Do Triarchic Model of Grit Dimensions Predict Subsequent Achievement Goals, Math and Science Engagement, and Well-Being Outcomes among Children in Hong Kong and Macau?

Effectively engaging children in math and science remains a pressing issue for many educators and policy makers. Research shows for example, that middle school and high school students experience decreasing academic motivation and engagement in math and science over time. There has been also growing concern about how the COVID-19 pandemic may have exacerbated these educational problems, especially where face-to-face classes were suspended. Thus, it is critical to pinpoint psychological resources that facilitate students' engagement in science, technology, engineering, and mathematics (STEM) subjects. The principal investigator's previously funded project has identified the triarchic model of grit (TMG) –conceptualized as the tendency to show persistence, passion, and adaptability for long-term ambitions– as a key antecedent of achievement goals and engagement in math and science in high school students in Hong Kong, mainland China, and the Philippines. Although such findings and the existing literature indicate that psychological resources like grit and achievement goals may operate differently along the developmental continuum, there is dearth of research on the educational and psychological benefits of grit in young Chinese children.

Drawing from the hierarchical model of achievement motivation, this research extends the impacts of the PI's previous project by examining the role of the TMG's dimensions in academic engagement in math and science and well-being outcomes, such as positive emotions and psychological flourishing. It will generate insights into the mediating effects of achievement goals because prior research shows that certain goals (e.g., mastery-approach goals) serve as psychological processes linking grit to engagement. Put simply, grit may relate to increased math and science engagement and well-being, through its association with mastery-approach goals.

The project will use a three-wave longitudinal design to assess: (a) the longitudinal relations of the triarchic model of grit with math and science engagement and well-being; and (b) the mediating role of achievement goals on the association between grit and engagement outcomes as well as well-being, in around 1,400 primary school students in Hong Kong (n = 700) and Macau (n =700). This research will expand the literature on the psychological processes that account for the benefits of grit on children's engagement in math and science, and well-being. Further, this project will provide insights into the educational and psychological payoffs of grit in cities within the Greater Bay Area (GBA), which may be relevant in designing policy initiatives that can strengthen mutual collaboration in the field of education in the GBA region.