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Officer Appearance and Perceptions of Police: Beyond an Instrumental Function, Toward a Signaling Framework

DISSERTATION

submitted in partial satisfaction of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

in Criminology, Law and Society

by

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DEDICATION

To

my mother, father, and brothers

in recognition of their unconditional support and encouragement

and to

all of the police officers and emergency responders selflessly serving their communities

in recognition of their dedication and commitment to public service

"You can't hold what's not in your hand"

- Patricia Davies (1945 – 2016)

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Simpson, R. (2018). Officer appearance and perceptions of police: Accoutrements as signals of intent. *Policing: A Journal of Policy and Practice.* Advance online publication. doi: 10.1093/police/pay015.

Simpson, R. (2017). The Police Officer Perception Project (POPP): An experimental evaluation of factors that impact perceptions of the police. *Journal of Experimental Criminology, 13*, 393-415.

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Simpson, R., & Hipp, J. R. (2017). What came first: The police or the incident? Bidirectional relationships between police actions and police incidents. *Policing and Society.* Advance online publication. doi: 10.1080/10439463.2017.1405957.

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ABSTRACT OF THE DISSERTATION

Officer Appearance and Perceptions of Police:

Beyond an Instrumental Function, Toward a Signaling Framework

By

Rylan Matthew Simpson

Doctor of Philosophy in Criminology, Law and Society

University of California, Irvine, 2019

Professor John Hipp, Chair

As an institution, the police are particularly sensitive and vulnerable to public opinion. Building upon existing research, this dissertation contributes to the policing literature by employing an experimental methodology in order to explore the effects of aesthetic factors associated with the police on perceptions of the police. As part of the experimental design, participants from a large public university (N = 399; Chapters 1-3) and Amazon's Mechanical Turk (N = 349; Chapter 4) were presented with images of several different police officers under the guise of a memory study, and asked to rate them along six important outcomes: aggressive versus *not* aggressive, approachable versus *not* approachable, friendly versus *not* friendly, respectful versus *not* respectful, accountable versus *not* accountable, and competent versus *not* competent. In each image, the appearance of the pictured officer was carefully manipulated in order to empirically test the effects of different elements of appearance on perceptions of officers. For example, when presented on foot, officers were equipped with different accoutrements, including vests, gloves, batons, sunglasses, and baseball hats (Chapter 1). When presented in a police vehicle, officers occupied different styles of vehicles, including marked and non-marked vehicles with different

color schemes (Chapter 2). Across all of the different aesthetic capacities, officers exhibited either a neutral facial expression or a smile (Chapter 3). The results revealed that police appearance significantly impacted perceptions of officers along all of the dependent variables. The validation analyses also revealed that the effects of police appearance were consistent across both samples of participants (Chapter 4). I argue that different elements of police appearance signal different types of officer intent, influence perceived legitimacy, and shed insight into the philosophical orientations of police. I conclude the dissertation by discussing the results from the experiment in the context of theory and methodology as well as policy and practice.

INTRODUCTION[1]

As an institution, the police are particularly sensitive and vulnerable to public opinion. Although the public's attitudes toward the police have generally been positive (e.g., Cao et al., 1996; Dai & Jiang, 2016; Frank et al., 2005; Ivkovic, 2008), recent events involving public-police violence have pivoted the public and the police against each other in highly publicized ways. In response, many police departments have begun to modify their practices in attempts to restore public-police relations. For example, many police departments nationwide have now implemented body camera programs in hopes of increasing their officers' accountability. Many police departments have also now introduced implicit bias training programs in hopes of enhancing their officers' respectfulness and citizen police academies and informal coffee hours with community members (e.g., "Coffee with a Cop") in hopes of enhancing their officers' approachability. The cost of implementing these interventions has exceeded well into the hundreds of millions of dollars and captured the attention of the highest levels of government (President's Task Force on 21st Century Policing, 2015).

Although practitioners often presume that these interventions impact perceptions of their officers in positive and meaningful ways (as evidenced by the recent expansion of such programs), the presence and/or magnitude of their effects are not yet fully known. Considering the immense personnel and resource costs associated with such interventions, research should thus be mindful of how less intensive interventions may provide similar or even stronger benefits at lesser cost. For example, it is possible that even manipulating mere presence factors, such as the *appearance* of police officers, may be enough to impact officers' perceived approachability,

[1] Note that this Introduction contains excerpts of text from the following article:

Simpson, R. (2017). The Police Officer Perception Project (POPP): An experimental evaluation of factors that impact perceptions of the police. *Journal of Experimental Criminology, 13*, 393-415.

accountability, respectfulness, and so on. Indeed, officer appearance is embedded within all practices that involve the physical observation of police, and therefore, manipulating appearance may exhibit promise for enhancing citizens' perceptions of officers. Little research, however, has experimentally explored the perceptual effects of these types of manipulatable but non-contact-based factors. Instead, past research has generally focused more heavily on the effects of demographic, contextual, and/or contact factors on citizens' perceptions of officers.

For example, scholars have found that age can impact perceptions of the police, with older citizens reporting more positive attitudes toward the police than younger citizens (e.g., Bridenball & Jesilow, 2008; Decker, 1981; Ivkovic, 2008; Jesilow et al., 1995; Reisig & Giacomazzi, 1998). Scholars have also found that gender (e.g., Cao et al., 1996; Ivkovic, 2008) and race (e.g., Brick et al., 2009; Decker, 1981; Frank et al., 2005; Leiber et al., 1998; Prine et al., 2001; Weitzer & Tuch, 1999; Weitzer & Tuch, 2004; Weitzer et al., 2008) can impact perceptions of the police, with females and Whites reporting more positive perceptions than males and non-Whites (although the evidence for these factors has been more mixed; e.g., Bridenball & Jesilow, 2008; Cao et al., 1996; Dai & Jiang, 2016; Jesilow et al., 1995). In terms of contextual factors, scholars have found that residents who report greater satisfaction with their neighborhood (e.g., Cao et al., 1996) and/or live in less concentrated disadvantage (e.g., Sampson & Bartusch, 1998) generally report more favorable perceptions of the police than residents who report lesser satisfaction and/or live in greater concentrated disadvantage. And in terms of contact, scholars have found that encounters with the police can impact citizens' perceptions of the police in significant and meaningful ways (e.g., Bradford et al., 2009; Brick et al., 2009; Bridenball & Jesilow, 2008; Jesilow et al., 1995; Leiber et al., 1998; Maguire et al., 2017; Mazerolle et al., 2012; Mazerolle et al., 2013a; Mazerolle et al., 2013b; Skogan, 2005;

Skogan, 2006a; Weitzer & Tuch, 1999; Weitzer & Tuch, 2004; Weitzer et al., 2008). For example, Skogan (2005) reported that citizen-initiated contacts were described more positively by citizens than police-initiated contacts, Decker (1981) observed that citizens with negative or involuntary contacts with the police held more negative perceptions of the police, Skogan (2006a) argued that the impact of having a negative encounter with the police was four to fourteen times greater than the impact of having a positive encounter with the police, and Maguire and colleagues (2017) found that observing positive interactions with police enhanced citizens' trust and confidence in the police, willingness to cooperate with the police, and obligation to obey the police.

This body of research has thus provided much insight into a wide array of factors that can impact citizens' perceptions of the police. With that being said, it is important to note that many of these studies have relied on traditional survey and interview methodologies (e.g., Bradford et al., 2009; Bridenball & Jesilow, 2008; Cao et al., 1996; Frank et al., 2005; Ivkovic, 2008; Jesilow et al., 1995; Prine et al., 2001; Reisig & Parks, 2000; Skogan, 2005; Skogan, 2006a; Weitzer & Tuch, 1999; Weitzer & Tuch, 2004; Weitzer et al., 2008; Worrall, 1999; Wu et al., 2011). The use of these methodologies can restrict researchers' ability to evaluate the effects of variables that may impact participants' perceptions of the police without their explicit or conscious awareness and/or the effects of variables that are more specific to the visual presentation of officers. It is therefore possible that scholars' ability to fully disentangle the spectrum of factors that can impact perceptions of the police may be enhanced by using other approaches, like experimental methodologies (e.g., Maguire et al., 2017; Mazerolle et al., 2012; Mazerolle et al., 2013a; Seron et al., 2006), particularly when such approaches are targeted at issues related to appearance and presence, as done in this dissertation. The rationale for the contribution of

experimental methodologies is at least two-fold.

First, experimental methodologies help to isolate causality and enhance internal validity. Through careful manipulation and randomization, experiments can effectively disentangle the police nexus to identify elements that drive perceptions. For example, in the context of the present research, the experimental design teases apart the police ensemble to assess the perceptual effects of *specific* elements of "the police," such as their accoutrements, vehicle style and facial expression. Such disentanglement, which is important for eventual policy implication, would not be possible without careful manipulation given that these different elements would otherwise coexist under the overarching term "police" (i.e., the concept, "police," encompasses multiple different variables if not effectively partitioned). Second, experimental methodologies allow for researchers to test questions without drawing participants' explicit attention to such questions using techniques like deception. For example, by examining perception in a carefully-controlled environment, researchers can isolate a participant's perception to a visual field where particular stimuli, like police attire, are variables of interest but where such variables are not made salient to the participant (i.e., even though attire is being manipulated, participants are not made aware of the interest in attire or asked to consider attire as part of their judgments). Such strategies also allow for the examination of processes which may occur without much conscious thought or consideration by the participant. This benefit is particularly relevant in the context of policing: citizens may observe police as part of their regular routines (e.g., at a traffic light) and derive judgments about them without deliberation or explicit questioning of their observation (a claim which I interrogate in more detail in the subsequent chapters of this dissertation). For these reasons, experimental methodologies may add to the scholarly understanding of the police-perception nexus by offering complementary insight into the effects of police-manipulatable

variables that may not be as effectively derived from more traditional survey and interview methodologies.

Building upon existing literature, the present research, therefore, employs a novel strategy in order to explore the effects of aesthetic factors associated with the police on perceptions of the police. For example, does presenting an officer with a high-visibility vest versus a load-bearing vest, or in a marked police vehicle versus a non-marked police vehicle, or exhibiting a smile versus a neutral facial expression, impact perceptions of that officer? Moreover, the present research measures these effects in an experimental context where participants are blind to the research questions of interest. In doing so, this experiment, titled the Police Officer Perception Project (herein after referred to as the "POPP"), supplements past studies that have relied on non-experimental methodologies to explore factors associated with the public (i.e., the judge) that can impact perceptions of the police (i.e., the judged). This experiment also sheds important insight into the effects of mere presence on perceptions of the police: a topic not frequently explored in the literature. Indeed, this is the first known study to use an experimental methodology in order to simultaneously examine how several different elements of police appearance (e.g., accoutrements, vehicles, facial expressions) can impact perceptions of the police. It is also the first known study to experimentally examine the effect of facial expressions in the context of policing. Considering the potential dividend of these styles of interventions, and their applicability and accessibility to police departments of all sizes and compositions, the findings of this dissertation could prove to be particularly fruitful for enhancing public-police relations.

OVERVIEW OF THE DISSERTATION

I begin this Introduction by describing my experiment, the POPP, in detail. As part of this description, I highlight the motivating rationale for the experiment, situate the experiment within the broader policing literature, as well as describe its sample, paradigm, and analytic strategy. I then proceed to discuss sets of results from the experiment in the four chapters that follow: each chapter delves deeply into the relationships between specific categories of aesthetics (e.g., accoutrements, vehicles, facial expressions) and perceptions of the police.

In Chapter 1, I examine the effects of accoutrements on perceptions of police officers. For example, I assess how the presence of different accessories, like vests, gloves, batons, sunglasses and baseball hats, can impact perceptions of officers. My results from this chapter reveal that accoutrements, as signals of intent, are important means by which police nonverbally communicate their philosophies and intentions to the public. I describe my findings with respect to policy and practice: arguing that functionality of equipment and safety of officers do not need to be mutually exclusive. I also theorize how practitioners can use research to effectively draft policies that maximize both the utility and perceptual effects of their equipment (e.g., by minimizing the overt appearance of weaponry, changing the color of gloves, etc.).

In Chapter 2, I examine the effects of vehicle types and aesthetics on perceptions of police officers. For example, I assess how occupying different styles of police vehicles, like marked versus unmarked, and different color schemes of police vehicles, like black and white versus white and blue, can impact perceptions of officers occupying such vehicles. My results from this chapter reveal that police vehicles, as symbols of legitimacy, are important means by which police nonverbally communicate their philosophies and intentions to the public. Similar to Chapter 1, I describe my findings with respect to policy and practice.

In Chapter 3, I examine the effects of facial expressions on perceptions of police officers. Specifically, I investigate how exhibiting a smile versus a neutral facial expression can impact perceptions of officers presented in a variety of different aesthetic capacities (e.g., in a vehicle, on foot wearing different accoutrements, etc.). My results from this chapter reveal that officers are perceived much more favorably when exhibiting a smile than when exhibiting a neutral facial expression. As part of my theorizing, I argue that the nonverbal cue of smiling changes the perceived intent and philosophies of the pictured officer, which then changes participants' perceptions of that officer. I also argue that smiling accentuates the positive effects of some accoutrements (like high-visibility vests) and patrol strategies (like bicycle patrol) and minimizes the negative effects of other accoutrements (like black gloves) and patrol strategies (like vehicle patrol).

In Chapter 4, I revisit several existing questions from the preceding three chapters using new data from a sample of 349 participants from Amazon's Mechanical Turk. My goals for this chapter are twofold. First, I attempt to validate my findings from Chapters 1 through 3 by assessing the significance and magnitude of previously-analyzed variables among this non-student sample. Second, I assess the effects of police appearance on perceptions of officer *competency*: a sixth dependent variable which I introduced in this sample to provide insight into an additional element of police perception. I find that the results from my university student sample validate among my Amazon's Mechanical Turk sample and that police appearance impacts perceptions of officer competency. These analyses thus supplement my dissertation by not only validating existing findings, but also complementing such findings with new outcome data.

POLICING, APPEARANCE, AND THE MOTIVATIONAL BACKDROP

As described in the seminal work of Bittner (1970), the role of the police is complex. By definition, the police are tasked with maintaining order, preventing crime, and investigating crime that occurs. In reality, however, the police are responsible for a much wider array of activities. From civil service to traffic direction to property collection, contemporary patrol officers are tasked with resolving interpersonal conflict, forwarding information, and managing non-criminal events that do not fit neatly within the parameters of any other social service agency. This complexity pushes police into an arguably contentious position: as a function of their complex role, police officers must wear multiple hats on any given shift, at any given incident, with any given person, at any point, during any interaction. As a consequence, officers are often evaluated on a diverse array of outcomes, ranging from crime rates to response times to citizen complaints, depending upon the conditions of a particular circumstance.

Given the proliferation of attention toward issues in policing and the salience of policing outcomes, it is not surprising that a large body of empirical research has devoted itself to understanding the complexity associated with policing and its effects, correlates, and implications for society. Although substantial work has been rooted in the policing practices of the mid-twentieth century, the influence of such work continues to extend into the present era. Indeed, the questions, processes, and relationships studied by scholars like David Bayley, Egon Bittner, George Kelling, Jerome Skolnick, James Wilson, and August Vollmer (among others) continue to be studied and evaluated as part of contemporary research. For example, much scholarship continues to evaluate the effects of police tactics on crime. Scholars working within this genre typically examine the effects of a given patrol intervention, like foot patrol or hot spot policing, on outcomes like crime counts and rates (e.g., Andresen & Lau, 2014; Bowers &

Hirsch, 1987; Braga & Bond, 2008; Esbensen 1987; Groff et al., 2015; Jones & Tilley, 2004; Kaplan et al., 2000; Kelling et al., 1974; Koper, 1995; Mitchell, 2017; Piza & O'Hara, 2014; Police Foundation, 1981; Ratcliffe et al., 2011; Sherman & Weisburd, 1995; Simpson & Hipp, 2017; Telep et al., 2014; Williams & Coupe, 2017). Scholars also continue to evaluate the effects of behavioral events, like police misconduct and use of force, as well as sociodemographic factors, like race and gender, on topics such as satisfaction and confidence in the police (e.g., Brick et al., 2009; Bridenball & Jesilow, 2008; Cao et al., 1996; Dai & Jiang, 2016; Frank et al., 2005; Ivkovic, 2008; Jesilow & Meyer, 2001; Sindall & Sturgis, 2013; Skogan, 2005; Tyler, 2005; Weitzer, 2002; Weitzer & Tuch, 2005; Weitzer et al., 2008). Although heterogeneity exists in the specifics of each of these bodies of research, the shared interest in the effects of these types of factors on these types of outcomes continues to persist. These descriptive remarks lead me to an important caveat: the goal of this Introduction is not to review each of these studies in detail, but rather to highlight the themes embedded within them and the variation among them across time in order to help situate the present work in the broader trajectory of policing research.

CAN THE POLICE IMPACT CRIME?

Much discussion surrounding the effects of police dates back to the Kansas City Preventative Patrol Experiment (Kelling et al., 1974). Now a landmark experiment in policing research, the Kansas City Preventative Patrol Experiment sought to assess the effects of marked, motorized patrol on crime in Kansas City. As part of their experimental design, Kelling and colleagues (1974) manipulated the amount of patrol delivered across the city to produce three distinct types of beats: reactive, proactive, and control. In the reactive beats, officers entered the area only in response to calls for service (i.e., less presence); in the proactive beats, officers

increased their patrol in the area (i.e., more presence); and in the control beats, officers patrolled the area as usual. The results revealed that varying the levels of patrol had no significant effects on crime, crime reporting, fear of crime, or satisfaction with the police (Kelling et al., 1974). Given that it was the first randomized control trial of its time, the results set a strong precedent among the policing community: suggesting that the police could do little to impact crime and related behavior.

This theme received further support from subsequent studies that were published around the same time and found similarly pessimistic results. For example, the Police Foundation (1981) reported that an experimental foot patrol program had no significant effect on overall crime rates in New Jersey, but that foot patrol produced some psychological effects (e.g., residents in areas with foot patrol reported less fear and greater awareness of the levels of foot patrol than vehicle patrol). Esbensen (1987) found that foot patrol was effective in reducing public disorder but not effective in reducing overall crime and Bowers and Hirsch (1987) argued that foot patrol reduced calls for service but had no overall order maintenance or crime control effects in Boston. And the effects of patrol were equally pessimistic for non-crime outcomes as well: for example, Sloan and colleagues (1996) reported that changes in patrol tactics by campus police did not significantly affect community members' fear or perceived risk of victimization on campus. These findings strengthened Kelling and colleagues' (1974) conclusion and continued to cast doubt on the police's ability to impact crime.

This ideology that the police could do little to impact crime was neatly summarized by David Bayley who began his seminal book, *Police for the Future* (1994), with the quote: "The police do not prevent crime" (p. 3). Although critical, however, Bayley (1994) diligently noted that the "damning conclusion that the police are not preventing crime rest[ed] entirely on a large

body of research undertaken for the most part during the 1970s" (p. 9) and that much of the research contained "flaws of some sort" (p. 9). As a consequence, he noted that the police may be more useful than existing research at the time suggested, but that such conclusion would require more thought and better-conducted research. Indeed, as later research emerged, a potential role for the police and their effectiveness began to surface.

Many of these more optimistic studies which identified a role for the police tested the effects of police activity in geographically small but high crime places, typically referred to as "hot spots" (for a thorough review, see Braga et al., 2014). For example, in their foundational study, Sherman and Weisburd (1995) experimentally manipulated the amount of uniformed police patrol in hot spots in Minneapolis and found that intensified patrol could reduce crime and disorder at these locations. Subsequent analyses of the Minneapolis data by Koper (1995) also revealed that the deterrent effect of the motorized patrol varied by the duration of police presence. Specifically, Koper (1995) argued that intermittent 11- to 15-minute patrol stops were most effective for eliciting deterrence. These findings from Minneapolis suggested a shift in ideology from earlier work: implying that with careful planning and consideration, police could impact crime and that the impact was related to the amount of police presence (both overall and with regards to specific patrol stops).

Following the seminal work of Sherman and Weisburd (1995), the finding that the police could impact crime continued to emerge across different contexts and in different places. For example, Kaplan and colleagues (2000) found that the presence of an unmanned police vehicle reduced speeding along a high-collision roadway, Jones and Tilley (2004) observed that high-visibility foot patrols reduced personal robberies in a high-crime, urban city-center in the United Kingdom, and Ratcliffe and colleagues (2011) reported that foot patrol reduced violent crime in

violent crime hotspots in Philadelphia. Piza and O'Hara (2014) also observed that a saturation foot patrol program reduced violent offenses in a high-violence precinct in Newark, Andresen and Lau (2014) found that increased foot patrol was associated with declined levels of crime in North Vancouver, and Telep and colleagues (2014) reported that 12- to 16-minute hot spot patrols reduced total calls for service and Part I crime incidents in Sacramento. Williams and Coupe (2017) and Mitchell (2017) also found evidence to suggest that police presence could reduce crime and anti-social behavior in their respective studies. These more recent findings reaffirmed the contemporary belief that the police can impact crime and related behavior.

CURRENT CONSENSUS: POLICE IMPACT CRIME

As described in the preceding section, the finding that the police can impact crime is now documented in contemporary policing literature: studies consistently report this finding when tested using a variety of analytic techniques in different places and at different temporal scales (e.g., Andresen & Lau, 2014; Braga et al., 2014; Jones & Tilley, 2004; Kaplan et al., 2000; Koper, 1995; Mitchell, 2017; Piza & O'Hara, 2014; Ratcliffe et al., 2011; Sherman & Weisburd, 1995; Simpson & Hipp, 2017; Telep et al., 2014; Williams & Coupe, 2017). For this reason, I do not intend to dissect or interrogate this conclusion as part of my dissertation. With that being said, I do intend to interrogate some of the implicit assumptions rooted in this type of observation. As I highlight throughout the subsequent chapters of my dissertation, inferring that the presence of police can impact citizen behavior implies two points. First, it implies that citizens are aware of the presence of police. Indeed, if citizens are unaware of the police, then, theories like deterrence (Nagin & Pogarsky, 2003; Paternoster, 2010) and routine activities (Cohen & Felson, 1979; Felson, 1995) would not generally expect it to impact their behavior. Second, and more importantly, it implies that the presence of police produces a strong enough

perceptual impact to influence behavior. In other words, citizens must not only be aware of the police, but such awareness must be enough to actually impact their behavior. This leads me to an important point regarding methodology. Given that scholars are typically interested in crime as their outcome, "behavior" as traditionally assessed by criminological research has regarded *criminal*-related behavior. As a consequence, the effects of police interventions have generally been measured via change in the amount of *criminal*-related behavior (e.g., if the presence of police reduced the amount of crime).

If the presence of police impacts potential offenders' decision to engage in criminal behavior, then, it is also likely that such presence impacts non-offenders' thoughts and behaviors as well. Indeed, many citizens who observe the police are not in the process of committing crime or preparing to commit crime. Research must therefore also account for the potential perceptual effects of police presence on non-crime outcomes among non-criminally-involved persons (e.g., the effects of foot patrol on law-abiding citizens as well as criminally-involved citizens). Accounting for such effects, however, requires a shift in traditional research methodology: it is difficult to assess the effects of police presence on citizens who observe police but are not criminally-involved if behavioral impact is measured solely via crime-related outcomes. In these instances, the presence of police may still affect perceptions of officers, but such effects remain invisible because of the focus on crime. This line of theorizing raises the question of how to assess the impact of the mere presence of police in non-crime-specific contexts along non-crime-related outcomes. It also raises the question of how police presence itself can be manipulated by appearance characteristics (e.g., accoutrements, vehicles, facial expressions), and consequentially, how such appearance may then be implicated in policy.

Police Presence

Police presence has an important role in the broader policing equation. Mere presence in and of itself is asocial: it involves nothing more than the *observation* of the police. Such observation may occur at a traffic light, at a civic center, or in a community meeting. It does not require formal dialogue between the police and an observing party. Nonetheless, it can still impact perceptions of police for several reasons.

First, and foremost, appearance is directly implicated in presence, which is implicated in fear of crime, occurrence of crime as well as satisfaction and confidence in the police (e.g., Bahn, 1974; Balkin & Houlden, 1983; Hawdon et al., 2003; Sindall & Sturgis, 2013; Winkel, 1986; Zhao et al., 2002). As Bahn (1974) argued, police patrol (a correlate of presence) has the "function of citizen reassurance - providing feelings of safety that a citizen experiences when [s]he knows that a police officer or patrol car is nearby" (p. 338). Consistent with Bahn's remarks, Zhao and colleagues (2006) concluded from their review of relevant literature that police presence can decrease the public's fear of crime and that strategies which reduce fear of crime also tend to increase satisfaction with the police. Moreover, officer appearance, by default, transcends all forms of presence: an officer cannot be physically present without exhibiting appearance. Thus, regardless if an officer is patrolling on foot or in a vehicle, or on-scene at a civil dispute or physical altercation, they still exhibit aesthetic characteristics and a citizen must observe the officer and their aesthetic characteristics in order to physically engage with them. From this perspective, appearance is an important variable in any perceptual-orientated, police-related question: police may elicit differential perceptual effects in any situation by manipulating their appearance given that their appearance is present in all such situations.

Second, the public may use appearance characteristics to infer conclusions about the intentions of officers and their policing philosophies (for a discussion of policing styles, see Wilson, 1968). These inferences may be made based on any type of officer aesthetics. For example, if officers appear to be dressed for combat while patrolling because of their accoutrements, the public may reasonably expect that the police perceive their role to align more with militaristic values, or a warrior orientation. On the contrary, if officers are dressed without such overt force equipment, the public may reasonably expect that the police perceive their role to align more with service values, or a guardianship orientation. Perceptions of such mentalities are important for both the police and the public with whom they interact. Although both warriors and guardians arguably fulfill the most basic roles and responsibilities of police officers (e.g., investigate crime, respond to calls for service, etc.), the means and mindsets by which they do it vary dramatically, and such differences may impact perceptions (e.g., Owens et al., 2018; Stoughton, 2015; Stoughton, 2016). As part of the warrior orientation, officers conduct their duties under the auspice of officer safety: prioritizing safety and the practices which they believe accentuate safety above all else, including perception (Stoughton, 2015; Stoughton, 2016). Under such worldview, officers become "locked in intermittent and unpredictable combat with unknown but highly lethal enemies… [they] learn to be afraid" (Stoughton, 2015, p. 227). In many cases, this hypervigilance, then, translates into distant, formalized, and highly impersonal encounters that are fueled by the threat of danger. On the contrary, the guardianship orientation "prioritizes service over crimefighting … it values the dynamics of short-term encounters as a way to create long-term relationships" (Stoughton, 2015, p. 231). As part of this latter worldview, officers learn to value the principles of fairness, respect, and consideration: they emphasize communication over command, cooperation over compliance, legitimacy over

authority, and patience and restraint over control (Stoughton, 2015; Stoughton, 2016). As such, the guardianship orientation seeks to foster positive relations and rapport, which its antithesis often hinders.

These worldviews about policing are more than just theoretical concepts: they are also relevant and important in the context of broader practices like community policing (e.g., see Skogan, 2006b). Indeed, community policing has become the most popular and widely cited policing reform in the country (e.g., Maguire, 1997; Mastrofski et al., 2007; Rosenbaum & Lurigio, 1994; Skogan, 2006b; Skogan & Roth, 2004): with 91% of respondents in one national survey reporting that it was a major or moderate part of their agency's organization and operations (Mastrofski et al., 2007). Defined as a "process rather than a product" (p. 5), community policing has been characterized by three features: administrative decentralization (e.g., delegation to individual officers, sergeants, and localized policing teams), proactive problem solving techniques (e.g., community-driven crime prevention activities), and community engagement (e.g., partnerships with community groups, community meetings, community surveys; Skogan, 2006b). These latter features are particularly relevant for the present research.

Simply hosting a community meeting, for example, may not be enough to foster positive, public-police dialogue if the officers participating in such meeting appear to citizens as aggressive, unapproachable, and unfriendly. If the presence of officers is a key component of the meeting, which is arguably the case in any community event, then, the police must consider the effect that their appearance has on the likelihood of citizens attending and engaging with officers at such meeting. A room occupied by stern, militant, and warrior-appearing officers would likely receive a different reception than a room occupied by smiling, approachable, and guardian-

appearing officers given the disconnect between the former mentality and the intended goals of the event.

