
MINDSETS IN LEGAL EDUCATION

Evaluating Productive Mindset Interventions that Promote Excellence on California's Bar Exam

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Executive Summary

As Mindsets in Legal Education (MILE) researchers, we designed, administered, and evaluated the online productive mindset intervention referred to as the *California Bar Exam Strategies and Stories Program* (the program). In partnership with the State Bar of California (SBC), we streamlined and simplified the enrollment process while improving participation on the July 2018 and July 2019 California bar exams.

1. Proven effectiveness

Working closely with the SBC, we conducted a preliminary analysis of the program in January 2020. The results suggest that the program increases the likelihood of passing the bar exam, after controlling for LSAT and GPA, by between 6.8 to 9.6 percent, depending on the analysis conducted.

2. Boost for first-generation and underrepresented minority students

The program particularly helped applicants who were first-gen college students and underrepresented minorities, according to our analyses.

3. Reductions in psychological friction

Our analyses suggest that the productive mindset intervention succeeded by reducing psychological friction. Among applicants studying for the exam, it fostered stress-is-enhancing and growth mindsets that helped them succeed in the face of stress, anxiety, and mistakes.

In light of these results, we recommend that the SBC offer the *California Bar Exam Strategies and Stories Program* to future cohorts. Future test takers would likely benefit from the stress-is-enhancing and growth mindsets that the program fosters. Adaptive mindsets may be especially important in the immediate future, as applicants face adversity associated with COVID-19. We anticipate updating the program to address these new sources of psychological friction.

I. Overview of the Productive Mindset Intervention

The challenge and the opportunity

Passage rates on the California bar exam are at the low end of historical ranges and reveal persistent racial, ethnic, and socio-economic disparities. These problems suggest a need for research into factors that shape bar exam performance and for interventions that improve bar exam performance. This need is acute where racial and ethnic minorities and socio-economically disadvantaged groups are concerned. Resolving these challenges may enhance opportunity. Greater bar passage may motivate prospective law school applicants and expand the value of legal education by fulfilling the commitment that law students who expend considerable effort and resources can thereby gain access to the legal profession.

Psychological friction: A root cause

In addition to a high-quality legal education and adequate financial aid, productive mindsets may be important for success in law school and during bar exam preparation. Worries about ability, potential, belonging, and stress are commonplace among students during the transition into law school, within law school classes, and while studying for the bar exam. This psychological friction can prevent students from achieving their potential (e.g., Murphy et al., 2007; Crum, et al., 2013; Yeager et al., 2019), including by draining students' executive functioning and cognitive resources and thereby lowering persistence and performance (e.g., Kamins & Dweck, 1999, Walton & Cohen, 2007; 2011).

