rosa & Orey, 2016; Ormseth et al., 2017; Gutiérrez, 2018; Simic-Muller, 2023; Kalinec-Craig, 2025; MacArthur et al., 2025), just as more and more math pedagogy literature calls upon love. In their development of a framework of ethnic studies for mathematics education, for example, Yeh et al. (2021) ground in an “orientation to [radical] love... drawn from activist and critical scholarship” (p. 73). However, they do not develop a deeper formulation of what they mean by “radical love” except to say that it is “interdependent, collective, healing, and nurturing” (p. 73). Likewise, in their “loving critique” of asset-based mathematics pedagogy, Paris & Alim (2014) avoid a theoretical framing of love and only remark that “love” refers to their “position of deep respect” (p. 1). Basile & Azevedo (2022), drawing upon Paris & Alim, also engage in a “loving (self-)critique” of their work as STEM educators, but offer only that their use of “love” reflects a “willingness and courage to deeply interrogate” (p. 1087) and their “patience and forgiveness” (p. 1095) in the process. My colleagues and I likewise engage in loving self-critique of our work in the ACT UP Math project on critical transformation in math education (Black et al., this issue). As such, even as mathematics educators call upon love, they do so without a robust theoretical development. Hence we offer a theory of “critical love” here, drawing upon and synthesizing the wisdom of pedagogy scholarship, activist writing, and queer theory.

Theoretical Framing

Queer theory provides a theoretical framing that: embraces fluidity of selves and identities (Morris, 2000); questions everything, especially things thought of as normal (Rands, 2019); embraces uncertainty (Shlasko, 2005); deconstructs binaries (Fifield & Letts, 2013); holds criticality of power relationships (Mayo & Rodriguez, 2019); and interrogates categorization (Brim & Ghaziani, 2016). For additional discussion, we refer the reader also to Chapters 2 and 3 of Hall’s (2003) *Queer Theories*, and Chapter 1 of Browne and Nash’s (2010) *Queer Methodologies*. We reference the preceding literature throughout our discussion of critical love. In particular, the *simultaneous holding of countless complexities* binds critical love together (see Table 1), aligned with queer theory’s call to “engage with multiple [potentially contradictory] understandings” at once (Shlasko, 2005, p. 129).

We also draw inspiration from the *Revolutionary Love Project* (RLP), led by activist, documentary filmmaker, and faith leader Valerie Kaur. The RLP conceptualizes love as having three orientations: “love for others, love for opponents, and love for self”, and teaches this practice of love “backed by research and infused with ancestral wisdom”. While we draw upon the literature of the RLP – especially their *Educator’s Guide* (2020), prepared by the project’s Director of Education, Dr. Melissa Canlas – we organize critical love without reference to the recipient (e.g. self, others) of love. Instead, we focus on love as a force of individual and systemic transformation, which requires action and labor. Indeed, “love is a form of sweet labor” (Canlas, 2020, p. 17) and “love is an action, a participatory emotion” (hooks, 2000, p. 135).

A Theory of Critical Love

We elucidate our theory of critical love by identifying its essential components, organized in Table 1. We tabulate the elements of critical love to offer some conceptual structure and to facilitate the reader’s remembering. However, queer theory calls us to hold caution around rigid categorization and hierarchy among the components. Throughout our discussion, therefore, we endeavor to explicate some of the ways that the components are inextricably interwoven.

Table 1. The essential components of critical love, tabulated in relation to one another.

Individual		link	Systems
Change	Courage	<i>simultaneous holding of countless complexities</i>	Envisioning
Power	Humility		Criticality of Power
Connection	Curiosity		Interdependence
Practice	Embodiment Discernment		

Conceptual Core of Critical Love

First, critical love requires ***courage***. Courage empowers us to try, “fail”, change, and try again, a cycle necessary for our individual and collective growth. Freire (1998) named the necessity of this cycle in teaching: “It is impossible to teach... without the courage to try a thousand times before giving in” (p. 3). Likewise, the RLP conceptualizes “transition” – or change – as a key practice of love, which they define as “the fiery process that is required to move from one reality into another” (2020, p. 118). Critical love calls us to willingly engage in this “fiery process”, which places us in a state of vulnerability and thereby requires courage. As education researcher Ohito wonders, in conversation with colleagues Lyiscott et al. (2021): “Can we be courageous enough to *name* exactly who and what we fear? If we were to unstick from our fear and unfurl our tongues, then what would we feel free/d to say?” (p. 5). We invite the reader to consider what they fear – and why – as they consider the other components of critical love.