Similar logic can be applied to activities like foot patrol. If the goal of having police walk a beat and maintain a presence is to promote dialogue and enhance relations with local residents (e.g., Berkley & Thayer, 2000; Wood et al., 2014), understanding whether the appearance of the officers walking the beat impacts the likelihood of residents wanting to approach such officers is a vital component of the patrol's success. Citizens may be less apt to approach officers who they perceive to be as aggressive, unapproachable, and unfriendly because of their appearance. And similar principles may apply to vehicle patrol as well: residents may perceive officers patrolling their neighborhood very differently when they are patrolling in marked versus unmarked (or "undercover") vehicles. As I interrogate in Chapter 2, the types of vehicles police utilize for their patrols may be important for several reasons, including legitimacy. Defined as "a property of an authority or institution that leads people to feel that that authority or institution is entitled to be deferred to and obeyed" (Sunshine & Tyler, 2003, p. 514), legitimacy is implicated in vehicle style. Not only do marked vehicles maximize the association between the officer and the policing institution, but they also infer that the police wish for the public to know their location, which suggests a different philosophy than when the police wish to hide their location using more deceptive vehicle styles (which may also more easily hide problematic officer behavior). Traffic enforcement neatly illustrates such link between legitimacy and police vehicles: receiving discipline for speeding past a *marked* police vehicle would likely be received by a citizen quite differently than receiving the same discipline for speeding past an *unmarked* police vehicle, where it could appear as if the officer was attempting to "catch" or abet the driver into committing a traffic offense. If police departments wish to enhance perceptions of their officers'

respectfulness and accountability as a consequence of their presence, then it remains important to know if visual cues, like the types and kinds of vehicles they use for their patrols, impact such outcomes.

Appearance does not exist in a vacuum: perceived visual characteristics may shed insight into perceived philosophical characteristics. In order to fully understand the effects of police on citizen behavior, research must consider intervention-induced change among more outcomes than just those related to crime. Moreover, research must account for mechanisms which may induce change that are not dialogue- or interaction-based, such as the mere presence or observation of police, because most people in most places at least observe the police on a regular basis even if they never formally engage with them. Thus, as part of this dissertation, I investigate the effects of police appearance on perceptions of police officers as aggressive, approachable, friendly, respectful, accountable, and competent. In doing so, I complement the existing literature by delving into the "black box" of what, specifically, about "the police" impacts perception (e.g., accoutrements, vehicles, facial expressions) and the specific effects of such elements on perception (e.g., more or less approachable, etc.). This is particularly important in the context of existing research and beliefs about the police. Every physical encounter with the police begins with an observation of the police: before dialogue starts, one must first *see* the attending police officer. Depending upon what citizens "see" in or on that officer may then impact their evaluation of the officer along the aforementioned constructs and eventually their behaviors when and if they interact with such officer. Studying the effects of police appearance on non-crime outcomes is thus important for helping to understand public-police dynamics more broadly.

THE POLICE OFFICER PERCEPTION PROJECT (POPP)

SAMPLING

Participants for the present research were recruited via two sampling frames: the human subject pool[2] at a large, highly selective public university and Amazon's Mechanical Turk. In total, 748 participants (who were at least 18 years of age and could read, speak, and write English) participated in the experiment.

PARTICIPANTS[3]

University Student Sample

Three-hundred and ninety-nine participants are included in the first sample of participants (338 females and 61 males). Participants ranged in age from 18 to 56 (with a mean age of 21), and self-identified as Asian (194), Hispanic (121), White (47), and other race (37). Most participants reported that their mother and father had at least some college education and that their parents' combined annual income during their adolescence was "a little more than average." More participants reported having a positive contact with the police in the prior six months (78) than a negative contact with the police (24), although the majority of participants reported having no contact with the police (285). Only twelve participants reported having both a positive and a negative contact with the police in the prior six months. All participants were compensated via course credit.

Background. The university where this first set of participants were recruited from has a diverse student population: 54% of undergraduate students identify as female, 37% identify as

[2] The human subject pool provides opportunities for undergraduate students to participate in research in order to obtain course credit.
[3] I provide descriptive statistics (and associated tables) for each phase of the experiment as appropriate throughout this dissertation.

Asian, 25% identify as Hispanic, 12% identify as White, and 2% identify as Black or African-American. More than two-thirds of freshmen and transfer students report that their primary home language is English and another language *or* another language only. Approximately two-thirds of full-time undergraduate students also receive some form of financial aid. In terms of institutional-status, this university has been nationally recognized for its commitment to diversity, inclusive excellence, and support for first-generation and low-income students. For example, the United States Department of Education designated it as an Asian American and Native American Pacific Islander-serving institution in 2016. The Department of Education also designated it as a Hispanic-serving institution in 2017: fulfilling criteria that at least one-quarter of undergraduates identify as Latino and half of all students receive financial aid. In terms of income, this university received top recognition from *The New York Times'* College Access Index in 2016 for its commitment to upward mobility for the second consecutive year. This university student population thus provides a fruitful sample to test the internal validity of my experiment on a diverse sample of student participants.

Amazon's Mechanical Turk Sample

Three-hundred and forty-nine participants are included in the second sample of participants (202 females, 145 males, and 2 other). Participants ranged in age from 18 to 70 (with a mean age of 32), and self-identified as Asian (25), Black (35), Hispanic (26), White (246), and other race (17). Most participants reported that their mother and father had at least some college education and that their parents' combined annual income during their adolescence was "average." One-third of participants reported receiving some form of financial aid. More participants reported having a positive contact with the police in the prior six months (94) than a negative contact with the police (13), although the majority of participants reported having no contact with the police (235). Only

seven participants reported having both a positive and a negative contact with the police in the prior six months. All participants were compensated via online payment.

Background. This sample of participants were recruited from Amazon's Mechanical Turk (herein after referred to as "MTurk"). MTurk offers a unique opportunity to sample the general adult population using web-based technology. Similar to the university student sample, participants self-selected into the experiment. All recruitment materials were the same for both samples. With that being said, this sample's demographic composition, as described above, varies substantially from the university student sample's demographic composition. The geographic location of participants in this sample also varies from the geographic location of participants in the university student sample: approximately ten percent of participants in this sample reported living outside of the United States and the remaining ninety percent reported living in regions throughout the country, including California (35), Texas (31), New York (20), Florida (19), Georgia (17), Ohio (14), Washington (10), and Illinois (8). This MTurk sample thus provides a fruitful means to test both the internal and external validity of my experiment and associated findings among a non-student population.

METHOD

Upon arrival at their study appointment, participants were advised that the study sought to explore factors that could impact their memory retention. Participants were further informed that they would be randomly assigned to observe images associated with one of four different occupations (i.e., policing, nursing, teaching, or engineering), rate these images on a number of different dichotomous variables, and then complete a memory test that would assess their memory of the images that they previously rated.

After participants were introduced to the deception of the study, they were then asked to select their occupation. The logistics of this process varied as a function of the sample. For the university student sample, participants were given an envelope that allegedly contained the aforementioned four occupations and asked to *blindly* select one occupation. Once they selected their occupation, they were asked to read it aloud. In reality, all of the pieces of paper in the envelope read "policing" in order to ensure that all participants observed police-related images. For the MTurk sample, participants "randomly" selected their occupation via a digital generator (i.e., the generator cycled through all four occupations but always stopped on policing). Given the online environment, participants could not have been physically handed an envelope and/or asked to read their selection aloud. This mild deception was employed in order to help minimize demand characteristics as well as ensure that participants paid enough attention to the images that they were able to notice differences between them but not so much attention that they fixated on the policing elements of the images (which could have compromised the validity of my results).[4] Following their occupation selection, participants were then provided with instructions on how to complete the perception task. Following their completion of the task, participants were provided with a thorough debrief which explained the experiment's deception and its rationale. [5]

Note that all remaining procedures were the same for both samples of participants, with the following exceptions. First, all instructions were provided online for the MTurk sample, and therefore, participants were required to read such instructions without assistance or facilitation from a research assistant. Second, and as noted below, MTurk participants rated all of the images

[4] The three non-policing occupations are artificial and not of interest in the present research.
[5] All procedures (including the use of deception) were approved by the Institutional Review Board at the university where the research was conducted.

of police officers on a sixth dependent variable (competent versus *not* competent) as well as completed a series of additional questionnaires at the conclusion of the experiment.

Perception Task

Using Inquisit software, the experiment presented participants with a set of 64 different images of police officers, and asked them to rate each image on the following dichotomous outcome variables: (1) aggressive versus *not* aggressive, (2) approachable versus *not* approachable, (3) friendly versus *not* friendly, (4) respectful versus *not* respectful, (5) accountable versus *not* accountable, and for the MTurk participants, (6) competent versus *not* competent.[6] Each of the 64 different images presented one of four different officers (i.e., 16 images/officer), in one of three different patrol strategies (i.e., bicycle, foot, or vehicle), in either police uniform or civilian clothing, exhibiting either a smile or a neutral facial expression (the specific images featured in the experiment varied by the phase of the experiment). All of the images were collected during a choreographed photo shoot with a local police department, and therefore, feature real police officers, real police vehicles, and real police equipment. All reasonable attempts were made to match the physical characteristics (e.g., age, size, etc.) of the police officers featured in this experiment.

At the commencement of the task, and as part of each set of instructions throughout the task, participants were requested to rate each image as quickly as it took them to process the image in its entirety. These instructions appeared to be well digested because on average participants viewed each image for approximately two seconds.

[6] Verbatim instructions: "ATTENTION: Please rate the following images as either [dependent variable] or not [dependent variable]. When making your decisions, please move as quickly as you can observe the image in its entirety."

All of the images presented to participants occupied approximately fifty percent of the computer screen that was situated directly in front of them (all images were digitally resized to minimize any potential perceived differences in physical size). The images were horizontally centered and displayed against an all-white background. In the top left and top right corners of the screen, participants saw the two dichotomous categorizations of each dependent variable (e.g., approachable versus *not* approachable, etc.). Once participants reviewed each image, they then selected either the left or right arrow key on their keyboard in order to indicate their categorization of the image (i.e., the left arrow key corresponded with the categorization displayed in the top left corner and vice versa). Following each rating, the next image in the set replaced the previously rated image, and the procedure repeated until the participant rated the entire set of 64 images on each variable (i.e., participants' ratings of images were all sequential).

The order by which participants rated each set of images on each dependent variable was randomized, such that each participant could have experienced a different ordering of the dependent variables. The order of the presentation of the 64 images within each set was also randomized, such that each participant could have experienced a different ordering of the 64 images for each dependent variable. Finally, the position of the two dichotomous categorizations of each dependent variable on the screen was randomized, such that the negated and non-negated versions of each variable randomly alternated between the top left and top right corners of the screen. Including multiple levels of randomization ultimately allowed me to control for order effects (e.g., practice effects, fatigue effects, etc.) by ensuring that no variables or images were systematically rated at the beginning or end of the task. Once participants finished rating all of the images on all of the dependent variables, they completed a number of sociodemographic questionnaires.

Outcome Variables

As described in the Introductory remarks, the role of the police is complex. The types of duties that the police must fulfill and the criteria upon which they are evaluated are equally complex. And such complexity is further intensified by the fact that most contact with the police is both informal and unceremonious: for example, observing a police officer in passing at a traffic light or community event. As a consequence, the outcome variables included in the present research are complex as well. Indeed, as part of my experiment, I measured a myriad of outcomes which represent a diverse array of policing dimensions: (1) aggressive versus *not* aggressive, (2) approachable versus *not* approachable, (3) friendly versus *not* friendly, (4) respectful versus *not* respectful, (5) accountable versus *not* accountable, and for the MTurk participants, (6) competent versus *not* competent.

My selection of these outcome variables was informed by several factors, including previous research, practice, the substantive goals of the present research, and theory. Regarding previous research, I sought to identify outcome variables that were at least partially consistent with the types of outcomes assessed as part of related research so that I could engage in conversation with such research. For example, Worrall (1999) as well as Johnson and colleagues (2015) evaluated perceptions of police friendliness, Singer and Singer (1985) examined perceptions of police aggressiveness and competency, and Brunson and Weitzer (2009) as well as Weitzer and Brunson (2009) assessed perceptions of accountability, to name a few. Regarding practice, I sought to assess outcome variables that police departments frequently cite as part of their core values. Indeed, as part of my selection process, I conducted Internet queries (e.g., reviews of police websites) and observed consistent patterns in values, such as “Accountability” (e.g., Irvine Police Department (PD), Santa Ana PD, Vancouver PD), “Respect” (e.g., Beverly

Hills PD, Irvine PD, Long Beach PD, Los Angeles PD, Santa Ana PD, Tustin PD, Vancouver PD), "Partnership" (e.g., Buena Park PD, Tustin PD), "Friendship" (e.g., New Westminster PD), and "Integrity" (e.g., Beverly Hills PD, Delta PD, Edmonton PD, Los Angeles PD, Port Moody PD, Vancouver PD). Regarding substantive goals, I sought to identify outcome variables that could reasonably be impacted by appearance characteristics, which are my primary independent variables of interest. Finally, regarding theory, I sought to identify outcome variables that would speak broadly to the complex roles of the police in ways that would advance the field's understanding of how citizens evaluate the police along non-crime-related dimensions. I also sought to contribute to the literature by assessing process-based variables which may be implicated in the types of traditional outcomes, like cooperation with the police, willingness to report incidents to the police and confidence and satisfaction with the police, which have been of interest in previous research (as discussed at the outset of this Introduction). I provide more detail regarding the framework for my outcome variables in the paragraphs that follow.

Conceptual Framework. The core principles of modern policing evolved largely from the ideals of Sir Robert Peel (who is now considered the father of British policing). In his script, often referred to as the Peelian principles, he argued that the police cannot exist without the support of the public. In one of his key principles, Peel urged, "The police are the public and the public are the police." Given his principles, and the effect that they have had on contemporary policing, both the public and the police should wish for officers to be perceived as *approachable* and *friendly*. The rational for such conclusion is multifold. First, citizens' perceptions of officers as such traits likely impacts their willingness to engage with officers, particularly under non-criminal conditions. Insofar that the police depend upon the public for support, information, and the legitimacy to conduct their duties, and the public depend upon the police for service and

response, the two parties must be able to engage if the system is to function both effectively and democratically (e.g., Jackson & Bradford, 2009; Bradford et al., 2009). Similar logic can be applied to a discussion of *aggression*: if citizens perceive police as aggressive, they may think more negatively of them and be less apt to engage with them, phenomena which have been documented by Weitzer and Brunson (2009) and Brunson and Weitzer (2009). And it is important to note that aggression as a phenomenon is not limited to physical aggression, but also verbal aggression and policing style as well.

In this vein, perceptions of unapproachability, unfriendliness, and aggressiveness all exist in opposition to the idealistic values of police as social service providers (Wilson, 1968) with guardianship mentalities (Stoughton, 2015; Stoughton, 2016). As a consequence, when these traits surface during encounters, and taint citizens' perceptions of such encounters, they can negatively impact public-police relations (Skogan, 2006a). The power of the police to fulfill their functions and duties is dependent upon public approval: if such approval is lost because the public do not feel that the police represent their desired values, the democratic policing system cannot function. The stakes of these outcomes for both the public and the police are thus high, and therefore, understanding how appearance may impact them is important for informing both policy and practice.

Revisiting the Peelian principles, and the implicit notion of policing by consent, both the public and the police should also wish for police to be *respectful* and *accountable* given that perceptions of such traits can impact citizens' willingness to cooperate with the police, as suggested by the procedural justice literature. Indeed, previous research has found that citizens are more likely to want to cooperate with the police when they feel they will be treated in a fair, respectful, and impartial manner (e.g., Murphy et al., 2008; Sunshine & Tyler, 2003; Tyler,

1990; Tyler & Huo, 2002). And more applied research has observed that citizens evaluate police based on their perceived *accountability*, and that perceptions of *unaccountability* negatively impact perceptions of encounters, officers, and the police more generally (e.g., Brunson & Weitzer, 2009; Weitzer & Brunson, 2009). Perceptions of *accountability* and *respectfulness* are therefore important in the broader perception equation. The degree of perceived importance of these outcomes is also evidenced by the material expansion of practices like the use of body cameras which are believed to enhance perceptions of such outcomes (for a thorough review and discussion of "contagious accountability," see Ariel et al., 2017).

Finally, the variable of *competency*, which was included in the perception task for the participants in the MTurk sample, offers insight into the stereotype content model (Fiske et al., 2002) in the context of policing. As part of this model, social judgments are captured along two dimensions that reflect evolutionary pressures to survive and reproduce: warmth and competence. Whereas the former refers to perceived intentions and evaluations of kindness, friendliness, trustworthiness, and helpfulness, the latter refers to perceived abilities and evaluations of effectiveness, intelligence, power, and skillfulness. Judgments along these two dimensions, which may be derived from visual cues like appearance, allow people to quickly determine others' intentions and their associated ability to act on such intentions (e.g., see Fiske et al., 2002; Fiske et al., 2007). Given that police appearance may be implicated in participants' perceptions of officer competency, evaluating the effects of different aesthetics on such outcome provides a fruitful test of this theory. Understanding the relationship between officer appearance and perceptions of *competency* also has important practical implications: police departments require the support and cooperation of their communities in order to effectively function, but such participation may hinge upon citizens' perceptions of officer *competency*.

Together, these outcome variables thus provide an effective means to not only evaluate perceptions of police from a research perspective, but also to assess concordance between prescribed policing roles and public assessments of such roles (e.g., if officers are being perceived in ways that are consistent with the roles upon which police publicly subscribe).

Pragmatic Rationale. My decision to use dichotomous categorizations of these outcome variables was largely a consequence of the experiment's methodology. Due to the high volume of images presented to participants, I could only display two variable options on the screen at any given time (presenting Likert-style scales, which are commonly utilized in survey research, would not have been feasible in this particular context). Although dichotomous categorizations may have potentially deflated the variability on each of these individual outcomes, measuring multiple outcomes, and interpreting their results both individually (e.g., aggressive, approachable, friendly, etc.) and simultaneously (e.g., more or less favorable perceptions), provides a comprehensive measure of perceptions of the police, particularly in the context of quick-second judgments as explored in this dissertation.

Predictor Variables

Attire. I examined two different sets of attire as part of the present research: police uniforms and civilian clothing. In poses with uniform attire, officers were presented in their full patrol uniform, which included their operational duty belt, navy blue short-sleeved shirt, navy blue pants, and black patrol boots. In poses with civilian attire, officers were presented in white t-shirts, blue jeans, and black shoes. In these particular images, it was not clear that the models featured in the images were in fact police officers. Note that I selected these particular items of civilian clothing due to their generic, non-occupation-specific nature. All officers were presented in the below noted patrol strategy poses with the below noted facial expressions in both sets of

attire (e.g., all officers were presented in a marked police vehicle in uniform and in civilian attire, etc.).

Patrol Strategies. I examined three different patrol strategies as part of the present research: vehicle patrol, bicycle patrol, and foot patrol. For the vehicle patrol poses, officers were presented in a marked police vehicle (i.e., black and white or white and blue), an unmarked police vehicle of the same make and model as the marked police vehicle, and an unrelated police vehicle (i.e., vehicle not traditionally used for patrol purposes) of the same color (grey) as the unmarked police vehicle (as outlined in Chapter 2). In all vehicle poses, officers were seated in the driver seat of the vehicle, with their head facing the camera and both of their hands grasping the steering wheel. For the bicycle patrol poses, officers were presented on bicycles, with their head facing the camera, both of their feet planted on the ground, and both of their hands grasping the handlebars. In these particular poses, all officers were wearing their standard-issued bicycle equipment, including bicycle helmets. For the foot patrol poses, officers stood directly facing the camera with both arms at their sides. In the reference foot patrol pose, officers were presented on foot with only their standard issued accessories (e.g., no external vest, no gloves, no headwear, etc.). In the remaining foot patrol poses, officers were presented with their standard issued accessories plus different accoutrements (as outlined in Chapter 1). In all of the poses (regardless of patrol strategy), officers displayed either a neutral facial expression or a smile.

Facial Expressions. I examined two different facial expressions as part of the present research: smiling and neutral. In the smiling poses, officers exhibited a Duchenne smile, which is distinguished by the contraction of both the zygomatic major and orbicularis oculi muscles. In the neutral poses, officers maintained no expression. All reasonable attempts were made to ensure that officers expressed "similar" expression structures.

Sociodemographic Characteristics. I examined several different sociodemographic characteristics of both participants and police officers as part of the present research. Using self-report surveys, I measured participants' gender, age, race, socioeconomic status, and history of contact with the police. First, gender was measured via a single nominal variable ("What is your gender?") with three choice options (i.e., male, female, and other). Second, age was measured via a single continuous variable ("What is your age?"). Third, race was measured via a single nominal variable ("What is your race?") with seven choice options (i.e., White, Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, two or more races, and other[7]). Fourth, ethnicity was measured via a single dichotomous variable ("Are you Hispanic?"). For analytical purposes, race and ethnicity were transformed into several mutually exclusive dummy variables (0 = not given race; 1 = given race). Fifth, socioeconomic status (SES) was measured via three different variables that pertained to parental education and income. Participants' mothers' and fathers' highest level of education were measured via two Likert scales ("What is your mother's [father's] highest level of education?") with seven choice options (1 = did not complete high school; 2 = high school / GED; 3 = some college; 4 = Bachelor's degree; 5 = Master's degree; 6 = Doctoral degree; missing = unknown). Participants' parents' combined approximate annual income during their adolescence was measured via a single Likert scale ("Please use the following scale to describe your parents' combined approximate annual income during your adolescence") with five choice options (1 = much less than average; 2 = a little less than average; 3 = average; 4 = a little more than average; 5 = much more than average). For analytical purposes, these three variables were combined into a single SES variable via a three-step process. First, I determined participants'

[7] These racial categories were obtained from the United States Census Bureau.

parents' highest level of education and then standardized this variable. Next, I standardized the variable for participants' parents' annual income. Finally, I combined these two standardized variables together in order to form a single SES variable. In Phase 3 of the university student sample and all of the MTurk sample, participants' socioeconomic status was also measured via a fourth dichotomous variable ("Do you receive financial aid?") with two choice options (0 = no; 1 = yes). Lastly, contact with the police was measured via two variables ("Have you had a negative [positive] experience with the police in the last 6 months?") with two choice options (0 = no; 1 = yes). For analytical purposes, these contact variables were transformed into four mutually exclusive dummy variables: positive contact, negative contact, both positive and negative contact, and no contact.

In addition to measuring sociodemographic characteristics of participants, I also manipulated the race and gender of the police officers featured in the experiment. [8] For the university student sample, all participants observed one male and one female police officer of their own race (as measured by their prescreen self-report information) and one male and one female police officer of a different race (randomly selected from the remaining three different races). For the MTurk sample, all participants observed two different races of officers, however they could not be assigned to a pseudo-race condition based on their prescreen information (such information was not available prior to the commencement of the study), and so the officers were not always their own race plus one other race. See Table 1 for the master set of officers.

<<< Table 1 >>>

[8] Although I collected images of eight different police officers for the purposes of this experiment, each participant only observed a selection of the eight officers during the experiment in order to manage the vast number of images associated with each officer.

Analytic Strategy

Although all of the analyses presented in this dissertation utilize some form of data from the POPP, each set of analyses exploits different elements of data from the project. For example, in Chapter 1, I individually examine data from the first two phases of the experiment (university student sample) to examine questions related to accoutrements. In Chapter 2, I examine the combined data from these two phases of the experiment (university student sample) to examine questions related to vehicles. In Chapter 3, I examine data from the third phase of the experiment (university student sample) to examine questions related to facial expressions. Finally, in Chapter 4, I examine data from the sample of MTurk participants to re-evaluate questions related to the preceding three chapters. I highlight the aforementioned sections of data and associated samples used in each set of analyses as appropriate throughout this dissertation.

CHAPTER 1

Accoutrements as Signals of Intent[9]

No equipment is arguably more important for the police than their uniform. From a rudimentary perspective, uniforms symbolize officers' membership in the police department. Uniforms also highlight status, foster legitimacy, emphasize group membership, influence impressions, and impact the nature of social interactions (e.g., Behling, 1994; Bell, 1982; Bickman, 1974; Damhorst, 1990; Durkin & Jeffery, 2000; Johnson et al., 2002; Joseph & Alex, 1972; Nickels, 2008; Paek, 1986; Singer & Singer, 1985; Volpp & Lennon, 1988). The presence of uniforms is thus particularly important in the context of policing and such importance is generally shared across the policing landscape. The appearance of uniformed officers, however, still varies widely. For example, police in Australia, the United Kingdom, and the United States all wear identifiable uniforms, and share relatively similar roles and responsibilities, yet officers in such countries appear very differently. Officers within departments within countries also typically exhibit at least some variation in their appearance: for example, officers in Los Angeles dress differently than officers in Chicago, and patrol officers in Los Angeles dress differently than tactical officers in Los Angeles.

Much of the variation in appearance among police stems from the variation in the *accoutrements* worn by officers. Indeed, uniforms as articles of clothing tend to infer broad characteristics, like status, legitimacy, and group membership. In contrast, accoutrements, as purposeful accessories, tend to signal more specific and individualized intentions. For example, on one hand, wearing a high-visibility vest may signal helpful and transparent intentions, or what

[9] Note that this chapter contains excerpts of text from the following article:

Simpson, R. (2018). Officer appearance and perceptions of police: Accoutrements as signals of intent. *Policing: A Journal of Policy and Practice.* Advance online publication. doi: 10.1093/police/pay015.

may be termed, a guardianship orientation (Stoughton, 2015; Stoughton, 2016). On the other hand, wearing black gloves, longstick batons, and/or sunglasses may signal predatory and aggressive intentions, or what may be termed, a warrior orientation (Stoughton, 2015; Stoughton, 2016). Differences in perceived intent can then elicit differences in reactions toward officers, especially given that accoutrements are generally worn for a specific purpose: the officer carries the accoutrement because of the potential need to use it. If an observing party perceives a police officer as having ill intentions because of the presence of a particular accoutrement, their reaction to such officer, and the subsequent interaction that follows, may be negatively impacted by their first impression of that officer. Little research, however, has experimentally explored the effects of accoutrements on perceptions of officers.

OVERVIEW OF THE CHAPTER

This chapter extends previous literature by interrogating the effects of accoutrements on perceptions of the police. In my first set of analyses (N = 155), I explore the effects of vests and gloves on perceptions of the police. In my second set of analyses (N = 152), I explore the effects of longstick batons, sunglasses, and baseball hats on perceptions of the police. In all of my analyses, I estimate multilevel mixed-effects logistic regression models to predict participants' ratings of police officers as (1) aggressive versus *not* aggressive, (2) approachable versus *not* approachable, (3) friendly versus *not* friendly, (4) respectful versus *not* respectful, and (5) accountable versus *not* accountable. Overall, I find that wearing different accoutrements impacts perceptions of police officers along all of my dependent variables.

BACKGROUND

VESTS

Vests (otherwise referred to as "body armor") are most typically worn to prevent injury

from bullets and/or other projectiles (LaTourrette, 2010). Recent innovations in vest design, however, have introduced new opportunities for vest functionality (e.g., Barker & Black, 2009; Barker et al., 2010). For example, load-bearing vests offer alternatives for officers to carry their operational equipment (e.g., ammunition, handcuffs, batons) and high-visibility fluorescent vests offer means to increase officers' visibility during traffic-related events (e.g., motor vehicle collisions). Some research has examined the effects of these vests on physiology. For example, scholars have found that vests can restrict police officers' mobility (Dempsey et al., 2013), decrease soldiers' pulmonary function and work capacity (Majumdar et al., 1997), and increase their musculoskeletal pain (Konitzer et al., 2008).

One particular type of vest that has become increasingly popular in recent years is the load-bearing vest. This vest functions to reposition officers' weaponry and equipment from their waist (where one could argue it is relatively concealed) to their chest (where it is much more visible). Although the life-protective functions of this vest remain the same as the internal, non-visible vest, the repositioning of equipment that accompanies it may be particularly important for perceptions because of the "weapon focus" effect. Described as the "concentration of a crime witness's attention on a weapon, and the resultant reduction in ability to remember other details of the crime" (Loftus et al., 1987, p. 55), the "weapon focus" effect has been found to negatively impact lineup identification and feature accuracy of individuals carrying weapons (Loftus et al., 1987; Steblay, 1992). Even though unilateral consensus may not exist for the mechanism which ultimately drives this effect (e.g., weapon-induced arousal and/or increased cognitive demands to process unusual objects, like firearms), the finding that weapons impact attention remains important for the present research. Given that load-bearing vests reposition weapons to more visible portions of the body, which in return could accentuate the "weapon focus" effect and/or

cue aggression (Boyanowsky & Griffiths, 1982) by shifting focus from the officer, generally, to their weapons, specifically, I propose the following hypothesis:

> **Hypothesis #1:** Police officers will be perceived as more aggressive and less approachable, friendly, respectful, and accountable when wearing load-bearing vests than when not wearing such vests.

