

**Improving Police-Community Relations with a Social-Psychological Intervention
for Reducing Racial Bias in Policing**

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At almost any point of contact between police officers and Black Americans, one can see evidence of unequal treatment. Police officers are more likely to stop, question, arrest, injure, or kill Black people than White people (Glaser, 2015). *Implicit or hidden biases* have been identified as a psychological mechanism underlying these inequities in police decision making and behavior (Spencer, Charbonneau, & Glaser, 2016). Unconscious or spontaneous mental associations cause police officers to perceive Black people as more dangerous than is warranted. For instance, a controlled laboratory experiment found that police recruits are more likely to shoot unarmed Black men than unarmed White men in ambiguous situations (Ma et al., 2013).

These racial inequities were thrust into the nation’s awareness following the 2014 police shooting of Michael Brown –an unarmed Black teenager – in Ferguson, Missouri. This incident (and others like it) disrupted the public trust in law enforcement and led to the rise of the “Black Lives Matter” movement. By the next year, the percentage of Americans who had “a lot” of confidence in the police reached a nadir at 52% (Jones, 2015). This lack of faith was especially notable among Black Americans, of whom only 30% had “a lot” of confidence in the police (Norman, 2017).

Recognizing this loss of trust as a crisis, law enforcement agencies across the United States have stepped up their efforts to reduce racial inequities with bias training programs (President’s Task Force on 21st Century Policing, 2015). A recent survey of 155 police departments in large metropolitan areas indicates that 69% have some form of implicit bias training program (CBS News, 2019). Despite these widespread efforts, bias training programs

have not been evaluated empirically and are not informed by psychological research on bias reduction or lasting behavior change (James, 2017). There is a real risk that training programs undertaken with the best intentions may be ineffective or create only fleeting reductions in bias (Lai & Banaji, 2019). Given all that is at stake in police-civilian interactions, there is a *critical need* to develop and test psychologically-informed interventions tailored for racial bias in policing.

The proposed research will be the first large-scale randomized controlled trial (RCT) to examine the effectiveness of *any* training program specifically designed to reduce racial biases in policing (Paluck & Green, 2009). We will develop and test a program to train police officers to interact with citizens in a more racially equitable manner. The program will draw on social-psychological research on interventions to address racial bias (Lai, Hoffman, & Nosek, 2013; Lai et al., 2016; Paluck & Green, 2009) and effective behavior change (Frey & Rogers, 2014; Miller, Dannals, & Zlatev, 2017) to create lasting changes in how officers interact with citizens. We will determine efficacy from the perspectives of officers' self-reports, community perceptions, and administrative data. This proposal was formulated on the basis of preliminary studies finding that a similar day-long training increased knowledge about racial bias, reduced officer bias in simulated scenarios, and increased intentions to use empirically-supported strategies to address bias in everyday life.

Review of Relevant Literature: Implicit or hidden biases in policing. The perception that police officers regularly discriminate against Black people is justified by the data. For example, officers are more likely to stop Black drivers for unjustified reasons than White drivers in the first place (Pierson et al., 2019). When stopped, evidence from video-recorded traffic stops finds that officers afford less respect toward Black drivers than their White peers (Voigt et al., 2017).

When speaking to Black drivers, officers are more likely to use informal language (e.g., “man” vs. “sir”), use harsher legal terms (e.g., “arrest” vs. “registration”), and are less likely to explain the reasons for their actions (e.g., “I’m doing this because...”).

Implicit assumptions about the criminality of Black individuals by virtue of their race underlie these inequalities. In one study (Eberhardt, Goff, Purdie, & Davies, 2004), police officers were subliminally shown images related to crime. These subliminal presentations of crime-related images led to faster identification of Black faces rather than White faces, suggesting that thoughts of crime lead to thoughts of Black people. A follow-up study by the same authors found evidence that thoughts of Black people lead to thoughts of crime, as well. Officers were much faster to identify images of weapons when those images were preceded by subliminal images of Black rather than White faces. These findings indicate a reciprocal relationship between Blackness and criminality within the minds of police officers: crime begets Blackness, and Blackness begets crime.

