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# 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 an online productive mindset intervention referred to as the *California Bar Exam Strategies and Stories Program* (the program). With the State Bar of California (SBC), we made the program available for the July 2018, July 2019, October 2020, and February 2021 California bar exams. The following describes our findings from these four administrations of the program in conjunction with the change in the bar passage threshold implemented by the Supreme Court of California in January 2021.

## 1. Proven effectiveness

Results suggest that the program increases total bar scores by approximately 24 points, after controlling for LSAT, GPA, and cohort effects. The program also increases bar passage rates, with increases depending on the bar exam cut score applied (1440 or 1390).

## 2. Helps first-generation and underrepresented test-takers

The program was effective for test-takers who identify as first-generation college students and as people of color; their bar exam performance was also boosted by approximately 24 points.

## 3. Reductions in psychological friction

Previous 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.

Considering these results, we recommend that the SBC offer the *California Bar Exam Strategies and Stories Program* to future cohorts. Future test-takers who elect to participate would likely benefit from the stress-is-enhancing and growth mindsets that the program fosters.

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# I. Overview of the Productive Mindset Intervention

## **The challenge and the opportunity**

Over the past decade, passage rates on the California bar exam have been at the low end of historical ranges and have revealed persistent group-based disparities. These problems suggest the 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. Our goal was to improve bar applicants' test-taking experiences and, subsequently, exam performance.

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## 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 tailored, psychologically-attuned productive mindset intervention to help test-takers prepare for the California bar exam. We conducted multiple surveys and focus groups of people studying for the July 2017 California bar exam and found that applicants experienced stress and anxiety when preparing for the exam, and had concerns about their personal situations limiting the time they would need to adequately prepare.

The *California Bar Exam Strategies and Stories Program* was designed to help applicants address this psychological friction.

## Initial Research Design: Randomized Controlled Trial (2018 – 2019)

Early administrations of the program were a randomized controlled trial (RCT), meaning that all who opted in were randomly assigned to one of two conditions:

- (1) the Control condition, which provided bar exam study strategies; or
- (2) the Treatment Condition, which provided both the productive mindset intervention and bar exam study strategies.

The RCT is the most rigorous design for evaluating the effectiveness of the *California Bar Exam Strategies and Stories Program* because random assignment of applicants to condition ensures the random dispersal of test-takers' traits (e.g., GPA, demographic details). Thus, when there is a difference in performance between the Treatment and the Control conditions, one can be confident that this difference is due to the program. The results of the RCT on the July 2018 and 2019 bar exams were promising: **those who were randomly assigned to the Treatment Condition were more likely to pass the bar than those randomly assigned to the Control (see June 2020 Executive Summary)**. Thus, starting with the October 2020 administration, we removed the Control Condition and delivered the Treatment Condition to everyone who wished to participate.

## Delivery of the Productive Mindset Intervention

The *California Bar Exam Strategies and Stories Program* was made available to all bar registrants taking the exam in July 2018, July 2019, October 2020, and February 2021. Registration for the program began with timely enrollment for the bar exam. Enrolling in the program included an IRB-approved consent process 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 for the July exams and early to mid-December for the February exam, and follow-up reminder emails were sent encouraging all to complete the program.

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The *California Bar Exam Strategies and Stories Program* incorporated an introductory film, audio and written stories from prior test-takers that illustrated how to reduce psychological friction, and participants writing letters to future test-takers about how to use the insights and strategies learned from the program.

## II. Four-Year Milestone Analysis

After bar exam scores were released, the research team worked closely with the SBC to ensure security of score data, and we worked closely with the SBC to evaluate the intervention. These analyses include applicants who enrolled in *the California Bar Exam Strategies and Stories Program* beginning in March 2018, 2019, 2020 and November 2020 (for the February 2021 bar exam). The two primary outcomes of interest were bar passage and total scores. Bar passage was an important outcome of interest because an increase in bar passage rates attributable to the treatment provides evidence of the effectiveness of the program. After the Supreme Court of California changed the bar passage threshold from 1440 to 1390, the research team also focused on total bar exam score, to discern whether participating in the program improved total scores on the bar exam.

Because all program enrollees received the treatment starting in 2020, the research team compared bar performance between those who completed the program (n=702, 24%) to those who signed up for, but did not participate in, the program (n=2,210, 76%) for a full sample of n=2,912 applicants. For purposes of these analyses, we excluded applicants who partially completed the program (i.e., those who began but did not finish the program) and applicants who participated in the Control conditions of the RCT in 2018 and 2019.