In contrast to load-bearing vests, high-visibility fluorescent vests primarily function to enhance vest-bearers' visibility in traffic-related environments (Kwan & Mapstone, 2004). Their secondary functions in a policing context may also be to soften the overall appearance of the dark colored uniform, shelter any underlying equipment that would otherwise be carried in this region, and accentuate officers' presence in all environments (traffic-related or not). In the context of color, scholars have found that dark colored uniforms can negatively impact perceptions and behaviors of uniform-bearers. For example, Johnson (2005) found that black uniforms evoked negative impressions of police (although Nickels (2008) reported contrasting results), and Frank and Gilovich (1988) found that professional football and hockey teams with black uniforms received more penalties than teams with non-black uniforms. Moreover, high-visibility vests have historically been worn by staff working in non-threatening occupations, like school crossing guards, and so their presence in policing may help to associate this otherwise "threatening" occupation with less threatening characteristics. Given their difference in color and this associated line of theorizing and findings, I propose the following hypothesis:

> **Hypothesis #2:** Police officers will be perceived as less aggressive and more approachable, friendly, respectful, and accountable when wearing high-visibility vests than when not wearing such vests.

GLOVES

In addition to vests, gloves have also become increasingly popular in policing in recent years. Although no known research has empirically examined the utility of gloves in a policing-specific context, practitioners have anecdotally advocated for their safety benefits. For example, practitioners often argue that gloves help to protect officers from injury and disease transmission during physical encounters (e.g., use of force incidents and person searches) and preserve evidence during exhibit collection (e.g., minimize the potential for fingerprint interference). Consistent with the former, scholars have found that gloves can prevent aggression-provoked hand injuries during physical engagements (Lin et al., 2012). With that in consideration, gloves worn by police are typically black in color, and hence, may contribute to the already dark uniform (as discussed in the preceding section). Moreover, given their primary function, the presence of gloves may also suggest to the public that an officer anticipates engaging in some form of physical contact with a citizen. Considering that gloves may therefore accentuate the perceived aggression of officers, I propose the following hypothesis:

> **Hypothesis #3:** Police officers will be perceived as more aggressive and less approachable, friendly, respectful, and accountable when wearing black gloves than when not wearing such gloves.

BATONS

Batons have a rich history in policing: evolving from largely a communication tool to more recently an impact tool. Even though batons' function and presence are now generally ubiquitous, their physical characteristics still vary. Batons range in size from the most conspicuous, longstick baton to the least conspicuous, collapsible baton, and are made from a variety of different materials, including wood, aluminum, plastic, and metal. Previous research

has investigated how differences in size and material can impact force characteristics. For example, Roberts and colleagues (1994) reported that wooden batons generate more force, but less peak pressure, than collapsible batons and Gervais and colleagues (1998) found that PVC batons produce greater impact, but lesser speed, than collapsible, side handle, and/or wooden batons. From an impact perspective, longstick batons therefore appear to generate more force than smaller, less conspicuous, collapsible batons. Although no known research has specifically examined the effects of batons on perceptions of baton-users, the correlation between size and force may be particularly fruitful in the context of perceptions of police who carry such batons. Given this relationship, it is reasonable to argue that more conspicuous batons will signal greater aggression and negatively impact perceptions. I propose the following hypothesis:

> **Hypothesis #4:** Police officers will be perceived as more aggressive and less approachable, friendly, respectful, and accountable when carrying a longstick baton than when not carrying such a baton.

SUNGLASSES

Sunglasses comprise another popular component of attire, particularly for police officers working in warm climates. Although sunglasses provide health benefits for their user, their presence can sometimes foster negative perceptions. For example, Boyanowsky and Griffiths (1982) found that citizens perceived police officers more negatively during traffic stops when officers wore reflective sunglasses (i.e., when citizens could not establish eye contact) than when officers did not wear such glasses. Boyanowsky and Griffiths (1982) also reported that citizens stopped by officers wearing sunglasses rated their own feelings as more negative and less energetic. In a non-policing context, Albas and Albas (1989) found that the presence of sunglasses increased surveyor-citizen proximity during interactions in potentially threatening

situations. The authors attributed these increases in proximity to increases in participants' suspicion: arguing that sunglasses intensified participants' uncertainty about the situation (i.e., sunglasses concealed information about the experimenter), and hence, increased participants' proximity from the experimenter. Given these findings, it is reasonable to argue that the presence of sunglasses on an officer will negatively impact perceptions of that officer. I propose the following hypothesis:

> **Hypothesis #5:** Police officers will be perceived as more aggressive and less approachable, friendly, respectful, and accountable when wearing sunglasses than when not wearing sunglasses.

BASEBALL HATS

Historically, police departments have used headwear to amplify their presence and signify their authority in public environments. More recently, however, many police departments have restricted their use of traditional headwear to more ceremonial occasions. In lieu, some departments have adopted the use of baseball hats in pursuit of greater functionality at lesser cost. Findings regarding the perceptual effects of headwear have been mixed. For example, Volpp and Lennon (1988) found that police hats conveyed authority, particularly when worn by female officers. In contrast, Johnson and colleagues (2015) reported that hats had no significant effect on citizens' impressions of officers as good, nice, warm-hearted, gentle, friendly, honest, or professional. Thus, even though hats may reduce eye contact with citizens (similar to sunglasses) and darken police uniforms (considering their typical dark color), their presence does not always materialize into negative perceptions of officers. Nonetheless, based upon the physical characteristics of baseball hats, I propose the following hypothesis:

Hypothesis #6: Police officers will be perceived as more aggressive and less approachable, friendly, respectful, and accountable when wearing baseball hats than when not wearing such hats.

METHOD

PARTICIPANTS

Data from three-hundred and seven participants who participated in the POPP are included in this chapter (see Table 1.1 for the descriptive statistics). Although all participants observed images of officers in multiple capacities as part of the experiment (i.e., in vehicles, on foot, on a bicycle), I only examine the subset of images of officers on foot for the purposes of this chapter. Specifically, I examine images where officers are wearing one of the following six accoutrements: a high-visibility vest, a load-bearing vest, black gloves, a longstick baton, sunglasses, or a baseball hat (the reference image is the officer on foot without any of the aforementioned accoutrements). Not all participants, however, observed all six accoutrements, and therefore I divide my total sample (N = 307) into two subsamples and model their results separately based on the accoutrements observed (herein after referred to as Phase 1 and Phase 2). In all of these poses, officers were presented against an all-white background and displayed a neutral facial expression. Each officer was presented with each accoutrement twice: once wearing their police uniform and once wearing generic civilian clothing.

<<< Table 1.1 >>>

In Phase 1, I utilize data from one-hundred and fifty-five participants (130 women and 25 men) to evaluate the effects of high-visibility vests, load-bearing vests, and black gloves on perceptions of police officers. Participants in Phase 1 range in age from 18 to 56 (with a mean age of 21), and self-identify as Asian (82), Hispanic (45), White (18), and other race (10). Most

participants report having no negative or positive police contact in the prior six months (102).

In Phase 2, I utilize data from one-hundred and fifty-two participants (129 women and 23 men) to evaluate the effects of longstick batons, sunglasses, and baseball hats on perceptions of police officers. Participants in Phase 2 range in age from 18 to 32 (with a mean age of 21), and self-identify as Asian (64), Hispanic (53), White (14), and other race (21). Most participants report having no negative or positive police contact in the prior six months (114). Note, again, that participants in Phase 2 are not the same participants as those in Phase 1 (155 + 152 = total of 307 participants).[10]

ANALYTIC STRATEGY

All of my dependent variables are dichotomous, and so I estimate a series of multilevel mixed-effects logistic regression models in order to measure the effects of accoutrements on perceptions of police officers.[11] My models use officer attire, accoutrement, gender, and race as well as participant gender, race, age, socioeconomic status, and contact with the police to predict perceptions of police officers. Note that the reference groups for all nominal variables remain the same across all models to maintain continuity.

All models are tested at the $p < 0.05$ level. Each rating of each image by each participant is treated as a unit of observation. My models are two-level: with image ratings nested within participants (all dependent variables are modeled individually). My N for my models in Phase 1 is 155 participants with 32 observations per participant (4,960 total observation points) and my N for my models in Phase 2 is 152 participants with 32 observations per participant (4,864 total observation points).

[10] All data were collected sequentially.
[11] These models were appropriate for my analyses given my repeated measurements of subjects and dichotomous outcomes.

RESULTS

PHASE 1: HIGH-VISIBILITY VESTS, LOAD-BEARING VESTS, AND BLACK GLOVES

In this first set of analyses, I explore the effects of high-visibility vests, load-bearing vests, and black gloves on participants' perceptions of police officers. As shown in Table 2, the results of my multilevel mixed-effects logistic regression models reveal a number of significant findings (all values represent odds ratios). Although the mere uniform itself impacts perceptions of police officers in meaningful ways (Simpson, 2017), the accoutrements worn by officers impact perceptions in important ways as well.

<<< Table 1.2 >>>

For example, relative to no external vest, wearing a high-visibility vest decreases the odds that participants rate police officers as aggressive ($OR = 0.442$, $p < 0.001$) and increases the odds that participants rate them as approachable ($OR = 2.333$, $p < 0.001$), friendly ($OR = 2.578$, $p < 0.001$), respectful ($OR = 2.889$, $p < 0.001$), and accountable ($OR = 3.054$, $p < 0.001$). High-visibility vests thus exhibit unilaterally positive perceptual effects.

Load-bearing vests, on the other hand, exhibit more complex effects. Relative to no external vest, wearing a load-bearing vest increases the odds that participants rate police officers as aggressive ($OR = 1.830$, $p < 0.001$) and decreases the odds that participants rate them as friendly ($OR = 0.724$, $p < 0.001$). With that being said, wearing a load-bearing vest also increases the odds that participants rate officers as respectful ($OR = 2.417$, $p < 0.001$) and accountable ($OR = 4.106$, $p < 0.001$).

Whereas load-bearing vests exhibit mixed effects, black gloves exhibit unilaterally negative perceptual effects. Relative to no gloves, wearing black gloves increases the odds that participants rate police officers as aggressive ($OR = 2.022$, $p < 0.001$) and decreases the odds that

participants rate them as respectful ($OR = 0.690$, $p < 0.001$), approachable ($OR = 0.571$, $p < 0.001$), and friendly ($OR = 0.518$, $p < 0.001$).

Sociodemographics exhibit some effect on perceptions as well. For example, the odds of police officers being rated as approachable ($OR = 1.880$, $p < 0.01$) and friendly ($OR = 1.830$, $p < 0.05$) are higher for male participants than female participants. The odds of officers being rated as accountable ($OR = 2.282$, $p < 0.05$) are also higher for male participants than female participants, and the odds of them being rated as respectful ($OR = 0.954$, $p < 0.05$) decrease with participant age. Lastly, the odds of participants rating officers as respectful ($OR = 2.279$, $p < 0.05$) are higher for White participants than Asian participants.

In terms of officer characteristics, the odds of male police officers being perceived as respectful ($OR = 0.850$, $p < 0.05$) are lower than female officers. The odds of Hispanic officers being rated as approachable ($OR = 0.822$, $p < 0.05$) are lower than Asian officers. The odds of Black officers being rated as aggressive ($OR = 0.783$, $p < 0.05$) are lower than Asian officers, and the odds of Black officers being rated as accountable ($OR = 1.326$, $p < 0.05$) and respectful *(*$OR = 1.418$, $p < 0.05$) are higher than Asian officers.

Discussion

These results provide the first known experimental evidence for the effects of vests and gloves on perceptions of police officers. Consistent with Hypotheses #1, #2, and #3, I find that the presence of different accoutrements translates into different perceptions of officers. The effects of these accoutrements, however, must not be evaluated in the absence of their associated utility and/or (unmeasured) effects on officers' physiology, functionality, and safety. For example, although wearing high-visibility vests may unilaterally enhance perceptions of officers, their presence in certain high-risk situations may hinder officers' safety (e.g., active shooter

scenarios where officers' physical presence best not be known). Moreover, although wearing load-bearing vests and gloves may tarnish perceptions of officers along some dimensions (e.g., by increasing officers' perceived militarization), they may also simultaneously offer alternatives for officers with musculoskeletal issues to carry their required equipment and to help protect them from injury and disease transmission during physical encounters.

Tension thus exists between comfort, utility, and perception. These findings provide some insight into how such tension may be mitigated. High-visibility vests, for example, may be utilized during community events and/or during routine foot or bicycle patrol where their benefits for perceptions would arguably be most realized. Load-bearing vests, which in their current state appear rather militaristic, may be redesigned to minimize the overt appearance of weaponry (e.g., by blending the external vest characteristics with the underlying shirt characteristics) and decrease the potential "weapon focus" effect. These particular vests could also be limited for use in high-risk situations (where easier access to equipment may be necessary) and/or by officers with health requirements that necessitate the use of such vests. Finally, standard-issued gloves could be modified such that their functionality remains but their negative perceptual effects diminish by, for example, transitioning to translucent-colored gloves (as sometimes used in the medical profession).

PHASE 2: LONGSTICK BATONS, SUNGLASSES, AND BASEBALL HATS

In this second set of analyses, I explore the effects of longstick batons, sunglasses, and baseball hats on participants' perceptions of police officers. As shown in Table 2, the results of my multilevel mixed-effects logistic regression models reveal a number of significant findings (all values again represent odds ratios). For example, relative to no longstick baton, carrying a longstick baton increases the odds that participants rate police officers as aggressive (*OR* =

3.255, $p < 0.001$) and decreases the odds that participants rate them as respectful ($OR = 0.573$, $p < 0.001$), approachable ($OR = 0.446$, $p < 0.001$), and friendly ($OR = 0.458$, $p < 0.001$). Relative to no sunglasses, wearing sunglasses increases the odds that participants rate officers as aggressive ($OR = 3.190$, $p < 0.001$) and decreases the odds that participants rate them as accountable ($OR = 0.787$, $p < 0.05$), respectful ($OR = 0.525$, $p < 0.001$), approachable ($OR = 0.329$, $p < 0.001$), and friendly ($OR = 0.301$, $p < 0.001$). Thus, longstick batons and sunglasses are both associated with unilaterally negative effects on perceptions of the police. I detect no significant effects for baseball hats.

Transitioning to my sociodemographic variables, I find that the odds of male participants rating police officers as approachable ($OR = 0.595$, $p < 0.05$) are lower than female participants.[12] I also find that the odds of participants rating officers as friendly ($OR = 0.471$, $p < 0.05$) are lower for participants with negative contact with the police than participants without police contact; and the odds of participants rating officers as friendly ($OR = 1.758$, $p < 0.05$) and respectful ($OR = 2.189$, $p < 0.01$) are higher for participants with positive contact with the police than participants without police contact. In terms of officer characteristics, I find that the odds of White officers being rated as friendly ($OR = 0.787$, $p < 0.05$) are lower than Asian officers. The odds of Hispanic officers being rated as approachable ($OR = 0.760$, $p < 0.01$) and friendly ($OR = 0.656$, $p < 0.001$) are also lower than Asian officers. Finally, the odds of Black officers being rated as respectful ($OR = 1.357$, $p < 0.05$) are higher than Asian officers.

[12] This finding regarding participant gender contrasts with the related finding from Phase 1. I predict that this fluctuation may be at least partially due to the small number of male participants, which makes the associated odds ratios less stable and robust.

Discussion

The results from this second set of analyses provide more experimental evidence to suggest that variation in officer appearance translates into variation in perceptions of officers. Consistent with Hypotheses #4 and #5, I find that longstick batons and sunglasses are associated with negative perceptions of officers (I find no support for Hypothesis #6 regarding baseball hats). The utility of equipment and the perceptual effects of wearing some equipment are thus again at odds. Although longstick batons may provide notable impact force, and sunglasses may provide health benefits, they both tarnish perceptions of officers. The implications of these results may seem bleak: suggesting that the mere presence of some equipment is associated with negative perceptions. The implications, however, do not need to be so negative. Understanding the effects of these accoutrements on perceptions of officers can help to shape policies regarding the effective use of such accoutrements so that functionality and safety can be complementary rather than mutually exclusive.

For example, police officers may selectively carry their longstick batons in high-risk situations (where utility arguably outweighs perception; e.g., physical altercations), but not (automatically) in lesser-risk situations (where perception arguably outweighs utility; e.g., community events), and/or consider carrying collapsible batons, which are more discrete in appearance.[13] Police officers may also selectively wear their sunglasses in order to maximize their benefits but reduce their costs. For example, sunglasses may be appropriate for use during tactical, outdoor scenarios where unobstructed visibility is critical to the outcome of an event, but less appropriate for use during non-tactical scenarios, such as statement taking and/or interviewing, where officers could reasonably relocate to areas where sunglasses may not be

[13] These findings do not imply that the police should never carry these equipment, but instead imply that the police should be mindful of the perceptual effects of the presence of such equipment.

required. Given that citizens may be more apt to approach officers when they are not carrying longstick batons or wearing sunglasses, the potential for interpersonal dialogue may be enhanced by officers' strategic use of these accoutrements. And these effects may be moderated by officer behavior: an important question for future research.

GENERAL DISCUSSION

This chapter contributes to the police-perception nexus by simultaneously examining the effects of several different accoutrements on perceptions of police officers. By using rigorously-collected, experimental data, this chapter unravels the effects of accoutrements on perceptions of the police while controlling for within- and between-officer characteristics. This chapter also facilitates the relative comparison of the direction and magnitude of the effects of these accoutrements: a methodological advantage of examining multiple stimuli simultaneously within a single experimental framework. Indeed, previous research has typically examined the effects of any one accoutrement absent explicit consideration of others, which has made relative comparisons between the effects of such accoutrements challenging. As a result, these findings contribute to the field's understanding of both the absolute (e.g., sunglasses and longstick batons are both associated with negative effects) and relative (e.g., sunglasses are associated with greater negative effects than longstick batons) effects of different accoutrements on perceptions of the police.

As described throughout this chapter, accoutrements exude presence and nonverbally communicate philosophies and intentions to the public. Whereas high-visibility vests may signal visible and transparent intentions consistent with a guardianship orientation (Stoughton, 2015; Stoughton, 2016), black gloves, longstick batons, and/or sunglasses may signal more deceptive and predatory intentions consistent with a warrior orientation (Stoughton, 2015; Stoughton,

2016). From a perceptual perspective, the former may soften the authoritarian and warrior image of the police (and hence increase favorable ratings), whereas the latter may reinforce such image (and hence decrease favorable ratings). Accoutrements are important ingredients in the perception equation and should be explicitly considered when evaluating the effects of interventions on perceptions of the police. It is possible that the effects of foot patrol, for example, may vary as a function of the appearance of the officers on foot: depending upon their accoutrements, observing parties may perceive officers' intentions very differently, from fear reducing to fear inducing. Given that citizens' infer judgement about officers based on their appearance, and officers can manipulate their appearance via their accoutrements, understanding the effects of such accoutrements is critical to advancing the police-perception nexus more broadly.

This latter discussion regarding perceptual signaling gives rise to an important caveat of accoutrement and appearance-related research. Although I have discussed the role of accoutrements in fostering an image which signals more approachable, friendly, respectful, and accountable intentions, I must note that there may be situations under which officers seek to facilitate an opposing image. For example, there may be environments where officers wish to adopt a more warrior image, such as large-scale public disturbances when officers are tasked with obtaining order among extreme disorder. In these particular instances, police may intentionally adorn aggressive-appearing accoutrements in an effort to stop or prevent criminal behavior from occurring. This use of appearance as a crime control tactic likely derives at least partially from beliefs rooted in police culture. Consistent with the signaling framework described at the outset of this chapter, officers anecdotally cite that certain accoutrements, like longstick batons, help to reinforce their enforcement role, whereas other accoutrements, like high-visibility

vests, weaken such role. This raises the question of how to best manage officers' attitudes toward accoutrements which are perceptually favorable but undesirable among police culture. Future research would benefit from analyses of officer response to appearance standards. Such work would also benefit from evaluations of accoutrements on officer behavior and decision-making.

Finally, I find that sociodemographic and contact factors exhibit some effect on perceptions of the police, even when controlling for the presence of accoutrements. With that being said, the effects of these characteristics are smaller than the effects of accoutrements. Given that accoutrements are very amenable to change, the implications of these findings are promising. As described earlier, functionality of equipment and safety of officers do not need to be mutually exclusive. Practitioners can use findings from research to effectively draft policies to maximize both the utility and perceptual effects of their equipment. Indeed, these findings provide one possible toolkit for modifying police appearance to enhance perceptions of officers and foster positive public-police relations (e.g., by increasing the use of high-visibility vests and minimizing the overt appearance of batons, gloves, etc.).

LIMITATIONS

I note four potential limitations of the present research. First, the generalizability of my results is arguably limited, given that my analyses utilize a university student sample which overrepresents Asian and female participants. With that being said, my sample characteristics do not necessarily minimize the magnitude of the effects observed as part of this research, largely because I examine differences between stimuli and I do not have theoretical reasons to predict that the differential effects of specific stimuli (e.g., sunglasses) would systematically vary by sample population (e.g., university versus non-university students). Moreover, the overrepresented populations included in my sample have been found to generally express

positive perceptions of the police (e.g., Cao et al., 1996; Ivkovic, 2008; Wu et al., 2011), and so I predict at least similar effects would exist in populations that express less favorable perceptions. Indeed, ancillary analyses which excluded Asian participants showed consistent patterns in results. In this respect, the overrepresentation of Asians and females in my sample arguably accentuates the contribution of this research by providing important insight into these understudied populations' perceptions of the police.

Second, and relatedly, the experiment was conducted entirely within a laboratory setting, which poses some concern regarding the external validity of the findings. It is possible that participants may not perceive such aesthetic differences among officers in dynamic environments where more contextual stimuli are present. With that being said, the focus of this research was primarily on developing an internally-valid and well-controlled methodology which could provide insight into the perceptual effects of these accoutrements. It is my hope that these findings will stimulate further conversation and research regarding accoutrements that will extend beyond the laboratory setting.

Third, I only assessed the effects of six different accoutrements. It is possible that other accoutrements, like conducted energy weapons, may impact perceptions of officers as well, and so they should be considered as part of future research. Fourth, and finally, I did not specifically measure intent as part of the present research, although I theorize regarding the relationship between accoutrements and perceived intent. Subsequent research should more explicitly evaluate the role of intent as well as other potential mechanisms when exploring the perceptual effects of accoutrements.

CONCLUSION

In sum, I find evidence to suggest that variation in officer appearance translates into variation in perceptions of officers, even absent police contact. Accoutrements as signals of intent are important means by which police exude presence and nonverbally communicate their philosophies and intentions to the public: for example, guardians who prioritize service and rapport versus warriors who prioritize crime-fighting and officer safety (Stoughton, 2015; Stoughton, 2016). Practitioners and academics alike should consider these perceptual effects when examining the police-perception nexus. By strategically equipping and deploying officers in appropriate aesthetics, police departments may enhance their relations with the public. This is particularly important given that police can change themselves via their appearance much easier than they can change the citizens whom they police. Future research should continue to investigate the effects of accoutrements on perceptions of police officers in more natural settings. Future research should also employ qualitative analyses to more precisely assess the causal mechanism(s) underlying the relationship between accoutrements and perceptions of the police.

CHAPTER 2

Police Vehicles as Symbols of Legitimacy[14]

The "police vehicle" has long been described as an icon in policing: a symbol of deterrence. Much police-related research has rooted itself, at least implicitly, in the assumption that the presence of police deters crime and related behavior (e.g., Jones & Tilley, 2004; Kaplan et al., 2000; Kelling et al., 1974; Koper, 1995; Piza & O'Hara, 2014; Ratcliffe et al., 2017; Ravani & Wang, 2018; Schnelle et al., 1977; Sherman & Weisburd, 1995; Telep et al., 2014; Williams & Coupe, 2017). Many proactive policing strategies, like hot spot policing, have also flourished out of this arguably contentious assumption: increase the volume of police presence and crime will decline (e.g., see Sherman & Weisburd, 1995; Braga et al., 2014). Although this chapter does not intend to interrogate the validity of the deterrence argument, it does draw specific aim at some of the mechanisms embedded within it. Given contemporary policing's dependence on motorized patrol (Bureau of Justice Statistics, 2011), implying that the presence of police in a given area will reduce crime typically hinges upon the assumption that the presence of a *police vehicle* elicits a strong enough perceptual effect to change citizen behavior. This is especially important considering that many saturation-type patrols do not necessarily intend to increase the number of formal contacts between the public and the police, but rather the number of observations of the police (e.g., see Kelling et al., 1974). Despite the prevalence of this assumption, however, very little research has specifically assessed the perceptual effects of police vehicles on officers occupying such vehicles. It is possible that police vehicles may be a key conduit for eliciting perceptions of officers along an array of outcomes and thus they warrant further research.

[14] Note that this chapter contains excerpts of text from the following article:

Simpson, R. (2019). Police vehicles as symbols of legitimacy. *Journal of Experimental Criminology, 15*, 87-101.

OVERVIEW OF THE CHAPTER

This chapter extends previous literature by evaluating the effects of police vehicle types and aesthetics on perceptions of the police. Specifically, it examines the perceptual effects of three vehicle styles: marked police vehicles (black and white versus white and blue), unmarked police vehicles, and unrelated (or civilian) police vehicles. In all of my analyses, I estimate multilevel mixed-effects logistic regression models to predict participants' (N = 307) ratings of police officers as (1) aggressive versus *not* aggressive, (2) approachable versus *not* approachable, (3) friendly versus *not* friendly, (4) respectful versus *not* respectful, and (5) accountable versus *not* accountable. Overall, I find that occupying different styles of vehicles impacts perceptions of police officers along all of my dependent variables.

BACKGROUND

Police appearance is an important predictor of perceptions of the police. For example, previous research has found that subtle differences in uniform aesthetics can impact perceptions of police officers in meaningful ways. Presenting officers in uniform versus civilian attire enhances officers' perceived approachability, respectfulness, accountability, and aggressiveness (Simpson, 2017). Presenting officers in different colored uniforms (e.g., Johnson, 2005; Nickels, 2008) with different types of accoutrements (e.g., Johnson et al., 2015; Volpp & Lennon, 1988) also impacts perceptions of officers in similarly significant ways. For example, Johnson (2005) found that black uniforms evoked more negative impressions of the police than blue and khaki uniforms. In Chapter 1, I found that longstick batons, sunglasses, and black gloves tarnished perceptions of officers whereas high-visibility vests enhanced perceptions of officers. And in non-policing contexts, Skorupski and Rea (2006) and Albert and colleagues (2008) found that nurses in white uniforms were perceived as more professional (and for older populations, more

approachable) than nurses in lavender-print uniforms and Frank and Gilovich (1988) found that professional football and hockey teams with black uniforms received more penalties than teams with non-black uniforms.

Uniforms, however, are only one mechanism by which police manipulate and symbolize their presence (e.g., Bell, 1982; Bickman, 1974; Durkin & Jeffery, 2000; Joseph & Alex, 1972; Simpson, 2017; Singer & Singer, 1985). Police also manipulate and symbolize their presence via their vehicles. Indeed, police use a plethora of different styles of vehicles as part of their operations (Bureau of Justice Statistics, 2015; Thomas & Williams, 2012). For example, police frequently use marked and non-marked vehicles for their patrol practices. And in terms of marked vehicles, police employ a variety of different color schemes, including black and white (e.g., Los Angeles Police Department) and white and blue (e.g., New York Police Department). But little is known about the perceptual effects of presenting officers in these different styles of vehicles. For example, does presenting an officer in a marked versus non-marked vehicle impact perceptions of that officer? And if so, does the color scheme of the marked vehicle matter? Considering police vehicles' presence and display in public environments (e.g., roadways, civic centers, etc.), understanding the effects of vehicle types and aesthetics on perceptions of officers is important for understanding perceptions of the police more broadly.