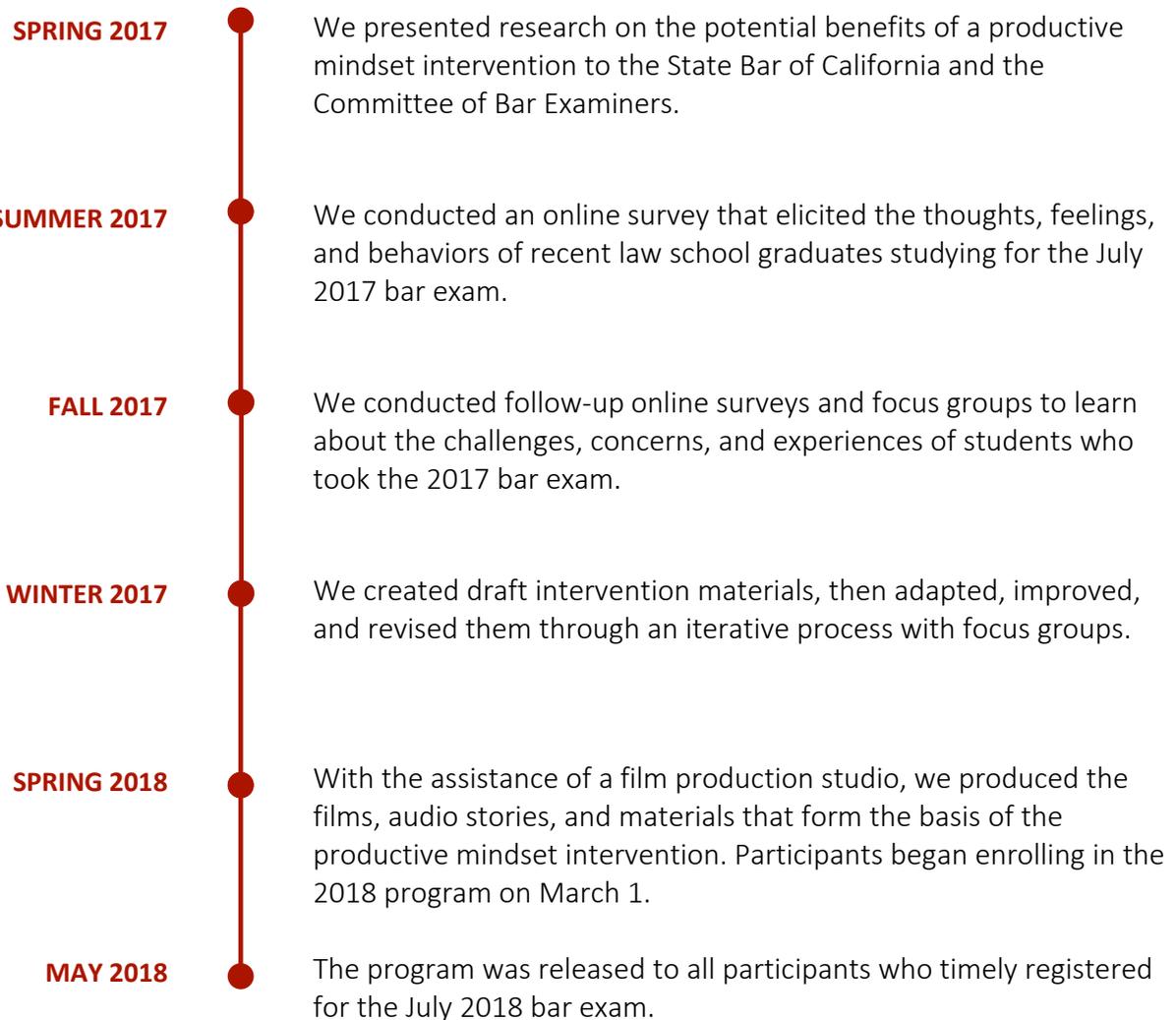
Productive mindset interventions: a way to reduce psychological friction

Productive mindset interventions mitigate the harms associated with concerns about potential, belonging, and stress and spur motivation and performance (Walton & Wilson, 2018). The *California Bar Exam Strategies and Stories Program* was developed to help test takers find productive ways to interpret the challenges, obstacles, and negative psychological experiences associated with preparing for the bar exam. Its goal was to improve bar applicants' test-taking experiences and exam performance.

Design of the Intervention (Summer 2017 – Spring 2018)

In collaboration with the State Bar of California, we engaged in a user-centered design process to create a well-tailored, psychologically attuned, optimized productive mindset intervention for law school graduates taking the California bar exam for the first time.

1. Timeline



2. Design-Stage Findings

The design-stage surveys and focus groups that we conducted suggested bar exam takers experienced stress and anxiety when preparing for the bar exam. One set of obstacles centered on the exam and applicants' feelings about preparing for it. Examples included:

- **FEAR OF FAILURE**
Applicants ruminated on failing the exam, especially if they were in the bottom half of their law school classes.
- **TIME**
Insufficient time to prepare for the exam and associated stress or panic were common complaints.
- **ATTENTION SPAN**
Difficulty focusing for hours and days on end was another substantial stressor.
- **CONFIDENCE**
Making mistakes on practice exams or performing worse than others on them produced negative expectations in applicants and reduced their confidence.
- **NEW MATERIAL**
Learning a high volume of material never covered in law school created stress, especially among those who skipped material early in the bar study process.
- **LACK OF FEEDBACK**
Infrequent and untimely feedback from bar review courses and distrust of self-assessments left applicants uncertain about their progress toward bar passage.
- **BAR REVIEW COURSES**
Remedial work on top of 10- or 12-hour study days and low scores on practice problems brought stress and anxiety.