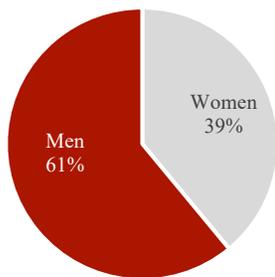
Thus, our analyses compared bar performance of the group of applicants who completed the program to those who enrolled but did not participate in the program. In other words, those who viewed all videos, listened to all recordings, and wrote every reflection piece comprise the treatment group; because they elected to participate in the program, they are not considered randomly assigned. Those in the no-content, inactive control condition represent a control group that is also considered not randomized because they elected not to participate. (This non-randomized control group of applicants was present across all four administrations.) Unlike the 2018-2019 RCT, these analyses do not control for potential differences between these groups of applicants. In other words, people who completed the program in the treatment group may differ from those in the control group, but those differences were addressed in prior years by the RCT design. The present analyses provide a way to compare groups of test-takers' performance to each other while still providing all applicants the opportunity to receive the benefits of the program.

## DEMOGRAPHIC CHARACTERISTICS

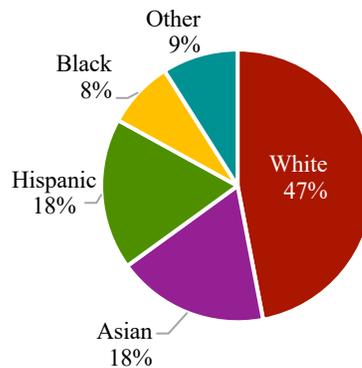
Among those reporting their demographic information, the sample comprised n=1,137 men (39%) and n=1,748 (61%) women. 47% were White, 18% were Asian/Asian-American, 18% were Hispanic, 8% were Black/African-American, and 9% reported being mixed race and “other” race. 73% were continuing-generation college students.

To compare the effects of the program on different groups, we combined those who were White and continuing-generation college students into an advantaged group (n=1,115, 38%) and those who were underrepresented racial minorities or first-generation college students into a disadvantaged group (n=1,790, 62%); this practice is consistent with educational research.

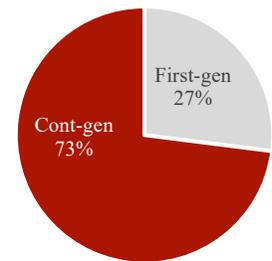
GENDER



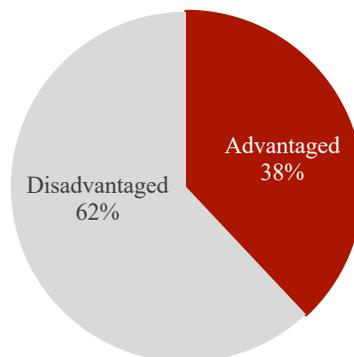
RACE



SOCIO-ECONOMIC STATUS



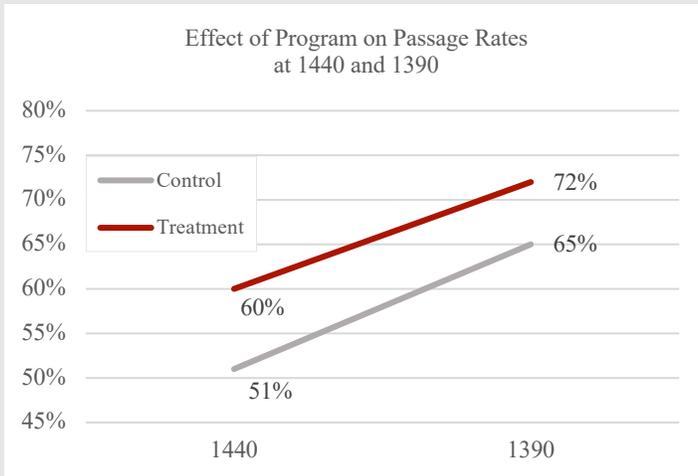
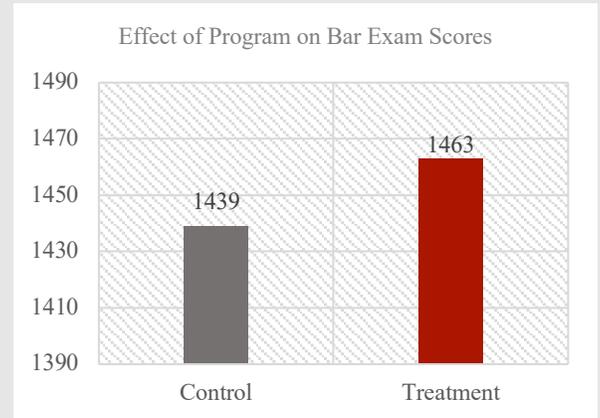
DISADVANTAGED STATUS