Racial inequities in perceived criminality extend to police use of force. Officers are 3.6 times as likely to use physical force against Black people than against White people (Goff, Lloyd, Geller, Raphael, & Glaser, 2016). Use-of-force decisions are not merely attributable to differences in crime rates or otherwise-dangerous behavior. Even when controlling for many other factors related to use of force, police use greater force on non-White suspects (Terrill & Mastrofski, 2002).

Implicit biases are implicated in the most extreme expression of police force: critical life-or-death decisions to shoot criminal suspects. In one series of studies (Correll, Park, Judd, & Wittenbrink, 2002), subjects participate in a simulation where they observe images of White and Black men. Some of the men are armed with guns, while others are unarmed. Participants are

instructed to press a button to “shoot” (if the man is holding a gun) or press another button to “don’t shoot” (if the man is not holding a gun). Police officers who participate in this simulation are more likely to mistakenly shoot unarmed Black men than unarmed White men when they are fatigued (Ma et al., 2013) or regularly interact with minority gang members as part of duties (Sim, Correll, & Sadler, 2013).

Review of Relevant Literature: Bias training programs. There have been no peer-reviewed studies examining the efficacy of a bias training program in reducing racial biases among police officers. However, there have been several RCTs of bias reduction training in educational and organizational settings that inform how to develop an effective program for reducing racial biases in policing (Carnes et al., 2015; Forscher, Mitamura, Dix, Cox, & Devine, 2017; Moss-Racusin et al., 2014). These interventions emphasize two critical prerequisites for bias reduction that we will incorporate into our proposed training program:

Prerequisite 1: Awareness of hidden biases. As awareness of bias is a prerequisite for making efforts to reduce biased behavior (Monteith, 1993), trainees should be made aware of how discrimination can affect daily behavior.

Prerequisite 2: Motivation to address hidden biases. Knowledge of unintentional bias may lead to reduced feelings of accountability for addressing bias (Daumeyer, Onyeador, Brown, & Richeson, 2019). To address this issue, effective trainings motivate trainees to think of bias reduction as a “habit” that can be worked on over time (Devine, Forscher, Austin, & Cox, 2012)

The interventions also emphasize two consistently effective strategies that we will adapt for our proposed training program:

Strategy 1: See people as individuals rather than as groups. Efforts to reduce stereotyping often involve seeing people as individuals (Forscher et al., 2017). This can be accomplished through actively taking the perspective of others (Galinsky & Moskowitz, 2000; Galinsky, Ku, & Wang, 2005), noticing stereotypic thoughts and replacing them with non-stereotypic thoughts (Monteith, 1993), or thinking of how other people are unique individuals rather than representatives of their groups (Fiske & Neuberg, 1990).

Strategy 2: Create opportunities for intergroup contact. Over seventy years of research have shown that positive contact with outgroup members can powerfully reduce prejudice and discrimination (Pettigrew & Tropp, 2006). For example, White police officers in the 1950's who had Black co-workers were less likely to later object to taking orders from Black officers or teaming up with Black partners (Kephart, 1957). Similarly, patrol officers who had regular contact with non-criminal minority community members are less likely to mistakenly shoot an unarmed Black man in a simulation than special unit officers who primarily engaged with minority gang members (Sim et al., 2013). Encouraging trainees to actively seek positive contact with members of the community can reduce inequities in policing (Spencer et al., 2016) and is the basis of community-oriented policing strategies (Kessler, 1999).

Review of Relevant Literature: Community perceptions of bias in policing. Community trust is a crucial component of effective policing. When citizens trust police, they are more likely to follow the law, cooperate with police, and support policies that empower police (Sunshine & Tyler, 2003). However, trust in police is rare for departments working with communities of color. Surveys find that a majority of Americans believe police departments are racist, and Black Americans are especially likely to believe that they will experience unjust treatment by police (Tyler & Huo, 2002; Weitzer & Tuch, 2006). These concerns manifest in daily interactions.

Black people are more likely to feel nervous or scared when interacting with a police officer than White people (Najdowski, Bottoms, & Goff, 2015). In turn, officers may interpret nervousness or fear as evidence of suspiciousness, leading to unjustified stops and questioning (Najdowski, 2011). These unjustified stops then lead to diminished trust in the police (Tyler, Fagan, & Geller, 2014). One potential approach to break this vicious cycle is changing police behavior – to be more equitable, fair, and respectful.