POLICE VEHICLES AND DETERRENCE

Vehicles provide numerous benefits for police officers, especially given contemporary policing's dependence on motorized patrol (Bureau of Justice Statistics, 2011). From a practical perspective, vehicles provide officers with the transportation, storage, and equipment necessary to conduct their duties. From a theoretical perspective, vehicles provide officers a potential means to elicit deterrence: if citizens associate the presence of a police vehicle with the presence

of a police officer than the vehicle itself may act as a conduit to achieving deterrence. The potential deterrent mechanism of police vehicles, however, may vary as a function of the type of vehicle (e.g., see Ratcliffe et al., 2017). For example, marked police vehicles, which are the most common type of police vehicle, arguably represent the most recognizable symbols of deterrence: they explicitly symbolize the policing institution. Practitioners anecdotally cite that the mere presence of a marked vehicle in a neighborhood alters citizens' behavior in fear of disciplinary action from the officer occupying such vehicle, which as I review in the subsequent sections, has received recent empirical support. In the case of marked vehicles, then, the alleged deterrence may be associated with the obvious, visible presence of police at a given location (i.e., the presence of a vehicle implies the presence of an officer).

Unmarked police vehicles, on the other hand, may elicit deterrence via a slightly different mechanism. Unlike marked vehicles, which hinge upon their explicit association with the policing institution, unmarked vehicles hinge upon their limited association with such institution: although the make and model of unmarked vehicles may be the same as marked vehicles, unmarked vehicles do not have any overt "police" markings. In this respect, unmarked police vehicles may induce deterrence via fear that the police "could be anywhere," suggesting that deterrence may be associated with the unknown element of police location.

Finally, unrelated (or civilian) police vehicles, which are also unmarked but typically used for more surveillance- and/or other non-patrol-type purposes (e.g., a non-marked and non-modified minivan purchased from a public dealership for use by police), potentially elicit deterrence via their threat of prosecution. The goal of this type of vehicle is largely to abolish the affiliation with the policing institution all together so that observing parties will engage in their business as if the police are not present (so that occupying officers can collect observational

evidence). Thus, these unrelated vehicles do not intend to elicit deterrence via their mere presence, but instead via the threat of their investigational capacity: police use these vehicles as part of investigations that may otherwise be hampered by the deterrent effects of more explicitly identifiable police vehicles like those discussed above.

As alluded to at the outset of this chapter, no known research has explicitly examined the perceptual effects of police vehicle style on deterrence. With that being said, some scholars have investigated the potential deterrent effects of police vehicles more generally by nature of their exploration of the police's impact on crime. These studies provide some loose insight into the potential perceptual effects, or lack thereof, of police vehicles.

For example, as part of the Kansas City Preventative Patrol Experiment, Kelling and colleagues (1974) experimentally assessed the effects of marked, motorized patrol on crime in three types of strategically-manipulated beats: control, reactive, and proactive. The results revealed that varying the levels of patrol had no significant effects on crime, crime reporting, fear of crime, or satisfaction with the police (Kelling et al., 1974). These very early results suggested that marked police vehicles elicit little perceptual effect. Subsequent, follow-up studies, however, have observed at least somewhat contrasting results.

As part of the Minneapolis Hot Spots Experiment, Sherman and Weisburd (1995) observed that marked police patrols reduced crime and disorder at hot spots. Moreover, an analysis of the Minneapolis data by Koper (1995) found that the deterrent effect of motorized patrol varied by the duration of police presence. Specifically, Koper (1995) argued that police could maximize their deterrent effect by intermittently conducting 11- to 15-minute patrol stops: findings which received additional support from the Sacramento Hot Spots Experiment (Telep et al., 2014). More recent research has also found that stationary police vehicles can reduce

speeding along highways in urban and rural environments when occupied (Ravani & Wang, 2018) as well as unoccupied (Kaplan et al., 2000) and mobile marked vehicle patrols can reduce property crime in high crime grids (Ratcliffe et al., 2017). In contrast to the earlier findings from the Kansas City Preventative Patrol Experiment, these latter studies suggest that the mere presence of marked police vehicles can actually elicit perceptual effects and influence citizen behavior, particularly when such presence is intermittent in high crime areas.

The evidence for unmarked vehicles, however, has been scant and less optimistic. Recent research by Ratcliffe and colleagues (2017) found that unmarked vehicle patrols yielded little benefit for crime reduction in high crime grids in Philadelphia. Although these particular findings suggest that unmarked vehicles may exhibit less of a deterrent effect than their marked counterparts, it is important to note that the goal and/or perceived function of non-marked patrols (as described earlier in this chapter) may not always be entirely consistent with immediate crime prevention or displacement. It is also important to note that some citizens may not even notice a non-marked police vehicle or associate it with the policing institution at all. Both of these latter points are important not only in the context of deterrence, but also in the context of police legitimacy, which is another important element of contemporary policing.

POLICE VEHICLES AND LEGITIMACY

As described above, the presence of a police vehicle is often believed to elicit deterrence. If police vehicles can elicit deterrent effects, then, it is also likely that they can elicit legitimacy effects as well. Thus, the effects and functions of uniforms may be applied to vehicles: similar to uniforms, police vehicles vary aesthetically and may be used to establish status and legitimacy. Defined as “a property of an authority or institution that leads people to feel that that authority or institution is entitled to be deferred to and obeyed” (Sunshine & Tyler, 2003, p. 514), legitimacy

is particularly important in the context of policing. As argued by Tyler (1990), citizens are more likely to voluntarily comply with the law and its directives when they believe that the police are legitimate (e.g., Mazerolle et al., 2013b; Sunshine & Tyler, 2003; Tyler, 2004). With that being said, two different models link legitimacy with policing: the instrumental model and the procedural justice model. In the instrumental model, citizens' willingness to accept legal authorities and cooperate with such authorities is linked to evaluations of risk, performance, and judgments about distributive justice (Sunshine & Tyler, 2003). From this perspective, citizens afford police acceptance when they are perceived as creating credible sanctions for rule-violators, controlling crime, and distributing police services in a fair fashion. In contrast, in the procedural justice model, citizens' willingness to accept and cooperate with legal authorities is linked to judgments about the fairness of the processes by which the police exercise their authority and make their decisions (Sunshine & Tyler, 2003). As part of the latter perspective, legitimacy is less linked to crime counts and more linked to the treatment of people: whereas the instrumental model prioritizes crime prevention, the procedural justice model prioritizes the processes by which such prevention is conducted.

The effects of legitimacy are immense for policing and existing research suggests that evaluations of legitimacy are often based on procedural fairness: process-based judgments are believed to exhibit greater impact on perceptions of police than instrumental judgments (Sunshine & Tyler, 2003). Thus, both researchers and practitioners have much to gain from analyzing factors that can impact process-based judgments of legitimacy, including the style of vehicles used by police.

Although legitimacy may be uniformly important in the context of policing, not all police vehicles afford equal potential to exhibit legitimacy. Whereas marked police vehicles (i.e., the

most stereotypical type of police vehicle) explicitly symbolize their association with the policing institution via their overt "police" identifiers, unmarked or unrelated police vehicles minimize their association with such institution (Thomas & Williams, 2012). This display of association is important for several reasons.

First, officers occupying marked police vehicles are much more clearly affiliated with the policing institution than officers occupying non-marked police vehicles: the marked vehicle explicitly identifies as a police vehicle, and hence, the driver as a police officer, but the non-marked vehicle does not. Indeed, the goal of a non-marked police vehicle is to blend the presence of the officer with non-police traffic to accentuate the uncertainty of the officer's location. This difference in affiliation can signal different types of policing philosophies and intentions. For example, the marked police vehicle implies that the police wish for the public to know their location, which suggests a more transparent, fair, and/or guardianship orientation (Stoughton, 2015; Stoughton, 2016). In contrast, non-marked vehicles imply that the police wish for the public *not* to know their location, which suggests a more deceptive, predatory, and/or warrior orientation (Stoughton, 2015; Stoughton, 2016). Whereas the former prioritizes fairness via exposure of the policing identity, the latter hinders it in pursuit of greater disciplinary-based consequences (e.g., "hiding" to catch larger numbers of traffic violators). Given the procedural justice model (Sunshine & Tyler, 2003), officers occupying marked police vehicles may therefore appear more legitimate than officers occupying non-marked police vehicles, which may be further implicated in the fact that *uniformed* officers typically drive *marked* vehicles.

Second, the procedural justice literature suggests that the public may find disciplinary action to be fairer when received by officers acting in obvious policing positions than when acting in covert positions. If procedural fairness is vital to perceptions of legitimacy (Sunshine &

Tyler, 2003), then, being stopped by police acting in a capacity where their presence could have been reasonably detected by the offending party (e.g., traffic enforcement in a *marked* police vehicle) would theoretically seem fairer than being stopped by police acting in a capacity where their presence would not likely have been detected (e.g., traffic enforcement in an *unmarked* police vehicle), in which case it could be perceived as a "trap."

Third, citizens may find the presence of officers in marked police vehicles more reassuring than non-marked police vehicles given the former's explicit affiliation with the policing institution and the values upon which such institution represents. Indeed, research on the effects of police presence suggests that fear can be reduced by uniformed police (e.g., Bahn, 1974; Zhao et al., 2002), which in this case, may apply to "uniformed" (i.e., marked) vehicles. The public may also be more apt to approach officers occupying marked vehicles with concern for similar reasons: a citizen must recognize the vehicle as belonging to the police if they wish to speak with the police or request their assistance.

Fourth, and finally, citizens may perceive officers as more accountable and respectful when occupying marked police vehicles given that it is arguably more difficult for officers to hide problematic behavior when occupying such an obvious symbol of the police. For example, a red-light infraction by an officer driving a marked police vehicle is much more obviously an infraction by police than a red-light infraction by an officer driving a non-marked police vehicle, which could theoretically belong to any member of the public. For all of these reasons, it is likely that officers presented in different types of police vehicles will be perceived differently. I propose the following hypothesis:

Hypothesis #1: Police officers will be perceived as more aggressive, but also more approachable, friendly, respectful and accountable, when occupying a marked police vehicle than when occupying an unmarked or unrelated police vehicle.

In addition to vehicle types, vehicle colors may also impact perceptions of officers occupying police vehicles. Indeed, past research suggests that color matters: Thomas and Williams (2012) reported that participants were faster to categorize a black and white marked vehicle as being associated with the police than a white marked vehicle. The association of a marked vehicle (and its occupants) as belonging to the police may be particularly important for perceptions of legitimacy: if black and white marked vehicles are more likely to be associated with the police, citizens may be more likely to perceive officers occupying them as respectful and accountable for the reasons noted above. The mere categorization of a marked vehicle as a police vehicle, however, does not necessarily infer how citizens may perceive other traits of officers occupying such vehicles. To help inform this latter discussion, I turn to research on uniform color and public discourse regarding vehicle aesthetics.

Given the findings that dark colored uniforms can elicit negative perceptions and behaviors (e.g., Frank & Gilovich, 1988; Johnson, 2005), it is possible that dark colored vehicles may elicit some negative perceptions as well. Consistent with this theorizing, practitioners often anecdotally cite these concerns with dark colored vehicles when justifying their use of light colored vehicles: arguing that light colored vehicles appear less aggressive, and relatedly, more approachable and friendly than dark colored vehicles. Media coverage has recently echoed such themes. As highlighted in the articles, "Why did Canadian police cars become so menacing" (Strebly, 2016) and "Canadian police forces' switch to darker cruisers 'a disturbing trend,' critics say" (Powell, 2016), communities in Canada have engaged in much discussion regarding their

concern about dark vehicle color schemes. As one case in point, negative response to the transition from a primarily white colored police vehicle to a primarily dark colored police vehicle halted the roll-out of new vehicle aesthetics ("Toronto police halt new 'militaristic' cars after council steps in"; The Canadian Press, 2016). Although not necessarily empirical, the outpouring response to these changes in police vehicle aesthetics suggests that the public are both conscious of such aesthetics and concerned about them and their perceptual effects. I propose the following hypothesis:

> **Hypothesis #2:** Police officers will be perceived as more respectful, accountable, and aggressive, but less approachable and friendly, when occupying a marked police vehicle with a black and white color scheme than a white and blue color scheme.

METHOD

PARTICIPANTS

Data from three-hundred and seven participants (259 females and 48 males) who participated in the POPP are included in this chapter (i.e., combined sample of participants from Phases 1 and 2). Most participants self-identified as Asian (146), Hispanic (98), and White (32), and reported having no contact with the police in the prior six months (216). See Table 2.1 for the descriptive statistics.

<<< Table 2.1 >>>

PROCEDURE

Although all participants observed images of officers in multiple capacities as part of the experiment (i.e., in vehicles, on foot, on a bicycle), I only examine the subset of images of officers in vehicles for the purposes of this chapter: in a marked police vehicle (black and white versus white and blue), in an unmarked police vehicle, and in an unrelated (or civilian) police

vehicle. In all of these poses, officers were seated in the driver seat of the vehicle (which was presented against an all-white background) with their head facing the camera and both of their hands grasping the steering wheel. All officers displayed a neutral facial expression. Each officer was presented in each vehicle style twice: once wearing their police uniform and once wearing generic civilian clothing.

Marked Police Vehicles

Marked police vehicles are defined as police vehicles with overt "police" identifiers that are typically used for patrol practices. For the purposes of this chapter, I distinguish between two marked vehicle color schemes: black and white and white and blue. The former vehicle has black front and rear quarter panels and white doors which feature the "police" text in large font. The latter vehicle is predominately white, with the "police" text embedded within a blue stripe that runs the length of the vehicle. Both vehicles are Ford Crown Victorias with push bars at the front of the vehicles and emergency light bars on top of the vehicles.[15] The use of Ford Crown Victorias with identifiable police equipment was important for highlighting these vehicles' stereotypical association with the policing institution (Thomas & Williams, 2012).

Unmarked Police Vehicles

Unmarked police vehicles are defined as police vehicles with no "police" identifiers that are typically used for patrol practices. I use a Ford Crown Victoria for this vehicle in order to maintain continuity with the make and model of the marked police vehicles. However, unlike the marked police vehicles, this vehicle does not have a visible push bar or external emergency light bar (which as described above are identifiers of more stereotypical police vehicles). In order to reduce potential color bias, I use a plain grey color scheme for this vehicle.

[15] City identifiers were removed from these vehicles using photo-editing software.

Unrelated Police Vehicles

Unrelated (or civilian) police vehicles are defined as police vehicles with no "police" identifiers that are not used for patrol practices (e.g., often used for surveillance purposes). In order to maintain continuity with the unmarked police vehicle, and not introduce any color bias, I use a plain grey color scheme for this vehicle. However, unlike the preceding two vehicle types, which use Ford Crown Victorias, I use a Ford Escape for this vehicle because it is generally considered an atypical police vehicle. This allows me to effectively assess whether the perceptual effects of being in a vehicle regard the mere presence of an officer being in any vehicle or being in a stereotypical police vehicle, specifically.

ANALYTIC STRATEGY

All of my dependent variables are dichotomous, and so I estimate a series of multilevel mixed-effects logistic regression models in order to measure the effects of vehicle types and aesthetics on perceptions of police officers.[16] My models use officer gender, race, attire, and vehicle style (reference vehicle is the unrelated police vehicle) as well as participant gender, race, age, socioeconomic status, and contact with the police to predict perceptions of police officers.

All models are tested at the $p < 0.05$ level. Each rating of each image by each participant is treated as a unit of observation. My models are two-level: with image ratings nested within participants (all dependent variables are modeled individually). My N for all of my models is 307 participants with 24 observations per participant (7,368 total observation points).

[16] These models were appropriate for my analyses given my repeated measurements of subjects and dichotomous outcomes.

RESULTS

As shown in Table 2.2, the results of my multilevel mixed-effects logistic regression models reveal a number of significant findings (all values represent odds ratios). As described by Simpson (2017), I find that police officers are perceived more favorably when presented in police uniform than when presented in civilian clothing, even when seated inside vehicles where minimal attire is visible (officer gender and race also exhibit some effects in these models as well). With that being said, the magnitude of the effects of attire is generally smaller than the magnitude of the effects of vehicle style, likely because attire is less visible when seated inside of a vehicle.

<<< Table 2.2 >>>

For example, police officers are perceived differently when presented in marked versus unrelated police vehicles. The effects of marked vehicles, however, vary as a function of color scheme and so I discuss their results separately. First, occupying a black and white marked police vehicle increases the odds that participants rate police officers as approachable (OR = 1.303, $p < 0.01$), respectful (OR = 1.929, $p < 0.001$), and accountable (OR = 3.424, $p < 0.001$) compared to an unrelated police vehicle. Occupying a black and white marked police vehicle also increases the odds that participants rate officers as aggressive (OR = 3.073, $p < 0.001$) and decreases the odds that participants rate them as friendly (OR = 0.737, $p < 0.001$) compared to an unrelated police vehicle. Occupying a white and blue marked police vehicle increases the odds that participants rate officers as respectful (OR = 1.554, $p < 0.001$), accountable (OR = 3.353, $p < 0.001$), and aggressive (OR = 3.603, $p < 0.001$) as well as decreases the odds that participants rate them as friendly (OR = 0.467, $p < 0.001$) compared to an unrelated police vehicle. Consistent with Hypothesis #1, presenting officers in marked police vehicles amplifies

perceptions of aggressiveness, approachability, respectfulness, and accountability, but unexpectedly, decreases perceptions of friendliness.

Presenting police officers in different color schemes of marked police vehicles further complicates this conclusion: suggesting that it is not only the type of vehicle but also the color of the vehicle which impacts perceptions. Indeed, ancillary analyses confirm that the values for these two marked police vehicle color schemes are significantly different for all dependent variables ($p < 0.01$), hence providing mixed support for Hypothesis #2.

Finally, occupying an unmarked police vehicle increases the odds that participants rate officers as aggressive ($OR = 1.662$, $p < 0.001$) and decreases the odds that participants rate them as respectful ($OR = 0.795$, $p < 0.01$), approachable ($OR = 0.715$, $p < 0.001$), and friendly ($OR = 0.590$, $p < 0.001$) compared to an unrelated police vehicle. Officers are thus perceived more negatively when occupying unmarked vehicles than unrelated vehicles, despite both vehicles having no overt "police" identifiers.

DISCUSSION

Like uniforms, police vehicles exhibit immense heterogeneity. Whereas some police departments utilize predominately marked police vehicles, other departments utilize a mixture of marked and non-marked police vehicles (Bureau of Justice Statistics, 2015). Similarly, whereas many departments use black and white marked vehicles, other departments use white and blue and/or other light colored marked vehicles. These stylistic differences matter for more than just aesthetic taste. Police officers are perceived differently when occupying marked police vehicles, which are most symbolic of the policing institution, than when occupying non-marked police vehicles, which are less symbolic of such institution. The differences in perceptions of officers in marked versus non-marked vehicles largely mirror the differences in perceptions of officers

wearing uniform versus civilian attire, where their status as police officers is clear versus not clear (Simpson, 2017). From this perspective, police vehicle markings may metaphorically act as important "uniforms for vehicles:" marked vehicles are to police uniforms as non-marked vehicles are to civilian clothing. Just like how citizens infer status to individuals when wearing a police uniform (e.g., Durkin & Jeffery, 2000; Simpson, 2017; Singer & Singer, 1985), they infer status to individuals when occupying a marked police vehicle as well, which is important given that officers spend much time occupying their vehicles (Bureau of Justice Statistics, 2011). In this respect, marked police vehicles may exhibit greater legitimacy than their non-marked counterparts.

Color schemes of police vehicle markings are important too, although the observed findings are contrary to some public discourse regarding vehicle aesthetics. Consistent with propositions from the uniform color literature (e.g., Frank & Gilovich, 1988; Johnson, 2005), some practitioners and communities (e.g., Powell, 2016; Strebly, 2016; The Canadian Press, 2016) argue that black and white marked police vehicles appear more aggressive than predominately white marked police vehicles, which appear "softer" in appearance. However, the current results suggest an opposite trend: relative to an unrelated police vehicle, officers are perceived as more aggressive, less friendly, less respectful, and less accountable when occupying a marked police vehicle with a white and blue color scheme than when occupying a marked police vehicle with a black and white color scheme. I theorize that the historical association between "black and white" and "police" continues to persist in contemporary society, and therefore, participants extend more of their favorable views of the police to officers when they are presented in black and white marked vehicles (i.e., more stereotypical) than when they are presented in white and blue marked vehicles (i.e., less stereotypical), especially in the context of

quick-second judgments. Put differently, participants may perceive officers occupying black and white vehicles as more legitimate, and more representative of the values upon which they wish for the police to represent (e.g., fair, trustworthy, etc.), and hence, provide them more favorable perceptions (e.g., see Bradford, 2014; Bradford et al., 2014; Sunshine & Tyler, 2003).

The findings regarding unmarked versus unrelated police vehicles are also of particular interest. Given that both of these vehicles are the same color and do not have any overt "police" identifiers, theory would predict that officers should be perceived similarly when occupying either vehicle. The results, however, reveal the opposite: officers are perceived more negatively when presented in the unmarked police vehicle. This suggests that participants may be associating the unmarked vehicle, which is a Ford Crown Victoria, with deceptive use in policing (e.g., covert patrol practices), and thus perceiving officers occupying such vehicle less favorably. Additional support for this hypothesis is derived from a comparison of the effects of officers occupying marked versus unmarked police vehicles. In this case, the make, model, and function of the vehicles are now largely the same, yet officers are perceived more favorably when occupying a clearly marked vehicle than when occupying a potentially deceptive unmarked vehicle. Marked police vehicles are thus again likely perceived as more legitimate and representative of idealistic policing values, and therefore, garner more favorable perceptions. This is particularly relevant given the finding that process-based judgments are more salient predictors of legitimacy than instrumental judgments (Sunshine & Tyler, 2003).

LIMITATIONS

I note three limitations of the present research. First, and similar to Chapter 1, the analyses utilize a sample of university students that overrepresents Asian and female participants, which may hinder the generalizability of the findings to broader populations. With

that being said, I do not expect that such overrepresentation limits the magnitude of the observed results, largely because I examine differences between stimuli and I do not have theoretical reason to predict that the effects of specific vehicle aesthetics (e.g., marked versus non-marked) would systematically vary all that much by sample population (e.g., university versus non-university students). Indeed, ancillary analyses which excluded Asian participants showed consistent patterns in results. Second, and again similar to Chapter 1, the experiment was conducted entirely within a laboratory setting: participants were not exposed to any contextual information regarding the officers presented in the vehicles or the rationales for the vehicles themselves. It is possible that context may be important in moderating perceptions of officers occupying different styles of vehicles. Third, I did not specifically measure legitimacy as part of the present research, although I theorize regarding the relationship between vehicle style and legitimacy. Future research should investigate the mechanism(s) underpinning the relationship between vehicles and legitimacy using more qualitative analyses in more natural settings. Future research should also more explicitly untangle the potential links between vehicle style and deterrence.

CONCLUSION

This chapter finds that police vehicle types and aesthetics impact perceptions of police officers in significant and meaningful ways. Officers are perceived differently when occupying different types and colors of police vehicles. For example, officers are generally perceived more favorably when presented in marked police vehicles than when presented in non-marked police vehicles. Thus, although the primary functions of transportation, storage, and so on remain largely constant across vehicle style, differences in vehicle aesthetics translate into differences in perceptions of officers occupying them. As such, police vehicles are semantically similar to

police uniforms: both can be symbols of legitimacy which exude presence and nonverbally communicate philosophies and intentions to the public. Whereas marked police vehicles may signal visible, transparent, and legitimate presence consistent with a guardianship orientation, non-marked police vehicles may signal more deceptive, predatory, and illegitimate presence consistent with a warrior orientation.

Vehicle style has significant implications for the utility and consequences of motorized patrol. Depending upon the appearance of police vehicles, the reaction and associated effect of the presence of such vehicles may vary from fear reducing to fear inducing. And this is critically important given that most observations of the police occur in unceremonious settings, like observing a police vehicle pass through one's neighborhood or stop at a traffic light. Police departments may tailor the perceived intentions of their motorized patrols by strategically manipulating the appearance of their vehicles. Similar to accoutrements, vehicle characteristics are very amenable to change, and therefore, practitioners should design and deploy their vehicles with these types of perceptual findings in mind. Process-based outcomes, which can be manipulated via factors like vehicle style, are much easier to change than instrumental outcomes, like crime rates, and are salient for perceptions of legitimacy (Sunshine & Tyler, 2003). Prioritizing such manipulation may thus be fruitful for eliciting broader perceptual change.

The current variation among styles of police vehicles both nationally and internationally suggests that style is not universal: there is no default vehicle aesthetic nor is there any reason to suggest that aesthetics are static or permanent. With proper consideration, police practitioners may maximize both the utility of vehicles and their associated perceptual effects.

CHAPTER 3

Facial Expressions and Perceptions of Police

As demonstrated throughout the preceding chapters, police aesthetics are important predictors of citizens' perceptions of police: presenting officers with different accoutrements in different styles of vehicles impacts perceptions of them in important and meaningful ways. Uniforms and vehicles, however, are only two elements of police appearance. Appearance also varies as a function of facial expression. Moreover, the effects of appearance may actually hinge upon perceptual indicators of officer intent, which may be manipulated via facial expression. For example, an officer presented in black gloves may be perceived differently when smiling versus not smiling given that the smile may signal different intentions to an observing party: whereas the combination of gloves and a neutral facial expression may signal threat and/or anticipation of unwanted physical contact (as suggested in Chapter 1), the combination of gloves and a smile may not. In this respect, facial expressions may be centrally located within the police perception equation. Facial expressions are also inherently implicated in all physical observations of the police: regardless of the context of an observation, an observing party will see the facial expression of the attending officer. Despite the potential importance of facial expressions in policing, however, no known research has empirically investigated their effects on perceptions of officers. This chapter provides the first known experimental evidence for the perceptual effects of facial expressions in the context of policing: a no-cost, easily trainable, and quickly implementable intervention for police departments of all sizes in all places.

OVERVIEW OF THE CHAPTER

This chapter extends previous literature and the findings from the preceding two chapters of this dissertation by experimentally exploring the effects of facial expressions on participants'

(N = 92) perceptions of police officers. In all of my analyses, I utilize a series of proportion tests in order to compare the proportion of an image rated as aggressive, approachable, friendly, respectful, and accountable when the uniformed officer exhibited a neutral facial expression versus a Duchenne smile. Overall, I find that smiling unilaterally enhances perceptions of officers: when exhibiting a smile, officers are perceived as more approachable, more friendly, more respectful, more accountable, and less aggressive.

BACKGROUND

THE EFFECT OF A SMILE

> *"The smile is one of the most common and effective signals in human communication"* (Krumhuber et al., 2007, p. 730)

A substantial body of research has examined the correlates and effects of smiling in social interactions (e.g., Ekman, 1992; Ekman et al., 1990; Ekman & Friesen, 1982; Krumhuber et al., 2007; Krys et al., 2015; Lau, 1982; Mussel et al., 2013; Otta et al., 1994; Reis et al., 1990; Scharlemann et al., 2001; Thornton, 1943). This research dates back as early as the mid-1940s, when Thornton (1943) argued that cues from facial photographs could lead to judgments of personality. Specifically, he argued that photographed persons tended to be rated as more humorous, kind, honest, dependable, but less intelligent, when smiling than when not smiling. Much experimental research has since followed in Thornton's tradition. For example, Otta and colleagues (1994) reported that Brazilian participants rated photographs of smiling stimuli more favorably than non-smiling stimuli and that the effects of smiling superseded the effects of head posture; Lau (1982) found that Chinese participants rated smiling stimuli as happier and more attractive and intelligent than non-smiling stimuli; Reis and colleagues (1990) observed that American participants perceived smiling stimuli as more attractive, sincere, sociable, and

competent, but less masculine, than non-smiling stimuli; and Krys and colleagues (2015) reported that an international sample of female participants perceived smiling stimuli as more honest than non-smiling stimuli. These findings, together, provide much evidence to suggest that smiling is generally associated with positive perceptions of people.

Research has also investigated the mechanisms by which facial expressions may impact perceptions of people. Much of this work regards the stereotype content model proposed by Fiske and colleagues (2002). As part of this model, social judgments are captured along two dimensions that reflect evolutionary pressures to survive and reproduce: warmth and competence. Whereas the former refers to perceived intentions and evaluations of kindness, friendliness, trustworthiness, and helpfulness, the latter refers to perceived abilities and evaluations of effectiveness, intelligence, power, and skillfulness. Judgments along these two dimensions, which may be derived from visual cues like facial expressions, allow people to quickly determine others' intentions and their associated ability to act on such intentions (e.g., see Fiske et al., 2002; Fiske et al., 2007). For example, research has found that frequency of smiling is highly correlated with perceptions of warmth (Bayes, 1972) and more intense (broad) smiling enhances perceptions of warmth but undermines perceptions of competence (Wang et al., 2017).