Humility forms another essential element of critical love. Again, we draw upon Freire (1985), who wrote “many things that today still appear to me valid... could be outgrown tomorrow, not just by me, but by others as well” (p. 11). Humility requires critical acknowledgement of where we are now, and loving imagination of where we might grow. One perspective might position humility as an antithesis to ego; aligned with queer theory’s rejection of binaries, critical love takes a different stance. “The Hebrew word *anavah*... means ‘to take up your God-given space in the world.’... [and] is translated into the English word *humility*... [to] take up space and just honor the full vision of who we are” (Lyiscott et al., 2023, p. 262). Critical love, through humility, calls us to continually grow in order to honor the “full vision” of ourselves. Not because we are “not enough”, but rather because we each have a deep potential for fullness and the power to influence our world through our beings. Thinking of the classroom, Darder (2017) explicates that “knowledge production is lived out by the teacher through humility and openness... [and] this shift necessitates... the willingness of teachers to take responsibility for what they know” (p. 101). Thus, humility calls us to not only name what we do not know, but also take responsibility for what we do know, ever-aware of continual transformation at the fuzzy and amorphous interface of “known” and “unknown”.

Along that interface, critical love calls us to ***curiosity and wonder***. The RLP encourages us to regard persons (including, at times, ourselves) with the mantra “you are a part of me I do not yet know” (Canlas, 2020, p. 25; compare to the Mayan concept of In Lak’ech as applied to math education in Gutiérrez, 2017). The phrase “I do not yet know” evokes a perpetual sense of curiosity and a readiness to construct new knowledge. “To wonder is to cultivate a sense of awe and openness to others’ thoughts and experiences... wonder is the wellspring of love” (Canlas, 2020, p. 25). Through wonder we broaden our perspectives and learn from one another; in particular, we learn from our students just as they learn from us. We therefore offer critical love as a partial answer to Britzman’s questions “How does one take joy in having ideas, in changing

one's mind, in encountering the work of learning?" and "What sort of relations [exist] between learning to love and loving learning?" (Britzman, 2000, p. 44). In a state of curiosity and wonder, we both learn to love and love to learn – an ontology aligned with queer theory's insatiable "interrogatory edge" (Rands, 2019). That said, we find an even deeper call in the seeing of others as "parts of us that we do not yet know": the practice pushes us to perpetually see the complexity of other persons and to feel that complexity reflected in ourselves. "Wonder is an orientation to humility [in recognition that] others are as complex and infinite to themselves as we are to ourselves" (Canlas, 2020, p. 25). We arrive therefore at critical love's conceptualization of the link between the self and systems outside of the self.

The *simultaneous holding of countless complexities* of personhoods presents a profound challenge. We again seek theoretical guidance in queer theory which "hopes to overwhelm our capacity to 'get it,' to bring us to a point where we... [have] neither knowledge nor resistance to knowledge... lacking answers, we are able to embrace questions, engage with multiple understandings, and imagine new possibilities" (Shlasko, 2005, p. 129). Curiosity and wonder help us "embrace questions" while courage and humility help us "imagine new possibilities". Here we elucidate critical love's holding of complexity, which requires that we can "engage with multiple [potentially contradictory] understandings" at once. In this way, critical love holds wariness around the idea of accessing an objective understanding and invites us to proactively recognize – and even celebrate – our subjectivities.

