Mindset Scholars Network’s Portfolio of Research on Mindsets and the Learning Environment

October 2017

In Fall 2016 the Mindset Scholars Network launched an interdisciplinary initiative to explore how learning environments shape the mindsets students develop about learning and school. The network issued a request for proposals (RFP) to network members and external collaborators for interdisciplinary studies that would utilize recently collected, large-scale datasets. With funding from the Raikes Foundation, Overdeck Family Foundation, Bill & Melinda Gates Foundation, and Joyce Foundation, the initiative’s aim is to rapidly generate scientific evidence about how schools and educators at all levels can convey messages to students that they can grow their ability, that they belong and are valued at school, and that what they are doing in school matters. Fourteen projects have been funded through two rounds of the RFP, one in Fall 2016 and a second round in Fall 2017.

PROJECTS FUNDED IN FALL 2016

A big biodata approach to mindsets, learning environments, and college success

Principal Investigator: Sidney D’Mello
Co-PI: Angela Duckworth
Other Team Members: Stephen Hutt, Margo Gardner, Parker Goyer, Donald Kamentz, Chad Spurgeon, Lauri Bonacorsi
Team Disciplines: Computer Science, Developmental Psychology, Education & Human Development

Primary Research Questions:
• Which mindset-related factors gleaned from student biographical data (e.g., extracurriculars, work experience) best predict college success?
• How do students’ learning environments in high school influence the mindset-related factors that predict college success?

The nature and reproducibility of mindset effects across diverse contexts

Principal Investigator: Mesmin Destin
Co-PIs: Elizabeth Tipton, Stephanie Fryberg, David Yeager
Other Team Members: Robert Crosnoe, Chandra Muller, Paul Hanselman
Team Disciplines: Psychology, Statistics, American Indian Studies, Sociology

Primary Research Questions:
• How do mindsets about intelligence vary across a wide range of communities nationwide?
• How much do perceptions about the nature of intelligence explain the relationship between SES and academic performance compared to other factors?

The role of psychologically wise teaching in student achievement

Principal Investigator: Geoffrey Cohen
Co-PI: Tanner LeBaron Wallace
Other Team Members: Ronald Ferguson
Team Disciplines: Psychology, Education, Economics

Primary Research Questions:
• How are teachers creating cultures of growth, belonging, purpose, and affirmation through their daily instructional practices?
• What “psychologically wise” instructional practices distinguish between low and high academic growth classrooms?
**Learning Mindset Development in Co-requisite Courses Across Learning Contexts**

Principal Investigator: **Chris Hulleman**

Co-PI: **Stephanie Wormington**

Other Team Members: **Elizabeth Tipton, Ron Ferguson, Tim Wilson**

Team Disciplines: Psychology, Education, Statistics, Economics

Primary Research Questions:

- How do learning mindsets develop during co-requisite courses (courses in which postsecondary students take a one-credit support course alongside foundational math, English, and writing courses—rather than a non-credit developmental course)?
- How do individual student, classroom, and institution-wide factors affect the relationship between students’ learning mindsets and academic performance?

**Developmental, Neural and Psychosocial Correlates of Mindset Among Low-Socioeconomic Adolescents from Two Cultural Groups**

Principal Investigator: **Mary Helen Immordino-Yang**

Co-PI: **Camille Farrington**

Other Team Members: **Xiaofei Yang, Christina Krone**

Team Disciplines: Neuroscience, Education

Primary Research Questions:

- Is it possible to extend mindset programs to target broader psychosocial and neurobiological health outcomes among adolescents?
- How do cultural influences on social brain development explain how exposures to cultural norms and values shape styles of social-emotional and self-processing?
- Are there practices and policies that could more effectively support the development of learning mindsets by strategically leveraging opportunities for downtime and reflection with opportunities for concrete productivity?