The effects of smiling, however, are not limited solely to perception. Research has also found that smiling can influence behavior. For example, Scharlemann and colleagues (2001) reported that smiling increased trust among strangers and helped to elicit cooperation during one-shot interactions; Mussel and colleagues (2013) found that participants accepted offers from other participants more often during an ultimatum game when proposers exhibited smiling expressions than neutral expressions; and Krumhuber and colleagues (2007) observed that

players who exhibited authentic smiles during a trust game were perceived as more likeable, attractive, trustworthy, and cooperative than players who exhibited fake smiles or neutral expressions. People thus infer meaning from facial expressions: such expressions are believed to contain information which observing parties use to formulate beliefs about subsequent actions of the expressing party (e.g., Ekman, 1992; Mehu et al., 2007; Mussel et al., 2013; Scharlemann et al., 2001). As Scharlemann and colleagues (2001) succinctly argued, "change in [people's] own behavior may be due to the effect of facial expressions on beliefs about the counterpart, which are then used to formulate behavioral strategies" (p. 638). Such logic has tremendous implications for policing in terms of both perceptual and behavioral outcomes.

SMILING IN THE CONTEXT OF POLICING

The aforementioned findings have much importance for the present research. If smiling stimuli are perceived more favorably than non-smiling stimuli, then I would expect that police officers would generally be perceived more favorably when smiling as well. I propose the following hypothesis:

> **Hypothesis #1:** Police officers will be perceived as less aggressive and more approachable, friendly, respectful, and accountable when exhibiting a smile than when exhibiting a neutral facial expression.

This hypothesis has much relevance for policing given that many observations of police occur without formal dialogue, such as when citizens observe officers in passing at traffic lights, on sidewalks, or inside public buildings. In these cases, citizens must rely solely on visual cues (like facial expressions) to formulate their judgments about otherwise unknown officers. And it is important to note that the role of facial expressions is not limited solely to engagements without contact: for the observations that eventually lead to formal contact with the police, the perceptual

process begins when citizens first observe the approaching officer. Indeed, the citizen must *see* the officer to physically engage with them, thereby facilitating an important role for facial expressions in the broader perceptual equation. Formulating positive perceptions of officers before formal interactions with such officers actually begin may be particularly important for the outcomes of police-citizen interactions for at least two reasons.

First, in the context of policing, smiling may help to convey officers' intentions to engage in respectful and fair encounters without violence and/or aggression. Such a desire to engage with citizens via service-oriented, non-violent means is often described among the literature as a guardianship orientation. As part of such orientation, officers prioritize the principles of fairness, respect, and consideration: they emphasize communication over command, cooperation over compliance, legitimacy over authority, and patience and restraint over control (Stoughton, 2015; Stoughton, 2016). Under the guise of guardianship, officers seek to enhance public relations and rapport by using positive short-term encounters as means to establish positive long-term relationships. This notion is consistent with many of the principles of procedural justice, which suggests a second reason why smiling may be particularly important in the context of policing. Procedural justice argues that citizens' willingness to accept and cooperate with legal authorities is linked to judgments about the fairness of the processes by which the police exercise their authority and make their decisions (Sunshine & Tyler, 2003). If the observation of a smile on an officer can help to elicit trust (e.g., Scharlemann et al., 2001), than it may act as a catalyst for cooperation with police given the importance of trust for one's willingness to cooperate with police (e.g., De Cremer & Tyler, 2007; Tyler, 2004; Tyler, 2005). In this respect, facial expression manipulation may be an important, albeit likely latent, component of the procedural justice framework: the presence of a smile may enhance perceptions of police by helping to

facilitate at least some of the core elements of procedural justice, including dignity and respect, voice, and trustworthy motives. The present research evaluates the effects of smiling on several perceptual outcomes and theorizes regarding the relationships between smiling and behavior in the context of policing.

METHOD

PARTICIPANTS

Data from ninety-two participants (79 females and 13 males) who participated in the POPP are included in this chapter. Most participants self-identified as Asian (48), Hispanic (23), and White (15), and reported having no contact with the police in the prior six months (69). See Table 3.1 for a review of the descriptive statistics.

<<< Table 3.1 >>>

PROCEDURE

Participants rated 64 different images of police officers on five dependent variables: (1) aggressive versus *not* aggressive, (2) approachable versus *not* approachable, (3) friendly versus *not* friendly, (4) respectful versus *not* respectful, and (5) accountable versus *not* accountable. Each image featured a White male or White female police officer in either police uniform or civilian attire in one of eight different capacities: in a marked police vehicle, on a bicycle, on foot wearing their standard equipment or their standard equipment plus a high-visibility vest, a load-bearing vest, black gloves, sunglasses, or a baseball hat. Each officer was presented in each of the eight poses twice: once exhibiting a neutral facial expression and once exhibiting a Duchenne smile. The Duchenne smile (herein after referred to as a "smile") is distinguished by the contraction of both the zygomatic major and orbicularis oculi muscles. All other elements of the experimental procedure were the same as described in the preceding chapters.

ANALYTIC STRATEGY

Proportion tests at the $p < 0.05$ level are used to assess the effects of facial expressions on perceptions of police officers. Each test compares the proportion of an image rated as a given dependent variable when the uniformed officer exhibited a neutral facial expression versus a smile (all outcomes are dichotomous). All tests are divided by officer pose and gender: independent tests are conducted for each aesthetic variant in order to help isolate the effects of facial expressions across different capacities (e.g., male officer in a marked police vehicle exhibiting a neutral facial expression versus a smile; female officer in the same pose exhibiting a neutral facial expression versus a smile; etc.).

RESULTS

As displayed in Table 3.2, the results of the proportion tests suggest that police officers are perceived differently when exhibiting different facial expressions. Consistent with Hypothesis #1, officers are perceived as less aggressive and more approachable, friendly, respectful, and accountable when exhibiting a smile, regardless of officer pose and gender. The uniformly positive effect of exhibiting a smile is particularly interesting given that previous research (including that discussed in Chapter 1) has found some accoutrements, like sunglasses and black gloves, to be associated with negative perceptual effects when accompanied by a neutral facial expression (Albas & Albas, 1989; Boyanowsky & Griffiths, 1982). In this context, the negative effects of such accoutrements appear to be minimized by the presence of a smile. The presence of a smile also amplifies the effects of other accoutrements, like high-visibility vests, which I found to exhibit positive effects along the same perceptual outcomes in Chapter 1. Nonetheless, the magnitude of the differences in perceptions of officers exhibiting different facial expressions varies as a function of the dependent variable.

<<< Table 3.2 >>>

Differences in perceptions of officers exhibiting a neutral facial expression versus a smile are largest for perceptions of officer friendliness. For example, the proportion of images of the male officer rated as friendly when presented in a police vehicle increases from 0.17 to 0.95 (difference = 0.77, $p < 0.001$) when exhibiting a smile. The proportion of images of the female officer rated as friendly when presented on foot in the standard uniform increases from 0.11 to 0.96 (difference = 0.85, $p < 0.001$) when exhibiting a smile. Differences in perceptions are also generally larger for perceptions of officer aggressiveness and approachability than perceptions of officer respectfulness and accountability. For example, the proportion of images of the female officer rated as aggressive when presented with black gloves decreases from 0.74 to 0.11 (difference = 0.63, $p < 0.001$) when exhibiting a smile. The proportion of images of the female officer rated as approachable when presented with black gloves also increases from 0.34 to 0.91 (difference = 0.58, $p < 0.001$) when exhibiting a smile. In contrast, the proportion of images of the male officer rated as respectful when presented with a high-visibility vest only increases from 0.77 to 0.95 (difference = 0.17, $p < 0.001$) when exhibiting a smile. Differences in perceptions are smallest and sometimes insignificant for perceptions of officer accountability.

DISCUSSION

The present research finds that facial expressions impact perceptions of police officers in significant and meaningful ways. Regardless of dependent variable, officer gender, and aesthetic variant, smiling enhances perceptions of officers: when exhibiting a smile, officers are perceived as more approachable, friendly, respectful, accountable, and less aggressive. Although the magnitude of the effect varies slightly as a function of the dependent variable (e.g., smiling exhibits a greater effect on perceptions of officer friendliness than accountability), the direction

of the effect and the associated conclusions remain the same and the tiering of effects across dependent variables remains consistent with theoretical predictions. These findings, together, suggest that facial expressions are important elements of the police perception equation and should be explicitly considered alongside more frequently studied verbal behaviors, like speech (e.g., Mazerolle et al., 2012; Mazerolle et al., 2013a; Seron et al., 2006; Voigt et al., 2017). It is likely that facial expressions signal different types of officer intent, which may then alter the behavioral consequences for both the officer and the citizen during an interaction.

For example, if citizens perceive smiling officers to be less aggressive and more approachable, friendly, respectful, and accountable, which is consistent with a guardianship orientation, then they may be more likely to engage with such officers and seek their assistance. Indeed, consistent with the concepts of procedural justice theory, such guardianship orientation prioritizes the development of positive public relations and emphasizes the importance of fairness, respect, and consideration (Stoughton, 2015; Stoughton, 2016). If citizens perceive officers to be more trustworthy, likeable, and cooperative when smiling (as suggested at the outset of this chapter), they may also be more likely to cooperate and comply with officers during engagements. Given the importance of trust in the cooperation context (e.g., De Cremer & Tyler, 2007; Tyler, 2004; Tyler, 2005), smiling may thus be an important mechanism by which police can improve their relations with citizens in their communities: the police depend upon cooperation from citizens and smiling may help to elicit such cooperation. As argued by Mehu and colleagues (2007), "smiling could regulate cooperative relationships through the advertisement of intentions relevant to the good functioning of relationships" (p. 420).

Finally, facial expression manipulation affords much promise for mitigating the otherwise negative effects of accoutrements that are often carried by police officers (e.g., Albas

& Albas, 1989; Boyanowsky & Griffiths, 1982). For example, I found in Chapter 1 that the presence of black gloves and sunglasses both diminish the likelihood of officers being perceived as approachable, friendly and respectful, and increase the likelihood of them being perceived as aggressive, when accompanied by a neutral facial expression. The necessity to carry these types of equipment thus places officers in direct conflict between functionality and safety: officers carry the equipment in order to conduct their duties, but the presence of such equipment negatively impacts perceptions of them. With that being said, the findings from this chapter suggest a potential solution: by exhibiting a smile, officers can dampen the negative perceptual effects of their equipment to help ensure that the safety and functionality of both officers and citizens can be complementary rather than mutually exclusive.

LIMITATIONS

I note four limitations of the present research (in addition to the generalizability limitation discussed in the preceding two chapters). First, although facial expression manipulation affords much utility in understanding citizens' perceptions of police officers, contextual factors which were not explored as part of the present research may be important as well. For example, exhibiting a smile while engaging in a non-enforcement interaction (e.g., routine foot patrol) may accentuate positive perceptual outcomes. On the other hand, exhibiting a smile when engaging in an enforcement interaction (e.g., issuing a citation) may be perceived much differently. In the context of the latter, expressional mismatch between the citizen's reception to the disciplinary action from the officer (e.g., anger) and the officer's delivery of the action (e.g., happiness) may lessen the otherwise positive effects of the officer's smile. Indeed, recent research has found that people are evaluated as more likeable and trustworthy when displaying *predicted* facial expressions (Chanes et al., 2018), which may not

always be achieved in the context of policing given the sometimes competing goals between citizens and the police. Related research regarding smiling in formal environments provides further support for this logic: although a smile may increase perceptions of warmth and competence when physically expressed, it can actually reduce perceptions of competence when expressed as a digital "smiley" in formal work settings (Glikson et al., 2018). Future research would benefit from evaluations of facial expressions in more natural and diverse policing environments where more contextual stimuli are present.

Second, and again similar to the preceding two chapters, the experiment was conducted within a laboratory setting with static stimuli. It is possible that facial expression manipulation may not be as salient in live, dynamic environments where more behavioral stimuli are also present. For example, citizens may not be as concerned with the facial expression of the officer during an interaction where they are being treated with disrespect. In these cases, the disrespectful actions, like speech (e.g., Voigt et al., 2017; Seron et al., 2006), may be the salient predictor of perceptions rather than the facial expression, although it is possible that the officer's facial expression and speech may be correlated. It is also possible that during dynamic displays of expressions that other non-verbal signals of emotion, like prosody, vocal tone and vocal bursts, may impact perceptions of officers, and so they too should be considered in future research.

Third, participants were never asked to explicitly consider the perceptual effects of the officer's facial expression: such latent manipulation was derived via careful control of the stimuli design and associated paradigm. It is possible that the effects may have been even larger if participants had been told to explicitly focus on the officer's facial expression. With that being said, the methodological strength of this type of design would likely come at the cost of the

study's external validity given that most real interactions do not explicitly isolate or emphasize a single element of person perception. Fourth, and finally, both officers included in the analyses for this chapter identify as White. It is possible that different effects may have been observed had officers of different races been included in the analyses.

CONCLUSION

Smiling exhibits unilaterally positive effects on perceptions of police officers. Simply observing officers exhibiting different facial expressions is enough to change perceptions of them. Such findings have tremendous implications for policing. Facial expression manipulation requires no funding, little training, and can be implemented by officers from departments of all sizes in all places. Facial expressions can also be manipulated in all environments: from a traffic stop to a welfare check to a community event. Formalizing expression manipulation may thus be a fruitful intervention for police departments to consider when attempting to enhance perceptions of their officers and relations with their communities, which should remain priorities given the current state of public-police affairs in many places. Although policing may be rooted in the concepts of authoritarianism and bureaucracy, it may be time to bring back individuality and human expression. Future research should continue to explore the effects of facial expressions in more natural and dynamic environments. Future research should also investigate the potential feedback loops between facial expressions and behavior.

CHAPTER 4

Validation and Extension Among a Non-Student Sample

The scientific method rests upon the assumption that well-conducted science can be replicated and validated by different scholars with different samples using similar methods. Such a statement at least implicitly infers that as a consequence of scientific rigor, observed findings should be the result of specified variables rather than spurious correlations, which can be haphazardly introduced without proper care and consideration. As a consequence of its principles, the credibility of research is drawn into question when similar studies are conducted with opposing results: such contradictions challenge scholars to investigate the explanation(s) for such differences among similar-appearing studies (e.g., sampling, situational conditions, selective reporting, test errors; see Baker, 2016; Open Science Collaboration, 2015). Although vocal interest in the questions of replication and validation have arguably ebbed and flowed as a function of time and subfield (e.g., for a discussion of this issue as it pertains to psychology, see Open Science Collaboration, 2015; for similar discussions as they pertain to physical sciences, see Baker, 2016; Ioannidis, 2005; Ioannidis & Khoury, 2011), the underlying interest in them remains at the core of much scientific work. Indeed, these topics are now becoming increasingly prevalent among the criminological community. As suggested by Lösel (2018) in his recent Joan McCord Award Lecture, the field of criminology must grapple with the issues of replication and validation as it progresses forward.[17]

[17] Interest among criminologists has also been evidenced by the prominence of replication-related panels and presentations at recent meetings of the American Society of Criminology.

OVERVIEW OF THE CHAPTER

This chapter extends the preceding three chapters by interrogating the issues of replication and validation in the context of my experiment. Specifically, it tackles the question of generalizability by testing the effects of police aesthetics on perceptions of police officers among a new sample of 349 participants from MTurk. As described at the outset of this dissertation, this sample of non-student participants provides a unique opportunity to test the effects of my predictors among a population which varies both demographically and geographically. Indeed, the demographic characteristics of participants in my MTurk sample vary substantially from the demographic characteristics of participants in my university student sample. The geographic locations where my MTurk participants reside vary dramatically as well: approximately ten percent of participants in this sample report living outside of the United States and the remaining ninety percent report living in regions throughout the country, including California (35), Texas (31), New York (20), Florida (19), Georgia (17), Ohio (14), Washington (10), and Illinois (8). Despite the substantial variation between the characteristics of participants in my two samples, I find that the findings from all three chapters remain very consistent across both samples.

BACKGROUND

REPLICATION AND VALIDATION

As alluded to at the outset of this chapter, questions regarding replication and validation have generated much attention in academic debates (e.g., Baker, 2016; Igl et al., 2009; Ioannidis, 2005; Ioannidis & Khoury, 2011; König, 2011; Lösel, 2018; Open Science Collaboration, 2015). With that being said, such debate exhibits important nuance. The generous use of the terms "replication" and "validation" in scholarly conversations has caused at least some stir among methodologists, largely because of mismatch between research design and research vocabulary

(e.g., for thorough discussions regarding this topic in the biological sciences, see Igl et al., 2009; König, 2011). Although both techniques are helpful for testing the scope of findings from existing research, each technique exhibits several clauses that make their implementation challenging and/or their inferences limited (Igl et al., 2009; König, 2011). For this reason, I begin this chapter by first highlighting the distinctions between these two techniques before discussing the implications of these techniques for the present research.

Replication involves the complete reproduction of research methods conducted on one sample of participants among a different sample of participants (Clarke et al., 2007; Igl et al., 2009; König, 2011). As part of true *replication* studies, procedures are reproduced in their entirety with nothing more than a change in the sample. From a methodological standpoint, this type of reproduction is desirable for testing the reliability of findings. With that being said, true replication studies are difficult to find among the social science literature (Singleton & Straits, 1999). As I discuss in the subsequent sections of this chapter, replication is often expensive and not possible when a study environment changes as a consequence of a change in sampling frame, which often occurs in pursuit of replication. For example, identical procedures employed on a sample of students in a university laboratory and a sample of students using an online platform cannot provide a true test of replication given that the laboratory presents a different ecological environment than the online platform, and the differences in environments may systematically correlate with participant behavior. In this case, the validity of the research has been tested, however, the results have not truly been replicated.

A related methodological process which also tests the scope of findings among different samples but affords greater flexibility surrounding changes in the study environment is validation. As part of *validation* studies, scholars test concepts and findings embedded in prior

research using different samples and sometimes slightly different procedures and/or study environments (Igl et al., 2009; König, 2011). Although these latter types of studies cannot infer that the results of prior research are replicable in the technique's truest sense because of differences in procedures, they can provide much insight into the scope and extent of phenomena among different populations. For example, observing similar results using samples from a university subject pool and online sampling frame would suggest that the results are not a function of local geography or university affiliation, but rather more global phenomena. These kinds of contributions are important in the context of external validity, which remains an issue in much research that utilizes university student samples, like that conducted as part of this dissertation. Considering the historical reliance on university student samples, the question of whether university students, who often come from Western, Educated, Industrialized, Rich, and Democratic societies (WEIRD; Henrich et al., 2010), represent a generalizable population has been a topic of great discussion.

Concerns regarding the potential mismatch between university student demographics and the demographics of populations of interest in criminological research have also led to contentious discussions about sampling frames and their implications for the validity of research findings. For example, researchers wishing to study the effects of education level on crime may have difficulty using a university student sample to adequately investigate their research questions given that all university students should have completed at least high school. In an effort to validate existing research in this realm and broaden behavioral science's reach into more diverse populations, some research, particularly in the field of psychology, has now turned to online study frames to recruit participants and conduct their studies in lieu of university subject pools and traditional laboratory environments.

ONLINE STUDY FRAMES

Online study frames offer several benefits for researchers. For example, an online study frame is not restricted by geography: participants can access the study from any environment that has a computer and Internet access. This allows for the recruitment of participants from different geographic regions, including areas far from the residence of the researcher. It also allows for the recruitment of non-student participants who would not otherwise be enrolled in a subject pool (e.g., some participants enroll in online sampling frames as a form of employment/income), which can be helpful for increasing the diversity of a sample and validating existing research findings. An online study frame also allows for the simultaneous participation of multiple subjects at one time without the demand for physical space and research assistants. This eliminates the demand for resources which often accompany in-person or even telephone-based studies. Relatedly, online study frames often allow for faster sampling with lesser cost: online participation does not require transportation to a research site, parking at such site, and so on. For these reasons, online study frames provide an alternative to using university subject pools and the traditional laboratory environment to recruit participants, validate existing research, and test new research questions.

It is important to note, however, that online study frames still generate challenges for experimentation: even though study materials can be held constant between in-person and online studies, the differences between in-person and online environments present methodological obstacles. For example, online environments hinder the ability for researchers to control the conditions under which participants complete a study: whereas researchers can control the external environment under which in-person studies are completed, they cannot control the external environment as part of online studies. During in-person studies, research assistants can

also monitor participants for distractions which may interfere with their participation in a task. During online studies, however, such monitoring is not possible. From this perspective, researchers can be confident that the environmental conditions (e.g., room design, color, lighting, volume, monitor size, etc.) are the same for all participants during an in-person study but not during an online study. Moreover, although online sampling frames can offer a "different" population than university subject pools, namely non-university students, they can still present limits for generalizability. Indeed, online sampling frames can suffer from processes such as self-selection just like university subject pools: not all people enroll in online sampling frames and not all people who enroll in online sampling frames are eligible or want to participate in all studies available on the sampling frame.

Each frame and technique thus has strengths and weaknesses. Testing the potential scope of phenomena among different populations using different sampling frames and platforms like university subject pools and MTurk is therefore important for generalizability. Given that different sampling frames demand different resources from researchers, identifying potential differences in effects across sampling frames exhibits promise for managing the logistics required for research projects. For example, if results are validated across samples, one might consider using the more affordable and efficient frame as part of their research design. In this vein, I attempt to validate the findings from my university student sample (described throughout the preceding three chapters) among a sample of adults from MTurk as part of this chapter.

Amazon's Mechanical Turk (MTurk)

MTurk offers a unique opportunity to sample the general adult population using web-based technology. In lieu of recruiting participants via university subject pools, researchers are able to use MTurk to recruit, manage, and compensate participants using online software. As part

of MTurk, researchers create administrative accounts on the application's portal, post information about their study, and then open their study for enrollment by eligible MTurk participants. Once open for enrollment, researchers are able to direct participants to online study platforms, like Inquisit, directly from the MTurk application so that participation does not require physical travel to the location of the researcher. This allows researchers to more quickly and remotely recruit and run participants with fewer costs than traditional sampling frames and study platforms like university subject pools and on-campus laboratories.

The benefits of MTurk, however, are not limited solely to cost. Previous research has found that participants from MTurk are also "more demographically diverse than standard Internet samples and significantly more diverse than typical American college samples" (Buhrmester et al., 2011, p. 4). In this respect, researchers may be able to collect more representative samples and better align their samples with the populations which they wish to infer their results using MTurk. For example, researchers interested in understanding processes among non-university-educated populations would not be able to recruit their participants using a university subject pool. Relatedly, research aimed at middle-age populations would likely experience difficulty attracting participants of such age category using university subject pools given the mean age of university students. With that being said, researchers would likely have little difficulty collecting samples of either populations using MTurk. Previous research has also found that "the quality of data provided by MTurk met or exceeded the psychometric standards associated with published research" (Buhrmester et al., 2011, p. 5). For these reasons, MTurk can offer a suitable platform to recruit, manage, and compensate participants with many benefits and few costs.

METHOD

PARTICIPANTS

Validation Analyses for Chapters 1 and 2

Data from two-hundred and fifty-one participants[18] (101 males, 148 females, and 2 other gender) sampled from MTurk are included in the validation analyses for Chapters 1 and 2. Participants ranged in age from 18 to 65 (M = 32), and self-identified as Asian (17), Black (28), Hispanic (16), White (178), and other race (12). Most participants reported average household income and no police contact in the prior six months (166). In comparison to the university student sample, this MTurk sample is older, more representative of gender, more geographically diverse, and more representative of different racial groupings. See Table 4.1 for the descriptive statistics.

<<< Table 4.1 >>>

Validation Analyses for Chapter 3

Data from ninety-eight[19] participants (54 females and 44 males) sampled from MTurk are included in the validation analyses for Chapter 3. Participants ranged in age from 18 to 70 (M = 32), and self-identified as Asian (8), Black (7), Hispanic (10), White (68), and other race (5). Most participants reported average household income and no police contact in the prior six months (69). Similar to the aforementioned sample of MTurk participants, this MTurk sample is again older, more representative of gender, more geographically diverse, and more representative

[18] Data from fourteen participants were excluded from the analyses because these participants completed the perception task in less than four minutes. Completing the task within such a short amount of time is unreasonable, and therefore, including their data may have compromised the study's internal validity.

[19] Data from five participants were excluded from the analyses because these participants completed the perception task in less than four minutes. Completing the task within such a short amount of time is unreasonable, and therefore, including their data may have compromised the study's internal validity.

of different racial groupings than the university student sample. See Table 4.2 for a review of these descriptive statistics.

<<< Table 4.2 >>>

PROCEDURE

As noted at the outset of this dissertation, the methods for my MTurk sample largely mirror the methods for my university student sample with a couple of exceptions. First, all instructions were provided online for this sample, and therefore, participants were required to read such instructions without assistance or facilitation from a research assistant. Second, MTurk participants rated all of the images of police officers on a sixth dependent variable: competent versus *not* competent. As discussed earlier in this dissertation, the stereotype content model (Fiske et al., 2002) suggests that competence (alongside warmth) is a key element of person perception. Understanding how facial expressions may impact perceptions of officer competency, therefore, provides a test of this model in the context of policing and sheds insight into the effects of police appearance on a semantically different outcome. Third, all participants observed two different races of officers, however they could not be assigned to a pseudo-race condition based on their prescreen information, and so the officers were not always their own race plus one other race (like with the university student sample).

ANALYTIC STRATEGY

This chapter employs the same analytical tests conducted in the preceding three chapters using the new sample of participants from MTurk. Given that each analysis varies slightly as a function of its respective research question, I describe the nuances of each analytical strategy in the subsequent sections of results.

RESULTS

CHAPTER 1: EFFECTS OF ACCOUTREMENTS ON PERCEPTIONS OF POLICE

As part of Chapter 1, I explored the effects of accoutrements on perceptions of police. I tested my hypotheses using two groups of multilevel mixed-effects logistic regression models: one group of models for each phase of analyses. My models were two-level and used officer attire, accoutrement, gender, and race as well as participant gender, race, age, socioeconomic status, and contact with the police to predict perceptions of police officers.

For the purposes of validation, I employ similar multilevel mixed-effects logistic regression models in this chapter. Each rating of each image by each participant is treated as a unit of observation. My N for all of my models is 251 participants with 32 observations per participant (8,032 total observation points). Note that I now include a model for the outcome of competency, which I added for this sample of MTurk participants. Also note that I now include some new variables for participant demographics (i.e., a variable for participants who do not identify as male or female, a variable for Black participants) given the differences in sample composition.

As shown in Table 4.3, the results for my main effects from my multilevel mixed-effects logistic regression models reveal a number of significant findings (all values represent odds ratios; for the full model results, please see Table A4.1). These findings are all consistent with the earlier findings from my university student sample (presented again in Table 4.3), which I described in Chapter 1, Phase 1. For example, civilian attire still tarnishes perceptions of officers' approachability ($OR = 0.368$, $p < 0.001$), friendliness ($OR = 0.767$, $p < 0.001$), respectfulness ($OR = 0.177$, $p < 0.001$) and accountability ($OR = 0.118$, $p < 0.001$). Civilian attire also still decreases the odds of officers being perceived as aggressive ($OR = 0.757$, $p <$

0.001). In the context of accoutrements, high-visibility vests still exhibit uniformly positive effects on perceptions of officers: their presence increases the odds that officers are perceived as approachable ($OR = 2.656$, $p < 0.001$), friendly ($OR = 3.016$, $p < 0.001$), respectful ($OR = 2.352$, $p < 0.001$), and accountable ($OR = 2.771$, $p < 0.001$) as well as decreases the odds that they are perceived as aggressive ($OR = 0.453$, $p < 0.001$). Load-bearing vests still exhibit mixed effects: their presence increases the odds that officers are perceived as aggressive ($OR = 1.434$, $p < 0.001$), but also as respectful ($OR = 1.797$, $p < 0.001$) and accountable ($OR = 3.287$, $p < 0.001$). And black gloves still exhibit uniformly negative effects: their presence decreases the odds that officers are perceived as approachable ($OR = 0.534$, $p < 0.001$), friendly ($OR = 0.514$, $p < 0.001$), respectful ($OR = 0.612$, $p < 0.001$), and accountable ($OR = 0.799$, $p < 0.001$) as well as increases the odds that they are perceived as aggressive ($OR = 2.047$, $p < 0.001$).