Recognition of our subjectives reminds us of the ever-presence of our history and position (Milner, 2007; Aguirre et al., 2017), and thereby leaves space for holding multiple understandings at once. Indeed, "queer theory attempts to understand the world (as do all theories) but makes this attempt while simultaneously recognizing the impossibility of ever developing a complete or unbiased explanation" (Shlasko, 2005, p. 125). Deeper still, critical love celebrates our subjectivities as reflective of our (individual and collective) capacity for transformation: "Queer thinking argues subjects and subjectivities are fluid, unstable, and perpetually becoming" (Browne & Nash, 2010, p. 1). In this way, critical love frees us from the chase of the unknowable and illusory capital 'T' 'Truth'. "The point of queering is not to fit the 'all' into one or more norms, but to mark, deconstruct, and pass beyond the regulatory impulse to fit being(s) into finite categories" (Fifield & Letts, 2014, p. 398). Rather, no one person or group of persons holds 'the' truth and critical love calls us to not just continually learn from one another, but also recognize (even celebrate) our dependence on one another for that learning. In an interview with Davis and Sarlin (2008), Michael Hardt describes love "as a social muscle" that has to involve "a kind of training... in cooperation with many". Likewise, Lanias and Zembylas (2015) write, drawing upon Nancy (2003), that "the transformational power of love arises precisely from the fact that it breaks the I" (p. 38).

We use *interdependence* to refer to this reciprocal dependence on one another for mutual knowledge production. For Darder (2017), in the classroom that reciprocity occurs through dialogue: "dialogue cultivates and nurtures students' curiosity and imagination toward a greater critical capacity to confront dialectically the content of their study and the task of constructing new knowledge" (p. 91). While critical love views dialogue as a manifestation of interdependence, there lies a deeper orientation at work. The RLP challenges us to "see no stranger" and critical love embraces the challenge as an invitation to depend on one another for our perpetual transformation. As Coles welcomes in conversation with colleagues Lyiscott et al. (2021), "I invite you to be transformed by my being, a being often falsely constructed as needing to be transformed by dominant power structures." (p. 3). Critical love calls us to transform one

another not just through dialogue, but also through relationships and curiosity – even in the face of ever-present pressure by the dominant systems of our context.

In this mutual transformation lies a deep sense of needing one another: I come to know myself and our world more deeply only in relation with others, whom I recognize as parts of myself I had not yet known. Implicit in this conceptualization of interdependence lies a perpetual expansion of each individual's meaning of “we”. Critical love pushes back on worldviews built on “us” and “them”, aligned once again with queer theory's rejection of binaries (Fifield & Letts, 2013). Traditional academic structures in mathematics, in contrast, overemphasize the transformation of students by instructors – which some authors describe as mathematical enculturation (Bishop, 1991; Perrenet and Taconis, 2008) – and thereby position students as a “them” separate from an “us” of instructors. Such a division limits the reciprocity of mutual transformation, and critical love views hierarchy as an obstacle here.

As such, critical love *interrogates power relations*. Like Lanas and Zembylas (2015), we view love as “always connected to power” (p. 38) and as a powerful force for “the long-term process of transforming power in our institutions and everyday lives” (p. 40). Drawing upon prior conceptualizations of Nepantla – a liminal space at the in-between of two worlds (Anzaldúa, 2002; Gutiérrez, 2012) – and tension (Gutiérrez, 2015; Myers et al. 2023), Hagman et al. (2024) highlighted the tension between “power over” and “power with” in transformation efforts in pedagogy. Critical love likewise embraces this idea of Nepantla, and reaffirms the deep value of students as partners in recognition of students’ “unique perspectives and contributions” (Green & Lopez, 2015, p. 19; also see Matthews et al., 2018; Cook-Sather et al., 2018; Bolick et al., 2024). At the same time, critical love holds wariness around the implicit binary that positions “power over” as a sort of opposite to “power with” or “shared power” (Brooks, 2017, p. 107). A binary framing might (subconsciously) celebrate “students as partners” as an “opposite” to more traditional “power over” models.