A second set of obstacles involved applicants' personal situations:

- **FINANCIAL CONCERNS**
Reducing or ending paid employment while studying for the bar could make money tight.
- **RELATIONSHIPS**
Those with obligations to care for dependents faced additional financial burdens or felt caught between neither being “good caregivers” nor “good students.”
- **JOB SEARCHES**
Those without jobs lined up faced the stress and anxiety of searching for a job while studying or of having temporarily abandoned the search for the interim.
- **UNEXPECTED CRISES**
Crises increased stress, could be hard to mitigate, and could be detrimental to personal well-being.
- **LONELINESS AND ISOLATION**
Studying for the bar exam could mean time away from family members or loved ones. Often the kinds of support they received (e.g., “You are really smart, you have nothing to worry about.”) was counterproductive and increased anxiety about failing the exam.
- **SELF-CARE**
Applicants reported sleeping poorly, having anxiety attacks, eating junk food, drinking alcohol, cutting back on time with loved ones, and being unable to exercise.

This reduced well-being and the ability to mitigate stress and anxiety.

The *California Bar Exam Strategies and Stories Program* was designed to help applicants with challenges such as these.

Delivery of the Productive Mindset Intervention (Summer 2018 and Summer 2019)

Online delivery of the *California Bar Exam Strategies and Stories Program* came in the summers of 2018 and 2019. In partnership with the State Bar of California, we offered the program to all applicants for the July bar exams. Applicants had the opportunity to enroll during registration, which began March 1. Doing so included consent to participate in the program and permission for the researchers to analyze the applicant's bar exam result. Enrollees who timely registered for the exam received a link to the online program in mid-May.

The *California Bar Exam Strategies and Stories Program* incorporated an introductory film, audio and written stories from prior test takers, and participants writing letters to future test takers about how to use the stories' insights and strategies. It had two conditions:

- (1) the active control condition, which provided bar exam study strategies; and
- (2) the treatment condition, which provided both the productive mindset intervention and bar exam study strategies.

The program was designed as a randomized control trial (RCT), which is the gold standard for examining efficacy of interventions. Random assignment of test takers ensures the random dispersal of student traits (e.g., GPA, demographic details) between conditions. Where possible, block (or stratified) random assignment is also recommended. We used blocks to ensure that equal proportions of men, women, racial and ethnic groups, U.S. law students, first-time test takers, and repeat test takers were randomly assigned into the treatment and into the control condition. Moreover, we statistically controlled average prior performance scores (i.e., LSAT and law school GPA) so that they were equal between treatment and control conditions. This left the intervention treatment as the only systematic difference between the conditions.

II. Evaluation of the Productive Mindset Intervention

Bar exam performance data became available in November 2018 and November 2019. The research team conducted onsite visits with the State Bar of California in December and January after the exam to investigate the effectiveness of each year's administration of the program. SBC researchers validated publicly available bar passage lists, and we worked closely with SBC researchers to evaluate the intervention.

Bar passage was the primary outcome of interest because an increase in bar passage rates in the intervention condition provides evidence of the effectiveness of the productive mindset intervention. We also assessed psychological outcomes, including whether participants adopted more adaptive mindsets about stress and mistakes. This executive summary provides our initial findings.

Enrollment and Participation in the Program

In March of 2018 and 2019, $n = 2,796$ applicants timely registered for the bar exam and enrolled in the *California Bar Exam Strategies and Stories Program*. All consented to allowing the researchers to analyze the effect of the program. The RCT protocol assigned $n = 1,391$ applicants to the control condition, and $n = 1,405$ to the treatment condition.