<<< Table 4.3 >>>

The results from this sample are not limited solely to validation. As introduced at the outset of this chapter, participants in this sample also rated the pictured officers on the new variable of competency. As shown in Table 4.4, the results for this variable provide additional insight into the effects of police appearance on perceptions of officers along a semantically different outcome. For example, wearing civilian attire decreases the odds that officers are perceived as competent ($OR = 0.084$, $p < 0.001$): suggesting that the uniform conveys job-relevant expertise that a white t-shirt and blue jeans does not convey. Relative to no external vest, wearing a high-visibility vest ($OR = 2.087$, $p < 0.001$) or load-bearing vest ($OR = 3.410$, $p < 0.001$) also enhances perceptions of officer competency, although the magnitude of the effect is stronger for the load-bearing vest. These findings suggest that the presence of different vests changes citizens' perceptions of an officer's ability to perform their duties. In both cases, the

addition of the external vest leads participants to believe that the officer may be able to more successfully fulfill their duties as a police officer. The presence of black gloves does not significantly impact perceptions of officer competency.

<<< Table 4.4 >>>

Discussion

The presence and direction of the effects of police attire, vests, and gloves do not vary between my samples. The magnitude of the effects, as assessed by the size of the odds ratios for each variable, also exhibit very little variation between my samples. For many of the accoutrements and most of the dependent variables, the differences between the odds ratios for the two samples are less than 0.1. Such findings provide strong evidence to suggest that the perceptual effects of these accoutrements are not constrained by sample characteristics: the effects exist among samples of both university students and MTurk participants whom vary in their demographic characteristics and geographic locations.

Police accoutrements also exhibit strong effects on perceptions of officer competency: officers are more likely to be perceived as competent when wearing their uniforms and external vests. In these cases, participants are using visual cues to derive judgments about how well they believe an officer may be able to fulfill their duties. It is possible that different accoutrements may align better with citizens' assumptions about what it takes to be an effective officer, and so displaying such accoutrements on an officer's person enhances perceptions of their effectiveness. For example, a citizen who believes that police are responsible for a warrior-related role (Stoughton, 2015; Stoughton, 2016) may believe that more aggressive officers who can arguably employ more force may be more competent, and hence, they perceive officers as more competent when wearing load-bearing vests (which are arguably more militaristic in their appearance). It is

important to caution here that such alignment between perceptions of officer competency and desired policing orientation may vary as a function of participant and their own philosophical beliefs about the role of the police.

CHAPTER 2: EFFECTS OF VEHICLE STYLE ON PERCEPTIONS OF POLICE

As part of Chapter 2, I explored the effects of vehicle types and aesthetics on perceptions of police. I tested my hypotheses using a group of multilevel mixed-effects logistic regression models. My models were two-level and used officer gender, race, attire, and vehicle style as well as participant gender, race, age, socioeconomic status, and contact with the police to predict perceptions of police officers.

For the purposes of validation, I employ similar multilevel mixed-effects logistic regression models in this chapter. Each rating of each image by each participant is treated as a unit of observation. My N for all of my models is 251 participants with 24 observations per participant (6,024 total observation points). Note that I now include a model for the outcome of *competency* and some new variables for participant demographics given the change in sample composition.

As shown in Table 4.5, the results for my main effects from my multilevel mixed-effects logistic regression models reveal a number of significant findings (all values represent odds ratios; for the full model results, please see Table A4.2). These findings are generally consistent with the earlier findings from my university student sample (presented again in Table 4.5), which I described in Chapter 2. For example, civilian attire still exhibits negative effects on perceptions of officers. Officers are also still perceived more favorably when occupying a marked police vehicle (relative to an unrelated police vehicle) and the differences in perceptions of officers occupying black and white versus white and blue marked vehicles remain. For example,

occupying a black and white marked police vehicle increases the odds that participants rate police officers as aggressive ($OR = 1.380$, $p < 0.01$), approachable ($OR = 1.597$, $p < 0.001$), respectful ($OR = 1.657$, $p < 0.001$), and accountable ($OR = 3.161$, $p < 0.001$); and occupying a white and blue marked police vehicle increases the odds that participants rate officers as aggressive ($OR = 1.227$, $p < 0.05$), approachable ($OR = 1.464$, $p < 0.001$), respectful ($OR = 1.571$, $p < 0.001$), and accountable ($OR = 3.057$, $p < 0.001$). Neither marked police vehicle color scheme significantly impacts perceptions of officer friendliness in this sample.

<<< Table 4.5 >>>

Occupying an unmarked police vehicle still increases the odds that participants rate officers as aggressive ($OR = 1.283$, $p < 0.01$) and decreases the odds that participants rate them as approachable ($OR = 0.839$, $p < 0.05$) and friendly ($OR = 0.693$, $p < 0.001$) relative to an unrelated police vehicle (of the same make and color of the unmarked vehicle but without any stereotypical association to police). Occupying an unmarked police vehicle does not significantly impact perceptions of officer respectfulness or accountability in this sample.

Transitioning to the new outcome of competency, I find that occupying different types and colors of police vehicles changes participants' perceptions of officers' abilities to successfully fulfill their duties (as shown in Table 4.6). For example, wearing civilian attire inside a police vehicle decreases the odds that officers are perceived as competent ($OR = 0.125$, $p < 0.001$). Relative to occupying an unrelated police vehicle, occupying a black and white ($OR = 2.028$, $p < 0.001$) or white and blue ($OR = 2.049$, $p < 0.001$) marked police vehicle increases the odds that officers are perceived as competent. Finally, occupying an unmarked police vehicle decreases the odds that participants perceive officers as competent ($OR = 0.811$, $p < 0.05$). These latter findings have particular relevance for practitioners who often hold the anecdotal belief that

they are perceived as being better able to "catch" criminals and deter crime when occupying unmarked (or "undercover") vehicles because the location of officers is not known. In this case, it appears that participants believe that the opposite is actually true.

<<< Table 4.6 >>>

Discussion

Similar to the validation analyses for the effects of accoutrements, I once again find that the presence and direction of the effects of police vehicle style remain largely consistent across both samples. I also find that police vehicle style impacts perceptions of officer competency: officers are more likely to be perceived as competent when occupying marked police vehicles and less likely to be perceived as competent when occupying unmarked police vehicles. With that being said, some differences in the magnitude of effects emerge for some variables. For example, the effects of vehicle style on perceptions of officer aggressiveness are smaller in this sample than the university student sample and there appears to be no significant relationships between marked vehicle color schemes and perceptions of officer friendliness in this sample. These few differences across samples were not surprising given that there is more variation among vehicle style across police departments than uniform style and the participants in this sample exhibit much more spatial variability than the university student sample. Nonetheless, the overall similarities in results provide further evidence to suggest that the effects of police vehicle style on perceptions of officers are not constrained by sample characteristics: participants sampled from a university subject pool and MTurk exhibit similar patterns in their responses. In this vein, police departments should explicitly consider how the aesthetics of their vehicles may impact perceptions of their officers and alignment with their organizational philosophies. A reliance on unmarked police vehicles in patrol settings may provide a different illusion to the

public of the police department's goals than a reliance on marked police vehicles. Given that many observations of the police occur when officers are occupying vehicles, and vehicle style can impact perceptions of officers, their aesthetics may be a fruitful mechanism for enhancing public-police relations.

CHAPTER 3: EFFECTS OF FACIAL EXPRESSIONS ON PERCEPTIONS OF POLICE

As part of Chapter 3, I explored the effects of facial expressions on perceptions of police. I tested my hypotheses using a series of proportion tests: each test compared the proportion of an image rated as a given dependent variable when the uniformed officer exhibited a neutral facial expression versus a smile. All tests were divided by officer pose and gender: independent tests were conducted for each aesthetic variant in order to help isolate the effects of facial expressions across different capacities.

For the purposes of validation, I employ the same proportion tests in this chapter in order to assess the differences in proportions of images rated as a given dependent variable when uniformed officers exhibited a neutral facial expression versus a smile.

As shown in Table 4.7, the results of the proportion tests for this sample are very similar to the results of the proportion tests for the university student sample (presented again in Table 4.7): police officers are perceived much more favorably when exhibiting a smile than when exhibiting a neutral facial expression, regardless of dependent variable, officer gender, accoutrement, and patrol strategy (for the full list of proportions, please see Table A4.3). With that being said, some variation emerges in the magnitude of the differences between ratings of officers with different expressions for some dependent variables. For example, the difference in ratings between facial expressions is smaller for perceptions of officer aggressiveness and friendliness in this sample. As one case in point, the difference in the proportion of ratings of

aggressiveness for the male officer inside a marked police vehicle is 0.31 in this sample ($p < 0.001$) whereas it is 0.64 in the university student sample ($p < 0.001$). The differences between facial expressions for perceptions of officer accountability are also sometimes insignificant in this sample.

<<< Table 4.7 >>>

As shown in Table 4.8, the results for perceptions of officer competency are similar to the results for accountability: although officers are typically perceived as more competent when exhibiting a smile, such differences are generally small and sometimes gender-specific. For example, the proportion of images of the male officer rated as competent when presented in the standard uniform with a load-bearing vest, sunglasses, or baseball hat all increase by 0.11 ($p < 0.01$) when exhibiting a smile. The difference in the proportion of images of the male officer rated as competent when presented in a marked police vehicle also increases from 0.79 to 0.92 (difference = 0.13, $p < 0.01$) when exhibiting a smile (such effect does not exist for the female officer) and the difference in the proportion of images of the female officer rated as competent when presented on a bicycle increases from 0.76 to 0.87 (difference = 0.11, $p < 0.05$) when exhibiting a smile (such effect does not exist for the male officer).

<<< Table 4.8 >>>

Discussion

Consistent with the aforementioned sections of results, I find that the presence and direction of the effects of officer facial expression do not vary between my samples. The magnitude of the effects, as assessed by the proportions presented in the associated tables, also exhibit very little variation between my samples. When police officers exhibit a smile, participants perceive them more favorably on almost all outcomes in almost all aesthetic

capacities, regardless of officer gender, accoutrement, patrol strategy, and sample characteristics. I also find that officers are perceived as more competent when exhibiting a smile: suggesting that expressions matter for more than just standard personality prescriptions in the context of policing. In this case, the presence of a smile leads participants to believe that the officer may be able to more successfully fulfill their duties as a police officer. This finding aligns with the work of Fiske and colleagues (2007) who suggest that people perceived as warm and competent elicit positive emotions and behaviors.

GENERAL DISCUSSION

Replication and validation remain important issues within the scientific community (e.g., Baker, 2016; Igl et al., 2009; Ioannidis, 2005; Ioannidis & Khoury, 2011; König, 2011; Lösel, 2018; Open Science Collaboration, 2015). Assessing the scope of findings across different samples and populations remains a priority for research groups in nearly all disciplines. This chapter contributes to this broader discussion by interrogating the issues of replication and validation in the context of my experiment. By re-evaluating the effects of police appearance among a new sample of MTurk participants, I tested the scope of my results from a sample of university students inhabiting one geographic location among a sample of adults from across the world. As a function of my evaluation, I also tested the effects of police appearance on perceptions of officer competency: an important element of the stereotype content model which argues that competence and warmth are key elements of person perception (Fiske et al., 2002).

The results of my analyses are striking. Despite substantial variation between the demographic characteristics and geographic locations of participants in my samples, the findings from all three chapters are very consistent across both samples. In the context of accoutrements, high-visibility vests still exhibit unilaterally positive effects, black gloves still exhibit unilaterally

negative effects, and load-bearing vests still exhibit mixed effects. In the context of vehicles, officers are still perceived more favorably when occupying marked police vehicles than unmarked police vehicles, at which time they are perceived less favorably than when occupying unrelated (or civilian) police vehicles. And in the context of facial expressions, officers are still perceived much more favorably when exhibiting a smile than when exhibiting a neutral facial expression. The differences between the effect sizes for these variables across samples are small and the direction of such effects remain parallel in both samples.

The consistency in results across samples suggests that the perceptual effects of police appearance are not a function of local geography or university affiliation, but rather more global phenomena. If it were the case that the results were a function of the former, then, the results would not look as similar as presented in this chapter. Although the participants from the MTurk sample reported state residences throughout the country and much more range in several of their demographic characteristics, their response patterns were very similar to the participants from the university student sample who all resided in a single state. As highlighted throughout this dissertation, this similarity in findings across samples was expected given that I did not have much theoretical rationale to predict that the effects of police appearance would vary much by sample characteristics. For example, as articulated in Chapter 1, the threat mechanism behind my hypothesis for black gloves is acontextual. If it is the fear of unwanted physical contact by police that is cued by gloves and thus driving perceptions of the officer when wearing gloves, then such fear should not operate differently for citizens living in New York versus California, or for citizens attending university versus not attending university, and indeed, it did not. These findings are based on quick-second judgments of officers in different aesthetic capacities: such judgments, which do not involve formal contact or context, operate similarly regardless of

sample characteristics. Given that different spatial environments are policed by different departments with different philosophies in communities of different cultural and political orientations, the similarity in results across participants residing in different geographic locations is convincing.

These results have several important implications for both the policing and scientific communities. In the context of the policing community, these findings further solidify the conclusion that police appearance is a strong predictor of perceptions of the police. The analyses presented in this chapter consistently and strongly support the argument that citizens use visual cues, like accoutrements, vehicles and facial expressions, to derive judgments about otherwise unknown officers. In cases where other information about officers that would normally arise from more formal police contact is not available, citizens systematically use appearance information to assign personality and job-related ascriptions to officers. For example, in the context of competency, the presence of different vests and facial expressions changes citizens' perceptions of an officer's ability to perform their duties. In both cases, the addition of an external vest or the presentation of a smile leads participants to believe that the officer may be able to more successfully fulfill their duties as a police officer. Given the frequency of observations of police in environments where formal contact does not occur, like in passing on roadways or inside public buildings, these findings offer much insight into the police perception equation.

In the context of the scientific community, these findings suggest that MTurk provides an efficient, affordable, and reliable means to remotely sample and engage participants. It took nearly two years and two research personnel to sample the approximately 400 participants from my university student sample. In contrast, it took less than two weeks and just one person to

sample roughly the same number of participants from my MTurk sample. During the sampling process, the university student sample also required physical space and resources like printing and parking, whereas the MTurk sample did not. And the ability to reach participants from further distances from my location was exponentially greater for the MTurk sample. The resources required in order to collect the data from the two samples thus varied dramatically, with a bias in favor of the MTurk sample, yet the results from both samples appear almost identical. In an era where resources are limited, these results thus have tangible benefits for the research community: researchers do not necessarily need to fear the use of online sampling frames as part of their research designs. In fact, it may work in the benefit of the scientific community writ large to better support and implement the use of these online sampling frames in order to conduct new primary research, validate existing research, and thrust the field forward for all of the reasons described throughout this chapter.

CONCLUSION

The effects of police appearance on perceptions of police officers are consistent across two large samples of diverse participants from both a public university and MTurk. In both samples, participants used the same visual cues, like accoutrements, vehicles and facial expressions, to derive their judgments about officers. The consistency in results across both samples suggests that the observed perceptual effects of police appearance are more global as opposed to local phenomena. The consistency in results also suggests that fear regarding the use of university subject pools and online sampling frames may not necessarily be warranted. Both offer reliable data and the findings regarding the effects of police appearance validated across both samples: data from the sample of MTurk participants provided the same conclusions as data

from the sample of university students. Future research should continue to attempt to validate existing research findings using data from online sampling frames.

CONCLUSION

The role of the police is complex, diverse, and challenging. Responsible for a wide array of activities, the police must maintain order, prevent crime, investigate crime, and manage social ills that otherwise would be left unmanaged by other government institutions. As a consequence, police officers often find themselves at the center of strained social fabrics. Understanding the mechanisms that drive perceptions of police and police behavior has thus become a central focus among criminological research. As cited throughout this dissertation, a long line of research has dedicated itself to the study of policing, and particularly, the effects of police on crime and related behavior (e.g., Andresen & Lau, 2014; Bowers & Hirsch, 1987; Braga & Bond, 2008; Esbensen 1987; Groff et al., 2015; Jones & Tilley, 2004; Kaplan et al., 2000; Kelling et al., 1974; Koper, 1995; Mitchell, 2017; Piza & O'Hara, 2014; Police Foundation, 1981; Ratcliffe et al., 2011; Sherman & Weisburd, 1995; Simpson & Hipp, 2017; Telep et al., 2014; Williams & Coupe, 2017), the correlates of satisfaction with the police (e.g., Bradford et al., 2009; Brick et al., 2009; Bridenball & Jesilow, 2008; Cao et al., 1996; Dai & Jiang, 2016; Decker, 1981; Frank et al., 2005; Ivkovic, 2008; Jesilow et al., 1995; Leiber et al., 1998; Maguire et al., 2017; Mazerolle et al., 2012; Mazerolle et al., 2013a; Mazerolle et al., 2013b; Prine et al., 2001; Reisig & Giacomazzi, 1998; Reisig & Parks, 2000; Skogan, 2005; Skogan, 2006a; Weitzer & Tuch, 1999; Weitzer & Tuch, 2004; Weitzer et al., 2008), and the philosophical orientations of police (e.g., Owens et al., 2018; Stoughton, 2015; Stoughton, 2016; Wilson, 1968), among others.

This dissertation contributes to this body of research by providing an empirical evaluation of the effects of police appearance on perceptions of police officers using an experimental methodology. By investigating such effects, the findings from this dissertation provide direct insight into the mechanisms which underpin citizens' perceptions of police officers as well as

insight into the related consequences for police efficacy and performance. This dissertation also provides a theoretical framework that can be used to help conceptualize, operationalize, and measure philosophies of police. Police appearance is intentional and manipulatable: officers exhibit variation in their appearance and such variation is deliberately induced via their adornment of different accoutrements, use of different vehicles, and display of different facial expressions. By interrogating the underlying rationale for variations in officer appearance, and the perceptual effects of such variation, it is possible to derive insight into the inner workings of police philosophies (e.g., as guardians or warriors). As a result, this dissertation delves into the "black box" of what, specifically, about "the police" impacts perception (e.g., accoutrements, vehicles, facial expressions) and the specific effects of such elements on perception (e.g., more or less approachable, etc.). As part of this conclusion chapter, I summarize the major contributions of this dissertation from both methodological and substantive perspectives as well as discuss the implications of its findings for both scholars and practitioners.

From a methodological perspective, a major obstacle for the policing literature has been mapping the perceptual effects of police on non-criminally-involved persons. If "behavior" is assessed as *criminal*-related behavior, as done in much historical research, then it is difficult to identify the effects of police presence on citizens who are not criminally-involved. This is particularly important given that the presence of police may still affect perceptions of police among non-criminally-involved persons, however, the effects of police remain invisible in many studies because of the focus on crime as the outcome. The experiment described in this dissertation thus provides a framework by which the effects of police can be conceptualized, operationalized, and measured among all people, including those who are not criminally-involved. By presenting participants with police stimuli in several different aesthetic capacities

absent contact, I was able to explore the perceptual effects of police presence on a wide array of outcomes that are not restricted to crime among a diverse set of people.

By employing a rigorous and carefully-controlled experimental design, I was also able to isolate the causal effects of police appearance on perceptions of police officers. Specifically, I was able to tease apart the police ensemble to assess the perceptual effects of *specific* elements of "the police," such as accoutrements, vehicle style and facial expressions, which would otherwise be lumped together under the overarching term "police." This methodological advantage helped to overcome some of the limitations of past research which has traditionally and spuriously collapsed all elements of the police together in a manner that limits tangible implications: if particular factors that impact perceptions of officers get masked by the generous use of vague vocabulary and/or stimuli, researchers are unable to identify which specific elements actually drive perceptions. Without identification of these elements, practitioners are then unable to manipulate them in order to try to enhance perceptions of officers. In this vein, this dissertation provides an important contribution to the field by causally identifying specific elements of police appearance that impact perceptions of police officers.

Relatedly, by isolating participants' perceptions to a visual field where particular stimuli, like accoutrements, vehicles and facial expressions, were variables of interest but where such variables were not made salient to the participant, I was able to examine perceptual processes that can occur without much conscious thought or consideration. This benefit is particularly relevant in the context of policing where most observations of the police are brief and informal: citizens may observe police as part of their everyday routines (e.g., during their commute to work) and derive judgments about them without deliberation or explicit questioning of their observations. Understanding how observations of police officers during these quick, routine, and

often mundane scenarios can impact perceptions may hold much promise for managing perceptions of police among the overwhelming majority of citizens who do not formally engage with the police.

From a more substantive perspective, this dissertation provides several important insights regarding the effects of police appearance on perceptions of police officers as aggressive, approachable, friendly, respectful, accountable, and competent. For example, as described in Chapter 1, I find that wearing different accoutrements changes the ways in which participants think about police officers. Whereas some accoutrements (like high-visibility vests) enhance perceptions of officers, other accoutrements (like black gloves, longstick batons, and sunglasses) tarnish perceptions of officers. As part of my theorizing, I argue that the rationale behind these perceptual effects regards the effects of accoutrements on the perceived intentions and philosophies of officers: accoutrements are worn by officers for specific purposes, and therefore, their presence on an officer signals specific and individualized intentions associated with such purposes. Whereas high-visibility vests may signal visible, transparent, and helpful intentions consistent with a guardianship orientation (Stoughton, 2015; Stoughton, 2016), black gloves, longstick batons, and/or sunglasses may signal more deceptive and predatory intentions consistent with a warrior orientation (Stoughton, 2015; Stoughton, 2016). Accoutrements as signals of intent are therefore important means by which police exude presence and nonverbally communicate their philosophies and intentions to the public. If a citizen perceives a police officer as having ill intentions because of the presence of a particular accoutrement, their reaction to such officer, and the subsequent interaction that follows, may be negatively impacted by their first impression of that officer.

As described in Chapter 2, I find that occupying different types and colors of police vehicles also changes the ways in which participants think about police officers. Officers are generally perceived more favorably when occupying marked police vehicles than non-marked police vehicles, although the color of the marked vehicle can impact perceptions as well. Thus, although the primary functions of transportation, storage, and so on remain largely constant across vehicle style, differences in vehicle aesthetics translate into differences in perceptions of officers occupying them. As part of my theorizing, I argue that police vehicles are semantically similar to police uniforms (Simpson, 2017): both can be symbols of legitimacy which exude presence and nonverbally communicate philosophies and intentions to the public. Whereas marked police vehicles may signal visible, transparent, and legitimate presence consistent with a guardianship orientation (Stoughton, 2015; Stoughton, 2016), non-marked police vehicles may signal more deceptive, predatory, and illegitimate presence consistent with a warrior orientation (Stoughton, 2015; Stoughton, 2016). As icons in policing, vehicles are some of the most visible and frequently observed symbols of the police. The findings from this chapter provide strong empirical evidence to substantiate the importance of vehicles in the broader police perception equation.

In Chapter 3, I extended the findings from the preceding two chapters by demonstrating how officers' facial expressions can impact participants' perceptions of them. By providing the first known examination of facial expressions in the context of policing, I was able to empirically highlight the importance of expression manipulation when adorning different accoutrements and occupying different styles of police vehicles. Overall, I find that police officers are perceived much more favorably when exhibiting a smile than when exhibiting a neutral facial expression. I also find that the negative effects of accoutrements accompanied by a neutral expression are

mitigated by the presence of a smile. As part of my theorizing, I argue that the nonverbal cue of smiling changes the perceived intent and philosophies of the pictured officer, potentially from guardians to warriors and vice versa (Stoughton, 2015; Stoughton, 2016), which then changes participants' perceptions of that officer.

Finally, in Chapter 4, I validated the findings from the preceding three chapters which used a sample of participants from a large public university using a new sample of participants from MTurk. By re-evaluating the effects of police appearance on perceptions of officers using my sample of MTurk participants, I was able to test the scope of my results from a sample of university students inhabiting one geographic location among a sample of adults residing in geographic regions across the world. As part of this chapter, I also tested the effects of police appearance on perceptions of officer competency: an important element of the stereotype content model which argues that competence and warmth are key elements of person perception (Fiske et al., 2002). The analyses revealed that the findings from all three chapters remain very consistent across both samples: data from the sample of MTurk participants provided the same conclusions as data from the sample of university students. Moreover, the differences between the effect sizes for variables across samples were small and the direction of such effects remained parallel. The consistency in results across samples suggests that the perceptual effects of police appearance are not a function of local geography or university affiliation, but rather more global phenomena. In both samples, participants used the same visual cues, like accoutrements, vehicles and facial expressions, to derive their judgments about officers. The results from this chapter also highlighted how appearance impacts perceptions of officer competency and provided evidence to suggest that MTurk provides an efficient, affordable, and reliable means to remotely sample and engage participants.

IMPLICATIONS

As described throughout this dissertation, the findings from the present research have several important implications for policy and practice. Officer appearance is embedded within all practices that involve the physical observation of police. Such practices include events where officers are simply seen but never spoken to and events where engagement occurs between citizens and officers. For example, in the context of foot patrol, residents in a neighborhood may see officers walking in their block but never actually contact them. In such cases, the mere observation of officers is still enough to impact perceptions of them: whereas some officers may appear more aggressive because of their appearance, and be perceived as such, others may appear more friendly, approachable, and so on. These judgments derived from appearance characteristics may then impact the likelihood of citizens initiating contact with officers. And in the event that contact does occur, citizens must physically *see* the officer before their interaction begins and then continuously as their interaction progresses. In these cases, citizens' first impressions of officers derived from their appearance may impact the outcome of the police interaction itself. For example, citizens may be more apt to cooperate and share information with officers whom they perceive to be approachable, friendly, respectful, accountable, and competent than vice versa. The findings from this dissertation are thus relevant to all police interventions, interactions, and presentations in all environments. The outcomes evaluated in this dissertation are also relevant for all police departments in all places insofar that all departments should theoretically wish for their officers to be perceived as approachable, friendly, respectful, accountable, and competent if their organizational philosophy aligns with a service role. In this respect, the implications of these findings should be received without much debate or contention

among all policing communities (e.g., rural versus urban departments, high crime versus low crime departments, small versus large departments, etc.).

IMPLEMENTATION

The implications of the findings from this dissertation are not limited to hypothetical predictions. Indeed, several police departments whom have received copies of the findings from this dissertation have already implemented them into their policies and practices. For example, as shown in Appendix A1, the Irvine Police Department recently transitioned from a primary white color police vehicle to a black and white color police vehicle based on the theorizing and findings presented in Chapter 2. This same department also utilized the theorizing and findings presented in Chapter 1 as justification for the implementation of high-visibility apparel during concerts and other events which attract large gatherings of people. Several other departments in the region have also implemented the findings from this dissertation in the form of policy modifications regarding headwear and gloves. The implementation of these findings within the policing environment is symbolic of the evidence-based policing movement which is gaining much traction and support among contemporary police practitioners across the globe (e.g., see Mitchell & Huey, 2019).

CONCLUDING REMARKS

As an institution, the police are particularly sensitive and vulnerable to public opinion. Building upon existing research, this dissertation contributes to the policing literature by experimentally unraveling the effects of aesthetic factors associated with the police on perceptions of the police. Using two large samples of diverse participants from both a public university and Amazon's Mechanical Turk, I was able to empirically identify the elements of police appearance that drive perceptions of officers along several important outcomes. I was also

able to use my findings to theorize regarding the relationships between appearance and perceptions: suggesting, for example, that the elements of police appearance which elicit positive perceptual effects are associated with the principals of a guardianship orientation and the elements which elicit negative perceptual effects are associated with the principals of a warrior orientation. Throughout each discussion, I illustrated the implications of the findings for the policing literature as well as the practitioner community.

Police appearance matters for more than just personal taste: by communicating information about officers' intentions, philosophies, and legitimacy, appearance characteristics can fundamentally change the ways in which citizens perceive police officers. Given that appearance is embedded within all practices that involve the physical observation of police, these findings have much relevance for policing. Although many observations of the police occur during quick, routine, and mundane scenarios, like when passing a police officer on a roadway or observing a police officer inside of a public building, variation in the appearance of officers is enough to derive variation in citizens' perceptions of them. Scholars and practitioners alike must be mindful of the effects of appearance on perceptions when drafting their policies and interventions. Scholars and practitioners must also continue to invest thought and attention into the effects of appearance when evaluating the impact of police on communities. Future research would benefit from further analyses of the effects of police appearance in more dynamic environments where more contextual stimuli are present. Future research would also benefit from analyses of the effects of appearance on officers' perceptions of themselves as well as the feedback loops between officer appearance and citizen behavior.