Instead, critical love asks: what could a non-binary conceptualization of power look like? Critical love calls for us to consider the varied forces of power in our lives – interpersonal and systemic – and not only seek out “power with” others, but also exercise deep trust and vulnerability by welcoming others to have certain “power over” us. As Darder (2017) writes, “teachers must recognize that there exist no human relationships, let alone educational practices, without the explicit or implicit existence of authority... [and] authority expresses itself in a multitude of ways” (p. 100). We must consider the systems and relations which give us power over others and give others power over us, and be critical of that power with a blend of courage, humility, and interdependence. Drawing upon Lewis's theorization of ‘presence’ (2022), Ahluwalia (2022) calls us to open up a “‘third space’ for more complicated, relational analyses of power” (p. 315). Critical love lives inside this “third space”.

Critical love therefore requires that we *envision* alternative – or “third” – spaces of research, education, and relationship. Indeed, critical love knows us to be capable of, as Ohito envisions, “a future pluriverse expansive enough for myriads of humans to coexist in and cohabit peacefully” (Lyiscott et al., 2021, p. 5). Likewise, in their pedagogical guidance on culturally-relevant STEM education, Tran and Pierre (2025) describe love as “visionary” in its movement “toward justice”, and that “love emphasizes the relationality of shared humanity, a type of love that is deeply personal, political, and collective” (p. 5). In pursuit of such a vision, the RLP grounds in the concept of reimagining: “to reimagine is to explore a vision of a relationship, community, and world where we all flourish” (2020, p. 80). We note not only a growing body of literature on (re)humanization of mathematics, but also a growing body of literature on

flourishing in and through mathematics (Su, 2017; Tunstall and Ferkany, 2017; Hill et al., 2021; Khan et al., 2021; Su, 2024). In cultivating a vision for the world in which we all flourish, we not only push back against injustice, but also ground in a vision of collective liberation. Such envisioning requires immense courage: “Dare to reimagine an outcome, a solution, a relationship, a future that does not leave anyone behind... imagine cultures, contexts, and institutions that run on love instead of fear” (Revolutionary Love Project, n.d., p. 2).

Foundational Elements of Critical Love

The prior seven components form the core of critical love. We turn to two foundational elements, which support the translation of more abstract notions into action. As the RLP reminds us, “theory can guide us but [it] must also be activated through action” (Canlas, 2020, p. 11).

The practice of critical love requires **embodiment**. As a social justice educator, Brooks (2017) argues that “love must be embodied” (p. 111) for knowing “intellectually” is “insufficient to bring about justice” (p. 109). Here we arrive at a pivotal departure in our conceptualization of critical love from the “epistemic love” conceptualized by STEM educators Tran and Pierre (2025), which they describe as having four typologies: tangibility, emotionality, intellectuality, and audacity. We see in these an overemphasis on the role of the mind, for love also lives in the body and it is through the body that we find deeper transformation in our ways of being. As Ahluwalia (2022) notes, “the body knows” and it is through attunement with the body that we can “understand what is being stirred up in [us] as [we] try to do this work” (p. 311). We must practice awareness of the sensations that arise in our bodies, and exercise loving wonder of their meaning. Indeed, the RLP grounds in the metaphor of cyclical “breathing” and “pushing”, for love is a perpetual “choice to labor and take action” (2020, p. 12). Without breath, we burnout; without push, we get stuck.

Critical love affirms that we are so much more than fragmentary minds elevated by elaborate flesh vessels. We are whole human beings, “not mathematical machines. We live, we breathe, we feel, we bleed.” (Su, 2017). Likewise for the people all around us. In the classroom, for example, Darder (2017) affirms that the “perception of our students as embodied human beings” is fundamental to “a liberatory classroom practice”, for “a student enters the classroom as a whole person and should be respected and treated as such” (p. 87). Embodiment calls us to ground in a perception of others as embodied human beings. Through such a grounding, we engage in a continual practice that teaches our bodies new ways of moving and being.