In mid-May, we sent enrollees ($n = 2,796$) a link to the program and follow-up reminder emails. Among enrollees, $n = 1,693$ (60.55%) clicked on the link to begin the program; $n = 630$ (37.21%) completed all lessons, modules, reflective writing exercises, and a letter to a future test taker, and thereby completed the program. Of the participants who completed the program, $n = 529$ (83.96%) were first time takers, while $n = 101$ (16.03%) were repeat test takers.

Predictors of Bar Exam Passage

We turn first to predictors of bar passage among applicants who enrolled in the program after timely registering for the California bar exam. These analyses combined across the July 2018 and July 2019 cohorts of applicants who enrolled in the program ($n = 2,796$).

1. Do LSAT scores or law school GPAs correlate with passing the July bar exam?

The LSAT score ($r = .41$) and law school GPA ($r = .41$) that enrollees self-reported in March of their exam year positively correlated, about equally, with passing the July bar exam.

2. Do psychological factors correlate with passing the July bar exam?

Among the psychological measures that enrollees completed in March, several relating to self-efficacy correlated with passing the July bar exam. For example, confidence in one's ability to pass the exam positively correlated with performing well on the exam. Conversely, participants who held low levels of self-efficacy—believing that they did not have what it takes to study for the exam or to perform well on the exam—were less likely to pass the exam.

We transformed self-efficacy measures into a validated psychological index of challenge-threat (Jamieson et al., 2016). This challenge-threat index correlated with passing the exam, such that applicants who perceived the experience of preparing for the bar exam as a “challenge,” rather than a “threat” were more likely to pass the exam. Moreover, experiencing stereotype threat also negatively correlated with passing the exam.

3. Do demographic and situational factors correlate with passing the July bar exam?

We next examined the extent to which demographic and situational factors correlated with passage of the July exam among program enrollees who timely registered for the bar exam ($n = 2,796$).

Demographic Factors

We found that participants with higher self-reported socio-economic status (SES) were more likely to pass the exam than those who self-reported lower SES. Applicants who were the first in their family to go to college were less likely to pass the exam, whereas those whose parents had higher levels of educational attainment were more likely to pass it.

There were also modest associations with applicants' race/ethnicity, but not with their gender. Self-identification as white correlated positively with bar passage ($r = .22$), while correlations with bar passage were negative when applicants self-identified as Asian American or Asian ($r = -.11$), and African American ($r = -.15$). Applicant gender (male vs. female) was not associated with bar exam performance.

That is, demographic factors that give rise to greater psychological friction in academic settings correlated with performance on the bar exam. For example, research reveals that students of color and first-generation college students are numerically underrepresented in law schools and experience stereotypes about negative ability that may affect their performance in school (Green et al., 2020; Steele & Aronson, 1995; Canning, Muenks, Green & Murphy, 2019).

Age and legal training also correlated moderately with bar passage. Older participants were less likely to pass the bar exam. Test takers graduating from law schools outside the U.S. and foreign attorneys were less likely to pass, as were international students graduating from U.S. law schools.

Situational Factors

Part- or full-time summer employment negatively correlated with passing the bar exam as did responsibility for caring for dependents (e.g., children or aging parents) while preparing for the exam. Test takers who had failed and were repeating the bar exam were less likely to pass than those taking the exam for the first time.

Evaluating the Productive Mindset Intervention

We now turn to an evaluation of the *California Bar Exam Strategies and Stories Program*.