A procedural justice approach to policing provides one avenue for cultivating community trust, and is increasingly incorporated into police education within the United States (Eberhardt, 2016). The core principles of procedural justice involve (Tyler, 2004):

- Being *fair* by applying the law impartially to all community members
- Treating community members with *respect*
- Giving *voice* to community members by listening to community members' views
- Being *trustworthy* by acting out a sense of benevolence for the community

Procedural justice approaches are effective for building trust within communities generally and may be uniquely effective for communities of color where trust in police is in short supply. Our proposed training program will incorporate two evidence-based strategies for police stops that adapt procedural justice approaches with a focus on curbing hidden biases.

Strategy 3: Justify the stop. When an officer relies on intuition when making a stop, they are especially likely to rely on stereotypes and stop Black people at higher rates (Glaser, 2015; Spencer et al., 2016). A simple intervention can curtail unjustified stops: before initiating a stop, ask officers to justify to themselves why a stop is necessary and consider whether the stop would

be justifiable to others. Establishing a personal sense of accountability increases impartiality and reduces discrimination (Axt & Lai, 2019; Lerner & Tetlock, 1999; Uhlmann & Cohen, 2005).

Strategy 4: Sell the stop. It is not enough to stop citizens fairly; citizens must also perceive the stop to be fair as well. To do so, officers must “sell the stop” by explaining why a citizen was stopped, linking the stop to broader concerns about public safety, and listening to citizens’ concerns about the stop (Lachman, La Vigne, & Matthews, 2012; Tyler & Fagan, 2012). This approach incorporates all four principles of procedural justice: fairness, respect, giving voice, and being trustworthy.

Table 1. Evidence-based strategies for addressing racial bias in policing.

Strategy	Description	Rationale
Perspective-Taking	Actively take the perspective of a citizen you are interacting with.	Perspective-taking reduces stereotyping & fosters social bonds. ¹
Contact	Seek opportunities to know people in your patrol as individuals.	Contact with people outside of one’s group is a powerful approach to reducing discrimination. ²
Justify the Stop	Explain to yourself why a stop is necessary and consider whether the stop would be justifiable to others.	Giving officers a sense of accountability reduces bias in decision-making. ³
Sell the Stop	Explain to a citizen why they are being stopped. Emphasize how the stop benefits public safety.	Citizens who believe that police are acting fairly are more likely to help officers in reducing crime. ⁴

Note. See *Review of Relevant Literature* for detailed descriptions of these strategies.

¹ Galinsky & Moskowitz, 2000; Galinsky et al., 2005. ² Pettigrew & Tropp, 2006.

³ Axt & Lai, 2019; Lerner & Tetlock, 1999; Uhlmann & Cohen, 2005. ⁴ Lachman et al., 2012; Tyler & Fagan, 2012.

Research aim. My team will develop and experimentally test a program to train police officers to interact with citizens in a more racially equitable manner. The program will draw on social-psychological research to create lasting changes in how officers interact with citizens. We

will train officers to employ evidence-based practices in perspective-taking, having positive contact with community members, initiating police stops, and explaining stops to citizens (See Table 1). All four strategies have a strong record of efficacy in the general population and are tailored to officers' work practices. To make the learning "stick", the program will take a habit-building approach that incorporates an intensive initial session and six brief practice sessions.

Preliminary studies. This proposal builds on a **large-scale study** that we are currently conducting with the Anti-Defamation League (ADL), a nonprofit that trains approximately 15,000 law enforcement professionals annually on bias-related issues. We are testing the effects of a training program on 2,000 police officers in the United States.¹ This day-long training introduces practices designed to enhance officers' ability to manage the impact of hidden biases in their work. In this study, we are administering surveys to officers before and after the training to understand whether officers endorse what they learned about racial biases and whether they report using the practices designed to manage the impact of racial biases. Before this large-scale study, we conducted a **pilot study** in four cities using pre-post designs. We found that a pilot version of that training increased knowledge about racial bias, reduced officer bias in simulated scenarios, and increased intentions to use empirically-supported strategies to address bias in everyday life.

Funding from the Russell Sage Foundation would support a cluster randomized controlled trial (RCT) to expand on the encouraging results from the preliminary studies. The RCT will assess the impact of a new training program that improves on the large-scale program referenced above with innovations in social-psychological approaches to bias reduction and behavior change (Lai et al., 2013; Miller et al., 2017). Crucially, we will assess a broad set of key

¹ To preserve the confidentiality of police departments undergoing training and evaluation, no cities are named in this proposal.

psychological and behavioral outcomes: (1) officers' reports of their own behavior, (2) community perceptions of officers, and (3) administrative data.

