**Background**

Geradi, Goette, and Meier (2010) of the Federal Reserve found that mortgage foreclosure was related to deficiencies in basic arithmetic calculations that most children are expected to have mastered by middle school, such as computing half of 300 or 10 percent of 1000. Low math ability is also associated with unemployment, poor health, and other social problems in adulthood. Children from minority backgrounds are more likely than their non-minority peers to become struggling math learners, although the sources of this achievement gap are not well understood, particularly in children below eighth grade. We propose that identity formation (e.g., ethnic identity, academic identity, gender identity) may underpin math difficulties in this group of children.

**Theoretical Framework and Rationale**

Bronfenbrenner’s social ecological model situates individuals within multiple systems (e.g., microsystem, mesosystem, exosystem, macrosystem, etc.), in which dynamic interactions occur and relationships build socially, culturally, and psychologically to encourage healthy development (Bronfenbrenner & Morris, 2007). The relation between discrimination and bias that affect minority students can be researched to inform more effective school experiences, achievement, and satisfaction by developing an integrated, ecological view of the development of the child rooted in socio-cultural understandings of the specific experiences of the child.

Ethnic minority students are glaringly underrepresented in advanced math classes and math-related fields in the U.S. (NCSES, 2013). Undergirding this longstanding trend is the pervasive stereotype that Blacks and Latinos are inherently less academically competent, motivated, and engaged than their non-minority peers (Steele, 1997). Minority-status children develop awareness of stereotypes earlier than majority-status children partly due to the encounters with biases directed toward their stigmatized groups (McKown & Weinstein, 2003). These attitudes may begin as early as first grade and could impact later mathematical performance and preference (Cvencek, Meltzoff, & Greenwald, 2011). Indeed, prejudiced and unequal treatment of marginalized children can relate strongly to the negative development of children’s identity, feelings of inadequacy and not belonging, lowered self-efficacy, less motivation to succeed, and repeated failure (Clark & Clark, 1950; McKown & Weinstein, 2008). It is therefore crucial to understand the development of early stereotype awareness in young ethnic minority children. Specifically, a better understanding is needed about how early stereotype awareness manifests itself in minority children’s learning and the long-term implications for their academic performance, including mathematics.

**Research Questions**

This program of research aims to identify the socio-ecological and social cognitive underpinnings of math difficulties in minority children by focusing on the following questions:

1. How do minority children in kindergarten through seventh grade understand and operationalize their ethnic identity, stereotype vulnerability, math identity, and academic self-concept?
2. Do these processes relate to mathematics achievement?
3. Does gender and parent attitudes/involvement moderate the relation between these processes and mathematics achievement?
4. How does school context influence the relation between ethnic identity, vulnerability and mathematics achievement for minority children?

**Measures (Abbreviated)**

**Social-Cognitive Processes**

- Math Anxiety Rating Scale (Suinn et al., 1988)
- Gender Stereotype Vulnerability in Math Scale (adapted from Muzzatti & Agnoli, 2007)
- Stereotype vulnerability scale (Aronson & Inzlicht, 2004)
- Multi-Ethnic Identity Measure (Phinney, 1992)
- Academic Self-Concept Scale (Marsh, 1990; 1993)
- Parental Educational Expectations (Jeynes, 2007)
- Academic Self-Efficacy Scale (Muris, 2001)

**Conceptual Framework**