1. Was the California Bar Exam Strategies and Stories Program effective?

We first conducted a conservative test of the efficacy of interventions known as an intent-to-treat (ITT) analysis. This type of analysis examines the effect on enrollees assigned to the treatment or control condition, regardless of whether the enrollee completed—or even began—the program. Hence, we compared enrollees who timely registered for the California bar exam and received a link to the program in May 2018/2019, even if they never clicked on that link to begin ($n = 2,796$). The sample included enrollees for whom the program was not specifically designed: graduates of foreign law schools and out-of-state attorneys. As is recommended, we controlled for participants' prior performance, LSAT and law school GPA (LGPA). The results of this evaluation were promising: the estimated probability of passing the July bar exam was **6.8 percentage points higher** in the treatment condition (53.3%) than in the control (46.5%) condition.

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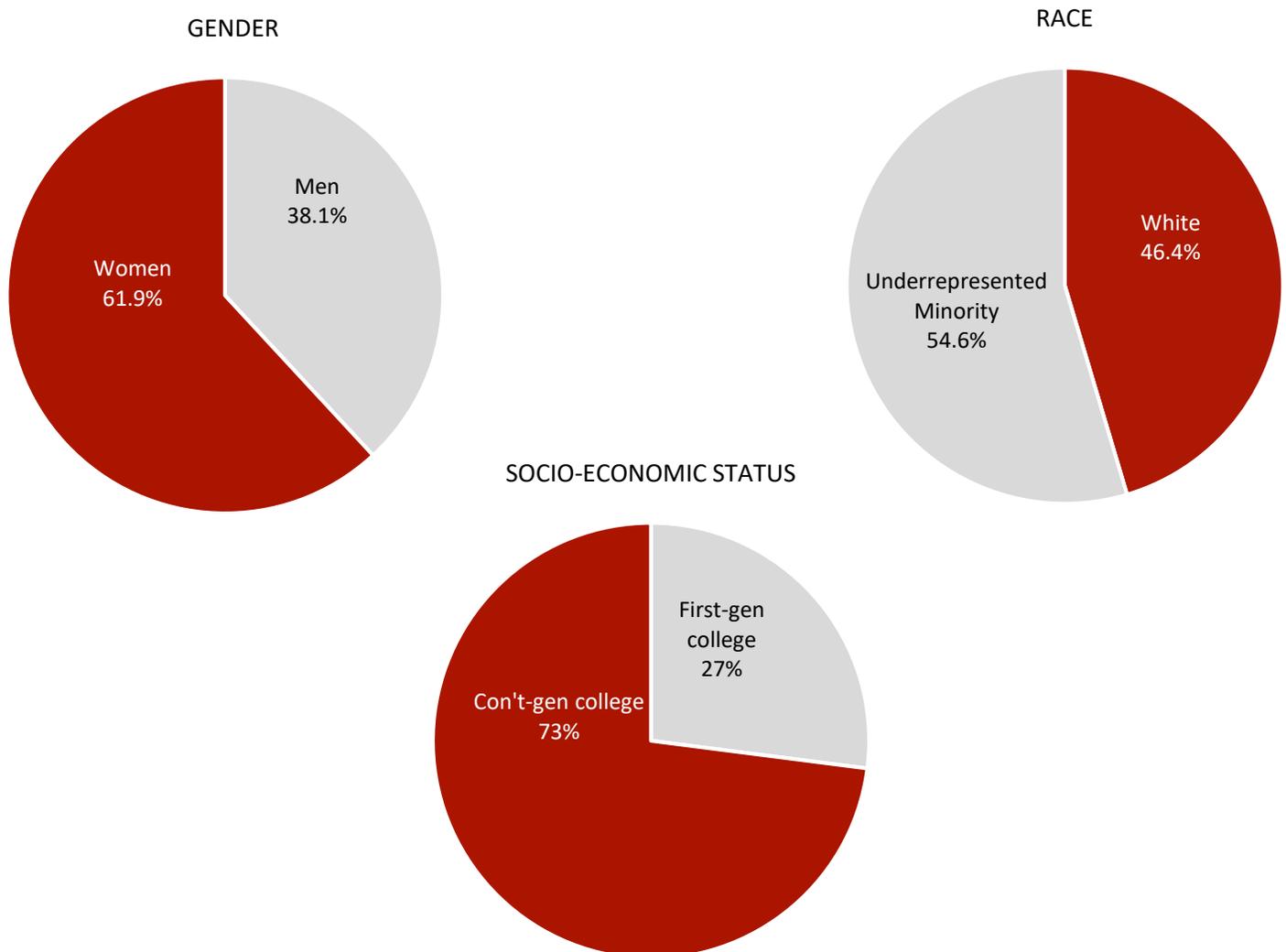
Controlling for LSAT and LGPA, the estimated probability of passing the bar exam was 9.6 percentage points higher in the treatment (59.7%) than the control (50.1%) condition.