Examining efficacy across three types of criteria will allow us to triangulate aspects of the intervention that are effective from the varying perspectives of police, the citizens impacted by police behavior, and administrative data on crime and citizen complaints against police. Many possible patterns could emerge. In the best-case scenario, the training program will improve outcomes across all three criteria. However, it is easy to imagine alternate scenarios. For example, officers may show change in self-reported behavior and administrative data, but community members may not perceive these changes. Or, officers may be unaware of their own behavior change, but community perceptions and administrative outcomes suggest otherwise.

RESEARCH DESIGN

This study will be conducted with the ADL, with whom we have a strong ongoing partnership. ADL will assist with recruiting police departments and delivering the training program.

Participants. Police officer participants will be 1,620 patrol officers belonging to 200 police beats in a metropolitan area (or areas) in the United States. These officers will participate in the survey as part of their regular work activities. This sample allows for 80% power to detect an effect of .20 as calculated in WebPower (Zhang & Yuan, 2018).

We will recruit 1,500 community members through a telephone survey using a geographically stratified random sampling strategy that reflects the racial and age demographics of the metropolitan area (or areas), with people of color being oversampled. We plan on collecting this data under a longitudinal panel design but may employ a repeated cross-sectional

design if participant retention is expected to be difficult in the local context (e.g., low initial participation rates, high probability of selective attrition). The community sample also allows for 80% power to detect an effect of .20 as calculated in WebPower (Zhang & Yuan, 2018).

Training program. We will construct a new day-long program that improves on past programs by combining effective elements of ADL's current training with other evidence-based bias reduction interventions (Carnes et al., 2015; Devine et al., 2012; Moss-Racusin et al., 2016) and techniques for creating long-lasting behavior change (Frey & Rogers, 2014). In an initial training, expert facilitators from ADL will educate officers on how subtle or implicit biases affect officers' interactions with citizens. This education will frame successful behavior change as a habit that must be developed over time through practice.

Next, participants will be trained on four evidence-based strategies to practice over the following two months (See Table 1 for a summary and *Review of Relevant Literature* for detailed descriptions). After the initial training, officers will complete six brief follow-up training sessions on their phones or computers. Officers will practice strategies with challenging exercises that stress active engagement and have been shown to enhance learning (e.g., applying a strategy to a novel scenario; Bjork & Bjork, 2011). Follow-up trainings will be spaced out after the initial training to maximize memory consolidation (Hintzman, 1974) and increase the likelihood that officers will apply the lessons to their daily practices (Eberhardt, 2016): 1, 3, 7, 12, 18, and 26 days.

Procedure. In a baseline assessment, officers will report on their personal demographics and beliefs about racial biases in policing. Then, 202 police beats (i.e., distinct areas where officers patrol) matched on crime rates and racial composition within the metropolitan area (or areas) will be randomly assigned to participate in the training program or a control condition in

which they receive no training. Officers in treatment beats will participate in the training program, completing an initial day-long training session and six brief follow-up sessions. All officers will take surveys four times after the initial training sessions have been completed: 8 days after, 30 days after, 3 months after, and 6 months after.

Community members will be assessed before the training begins, 30 days after, 3 months after, and 6 months after. This schedule allows us to track the duration of intervention effects – be it a week, a month, or longer. These longer-term evaluations will complement our preliminary studies, which focused on shorter-term impacts over two months. See the Appendix for a draft of all survey materials.

Officer self-report. Officers will complete one pre-training baseline assessment about demographics, contact with minority group members, and beliefs about racial inequities in policing. Officers in both treatment and control conditions will also complete four assessment sessions after the training program is administered: after 8 days, 30 days, 3 months, and 6 months. These sessions will assess beliefs about the existence of racial bias in policing, motivations to address bias in policing, and self-reported use of the evidence-based strategies.

Beliefs about the existence of racial bias in policing. Assessment of knowledge and understanding of key concepts will be tailored to the concepts covered in the training program. Examples of questions that will be included for assessing knowledge of bias include 7-point Likert-style questions asking about agreement/disagreement to statements such as "Everyone, including me, has biases toward other people", "Subtle or implicit biases influence my decision making about other people" and "Whether I am aware of it or not, I use a person's race or ethnicity to form an impression of the kind of person they are." (adapted from Perry, Murphy, & Dovidio, 2015).