Although the equipment discussed, manipulated, and tested as part of this dissertation has historically been conceptualized and defined in terms of its functionality, it is now time to

conceptualize and define it in terms of perception. Wearing black gloves may help to protect officers from disease, but such gloves may also hinder citizens' willingness to engage with them. Driving marked police vehicles may offer an efficient means to transport officers, but such vehicles may also enhance the perceived legitimacy of police. As the field moves forward, scholars must think as much about the instrumental function of equipment as the signaling framework in which such equipment exists. Different equipment induce different aesthetics, different aesthetics induce different perceptions, and perceptions exist at the core of policing.

REFERENCES

Albas, D. C., & Albas, C. A. (1989). Meaning in context: The impact of eye contact and perception of threat on proximity. *The Journal of Social Psychology, 129*, 525-531.

Albert, N. M., Wocial, L., Heyer, K. H., Na, J., & Trochelman, K. (2008). Impact of nurses' uniforms on patient and family perceptions of nurse professionalism. *Applied Nursing Research, 21*, 181-190.

Andresen, M. A., & Lau, K. C. (2014). An evaluation of police foot patrol in Lower Lonsdale, British Columbia. *Police Practice and Research, 15*, 476-489.

Ariel, B., Sutherland, A., Henstock, D., Young, J., Drover, P., Sykes, J., Megicks, S., & Henderson, R. (2017). "Contagious accountability": A global multisite randomized controlled trial on the effect of police body-worn cameras on citizens' complaints against the police. *Criminal Justice and Behavior, 44*, 293-316.

Bahn, C. (1974). The reassurance factor in police patrol. *Criminology, 12*, 338-345.

Baker, M. (2016). Is there a reproducibility crisis? *Nature, 533*, 452-454.

Balkin, S. & Houlden, P. (1983). Reducing fear of crime through occupational presence. *Criminal Justice and Behavior, 10*, 13-33

Barker, J., & Black, C. (2009). Ballistic vests for police officers: Using clothing comfort theory to analyse personal protective clothing. *International Journal of Fashion Design, Technology and Education, 2*, 59-69.

Barker, J., Black, C., & Cloud, R. (2010). Comfort comparison of ballistic vest panels for police officers. *Journal of Textile and Apparel, Technology and Management, 6*, 1-12.

Bayes, M. A. (1972). Behavioral cues of interpersonal warmth. *Journal of Consulting and Clinical Psychology, 39*, 333-339.

Bayley, D. H. (1994). *Police for the future.* New York, NY: Oxford University Press.

Behling, D. (1994). School uniforms and person perception. *Perceptual and Motor Skills, 79*, 723-729.

Bell, D. J. (1982). Police uniforms, attitudes, and citizens. *Journal of Criminal Justice, 10*, 45-55.

Berkley, B. J., & Thayer, J. R. (2000). Policing entertainment districts. *Policing: An International Journal of Police Strategies & Management, 23*, 466-491.

Bickman, L. (1974). The social power of a uniform. *Journal of Applied Social Psychology, 4*, 47-61.

Bittner, E. (1970). *The functions of the police in modern society*. Chevy Chase, MD: National Institute of Mental Health.

Bowers, W. J., & Hirsch, J. H. (1987). The impact of foot patrol staffing on crime and disorder in Boston: An unmet promise. *American Journal of Police, 6*, 17-44.

Boyanowsky, E. O., & Griffiths, C. T. (1982). Weapons and eye contact as instigators or inhibitors of aggressive arousal in police-citizen interaction. *Journal of Applied Social Psychology, 12*, 398-407.

Bradford, B. (2014). Policing and social identity: Procedural justice, inclusion and cooperation between police and public. *Policing & Society, 24*, 22-43.

Bradford, B., Jackson, J., & Stanko, E. A. (2009). Contact and confidence: Revisiting the impact of public encounters with the police. *Policing & Society, 19*, 20-46.

Bradford, B., Murphy, K., & Jackson, J. (2014). Officers as mirrors: Policing, procedural justice and the (re)production of social identity. *The British Journal of Criminology, 54*, 527-550.

Braga, A. A., & Bond, B. J. (2008). Policing crime and disorder hot spots: A randomized controlled trial. *Criminology, 46*, 577-607.

Braga, A. A., Papachristos, A. V., & Hureau, D. (2014). The effects of hot spots policing on crime: An updated systematic review and meta-analysis. *Justice Quarterly, 31*, 633-663.

Brick, B. T., Taylor, T. J., & Esbensen, F. A. (2009). Juvenile attitudes towards the police: The importance of subcultural involvement and community ties. *Journal of Criminal Justice, 37*, 488-495.

Bridenball, B., & Jesilow, P. (2008). What matters: The formation of attitudes toward the police. *Police Quarterly, 11*, 151-181.

Brunson, R. K., & Weitzer, R. (2009). Police relations with Black and White youths in different urban neighborhoods. *Urban Affairs Review, 44*, 858-885.

Buhrmester, M., Kwang, T., & Gosling, S. D. (2011). Amazon's Mechanical Turk: A new source of inexpensive, yet high-quality, data? *Perspectives on Psychological Science, 6*, 3-5.

Bureau of Justice Statistics. (2011). Law enforcement management and administrative statistics (LEMAS), 2007. Available from: http://doi.org/10.3886/ICPSR31161.v1.

Bureau of Justice Statistics. (2015). Law enforcement management and administrative statistics (LEMAS), 2013. Available from: http://doi.org/10.3886/ICPSR36164.v2.

Cao, L., Frank, J., & Cullen, F. T. (1996). Race, community context and confidence in the police. *American Journal of Police, 15*, 3-22.

Chanes, L., Wormwood, J. B., Betz, N., & Barrett, L. F. (2018). Facial expression predictions as drivers of social perception. *Journal of Personality and Social Psychology, 114*, 380-396.

Clarke, G. M., Carter, K. W., Palmer, L. J., Morris, A. P., & Cardon, L. R. (2007). Fine mapping versus replication in whole-genome association studies. *American Journal of Human Genetics, 81*, 995-1005.

Cohen, L. E., & Felson, M. (1979). Social change and crime rate trends: a routine activity approach. *American Sociological Review, 44*, 588-608.

Dai, M., & Jiang, X. (2016). A comparative study of satisfaction with the police in the United States and Australia. *Australian & New Zealand Journal of Criminology, 49*, 30-52.

Damhorst, M. L. (1990). In search of a common thread: Classification of information communicated through dress. *Clothing and Textiles Research Journal, 8*, 1-12.

De Cremer, D., & Tyler, T. R. (2007). The effects of trust in authority and procedural fairness on cooperation. *Journal of Applied Psychology, 92*, 639-649.

Decker, S. H. (1981). Citizen attitudes toward the police: A review of past findings and suggestions for future policy. *Journal of Police Science and Administration, 9*, 80-87.

Dempsey, P. C., Handcock, P. J., & Rehrer, N. J. (2013). Impact of police body armour and equipment on mobility. *Applied Ergonomics, 44*, 957-961.

Durkin, K., & Jeffery, L. (2000). The salience of the uniform in young children's perception of police status. *Legal and Criminological Psychology, 5*, 47-55.

Ekman, P. (1992). Facial expressions of emotion: New findings, new questions. *Psychological Science, 3*, 34-38.

Ekman, P., Davidson, R. J., & Friesen, W. V. (1990). The Duchenne smile: Emotional expression and brain physiology II. *Journal of Personality and Social Psychology, 58*, 342-353.

Ekman, P., & Friesen, W. V. (1982). Felt, false and miserable smiles. *Journal of Nonverbal Behavior, 6*, 238-252.

Esbensen, F. A. (1987). Foot patrols: Of what value? *American Journal of Police, 6*, 45-65.

Felson, M. (1995). Those who discourage crime. *Crime and Place, 4*, 53-66.

Fiske, S. T., Cuddy, A. J., & Glick, P. (2007). Universal dimensions of social cognition: Warmth and competence. *Trends in Cognitive Sciences, 11*, 77-83.

Fiske, S. T., Cuddy, A. J., Glick, P., & Xu, J. (2002). A model of (often mixed) stereotype content: Competence and warmth respectively follow from perceived status and competition. *Journal of Personality and Social Psychology, 82*, 878-902.

Frank, J., Smith, B. W., & Novak, K. J. (2005). Exploring the basis of citizens' attitudes toward the police. *Police Quarterly, 8*, 206-228.

Frank, M. G., & Gilovich, T. (1988). The dark side of self- and social perception: Black uniforms and aggression in professional sports. *Journal of Personality and Social Psychology, 54*, 74-85.

Gervais, P., Baudin, P., Cruikshank, B., & Dahlstedt, D. L. (1998). Comparative analysis between police batons. *Forensic Science International, 91*, 7-17.

Glikson, E., Cheshin, A., & van Kleef, G. A. (2018). The dark side of a smiley: Effects of smiling emoticons on virtual first impressions. *Social Psychological and Personality Science, 9*, 614-625.

Groff, E. R., Ratcliffe, J. H., Haberman, C. P., Sorg, E. T., Joyce, N. M., & Taylor, R. B. (2015). Does what police do at hot spots matter? The Philadelphia policing tactics experiment. *Criminology*, 53, 23-53.

Hawdon, J. E., Ryan, J., & Griffin, S. P. (2003). Policing tactics and perceptions of police legitimacy. *Police Quarterly, 6*, 469-491.

Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences, 33*, 61-83.

Igl, B. W., König, I. R., & Ziegler, A. (2009). What do we mean by 'replication' and 'validation' in genome-wide association studies? *Human Heredity, 67*, 66-68.

Ioannidis, J. P. (2005). Contradicted and initially stronger effects in highly cited clinical research. *Journal of the American Medical Association, 294*, 218-228.

Ioannidis, J. P., & Khoury, M. J. (2011). Improving validation practices in "omics" research. *Science, 334*, 1230-1232.

Ivkovic, S. K. (2008). A comparative study of public support for the police. *International Criminal Justice Review, 18*, 406-434.

Jackson, J., & Bradford, B. (2009). Crime, policing and social order: On the expressive nature of public confidence in policing. *The British Journal of Sociology, 60*, 493-521.

Jesliow, P., & Meyer, J. F. (2001). The effect of police misconduct on public attitudes: A quasi-experiment. *Journal of Crime and Justice, 24*, 109-121.

Jesilow, P., Meyer, J., & Namazzi, N. (1995). Public attitudes toward the police. *American Journal of Police, 14*, 67-88.

Johnson, K. K., Schofield, N. A., & Yurchisin, J. (2002). Appearance and dress as a source of information: A qualitative approach to data collection. *Clothing and Textiles Research Journal, 20*, 125-137.

Johnson, R. R. (2005). Police uniform color and citizen impression formation. *Journal of Police and Criminal Psychology, 20*, 58-66.

Johnson, R. R., Plecas, D., Anderson, S., & Dolan, H. (2015). No hat or tie required: Examining minor changes to the police uniform. *Journal of Police and Criminal Psychology, 30*, 158-165.

Jones, B., & Tilley, N. (2004). *The impact of high visibility patrols on personal robbery.* London, England: Home Office.

Joseph, N., & Alex, N. (1972). The uniform: A sociological perspective. *American Journal of Sociology, 77*, 719-730.

Kaplan, J. L., Wright, M. J., Lazarus, L., Congemi, N., duTreil, K., Arnold, R., Mercante, D., Diaz, J. H., Vrahas, M., & Hunt, J. P. (2000). Use of an unmanned police car to reduce traffic speed. *Journal of Trauma and Acute Care Surgery, 49*, 43-46.

Kelling, G. L., Pate, T., Dieckman, D., & Brown, C. E. (1974). *The Kansas City preventative patrol experiment.* Washington, DC: Police Foundation.

König, I. R. (2011). Validation in genetic association studies. *Briefings in Bioinformatics, 12*, 253-258.

Konitzer, L. N., Fargo, M. V., Brininger, T. L., & Reed, M. L. (2008). Association between back, neck, and upper extremity musculoskeletal pain and the individual body armor. *Journal of Hand Therapy, 21*, 143-149.

Koper, C. S. (1995). Just enough police presence: Reducing crime and disorderly behavior by optimizing patrol time in crime hot spots. *Justice Quarterly, 12*, 649-672.

Krumhuber, E., Manstead, A. S., Cosker, D., Marshall, D., Rosin, P. L., & Kappas, A. (2007). Facial dynamics as indicators of trustworthiness and cooperative behavior. *Emotion, 7*, 730-735.

Krys, K., Hansen, K., Xing, C., Espinosa, A. D., Szarota, P., & Morales, M. F. (2015). It is better to smile to women: Gender modifies perception of honesty of smiling individuals across cultures. *International Journal of Psychology, 50*, 150-154.

Kwan, I., & Mapstone, J. (2004). Visibility aids for pedestrians and cyclists: A systematic review of randomized controlled trials. *Accident Analysis and Prevention, 36*, 305-312.

LaTourrette, T. (2010). The life-saving effectiveness of body armor for police officers. *Journal of Occupational and Environmental Hygiene, 7*, 557-562.

Lau, S. (1982). The effect of smiling on person perception. *The Journal of Social Psychology, 117*, 63-67.

Leiber, M. J., Nalla, M. K., & Farnworth, M. (1998). Explaining juveniles' attitudes toward the police. *Justice Quarterly, 15*, 151-174.

Lin, T., Luiselli, J. K., Gilligan, K., & Dacosta, S. (2012). Preventing injury from child aggression: A single-case evaluation of the effects of staff-worn protective equipment. *Developmental Neurorehabilitation, 15*, 298-303.

Loftus, E. F., Loftus, G. R., & Messo, J. (1987). Some facts about "weapon focus". *Law and Human Behavior, 11*, 55-62.

Lösel, F. (2018). Evidence comes by replication, but needs differentiation: The reproducibility issue in science and its relevance for criminology. *Journal of Experimental Criminology*, 14, 257-278.

Maguire, E. R. (1997). Structural change in large municipal policing organizations during the community policing era. *Justice Quarterly, 14*, 547-576.

Maguire, E. R., Lowrey, B. V., & Johnson, D. (2017). Evaluating the relative impact of positive and negative encounters with police: A randomized experiment. *Journal of Experimental Criminology, 13*, 367-391.

Majumdar, D., Srivastava, K. K., Purkayastha, S. S., Pichan, G., & Selvamurthy, W. (1997). Physiological effects of wearing heavy body armour on male soldiers. *International Journal of Industrial Ergonomics, 20*, 155-161.

Mastrofski, S. D., Willis, J. J., & Kochel, T. R. (2007). The challenges of implementing community policing in the United States. *Policing: A Journal of Policy and Practice, 1*, 223-234.

Mazerolle, L., Antrobus, E., Bennett, S., & Tyler, T. R. (2013a). Shaping citizen perceptions of police legitimacy: A randomized field trial of procedural justice. *Criminology, 51*, 33-64.

Mazerolle, L., Bennett, S., Antrobus, E., & Eggins, E. (2012). Procedural justice, routine encounters and citizen perceptions of police: Main findings from the Queensland Community Engagement Trial (QCET). *Journal of Experimental Criminology, 8*, 343-367.

Mazerolle, L., Bennett, S., Davis, J., Sargeant, E., & Manning, M. (2013b). Procedural justice and police legitimacy: A systematic review of the research evidence. *Journal of Experimental Criminology, 9*, 245-274.

Mehu, M., Grammer, K., & Dunbar, R. I. (2007). Smiles when sharing. *Evolution and Human Behavior, 28*, 415-422.

Mitchell, R. J. (2017). Frequency versus duration of police patrol visits for reducing crime in hot spots: Non-experimental findings from the Sacramento hot spots experiment. *Cambridge Journal of Evidence-Based Policing, 1*, 22-37.

Mitchell, R. J., & Huey, L. (Eds.). (2019). *Evidence based policing: An introduction.* Bristol, England: Policy Press.

Murphy, K., Hinds, L., & Fleming, J. (2008). Encouraging public cooperation and support for police. *Policing & Society, 18*, 136-155.

Mussel, P., Göritz, A. S., & Hewig, J. (2013). The value of a smile: Facial expression affects ultimatum-game responses. *Judgment and Decision Making, 8*, 381-385.

Nagin, D. S., & Pogarsky, G. (2003). An experimental investigation of deterrence: Cheating, self-serving bias, and impulsivity. *Criminology, 41*, 167-194.

Nickels, E. (2008). Good guys wear black: Uniform color and citizen impressions of police. *Policing: An International Journal of Police Strategies & Management, 31*, 77-92.

Open Science Collaboration. (2015). Estimating the reproducibility of psychological science. *Science, 349*, 4716-1-4716-8.

Otta, E., Lira, B. B., Delevati, N. M., Cesar, O. P., & Pires, C. S. (1994). The effect of smiling and of head tilting on person perception. *The Journal of Psychology: Interdisciplinary and Applied, 128*, 323-331.

Owens, E., Weisburd, D., Amendola, K. L., & Alpert, G. P. (2018). Can you build a better cop? Experimental evidence on supervision, training, and policing in the community. *Criminology & Public Policy, 17*, 41-87.

Paek, S. L. (1986). Effect of garment style on the perception of personal traits. *Clothing and Textiles Research Journal, 5*, 10-16.

Paternoster, R. (2010). How much do we really know about criminal deterrence? *The Journal of Criminal Law & Criminology, 100*, 765-824.

Piza, E. L., & O'Hara, B. A. (2014). Saturation foot-patrol in a high-violence area: A quasi-experimental evaluation. *Justice Quarterly, 31*, 693-718.

Police Foundation. (1981). *The Newark foot patrol experiment.* Washington, DC: Police Foundation.

Powell, B. (2016, October 30). Canadian police forces' switch to darker cruises 'a disturbing trend,' critics say. *The Star.*

President's Task Force on 21st Century Policing. (2015). *Final report of the President's Task Force on 21st Century Policing.* Washington, DC: Office of Community Oriented Policing Services.

Prine, R. K., Ballard, C., & Robinson, D. M. (2001). Perceptions of community policing in a small town. *American Journal of Criminal Justice, 25*, 211-221.

Ratcliffe, J. H., Taniguchi, T., Groff, E. R., & Wood, J. D. (2011). The Philadelphia foot patrol experiment: A randomized controlled trial of police patrol effectiveness in violent crime hotspots. *Criminology, 49*, 795-831.

Ratcliffe, J. H., Taylor, R. B., Askey, A. P., Grasso, J., & Fisher, R. (2017). *The Philadelphia predictive policing experiment: Impacts of police cars assigned to high crime grids.* Available from: http://www.jratcliffe.net/research/the-philadelphia-predictive-policing-experiment/.

Ravani, B., & Wang, C. (2018). Speeding in highway work zone: An evaluation of methods of speed control. *Accident Analysis & Prevention, 113*, 202-212.

Reis, H. T., Wilson, I. M., Monestere, C., Bernstein, S., Clark, K., Seidl, E., Franco, M., Gioioso, E., Freeman, L., & Radoane, K. (1990). What is smiling is beautiful and good. *European Journal of Social Psychology, 20*, 259-267.

Reisig, M. D., & Giacomazzi, A. L. (1998). Citizen perceptions of community policing: Are attitudes toward police important? *Policing: An International Journal of Police Strategies & Management, 21*, 547-561.

Reisig, M. D., & Parks, R. B. (2000). Experience, quality of life, and neighborhood context: A hierarchical analysis of satisfaction with police. *Justice Quarterly, 17*, 575-629.

Roberts, A., Nokes, L., Leadbeatter, S., & Pike, H. (1994). Impact characteristics of two types of police baton. *Forensic Science International, 67*, 49-53.

Rosenbaum, D. P., & Lurigio, A. J. (1994). An inside look at community policing reform: Definitions, organizational changes, and evaluation findings. *Crime & Delinquency, 40*, 299-314.

Sampson, R. J., & Bartusch, D. J. (1998). Legal cynicism and (subcultural?) tolerance of deviance: The neighborhood context of racial differences. *Law & Society Review, 32*, 777-804.

Scharlemann, J. P., Eckel, C. C., Kacelnik, A., & Wilson, R. K. (2001). The value of a smile: Game theory with a human face. *Journal of Economic Psychology, 22*, 617-640.

Schnelle, J. F., Kirchner, R. E., Casey, J. D., Uselton, P. H., & McNees, M. P. (1977). Patrol evaluation research: A multiple-baseline analysis of saturation police patrolling during day and night hours. *Journal of Applied Behavior Analysis, 10*, 33-40.

Seron, C., Pereira, J., & Kovath, J. (2006). How citizens assess just punishment for police misconduct. *Criminology, 44*, 925-960.

Sherman, L. W., & Weisburd, D. (1995). General deterrent effects of police patrol in crime "hot spots": A randomized, controlled trial. *Justice Quarterly, 12*, 625-648.

Simpson, R. (2017). The Police Officer Perception Project (POPP): An experimental evaluation of factors that impact perceptions of the police. *Journal of Experimental Criminology, 13*, 393-415.

Simpson, R. (2018). Officer appearance and perceptions of police: Accoutrements as signals of intent. *Policing: A Journal of Policy and Practice*. Advance online publication. doi: 10.1093/police/pay015.

Simpson, R. (2019). Police vehicles as symbols of legitimacy. *Journal of Experimental Criminology, 15*, 87-101.

Simpson, R., & Hipp, J. R. (2017). What came first: The police or the incident? Bidirectional relationships between police actions and police incidents. *Policing & Society*. doi: 10.1080/10439463.2017.1405957.

Sindall, K., & Sturgis, P. (2013). Austerity policing: Is visibility more important than absolute numbers in determining public confidence in the police? *European Journal of Criminology, 10*, 137-153.

Singer, M. S., & Singer, A. E. (1985). The effect of police uniform on interpersonal perception. *The Journal of Psychology: Interdisciplinary and Applied, 119*, 157-161.

Singleton, R. A., & Straits, B. C. (1999). *Approaches to social research.* New York, NY: Oxford University Press.

Skogan, W. G. (2005). Citizen satisfaction with police encounters. *Police Quarterly, 8*, 298-321.

Skogan, W. G. (2006a). Asymmetry in the impact of encounters with police. *Policing & Society, 16*, 99-126.

Skogan, W. G. (2006b). *Police and community in Chicago: A tale of three cities.* New York, NY: Oxford University Press.

Skogan, W. G., & Roth, J. A. (2004). Introduction. In W. Skogan (Ed.), *Community policing: Can it work?* (pp. xvii-xxxiv). Belmont, CA: Wadsworth.

Skorupski, V. J., & Rea, R. E. (2006). Patients' perceptions of today's nursing attire: Exploring dual images. *Journal of Nursing Administration, 36*, 393-401.

Sloan, J. J., Fisher, B. S., & Wilkins, D. L. (1996). Reducing perceived risk and fear of victimization on campus: A panel study of faculty members, staff, and students. *Journal of Contemporary Criminal Justice, 12*, 81-107.

Steblay, N. M. (1992). A meta-analytic review of the weapon focus effect. *Law and Human Behavior, 16*, 413-424.

Strebly, J. V. (2016, October 20). Why did Canadian police cars become so menacing? *National Observer.*

Stoughton, S. W. (2015). Law enforcement's "warrior" problem. *Harvard Law Review Forum, 128*, 225-234.

Stoughton, S. W. (2016). Principled policing: Warrior cops and guardian officers. *Wake Forest Law Review, 51*, 611-676.

Sunshine, J., & Tyler, T. (2003). Moral solidarity, identification with the community, and the importance of procedural justice: The police as prototypical representatives of a group's moral values. *Social Psychology Quarterly, 66*, 153-165.

Telep, C. W., Mitchell, R. J., & Weisburd, D. (2014). How much time should the police spend at crime hot spots? Answers from a police agency directed randomized field trial in Sacramento, California. *Justice Quarterly, 31*, 905-933.

The Canadian Press. (2016, November 10). Toronto police halt new 'militaristic' cars after council steps in. *CTV News.*

Thomas, M. D., & Williams, C. C. (2012). Police car visibility: Detection, categorization, and defining components. *The Journal of Law Enforcement, 2*, 1-29.

Thornton, G. R. (1943). The effect upon judgments of personality traits of varying a single factor in a photograph. *The Journal of Social Psychology, 18*, 127-148.

Tyler, T. R. (1990). *Why people obey the law*. New Haven, CT: Yale University Press.

Tyler, T. R. (2004). Enhancing police legitimacy. *The Annals of the American Academy of Political and Social Science, 593*, 84-99.

Tyler, T. R. (2005). Policing in black and white: Ethnic group differences in trust and confidence in the police. *Police Quarterly, 8*, 322-342.

Tyler, T. R., & Huo, Y. (2002). *Trust in the law*. New York, NY: Russell Sage Foundation.

Voigt, R., Camp, N. P., Prabhakaran, V., Hamilton, W. L., Hetey, R. C., Griffiths, C. M., Jurgens, D., Jurafsky, D., & Eberhardt, J. L. (2017). Language from police body camera footage shows racial disparities in officer respect. *Proceedings of the National Academy of Sciences of the United States of America, 114*, 6521-6526.

Volpp, J. M., & Lennon, S. J. (1988). Perceived police authority as a function of uniform hat and sex. *Perceptual and Motor Skills, 67*, 815-824.

Wang, Z., Mao, H., Li, Y. J., & Liu, F. (2017). Smile big or not? Effects of smile intensity on perceptions of warmth and competence. *Journal of Consumer Research, 43*, 787-805.

Weitzer, R. (2002). Incidents of police misconduct and public opinion. *Journal of Criminal Justice, 30*, 397-408.

Weitzer, R., & Brunson, R. K. (2009). Strategic responses to the police among inner-city youth. *The Sociological Quarterly, 50*, 235-256.

Weitzer, R., & Tuch, S. A. (1999). Race, class, and perceptions of discrimination by the police. *Crime & Delinquency, 45*, 494-507.

Weitzer, R., & Tuch, S. A. (2004). Race and perceptions of police misconduct. *Social Problems, 51*, 305-325.

Weitzer, R., & Tuch, S. A. (2005). Determinants of public satisfaction with the police. *Police Quarterly, 8*, 279-297.

Weitzer, R., Tuch, S. A., & Skogan, W. G. (2008). Police-community relations in a majority-Black city. *Journal of Research in Crime and Delinquency, 45*, 398-428.

Williams, S., & Coupe, T. (2017). Frequency vs. length of hot spots patrols: A randomised controlled trial. *Cambridge Journal of Evidence-Based Policing, 1*, 5-21.

Wilson, J. Q. (1968). *Varieties of police behavior.* New York, NY: Harvard University Press.

Winkel, F. W. (1986). Reducing fear of crime through police visibility: A field experiment. *Criminal Justice Policy Review, 1*, 381-398.

Wood, J., Sorg, E. T., Groff, E. R., Ratcliffe, J. H., & Taylor, C. J. (2014). Cops as treatment providers: Realities and ironies of police work in a foot patrol experiment. *Policing & Society, 24*, 362-379.

Worrall, J. L. (1999). Public perceptions of police efficacy and image: The "fuzziness" of support for the police. *American Journal of Criminal Justice, 24*, 47-66.

Wu, Y., Sun, I. Y., & Smith, B. W. (2011). Race, immigration, and policing: Chinese immigrants' satisfaction with police. *Justice Quarterly, 28*, 745-774.

Zhao, J., Schneider, M., & Thurman, Q. (2002). The effect of police presence on public fear reduction and satisfaction: A review of the literature. *The Justice Professional*, *15*, 273-299.

APPENDIX A

Memo

Memo from Chief Hamel of the Irvine Police Department to Irvine City Council.

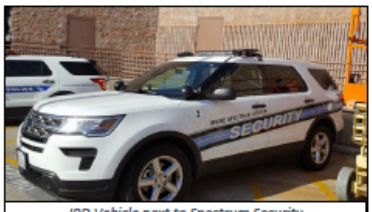
CITY COUNCIL AND DIRECTORS

Memo

To: City Council
Via: John A. Russo, City Manager
From: Mike Hamel, Director of Public Safety
Date: November 16, 2018
Re: **Patrol Vehicles**

In the coming weeks, Public Safety will implement new graphics for patrol vehicles. The new design includes a transition to the widely used, traditional black-and-white color scheme. New patrol vehicles added to the fleet and those scheduled for replacement will be among the first to transition to the new design. The remaining patrol vehicles will be outfitted with the new graphics and color scheme over the next several months. Support vehicles will retain a white color scheme. The change is being instituted to create a distinction between sworn police officers and private security personnel, increasing police visibility while reducing the chance private security details will be mistaken for police officers.

In recent years, interest in the discussion of providing a more distinct appearance for our patrol vehicles has risen as private security companies, often using the same white and blue color schemes, become more prevalent.