We then examined the average-treatment effect (ATE) of the California Bar Exam Strategies and Stories Program among applicants who timely registered for the California bar exam and who completed the program ($n = 630$). This analysis included only those participants who completed all video and written modules of the program, watched the introductory films, read the written stories from prior test takers, and wrote a letter to a future test taker about how to use the insights and strategies shared. Controlling for LSAT and LGPA, the estimated probability of passing the bar exam was **9.6 percentage points higher** in the treatment (59.7%) than the control (50.1%) condition. These results were again promising.

2. Did the California Bar Exam Strategies and Stories Program help members of disadvantaged groups?

Next, we examined the effect of the program among the following historically disadvantaged groups: underrepresented minorities and first-gen applicants. We again combined across 2018 and 2019 cohorts to increase the sample size of participants who completed the program (n = 630). This sample consisted of 38.1% men and 61.9% women; 45.4% white participants, 6.7% African American participants, 20.3% Hispanic participants, and 19.5% Asian/Asian American participants.

DEMOGRAPHIC CHARACTERISTICS



Underrepresented Minority Applicants: Our initial analysis revealed that the program improved pass rates among underrepresented minorities applicants (control = 39.1% vs. treatment = 55.1%), an estimated difference of 16 percentage points. This is a promising result, especially given the persistent racial/ethnic achievement gaps on the bar exam.

The program improved pass rates for underrepresented minorities applicants an estimated 16 percentage points, as compared to the control group.

The estimated probability of passing the bar exam among first-generation applicants was much higher in the treatment condition (70.3%) than in the control (31.8%).

First Gen Applicants: To learn whether the program benefits applicants of lower socio-economic status and might thereby help narrow socio-economic status achievement gap between, we analyzed its impact on first-generation college students (regardless of race). The results were again promising. The estimated probability of passing the bar exam among first-generation applicants was much higher in the treatment condition (70.3%) than in the control (31.8%) condition.

The impact of the program on members of disadvantaged groups was promising and suggests that the California Bar Exam Stories and Strategies Program helped first-gen college students and under-represented minorities.

We wish to emphasize, however, that we are continuing to examine the program's impact on achievement gaps. The sample sizes were small even when combining across years. Replication with a larger sample will reduce uncertainty about the replicability and magnitude of these effects.

3. Why was the California Bar Exam Strategies and Stories Program effective?

The *California Bar Exam Strategies and Stories Program* was designed to improve passage rates by changing how applicants think about the stress that they encounter and the mistakes that they make when studying for the exam. Our initial analyses of the effect of the program on psychological processes suggest that the program worked as intended, by reducing psychological friction

Participants appear to have succeeded in the face of stress, anxiety, and mistakes by adopting more adaptive mindsets. They moved from a stress-is-debilitating mindset to a stress-is-enhancing mindset. They learned to reappraise the anxiety they experienced. And they shifted toward meeting mistakes with a growth mindset rather than a fixed mindset.

These benefits are consistent with the effects of other well-designed psychological interventions. See generally Gregory M. Walton & Timothy D. Wilson, *Wise Interventions: Psychological Remedies for Social and Personal Problems*, 125 PSYCH REV. 617 (2018).

Future analyses will continue to explore the underlying mechanisms and the reasons for the effectiveness of the program.