Motivations to address bias in policing. To assess motivation to address bias, we will examine officers' perceptions that bias can be changed (example item: Agreement to the statement "People have a certain amount of bias toward other people and they can't really change that"; Carr, Dweck, & Pauker, 2012), worry about acting biased, and motivation to apply the evidence-based strategies.

Self-reported use of evidence-based strategies. Participants will report on the use of strategies to manage the impact of implicit bias. They will be asked about how many times they have used each of the four strategies in the past week along with their perceptions of the strategies' feasibility and effectiveness (adapted from Devine et al., 2012).

Community perceptions. Community perceptions will be assessed once before the training and three times after (30 days, 3 months, 6 months). In all time-points, we will assess general perceptions of police, perceptions of racial bias in local policing, and experiences with local police to understand how community perceptions respond to changes in police behavior.

General perceptions of police. To assess general perceptions of police, we will adapt the well-validated Perceptions of Police Scale (Nadal & Davidoff, 2015) to perceptions of police within one's own community. Examples of questions that will be included include 5-point Likert-style questions asking about agreement/disagreement to statements such as "The police in your community are trustworthy", "Police officers care about the community", and "The police in your community usually give an honest explanation for their decisions."

Perceptions of racial bias in local policing. To assess perceptions of racial bias in local policing, we will adapt a scale from Tyler and Wakslak (2004). Questions will be asked on a 5-point scale from "Not at all" to "A great deal" and include questions such as "How much do

police in your community consider a person’s race when deciding which cars to stop for possible traffic violations?” and “How much do police in your community consider a person’s race when deciding which people to stop and question on the street?”

Experiences with local police. Using scales from Oliveira and Murphy (2015) and Rosenbaum and colleagues (2005), we will ask about contact with police and perceived treatment by police. These questions ask about direct contact with police, knowledge of others who have had contact with police, the overall positivity or negativity of those experiences, and perceptions of whether the police were professional and fair.

Administrative indicators. Administrative indicators will include racial inequities in stops, searches, and use of force 3 months, 6 months, and 1 year after training. We will also assess the total number of citizen complaints against officers in a beat and racial differences in citizen complaints (i.e., how often White vs. Black citizens report officers). If the training is effective, then all five administrative indicators should decrease.

Qualitative interviews. To provide additional context to the survey findings, we will conduct semi-structured interviews about reactions to the training over the phone or Skype with patrol officers and their managers after the training program is completed. We will have separate questions for participants that attended the training program and participants that manage attendees of the MIB training program. We expect that we will reach saturation between 10-25 participants. We will audiotape and transcribe verbatim each interview (Creswell, 2003) and conduct a thematic analysis of the text data to develop broader conclusions about participants' responses.

Analysis plan. To examine how officers change over time in response to the training program, we will conduct multilevel models examining how the three outcome variables (i.e., racial bias in policing, motivations to address bias in policing, and self-reported use of the evidence-based strategies) are predicted by beat treatment condition, timepoint, and their interaction with random intercepts for each subject. We will also conduct follow-up analyses examining potential moderators of treatment effects (e.g., perceived efficacy and motivation to use strategies, officer race, compliance with training program, individual strategy use).

To examine how community perceptions change over time, we will conduct multilevel models examining how the three outcome variables (i.e., general perceptions of police, perceptions of racial bias in local policing, and experiences with local police) are predicted by beat treatment condition, timepoint, and their interaction with random intercepts for each subject. We will also conduct follow-up analyses examining potential moderators of treatment effects (e.g., participant race, participant age).

To examine how administrative indicators change over time, we will conduct linear regression models examining how the five outcome variables (i.e., racial inequities in stops, racial inequities in searches, racial inequities in use of force, total number of citizen complaints, and racial inequities in citizen complaints) for each beat are predicted by beat treatment condition, timepoint, and their interaction.