Finally, critical love calls us to **discernment**. At the tension point of “simultaneously holding countless complexities” lies a fiercely tangled struggle of determining when and how to love in each moment. We note a possible orientation which resonates for us: the idea of “returning to our name(s)”, employed by Lyiscott et al. when they first elucidate (2021) and later reflect (2023) on their editorial vision for *Equity and Excellence in Education*. Through the lens of “naming”, discernment calls us to thoughtful consideration of what constitutes our names, and how we might return home to them “in loving accountability” (2023, p. 259). With courage, can we discern “who and what we fear” (2021, p. 5) and how fear pushes us from our names? With humility, can we discern our fullness of self and when we stray from it? With curiosity, can we discern “who should do the listening in a given moment” (Canlas, 2020, p. 69)? Can we discern with whom we might grow our interdependence? Can we discern which systems give us power over others and how to hold it, if we even should? Can we discern when we avoid others having power over us, and why? Can we listen to our bodies when they communicate, and discern the message?

Implications for Practice

As Johnson et al. (2018) wonder, couldn't "a pedagogy of love" serve "as an embodied practice that influences holistic teaching?" (p. 47). We affirm a resounding yes, and highlight some implications of critical love's *embodiment* on how we regard our students. We chose embodiment for this short paper as it deeply challenges our orientation to the teaching of mathematics, a discipline often positioned as disembodied and outside of human activity (de Freitas & Sinclair, 2013; Gutiérrez, 2017; Battey & Marshall, 2024; McNeill et al., this issue). We recognize the field of embodied cognition in mathematics education as a partial implication (cf. Edwards et al., 2014; Abrahamson, 2020; Khatin-Zadeh, 2022; Soto, 2024; also see MacArthur et al., 2025, p. 24-25 on "body and emotions" in the math classroom). However, we argue that critical love maintains an even deeper call. Darder (2017) cautions against "standards [in the classroom] of disembodied expectations removed from the organic responses of student bodies" where "teachers conduct themselves 'professionally' in ways that distance them from the possibility of expressing authentic human love" (Darder, 2017, p. 83). Critical love calls us to remember the body as an indivisible unit, not merely a vehicle for "cognition".

A simple practice might invite students to attune to their breath in the math classroom (cf. Peper et al., 2016; Walkins, 2021). For another practice, I reflect on my first TA assignment in a calculus class of 200 students: for all exams, the instructor – in an act of critical love – would bring in a small "test box" of extra snacks, water, and personal hygiene supplies to support students in caring for their bodies. Indeed, some neuroscientific research has considered the impact of nutrition on brain function (Gómez-Pinilla, 2008), while numerous pedagogical studies have considered the impact of snacks (Kanarek & Swinney, 1990; Burrows et al., 2017) and hydration (Beezhold et al., 2018; Pawson et al., 2013) on university students' success.

Critical love also carries potential for teacher professional development. In our literature review, we highlighted Green & Lopez's (2025) recent study on training of STEM preservice teachers, in which they found that teachers "rehearsed dominant discourses" while also giving "strong commitments to social justice in terms of radical love" (p. 22). Rather than avoid the term "love" in training – and have it called upon anyway – we wonder about the incorporation of thoughtful dialogue on critical love as "an anchor that empowers us to humanize each other" (Tran & Pierre, 2025, p. 5). Hauk et al. (2014) draw upon Bennett's (2004) model of intercultural sensitivity to foster an "intercultural orientation" for post-secondary math instructors. We offer critical love as a potentially fruitful framing, for we find alignment between critical love and Bennett's "stages" of ethnorelativism (acceptance, adaptation, and integration). Moreover, we argue that the linearity and strong hierarchy of Bennett's model limit its application, while critical love actively avoids such structures via queer theory. Indeed, Lanás (2017) calls for "intercultural education in teacher education" that moves away from "seeing the relationships between teacher and learners as static" and is "connected more explicitly to a theoretical conceptualisation of love" (p. 1). As Green & Lopez (2025) put it, "further research could explore how love, serving as a foundation for STEM education, can prompt teachers to reevaluate... notions of individualism [and] competition" (p. 25), notions the prevailing culture of mathematics channels into broader STEM (Battey & Marshall, 2024).

Lastly, we offer critical love as an orientation in our research work. In our literature review, we highlighted various STEM and mathematics education research which call upon love without a deeper theoretical framing (Yeh et al., 2021; Paris & Alim, 2014; Basile & Azevedo, 2022; Black et al., this issue). With an orientation of critical love, we can expand our openness to new research perspectives and engage in generative loving (self-)critique.

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