Conclusion

The research and design team is grateful for this opportunity to update the State Bar of California on this project. More broadly, we are grateful for the opportunity to collaborate with the SBC on improving bar-exam performance through productive mindset interventions.

Research Team Qualifications

The research team is highly qualified to conduct the project. The team includes members of the College Transition Collaborative (<http://collegetransitioncollaborative.org>) — a partnership between researchers and institutions of higher education aimed at improving student success in college. The investigators are leaders in the field of creating, implementing, and evaluating largescale productive mindset interventions that reduce achievement gaps and boost retention among undergraduate and graduate students (e.g., Walton & Cohen, 2011; Murphy et al., 2020; Walton, Logel, et al., 2015).

Principal Investigator, Victor D. Quintanilla is an Indiana University Bicentennial Professor of Law, Co-Director of the Maurer School of Law’s Center for Law, Society & Culture, and Affiliate Professor of the IU Department of Psychological and Brain Sciences. Professor Quintanilla’s research empirically examines legal education by drawing on theory and methods within the field of psychological science. He serves as the principal investigator of Mindsets in Legal Education (MILE) a multi-site research line that creates, implements, and evaluates social psychological interventions that promote productive mindsets, belonging, and enhance law student experiences and performance, with funding from the AccessLex Institute. His work appears in leading law reviews and peer-reviewed journals. He was a Fellow in Residence at the Center for Advanced Study in the Behavioral Sciences at Stanford University (2015-2016).

Co-Principal Investigator, Dr. Sam Erman is a Professor of Law at the USC Gould School of Law. Dr. Erman conducts policy-relevant research concerning the relationship of law to belonging, the relationship of psychology to antidiscrimination law, the spread and maturation of ideas within legal communities, and the strategies and impacts of outsiders on legal thought and practice. His work has appeared in leading law reviews and peer-reviewed journals and in a book with Cambridge University Press, *Almost Citizens* (2019). Erman was also a law clerk to Supreme Court Justices Anthony Kennedy and John Paul Stevens; and a law clerk to Judge Merrick Garland of the U.S. Court of Appeals for the D.C. Circuit.

Co-Principal Investigator, Dr. Dorraine Green is an Assistant Professor of Psychology in the Department of Psychological and Brain Sciences at Indiana University. Her research explores the pathways through which stigma-related stressors contribute to disparities in education, health, and wellbeing between socially advantaged and socially disadvantaged individuals. A primary interest is the identification of strategies to help stigmatized individuals manage the challenges of navigating diverse spaces, including those with the potential to expose them to stigma-related stressors. Dr. Green has a Ph.D. from Northwestern University in Social Psychology.

Co-Principal Investigator, Dr. Mary Murphy is the Herman B. Wells Professor of Psychological and Brain Sciences and Associate Vice Provost for Diversity and Inclusion at Indiana University. In the area of education, her research illuminates the situational cues—like faculty and institutional mindset—that influence students’ academic motivation and achievement with an emphasis on understanding when those processes are similar and different for majority and minority students. She develops, implements, and evaluates social psychological interventions that reduce identity threat and spur students’ motivation, persistence, and performance. Dr. Murphy is a co-founder of the College Transition Collaborative, a research-practice partnership aimed to increase student success through social psychological interventions. In 2013, she was named a Rising Star by the Association for Psychological Science (APS). In 2019, she was awarded the Presidential Early Career Award for Scientists and Engineers (PECASE)—the highest honor bestowed on early career scientists by the United States Government. She is the recipient of over \$8 million in federal and foundation grants including a recent \$2.2 million NSF CAREER award for her research on strategies to improve diversity in STEM. Her research has been profiled in The New York Times, Forbes, Harvard Business Review, Scientific American, and NPR, among other outlets.