**Projects Funded in Fall 2017**

**A Neurobehavioral Investigation of the Relationship Between Adverse Experiences and Learning Mindsets in Children**

Principal Investigators: **Andrei Cimpian, Nim Tottenham**

Other Team Members: **Joseph Robinson Cimpian, Kali Trzesniewski**

Team Disciplines: Psychology, Economics, Education, Neuroscience

Primary Research Questions:

- Can a growth mindset serve as a protective factor that allows some children to “bounce back” despite facing considerable hardship?
- What experiences of children faced with early adversity might lead them to adopt a growth mindset?
- What are the neurobiological components that explain the link between children’s experiences and their mindsets?
The effects of the African American Male Achievement (AAMA Program)

Principal Investigator: Thomas Dee
Co-PI: Emily Penner
Team Disciplines: Economics, Education
Primary Research Questions:

- What were the effects of AAMA participation on measures of academic engagement such as chronic absenteeism and the probability of being suspended or expelled?
- What are the effects of AAMA participation on diverse academic outcomes such as grades in core academic subjects, test performance, school dropout, and college matriculation?
- Do social-psychological mechanisms mediate the effects of AAMA?
- Is there any evidence that the presence of an AAMA program had “spillover” effects for non-participating students in the school?

Social and environmental influences on motivation for learning: The role of childhood adversity in affecting motivation among older children and adolescents

Principal Investigator: Katie McLaughlin
Co-PI: Rob Crosnoe
Team Disciplines: Sociology, Psychology
Primary Research Questions:

- Does exposure to childhood adversity influence mindsets about intelligence, sense of belonging at school, and perceived utility value of school and do these associations vary across distinct types of adversity? (threat (i.e., exposure to violence), deprivation (i.e., an absence of cognitive and social stimulation), and socioeconomic disadvantage)?
- Are mindsets about intelligence, belonging, and perceived utility value mechanisms that link diverse forms of childhood adversity to poor academic performance later in childhood and adolescence?

Developing spartan persistence: Connecting students to resources in a public university

Principal Investigator: Barbara Schneider
Co-PIs: John T. Yun, Soobin Kim
Team Disciplines: Sociology, Economics, Education
Primary Research Questions:

- Is there value add to assigning students to both a light-touch mindset intervention at orientation and a follow-up mentoring program offered by the university that provides support throughout the first year of college?
- Do any of these effects differ by key subgroups (e.g., race/ethnicity, gender, first generation in college status)?
- Do outcomes differ depending on characteristics of the mentor who works with the student during the first year of college?
- What causal mechanisms might explain how the interventions achieved their effects?

Learning mindsets, teacher practice, and school organizations: Becoming Effective Learners Survey and 5Essentials

Principal Investigator: Camille Farrington
Co-PI: Shanette Porter
Other Team Members: Christopher Young, Sangyoon Park, Faye Kroshinsky
Team Disciplines: Education, Psychology, Psychometrics
Primary Research Questions:

- How is school organization (e.g., effective leaders, collaborative teachers, involved families, supportive environments, ambitious instruction) related to students’ learning mindsets and performance?
- How are teachers’ mindsets, beliefs about students, and teaching-related beliefs/practices related to students’ learning mindsets, learning strategies, and course performance?
- What role do schools and teachers play in disparities in student learning mindsets across students’ background characteristics?

Language as thought: Using natural language processing to investigate mindsets, learning environments, and college success

Principal Investigator: Sidney D’Mello
Co-PI: Angela Duckworth
Other Team Members: Stephen Hutt, Margo Gardner, Donald Kamentz, Abigail Quirk, Laura Allen
Team Disciplines: Computer Science, Psychology, Education
Primary Research Questions:

- How do mindsets and motivation, as coded from students’ open-ended descriptions of extracurricular activities and work experiences, predict college success and mediate the relationship between extracurricular activities / work experiences and college success?
- Can natural language processing and machine learning techniques be used to automatically measure mindsets and other motivation-related constructs from writing samples at scale?
- How do aspects of students’ high school learning environments moderate the relationship between extracurricular activities or work experiences, mindsets, and college success?