Modeling the Relationship Among Classroom Climate, Math Self-Concept, and Math Interest in College: A Proposed Humanizing Framework

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Mathematics self-concept and interest are key predictors of student achievement and future career choices (Geisler et al., 2023; Pietsch et al., 2003). Studies have demonstrated that the two psychological processes of motivation can be related to the psychosocial environment in the classroom, also termed as classroom climate (Erdem & Kaya, 2024) for students at all educational levels in mathematics courses (Sekone, 2025; Wang et al., 2017; Yin et al., 2020). However, those studies were mostly grounded in Eurocentric sociocultural theories including Moos's (1979) framework, Bronfenbrenner's (1979, 2005) ecological systems, Vygotsky's sociocultural (Walshaw, 2016), and the four-phase model of interest development (Hidi & Renninger, 2006) to either describe the classroom climate and/or examine its contribution to self-concept or interest in mathematics (e.g., Stone-Johnstone, 2023; Yang, 2015; Yin et al., 2020).

To gain a comprehensive and sociopolitical understanding of the mechanism of the causal relationships among the three constructs, this study proposes a framework that integrates sociocultural Eurocentric theories with the African philosophy of Ubuntu (Blackwood, 2025; Tutu, 1999) which translates to "I am, because we are" (Mbiti, 1989, p. 106). Ubuntu emphasizes the interconnectedness and shared humanity of all people and in education, Ubuntu pedagogy is considered "a learner-centered pedagogical approach that promotes democratic atmospheres where students feel respected, cared for and have the freedom to co-learn in an environment where power relations are grounded in humanism." (Ukpokodu, 2016, p. 155).

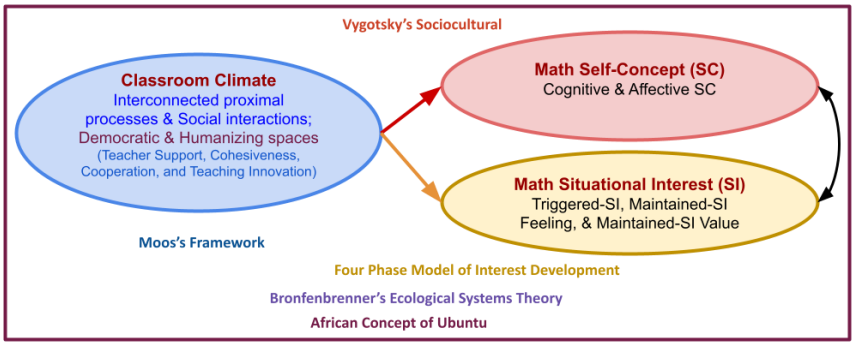

Figure 1. Hypothesized Model of Causal Relationships Among Classroom Climate, Self-Concept, and Interest

In the poster, I include the modeling process that resulted in the hypothesized model (see Figure 1) depicting how the humanizing African philosophy of Ubuntu can provide a sociopolitical lens that enriches the descriptive and/or explanatory power of the four Eurocentric sociocultural theories to gain a comprehensive understanding of the influence of classroom climate on self-concept and interest in mathematics. From this study, RUME researchers could identify avenues for using this model to inform classroom practices and curriculum design aimed at fostering mathematics motivation. I also discuss how my future research will collect quantitative surveys and qualitative data in Calculus I courses to test the proposed humanizing framework.

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