Statement on transparency and reproducibility. Dr. Lai has publicly posted the materials for every paper that he has published as a lead author and pre-registered every study he has led since 2012. This proposed work will continue to prioritize open and reproducible research practices. This will include (1) posting all study materials so methods can be directly replicated, (2) posting all final data (in unidentifiable form) and analysis scripts so that others can

reproduce our analyses, (3) pre-registering analysis plans to reduce “researcher degrees of freedom” (Simmons, Nelson, & Simonsohn, 2011), and (4) sharing all pre-prints publicly on preprint servers so that public and scientific community stakeholders can freely access them. Materials, data, analysis, scripts, and pre-registrations will all be stored at Open Science Framework (<https://osf.io>). Preprints will be hosted at PsyArXiv (<https://psyarxiv.com/>), a preprint service hosted by the Open Science Framework.

LIKELY CONTRIBUTIONS

Advancing the objectives of the Russell Sage Foundation. This project aligns with RSF’s Decision Making and Human Behavior in Context initiative, in particular:

Biases and Misperceptions: This project will focus on hidden racial biases in policing.

Collecting officer and community outcomes will also help develop an understanding of how officers and community members perceive (or misperceive) each other.

Motivations and Incentives: The training program seeks to cultivate officers’ motivations and values so that they feel empowered to address racial biases and motivated to implement the strategies we will teach them. As part of our assessment strategy, we will track how motivations to address racial bias are increased, reduced, or maintained in the months following the training program.

Habits and Behavior Change: The proposed intervention incorporates many of the latest innovations in habit-building and behavior change to create long-lasting changes in how officers interact with the citizens they are duty-bound to protect and serve.

Potential impact. As the first large-scale RCT to examine the effectiveness of a training program specifically designed to reduce racial biases in policing (Paluck & Green, 2009), this

study is well-poised to have broader impacts on policing and policy-making. If it is effective, the training will dramatically impact how officers interact with citizens, particularly citizens of color. That reduction of racial bias in policing could be coupled with improvements in community perceptions of police and police-community relations. The training will also affect what communities ask of their police departments and how policymakers address racial disparities in policing. If the training is effective, then there may be greater investment in bias training. If bias training is ineffective, then greater investment into alternative strategies would be preferable (e.g., body cameras, programs focused on building trust between police officers and the community).

PROJECT WORK-PLAN

Work on the project will begin immediately with a focus on adapting the procedure to the local context over four months. Data collection of baseline characteristics, the training program and follow-up assessments will take place over ten months. After survey data collection, we will obtain administrative data, clean and analyze data from the three sources, and write up the findings for academic publication. See Table 2 for specific dates.

Table 2. Project Timeline.

	Jan. - Mar.	Apr. - Jun.	July - Sept.	Oct. - Dec.
2019	N/A	N/A	N/A	Tailor procedure for local context
2020	Finalize study design & materials	Baseline assessment	Training prog.; 8 & 30 day assessment	3-month assessment
2021	6-month assessment	Obtain admin. data; clean data	Analyze data & write publication	Write publication

RESEARCH TEAM QUALIFICATIONS & RESPONSIBILITIES

Our team is led by Dr. Calvin Lai, an assistant professor of Psychological & Brain Sciences at Washington University in St. Louis. His laboratory studies interventions to address implicit bias and its impact on behavior (<https://calvinklai.wordpress.com/research/>). He studies prejudice and discrimination with a focus on developing interventions to mitigate their pernicious effects. Dr. Lai has published in journals such as *Science*, *Journal of Personality & Social Psychology*, *Perspectives on Psychological Science*, and *Journal of Experimental Psychology: General*. He was named a Rising Star by the Association for Psychological Science in 2017. Dr. Lai completed his post-doctoral training at Harvard University and his PhD in Social Psychology from the University of Virginia.

Experience with evaluation of implicit bias training programs. Since 2011, Dr. Lai has given 33 implicit bias education workshops to diversity leaders at the White House and at organizations such as the Association of Corporate Counsel, the Department of Housing and Urban Development, the Environmental Defense Fund, and Harvard Business School. The structure of these workshops is similar to the MIB training program: (1) Raise awareness of the existence of implicit biases, (2) Demonstrate the relevance of implicit biases (and related concepts) to work practices, and (3) Improve the capacity for and use of strategies to mitigate the impacts of implicit bias. Internal evaluation of these workshops using quasi-experimental designs and a natural experiment found that the workshops have beneficial long-term effects.