Co-Principal Investigator, Dr. Gregory Walton is The Michael Forman University Fellow in Undergraduate Education and Associate Professor of Psychology at Stanford and one of the world’s leading experts in psychologically “wise” interventions, particularly interventions to support a sense of belonging among students. Validated interventions created by Dr. Walton have been disseminated to hundreds-of-thousands of students by schools and groups like PERTS (<https://www.perts.net/>) and integrated into diverse institutional practices. Dr. Walton cofounded CTC (<http://collegetransitioncollaborative.org/>), a center at Stanford that partners with dozens of colleges and universities to implement and evaluate interventions to support students’ sense of belonging in college, including in randomized controlled trials.

Dr. Shannon Brady is an Assistant Professor of Psychology at Wake Forest University. Her research examines how people make meaning of themselves and their environments, how institutional messages affect this meaning-making, and the consequences thereof for diverse outcomes including well-being, achievement, relationships, and health. By developing and testing social-psychological interventions, she seeks to advance theory, elucidate psychological dimensions of major social issues, and develop new ways to improve individual and community life. Before graduate school, she taught at Taopi Cikala Owayawa (Little Wound School) on the Pine Ridge Indian Reservation in South Dakota. She has a M.S. from Black Hills State University in Education and a Ph.D. from Stanford University in Developmental and Psychological Sciences.

Elizabeth Bodamer is the ABF/AccessLex Doctoral Fellow in Legal Education & Higher Education and a sociology PhD candidate at Indiana University Bloomington. She earned her J.D. from Indiana University Maurer School of Law. As a Ph.D. student at Indiana, she was also the Director of Student Affairs at Indiana University Maurer School of Law for four years.

Trisha Dehron is a current Ph.D. student at the University of Massachusetts' Psychology of Peace and Violence Program studying under Dr. Linda Tropp. She received her B.A. in Psychology at Rutgers University – Newark (2012-2015; Summa Cum Laude). She is presently a NSF GRFP Fellow, designing and analyzing interventions designed to bridge group differences in divided societies around the world. She also serves as an intern with the Psychological Study of Social Issues' United Nations NGO Committee (<https://www.spssi.org/>), which supports and trains psychologists in the dissemination of psychological research for policy related to the UN agenda.

Michael Frisby is a third year doctoral student in the Educational Foundations and Policy program at the University of Michigan. He works alongside Dr. Matthew Diemer in the ACCME lab, focusing on critical consciousness and structural equation modeling. Michael is also interested in research employing critical policy analysis and critical quantitative methods. Prior to pursuing his Ph.D. in Education Policy, Michael received his Bachelors of Arts in Philosophy from the University of Arkansas at Little Rock, and his Masters of Science in Statistics from Michigan State University. After completing his Masters, he worked for four years directing the Indiana Statistical Consulting Center for the Indiana University Department of Statistics. Michael served as the lead statistician for MILE's analysis of the California bar exam and has worked closely with MILE on many other projects.

Dr. Anita Kim comes to MILE with experience teaching and researching in social psychology at Indiana University Bloomington and Texas A&M University. Her research investigates attitudes, motivated social cognition, self-interest, and gender stereotyping. She has published numerous articles across a wide spectrum of prestigious journals, including multiple pieces at the intersection of law and psychology. She received her Ph.D. in psychology from the University of Minnesota and her B.S. Psychology from UC San Diego.

Heidi Williams is a Ph.D. candidate in Social Psychology at Indiana University. Her research investigates psychological and structural factors that contribute to the underrepresentation and underperformance of different groups in academic and professional contexts. She develops social psychological interventions designed to mitigate these factors and promote the success and wellbeing of all people. She has a B.S. in Psychology and a B.A. in Germanic Studies from Indiana University.

Dr. Nedim Yel has advanced methodological skills and experience, including publications on analyzing achievement gaps and using multi-level modeling. Dr. Yel received his Ph.D. in measurement statistics and methodological studies program at Arizona State University. His research interest focuses on measurement, Bayesian methods, multilevel models, large-scale assessment, item parameter recovery, and scale development. Dr. Yel currently works as a Senior Research Statistician at IU and teaches research methods and advanced methodology courses at University of Massachusetts Boston.