## Effect of the Productive Mindset Intervention on Bar Exam Performance

### 1. What was the overall effect of the *California Bar Exam Strategies and Stories Program*?

We compared total bar exam scores between the Treatment and Control groups, controlling for LSAT, law school GPA (self-reported) and cohort (when the exam was administered). The mean bar exam score for those in the Control group was 1439 and was 1463 for those in the Treatment group. Thus, it appears that the program **benefited those who participated by 24 total score points on the bar exam** after controlling for prior academic performance and cohort performance.

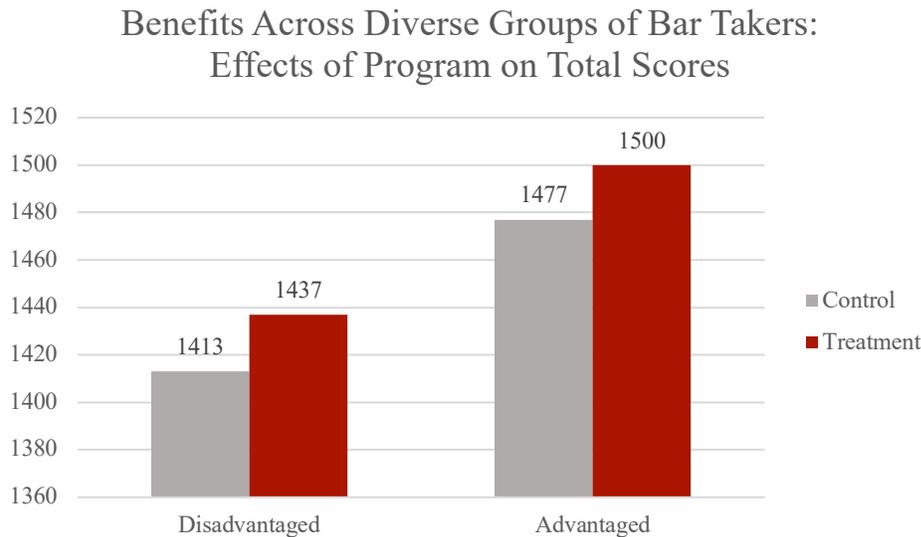


The program also improved bar passage rates at both bar passage thresholds that were in effect during that time period. At 1440, 51% of those in the Control group passed the bar exam, compared to 60% of those in the Treatment group. When considering the new bar passage threshold of 1390, the probability of passing the bar exam increased from 65% to 72%. **The joint effect of completing the program and the modified bar passage threshold thus improved bar passage rates by more than 20 percentage points.**

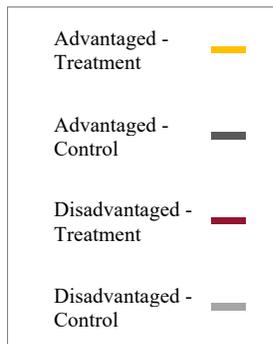
## 2. Did participating in the *California Bar Exam Strategies and Stories Program* help members of disadvantaged groups?

Next, we examined the effect of the program among the following historically disadvantaged groups: underrepresented minorities and first-gen applicants. Consistent with practice in educational research, we combined all who reported being a person of color with those who reported being first-generation college students (i.e., disadvantaged applicants) and compared their performance to White continuing generation students (i.e., advantaged applicants) in both the Treatment and Control groups. This yielded four comparison groups: disadvantaged applicants in the Control group (n=1,335) and the Treatment group (n=435), and advantaged applicants in the Control (n=848) and the Treatment group (n=267). We again analyzed total bar scores and pass rates at both 1440 and 1390.