Dr. Lai has given 48 academic presentations on implicit bias, covering topics such as interventions to reduce implicit bias, the relationship between implicit bias and behavior, and strategies to prevent discrimination. He has also advised on the development and evaluation of an exhibit on implicit bias at the National Underground Railroad Freedom Center and served on

an external blue-ribbon panel evaluating progress on diversity and inclusion issues at Amherst College.

In his academic research, Dr. Lai has conducted many large-scale studies evaluating the efficacy of interventions to reduce implicit or hidden biases (e.g., Axt & Lai, 2019; Forscher^{*2}, Lai^{*}, et al., 2019; Lai et al., 2014a, 2014b, 2016). He has also published reviews evaluating the evidence for interventions to address implicit bias and its impacts on behavior (Lai et al., 2013; Lai & Banaji, in press). These reviews find that implicit bias is difficult to change directly in the long-term, but breaking the link between implicit bias and behavior with action-oriented interventions is consistently effective.

Experience with designing and administering evaluations of programs in the field.

Dr. Lai's large-scale studies on implicit bias interventions have involved coordinating data collection at 18 universities simultaneously. This work required management skills at scale and an awareness of the issues that arise in large-scale field data collection. He has also taken a graduate course on Field Experiments and is familiar with the unique methodological and statistical issues that arise when testing interventions in the field (e.g., quasi-experimental designs, attrition, noncompliance, intent-to-treat, spillover). In addition to collecting data on police officers, he has collected field data from populations such as: attendees in diversity education workshops, surgeons, football fans, and K-12 students.

Familiarity working with law enforcement. Beyond his experiences leading studies of law enforcement with the Anti-Defamation League, Dr. Lai has conducted research examining police officers' implicit associations, beliefs, and attitudes about race in a police academy and in police departments in Los Angeles, Las Vegas, and Houston with the Center for Policing Equity

² Co-lead-authors.

(<http://policingequity.org/>). He has informally advised police officers and educators on implicit bias education, including trainers at the Department of Justice. He has also attended citizen-police workshops to gain working knowledge about everyday practices at police departments.

Jaelyn Lisnek, Research Assistant. Jaelyn Lisnek is a lab manager (Research Technician I) at Washington University in St. Louis. She graduated from Indiana University with majors in Psychology and Gender Studies, a minor in nonprofit management, and a thesis on community perceptions of policing. As part of her undergraduate research, she assisted Dr. Mary Murphy at Indiana University in an intervention to better the dynamics between White teachers and minority students in Chicago. Jaelyn Lisnek has assisted in the data collection of multiple large-scale field studies, including the preliminary studies described above.

REPORTING OF STUDY FINDINGS

Dissemination of findings to the public and relevant stakeholders. Dr. Lai is the Director of Research at Project Implicit, a non-profit whose mission is to educate the public about hidden biases with a site that receives millions of visitors per year (implicit.harvard.edu). Our team will use this website to promote a series of accessible articles, data visualizations, and blog posts about the link between implicit attitudes and behavior that will highlight the proposed work. Dr. Lai will write summaries of our proposed research for media outlets (past example: an article for *The Conversation* that was picked up by 20+ outlets including Time & Newsweek), and respond to media interviews about our research (past examples include *New York Times*, *Washington Post*, *Boston Globe*, *The Atlantic*, *BBC*, *National Public Radio*, *The Wall Street Journal*, *The Huffington Post*). Dr. Lai will also give talks to organizations focused on policing or communities of color about applying our scientific evidence (e.g., National Association of

Police Organizations (NAPO), National Association for the Advancement of Colored People (NAACP); past example: speaking at the White House about implicit bias).

Dissemination of findings within the scientific community. To broaden the reach and application of our findings, we will target scientific outlets that will tap into distinct audiences interested in biases within policing. We will submit our findings to journals with broad readership (e.g., *Science*, *PNAS*, *Nature Human Behavior*) and specialized journals (e.g., *Psychological Science*, *Journal of Personality and Social Psychology*, *Criminal Justice and Behavior*). We will present this research at conferences such as *Society for Personality and Social Psychology*, *Association for Psychological Science*, and *American Society of Criminology*. We will also present the research at other universities. Within the past three years, Dr. Lai has given invited talks at universities such as Harvard University, MIT, University of Toronto, McGill University, Tufts University, University of Illinois at Urbana-Champaign, and the University of Michigan.

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