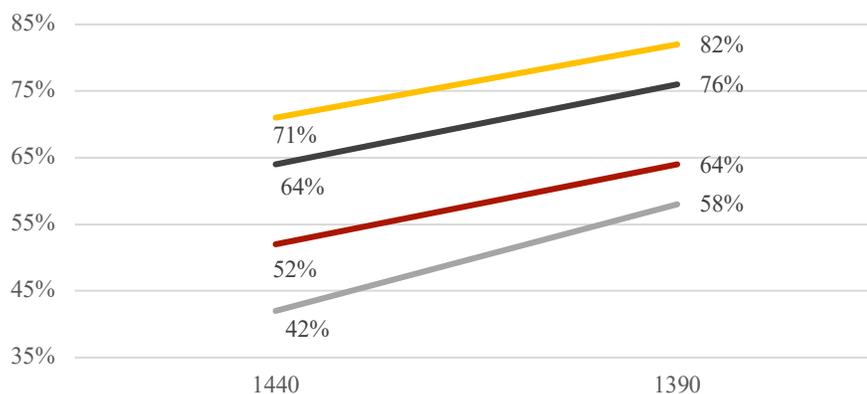
When considering total bar scores, completing the program improved scores by approximately 23 points, even after controlling for LSAT, LGPA, and cohort. Among disadvantaged applicants, mean bar scores in the Control were 1413 compared to 1437 in the Treatment group. Advantaged applicants in the Control group had mean bar scores of 1477, and those who opted into the Treatment Condition had mean bar scores of 1500.



**Completing the program improved bar scores by approximately 23 total score points on the bar exam.**



Benefits for Diverse Groups of Bar Takers:  
Effects of Program on Passage Rates at 1440 and 1390



**For disadvantaged applicants, the combination of completing the program and the changed passage threshold to 1390 improved chances of passing the bar exam by 22 percentage points.**

When considering pass rates, the program benefited all who participated compared to those in the Control group at both the 1440 and 1390 passage thresholds. The program was especially beneficial to disadvantaged applicants when the threshold was 1440 (with disadvantaged applicants in the Treatment group passing at 52% compared to 42% in the Control group). It continued to benefit disadvantaged applicants when the threshold was 1390 (with disadvantaged applicants in the Treatment group passing at 64% compared to 58% in the Control group). The program appears to have the greatest impact on passage rates when greater numbers of applicants are at risk of not passing. The coupled benefits of completing the program and the changed passage threshold for disadvantaged applicants is especially impressive, with 64% of disadvantaged applicants in the Treatment Condition at the 1390 passage threshold passing the exam compared to 42% of disadvantaged applicants in the Control group at the 1440 passage threshold.

The program and the change in passage threshold were similarly effective for those from more advantaged backgrounds: 82% of advantaged applicants in the Treatment group passed the bar at 1390, compared to 64% in the Control group at 1440.

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# Conclusion

Results suggest that the *California Bar Exam Strategies and Stories Program* increases total bar scores and passage rates (depending on the bar passage threshold applied) and can be effective for first-generation and underrepresented minority applicants. Related analyses suggest that the program works by changing how applicants think about the stress that they encounter and the mistakes they make when studying for the exam, reducing the psychological friction that applicants experience as they prepare (see June 2020 Executive Summary).

Because this is a voluntary program, only those who choose to participate will benefit, and our results suggest that such participation led to improved bar scores. We note that, unlike prior years entailing a RCT-evaluation of the program, these analyses evaluated the effectiveness of the program by comparing applicants who completed the program (in the Treatment group) to those who did not participate (the Control group). As such, the magnitude of this contrast may be driven in part by the effectiveness of the program and other applicant-related factors. Although the comparison of the Treatment Condition to the Control reduces the control provided as compared to a RCT, this four-year milestone analyses continues to provide meaningful evidence about the effectiveness of the program while permitting all who so choose to participate.

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.

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## 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.

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**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.

**Dr. Elizabeth Bodamer** has a Ph.D. in Sociology from Indiana University Bloomington and a J.D. from Indiana University Maurer School of Law. She was the 2019-2020 American Bar Foundation/AccessLex Doctoral Fellow in Legal Education & Higher Education and her dissertation focused on exclusionary experiences and sense of belonging in U.S. law schools. Dr. Bodamer served as the Director of Student Affairs at Indiana University Maurer School of Law

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and is currently the Diversity, Equity, and Inclusion Policy & Research Analyst and Senior Program Manager at the Law School Admission Council (LSAC).

**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.spsai.org/>), which supports and trains psychologists in the dissemination of psychological research for policy related to the UN agenda.

**Michael Frisby** is a fourth-year doctoral student in the Educational Foundations and Policy program at the University of Michigan. He works alongside Dr. Matthew Diemer in the AC<sup>2</sup>ME 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 Bachelor of Arts in Philosophy from the University of Arkansas at Little Rock, and his Master 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 with teaching and research 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.