IPD Vehicle next to Spectrum Security

Older IPD Vehicle

IPD Vehicle

Nordic Security Vehicle

The study, *Police Vehicles as Symbols of Legitimacy,* published October 25 in the Journal of Experimental Criminology was conducted by UCI doctoral candidate Rylan Simpson. This study utilized data from the Police Officer Perception Project conducted in 2016 with the cooperation of the Irvine and Newport Beach police departments.

Abstract Results: "Police officers are perceived differently when occupying different types and colors of police vehicles. For example, officers are generally perceived more favorably when occupying marked police vehicles than when occupying non-marked police vehicles. When occupying marked police vehicles, officers are generally perceived more favorably when such vehicles have a black and white color scheme than a white and blue color scheme."

Mr. Simpson theorizes, "The historical association between 'black and white' and 'police' continues to persist in contemporary society, and therefore, participants extend more of their favorable views of the police to officers when they are presented in black and white marked vehicles (i.e., more stereotypical) than when they are presented in white and blue marked vehicles (i.e., less stereotypical), especially in the context of quick-second judgments, which is consistent with the categorization-based findings of Thomas and Williams (2012)."

Public Safety will implement a multifaceted outreach strategy to communicate this change to the public.

APPENDIX B

Tables

Table 1. Composition of the master set of police officers featured in the experiment.

Officer	Male	Female	Asian	Black	Hispanic	White
1	X		X			
2		X	X			
3	X			X		
4		X		X		
5	X				X	
6		X			X	
7	X					X
8		X				X

Table 1.1. Descriptive statistics for participants, Phases 1 and 2; combined N = 307.

	Phase 1 (N = 155)					Phase 2 (N = 152)				
Variable	Number (%)	Mean	Std. Dev.	Min.	Max.	Number (%)	Mean	Std. Dev.	Min.	Max.
Gender										
Male	25 (16%)	--	--	0	1	23 (15%)	--	--	0	1
Female	130 (84%)	--	--	0	1	129 (85%)	--	--	0	1
Age	--	21	4.928	18	56	--	21	2.664	18	32
Race/Ethnicity										
Asian	82 (53%)	--	--	0	1	64 (42%)	--	--	0	1
Hispanic	45 (29%)	--	--	0	1	53 (35%)	--	--	0	1
White (non-Hispanic)	18 (12%)	--	--	0	1	14 (9%)	--	--	0	1
Other	10 (6%)	--	--	0	1	21 (14%)	--	--	0	1
Father's Education										
No high school	26 (17%)	--	--	--	--	34 (22%)	--	--	--	--
High school	28 (18%)	--	--	--	--	34 (22%)	--	--	--	--
Some college	45 (29%)	--	--	--	--	32 (21%)	--	--	--	--
Bachelor's Degree	30 (19%)	--	--	--	--	31 (20%)	--	--	--	--
Master's Degree	15 (10%)	--	--	--	--	14 (9%)	--	--	--	--
Doctoral Degree	6 (4%)	--	--	--	--	3 (2%)	--	--	--	--
Unknown	5 (3%)	--	--	--	--	4 (3%)	--	--	--	--
Mother's Education										
No high school	25 (16%)	--	--	--	--	27 (18%)	--	--	--	--
High school	37 (24%)	--	--	--	--	37 (24%)	--	--	--	--
Some college	39 (25%)	--	--	--	--	31 (20%)	--	--	--	--
Bachelor's Degree	39 (25%)	--	--	--	--	32 (21%)	--	--	--	--
Master's Degree	10 (7%)	--	--	--	--	17 (11%)	--	--	--	--
Doctoral Degree	3 (2%)	--	--	--	--	4 (3%)	--	--	--	--
Unknown	2 (1%)	--	--	--	--	4 (3%)	--	--	--	--
Household Income										
Much less than average	16 (10%)	--	--	--	--	21 (14%)	--	--	--	--
Little less than average	30 (19%)	--	--	--	--	35 (23%)	--	--	--	--

Average	38 (25%)	--	--	--	--	35 (23%)	--	--	--	--
Little more than average	58 (37%)	--	--	--	--	43 (28%)	--	--	--	--
Much more than average	13 (8%)	--	--	--	--	18 (12%)	--	--	--	--
Socioeconomic Status	--	-0.019	0.877	-1.888	1.832	--	-0.0002	0.900	-1.617	1.815
Police Contact										
Negative	11 (7%)	--	--	0	1	10 (7%)	--	--	0	1
Positive	38 (25%)	--	--	0	1	24 (16%)	--	--	0	1
Both	4 (3%)	--	--	0	1	4 (3%)	--	--	0	1
None	102 (66%)	--	--	0	1	114 (75%)	--	--	0	1

Table 1.2. Multilevel mixed-effects logistic regression models where *y* is the rating of police officer; values represent odds ratios.

	Dependent Variable									
Independent Variable	Aggressive (S.E.)		Approachable (S.E.)		Friendly (S.E.)		Respectful (S.E.)		Accountable (S.E.)	
	Phase 1	Phase 2	Phase 1	Phase 2	Phase 1	Phase 2	Phase 1	Phase 2	Phase 1	Phase 2
Civilian Attire[a]	0.381***	0.463***	0.536***	0.343***	1.163*	0.822**	0.126***	0.124***	0.087***	0.068***
	(0.025)	(0.030)	(0.036)	(0.023)	(0.076)	(0.053)	(0.011)	(0.009)	(0.008)	(0.006)
High-Visibility Vest[b]	0.442***	-	2.333***	-	2.578***	-	2.889***	-	3.054***	-
	(0.042)		(0.228)		(0.243)		(0.320)		(0.330)	
Load-Bearing Vest[b]	1.830***	-	1.051	-	0.724***	-	2.417***	-	4.106***	-
	(0.164)		(0.096)		(0.066)		(0.262)		(0.458)	
Black Gloves[b]	2.022***	-	0.571***	-	0.518***	-	0.690***	-	0.912	-
	(0.182)		(0.051)		(0.048)		(0.069)		(0.092)	
Longstick Baton[b]	-	3.255***	-	0.446***	-	0.458***	-	0.573***	-	0.853
		(0.303)		(0.041)		(0.042)		(0.058)		(0.089)
Sunglasses[b]	-	3.190***	-	0.329***	-	0.301***	-	0.525***	-	0.787*
		(0.297)		(0.031)		(0.028)		(0.053)		(0.082)
Baseball Hat[b]	-	1.063	-	1.004	-	1.109	-	0.974	-	0.984
		(0.099)		(0.094)		(0.101)		(0.099)		(0.103)
Male Officer[c]	1.064	0.969	1.022	0.926	0.905	1.011	0.850*	0.988	1.035	0.916
	(0.069)	(0.063)	(0.067)	(0.060)	(0.060)	(0.066)	(0.064)	(0.070)	(0.078)	(0.068)
White Officer[d]	0.925	1.170	1.148	0.854	0.972	0.787*	0.912	0.840	0.860	0.920
	(0.094)	(0.121)	(0.120)	(0.090)	(0.102)	(0.082)	(0.110)	(0.095)	(0.103)	(0.109)
Hispanic Officer[d]	0.897	1.083	0.822*	0.760**	0.865	0.656***	0.884	0.950	0.809	0.923
	(0.087)	(0.107)	(0.082)	(0.075)	(0.085)	(0.066)	(0.099)	(0.103)	(0.091)	(0.104)
Black Officer[d]	0.783*	1.031	1.024	1.051	1.199	1.158	1.418*	1.357*	1.326*	0.947
	(0.088)	(0.119)	(0.117)	(0.121)	(0.141)	(0.132)	(0.192)	(0.171)	(0.179)	(0.124)
Age	1.012	1.056	1.011	1.003	0.976	1.015	0.954*	0.985	0.970	0.972
	(0.017)	(0.033)	(0.018)	(0.030)	(0.021)	(0.034)	(0.020)	(0.037)	(0.021)	(0.038)
Male Participant[e]	0.896	1.098	1.880**	0.595*	1.830*	1.075	1.270	0.590	2.282**	1.268
	(0.200)	(0.254)	(0.449)	(0.134)	(0.524)	(0.265)	(0.362)	(0.162)	(0.666)	(0.365)
White Participant[f]	1.040	0.987	0.900	0.886	1.222	0.999	2.279*	1.573	1.535	1.041
	(0.280)	(0.302)	(0.254)	(0.263)	(0.417)	(0.328)	(0.806)	(0.571)	(0.529)	(0.393)
Hispanic Participant[f]	0.772	0.973	1.311	1.342	1.125	1.447	1.224	1.369	1.310	1.632
	(0.160)	(0.204)	(0.285)	(0.272)	(0.295)	(0.322)	(0.323)	(0.341)	(0.347)	(0.422)

Other Race Participant[f]	1.712	1.283	1.042	0.982	0.771	0.739	0.918	0.777	0.787	1.446
	(0.576)	(0.332)	(0.367)	(0.246)	(0.334)	(0.205)	(0.396)	(0.239)	(0.342)	(0.463)
Socioeconomic Status	0.906	1.048	1.035	1.063	0.905	1.054	1.001	1.030	1.044	0.987
	(0.090)	(0.108)	(0.109)	(0.106)	(0.114)	(0.115)	(0.127)	(0.126)	(0.132)	(0.125)
Negative Police Contact[g]	0.834	0.969	1.035	0.816	1.323	0.471*	0.689	1.125	0.977	1.069
	(0.270)	(0.325)	(0.350)	(0.261)	(0.541)	(0.168)	(0.283)	(0.447)	(0.410)	(0.441)
Positive Police Contact[g]	0.905	0.905	1.454	1.533	1.183	1.758*	1.233	2.189**	1.043	1.159
	(0.177)	(0.206)	(0.302)	(0.339)	(0.296)	(0.427)	(0.310)	(0.602)	(0.263)	(0.327)
Both Neg. & Pos. Police Contact[g]	0.987	1.025	0.739	1.033	0.930	0.445	0.502	1.135	0.451	1.376
	(0.503)	(0.526)	(0.398)	(0.513)	(0.604)	(0.245)	(0.325)	(0.699)	(0.292)	(0.878)
Constant	1.004	0.187*	1.564	3.827*	1.345	1.169	18.001***	9.195**	9.075***	11.606**
	(0.359)	(0.124)	(0.599)	(2.464)	(0.612)	(0.832)	(8.196)	(7.332)	(4.159)	(9.593)
# Observations	4,960	4,864	4,960	4,864	4,960	4,864	4,960	4,864	4,960	4,864
# Groups	155	152	155	152	155	152	155	152	155	152

*$p < 0.05$ **$p < 0.01$ ***$p < 0.001$

[a] Reference group = uniform attire
[b] Reference group = without any of the listed accoutrements
[c] Reference group = female officers
[d] Reference group = Asian officers
[e] Reference group = female participants
[f] Reference group = Asian participants
[g] Reference group = participants with no police contact

Table 2.1. Descriptive statistics for participants, Phases 1 and 2 combined; N = 307.

Variable	Number (%)	Mean	Std. Dev.	Min.	Max.
Gender					
Male	48 (16%)	--	--	0	1
Female	259 (84%)	--	--	0	1
Age	--	21	3.966	18	56
Race/Ethnicity					
Asian	146 (48%)	--	--	0	1
Hispanic	98 (32%)	--	--	0	1
White (non-Hispanic)	32 (10%)	--	--	0	1
Other	31 (10%)	--	--	0	1
Father's Education					
No high school	60 (20%)	--	--	--	--
High school	62 (20%)	--	--	--	--
Some college	77 (25%)	--	--	--	--
Bachelor's degree	61 (20%)	--	--	--	--
Master's degree	29 (9%)	--	--	--	--
Doctoral degree	9 (3%)	--	--	--	--
Unknown	9 (3%)	--	--	--	--
Mother's Education					
No high school	52 (17%)	--	--	--	--
High school	74 (24%)	--	--	--	--
Some college	70 (23%)	--	--	--	--
Bachelor's degree	71 (23%)	--	--	--	--
Master's degree	27 (9%)	--	--	--	--
Doctoral degree	7 (2%)	--	--	--	--
Unknown	6 (2%)	--	--	--	--
Household Income					
Much less than average	37 (12%)	--	--	--	--
Little less than average	65 (21%)	--	--	--	--
Average	73 (24%)	--	--	--	--
Little more than average	101 (33%)	--	--	--	--
Much more than average	31 (10%)	--	--	--	--
Socioeconomic Status	--	-0.009	0.89	-1.741	1.818
Police Contact					
Negative	21 (7%)	--	--	0	1
Positive	62 (20%)	--	--	0	1
Both	8 (3%)	--	--	0	1
None	216 (70%)	--	--	0	1

Table 2.2. Multilevel mixed-effects logistic regression models where *y* is the rating of police officer; values represent odds ratios.

	Dependent Variable				
Independent Variable	Aggressive (S.E.)	Approachable (S.E.)	Friendly (S.E.)	Respectful (S.E.)	Accountable (S.E.)
Civilian Attire[a]	0.638***	0.541***	0.850**	0.291***	0.192***
	(0.036)	(0.029)	(0.044)	(0.017)	(0.012)
Marked Vehicle:	3.073***	1.303**	0.737***	1.929***	3.424***
Black & White[b]	(0.260)	(0.105)	(0.058)	(0.169)	(0.305)
Marked Vehicle:	3.603***	1.073	0.467***	1.554***	3.353***
White & Blue[b]	(0.306)	(0.086)	(0.037)	(0.134)	(0.298)
Unmarked	1.662***	0.715***	0.590***	0.795**	0.972
Vehicle[b]	(0.119)	(0.046)	(0.038)	(0.054)	(0.067)
Male Officer[c]	1.637***	0.719***	0.684***	0.949	0.940
	(0.093)	(0.038)	(0.036)	(0.054)	(0.054)
White Officer[d]	1.467***	0.815*	0.645***	0.793*	0.947
	(0.133)	(0.070)	(0.054)	(0.072)	(0.086)
Hispanic Officer[d]	1.299**	0.780**	0.616***	0.730***	0.937
	(0.112)	(0.063)	(0.049)	(0.063)	(0.082)
Black Officer[d]	3.185***	0.536***	0.419***	0.683***	1.015
	(0.315)	(0.050)	(0.038)	(0.067)	(0.104)
Age	1.010	1.034	1.009	0.992	0.979
	(0.019)	(0.019)	(0.017)	(0.021)	(0.021)
Male Participant[e]	1.159	0.794	1.285	0.877	1.771*
	(0.235)	(0.156)	(0.233)	(0.197)	(0.415)
White	0.779	0.636	0.863	1.617	0.999
Participant[f]	(0.200)	(0.159)	(0.195)	(0.462)	(0.290)
Hispanic	0.827	0.977	0.980	1.502*	1.811**
Participant[f]	(0.153)	(0.175)	(0.161)	(0.308)	(0.383)
Other Race	0.991	0.736	0.629*	1.003	1.041
Participant[f]	(0.251)	(0.182)	(0.143)	(0.281)	(0.303)
Socioeconomic	0.843	1.106	0.979	1.042	1.331**
Status	(0.077)	(0.097)	(0.078)	(0.104)	(0.137)
Negative Police	1.137	0.823	0.549*	0.618	0.842
Contact[g]	(0.333)	(0.233)	(0.143)	(0.199)	(0.282)
Positive Police	1.129	1.502*	1.115	1.348	1.380
Contact[g]	(0.208)	(0.270)	(0.184)	(0.277)	(0.293)
Both Neg. & Pos.	1.598	1.087	0.603	0.736	0.540
Police Contact[g]	(0.729)	(0.481)	(0.246)	(0.379)	(0.285)
Constant	0.132***	1.508	2.639**	4.309**	2.551*
	(0.053)	(0.591)	(0.935)	(1.901)	(1.163)
# Observations	7,368	7,368	7,368	7,368	7,368
# Groups	307	307	307	307	307

*$p < 0.05$ **$p < 0.01$ ***$p < 0.001$

[a] Reference group = uniform attire
[b] Reference group = occupying an unrelated police vehicle
[c] Reference group = female officers
[d] Reference group = Asian officers
[e] Reference group = female participants
[f] Reference group = Asian participants
[g] Reference group = participants with no police contact

Table 3.1. Descriptive statistics for participants, Phase 3; N = 92.

Variable	Number (%)	Mean	Std. Dev.	Min.	Max.
Gender					
Male	13 (14%)	--	--	0	1
Female	79 (86%)	--	--	0	1
Age	--	20	2.3	18	32
Race/Ethnicity					
Asian	48 (52%)	--	--	0	1
Hispanic	23 (25%)	--	--	0	1
White (non-Hispanic)	15 (16%)	--	--	0	1
Other	6 (7%)	--	--	0	1
Father's Education					
No high school	15 (16%)	--	--	--	--
High school	20 (22%)	--	--	--	--
Some college	15 (16%)	--	--	--	--
Bachelor's degree	22 (24%)	--	--	--	--
Master's degree	14 (15%)	--	--	--	--
Doctoral degree	2 (2%)	--	--	--	--
Unknown	4 (4%)	--	--	--	--
Mother's Education					
No high school	11 (12%)	--	--	--	--
High school	19 (21%)	--	--	--	--
Some college	24 (26%)	--	--	--	--
Bachelor's degree	28 (30%)	--	--	--	--
Master's degree	6 (7%)	--	--	--	--
Doctoral degree	1 (1%)	--	--	--	--
Unknown	3 (3%)	--	--	--	--
Household Income					
Much less than average	9 (10%)	--	--	--	--
Little less than average	14 (15%)	--	--	--	--
Average	26 (28%)	--	--	--	--
Little more than average	34 (37%)	--	--	--	--
Much more than average	9 (10%)	--	--	--	--
Socioeconomic Status	--	-0.02	0.83	-1.97	1.76
Receives Financial Aid	54 (59%)	--	--	0	1
Police Contact					
Negative	3 (3%)	--	--	0	1
Positive	16 (17%)	--	--	0	1
Both	4 (4%)	--	--	0	1
None	69 (75%)	--	--	0	1

Table 3.2. Proportion of images rated as given dependent variables by officer pose and gender, with differences between neutral and smiling proportions tested at the $p < 0.05$ level; N = 92.

	Aggressive†		Approachable‡		Friendly‡		Respectful‡		Accountable‡	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
In a Police Vehicle										
Neutral	0.76	0.72	0.26	0.34	0.17	0.17	0.66	0.59	0.75	0.77
Smiling	0.12	0.12	0.90	0.87	0.95	0.91	0.89	0.89	0.85	0.85
Difference	**0.64*** **	**0.60*** **	**0.64*** **	**0.53*** **	**0.77*** **	**0.74*** **	**0.23*** **	**0.30*** **	**0.10***	**0.08**
On a Bicycle										
Neutral	0.48	0.37	0.48	0.51	0.22	0.26	0.66	0.63	0.70	0.77
Smiling	0.09	0.11	0.92	0.93	0.90	0.89	0.88	0.92	0.80	0.80
Difference	**0.39*** **	**0.26*** **	**0.45*** **	**0.42*** **	**0.68*** **	**0.63*** **	**0.22*** **	**0.29*** **	**0.11***	**0.03**
Standard Uniform (SU)										
Neutral	0.77	0.71	0.36	0.32	0.10	0.11	0.72	0.65	0.80	0.78
Smiling	0.07	0.10	0.96	0.91	0.92	0.96	0.95	0.96	0.89	0.90
Difference	**0.71*** **	**0.61*** **	**0.60*** **	**0.60*** **	**0.83*** **	**0.85*** **	**0.23*** **	**0.30*** **	**0.09**	**0.12***
SU + High-Visibility Vest										
Neutral	0.47	0.51	0.60	0.47	0.36	0.16	0.77	0.67	0.79	0.68
Smiling	0.10	0.04	0.91	0.93	0.91	0.95	0.95	0.92	0.86	0.85
Difference	**0.37*** **	**0.47*** **	**0.32*** **	**0.47*** **	**0.55*** **	**0.78*** **	**0.17*** **	**0.25*** **	**0.07**	**0.16****
SU + Load-Bearing Vest										
Neutral	0.73	0.68	0.36	0.35	0.13	0.09	0.67	0.64	0.76	0.76
Smiling	0.10	0.15	0.92	0.98	0.89	0.95	0.93	0.96	0.93	0.87
Difference	**0.63*** **	**0.53*** **	**0.57*** **	**0.63*** **	**0.76*** **	**0.86*** **	**0.26*** **	**0.32*** **	**0.17*** **	**0.11***
SU + Sunglasses										
Neutral	0.71	0.75	0.22	0.26	0.12	0.08	0.67	0.60	0.75	0.72
Smiling	0.12	0.08	0.85	0.88	0.89	0.92	0.97	0.91	0.89	0.91
Difference	**0.59*** **	**0.67*** **	**0.63*** **	**0.62*** **	**0.77*** **	**0.85*** **	**0.29*** **	**0.32*** **	**0.14****	**0.20*****
SU + Baseball Hat										
Neutral	0.67	0.54	0.32	0.50	0.11	0.26	0.67	0.68	0.75	0.79
Smiling	0.04	0.13	0.93	0.96	0.92	0.97	0.95	0.93	0.88	0.90
Difference	**0.63*** **	**0.41*** **	**0.62*** **	**0.46*** **	**0.82*** **	**0.71*** **	**0.27*** **	**0.25*** **	**0.13***	**0.11***
SU + Black Gloves										
Neutral	0.74	0.74	0.30	0.34	0.10	0.17	0.62	0.66	0.75	0.75
Smiling	0.08	0.11	0.92	0.91	0.91	0.96	0.93	0.96	0.89	0.82
Difference	**0.66*** **	**0.63*** **	**0.62*** **	**0.58*** **	**0.82*** **	**0.78*** **	**0.32*** **	**0.29*** **	**0.14****	**0.07**

*$p < 0.05$ **$p < 0.01$ ***$p < 0.001$

† H_a: diff > 0 ‡ H_a: diff < 0

Table 4.1. Descriptive statistics for participants in validation analyses for Chapters 1 and 2; N = 251.

Variable	Number (%)	Mean	Std. Dev.	Min.	Max.
Gender					
Male	101 (40%)	--	--	0	1
Female	148 (59%)	--	--	0	1
Other	2 (0.8%)	--	--	0	1
Age	--	32	9.60	18	65
Race/Ethnicity					
Asian	17 (7%)	--	--	0	1
Black	28 (11%)	--	--	0	1
Hispanic	16 (6%)	--	--	0	1
White (non-Hispanic)	178 (71%)	--	--	0	1
Other	12 (5%)	--	--	0	1
Father's Education					
No high school	19 (8%)	--	--	--	--
High school	70 (28%)	--	--	--	--
Some college	55 (22%)	--	--	--	--
Bachelor's degree	63 (25%)	--	--	--	--
Master's degree	21 (8%)	--	--	--	--
Doctoral degree	10 (4%)	--	--	--	--
Unknown	13 (5%)	--	--	--	--
Mother's Education					
No high school	16 (6%)	--	--	--	--
High school	76 (30%)	--	--	--	--
Some college	64 (26%)	--	--	--	--
Bachelor's degree	63 (25%)	--	--	--	--
Master's degree	25 (10%)	--	--	--	--
Doctoral degree	4 (2%)	--	--	--	--
Unknown	3 (1%)	--	--	--	--
Household Income					
Much less than average	22 (9%)	--	--	--	--
Little less than average	42 (17%)	--	--	--	--
Average	98 (39%)	--	--	--	--
Little more than average	70 (28%)	--	--	--	--
Much more than average	19 (8%)	--	--	--	--
Socioeconomic Status	--	-0.024	0.88	-2.190	2.098
Receives Financial Aid	84 (33%)	--	--	0	1
Police Contact					
Negative	8 (3%)	--	--	0	1
Positive	71 (28%)	--	--	0	1
Both	6 (2%)	--	--	0	1
None	166 (66%)	--	--	0	1

Table 4.2. Descriptive statistics for participants in validation analyses for Chapter 3; N = 98.

Variable	Number (%)	Mean	Std. Dev.	Min.	Max.
Gender					
Male	44 (45%)	--	--	0	1
Female	54 (55%)	--	--	0	1
Age	--	32	10.3	18	70
Race/Ethnicity					
Asian	8 (8%)	--	--	0	1
Black	7 (7%)	--	--	0	1
Hispanic	10 (10%)	--	--	0	1
White (non-Hispanic)	68 (69%)	--	--	0	1
Other	5 (5%)	--	--	0	1
Father's Education					
No high school	7 (7%)	--	--	--	--
High school	26 (27%)	--	--	--	--
Some college	17 (17%)	--	--	--	--
Bachelor's degree	25 (26%)	--	--	--	--
Master's degree	15 (15%)	--	--	--	--
Doctoral degree	8 (8%)	--	--	--	--
Unknown	--	--	--	--	--
Mother's Education					
No high school	4 (4%)	--	--	--	--
High school	26 (27%)	--	--	--	--
Some college	26 (27%)	--	--	--	--
Bachelor's degree	21 (22%)	--	--	--	--
Master's degree	16 (16%)	--	--	--	--
Doctoral degree	4 (4%)	--	--	--	--
Unknown	--	--	--	--	--
Household Income					
Much less than average	12 (12%)	--	--	--	--
Little less than average	8 (8%)	--	--	--	--
Average	36 (37%)	--	--	--	--
Little more than average	32 (33%)	--	--	--	--
Much more than average	10 (10%)	--	--	--	--
Socioeconomic Status	--	-1.00e-08	0.9	-2.02	1.63
Receives Financial Aid	31 (32%)	--	--	0	1
Police Contact					
Negative	5 (5%)	--	--	0	1
Positive	23 (23%)	--	--	0	1
Both	1 (1%)	--	--	0	1
None	69 (70%)	--	--	0	1

Table 4.3. Multilevel mixed-effects logistic regression models where *y* is the rating of police officer; values represent odds ratios for university student sample and MTurk sample.

	Dependent Variable									
Independent Variable	Aggressive (S.E.)		Approachable (S.E.)		Friendly (S.E.)		Respectful (S.E.)		Accountable (S.E.)	
	Students	MTurk	Students	MTurk	Students	MTurk	Students	MTurk	Students	MTurk
High-Visibility Vest[a]	0.442***	0.453***	2.333***	2.656***	2.578***	3.016***	2.889***	2.352***	3.054***	2.771***
	(0.042)	(0.037)	(0.228)	(0.224)	(0.243)	(0.245)	(0.320)	(0.205)	(0.330)	(0.249)
Load-Bearing Vest[a]	1.830***	1.434***	1.051	1.095	0.724***	0.928	2.417***	1.797***	4.106***	3.287***
	(0.164)	(0.110)	(0.096)	(0.085)	(0.066)	(0.071)	(0.262)	(0.152)	(0.458)	(0.301)
Black Gloves[a]	2.022***	2.047***	0.571***	0.534***	0.518***	0.514***	0.690***	0.612***	0.912	0.799**
	(0.182)	(0.156)	(0.051)	(0.041)	(0.048)	(0.039)	(0.069)	(0.049)	(0.092)	(0.066)
# Groups	155	251	155	251	155	251	155	251	155	251

*$p < 0.05$ **$p < 0.01$ ***$p < 0.001$

[a] Reference group = without any of the listed accoutrements

Table 4.4. Multilevel mixed-effects logistic regression models where *y* is the rating of police officer; values represent odds ratios.

	Dependent Variable
Independent Variable	Competent (S.E.)
Civilian Attire[a]	0.084***
	(0.006)
High-Visibility Vest[b]	2.087***
	(0.193)
Load-Bearing Vest[b]	3.410***
	(0.331)
Black Gloves[b]	0.857
	(0.075)
Male Officer[c]	1.053
	(0.069)
White Officer[d]	0.806
	(0.104)
Hispanic Officer[d]	0.768
	(0.127)
Black Officer[d]	1.154
	(0.188)
Age	1.025
	(0.013)
Male Participant[e]	0.723
	(0.179)
Other Gender Participant[e]	3.809
	(5.321)
White Participant[f]	1.607
	(0.766)
Hispanic Participant[f]	1.136
	(0.726)
Black Participant[f]	1.495
	(0.849)
Other Race Participant[f]	1.363
	(0.963)
Socioeconomic Status	0.803
	(0.111)
Financial Aid	1.014
	(0.259)
Negative Police Contact[g]	0.304
	(0.201)
Positive Police Contact[g]	0.938
	(0.245)
Both Neg. & Pos. Police Contact[g]	0.767
	(0.599)

Constant	6.134**
	3.892
# Observations	8032
# Groups	251

*$p < 0.05$ **$p < 0.01$ ***$p < 0.001$

[a] Reference group = uniform attire
[b] Reference group = without any of the listed accoutrements
[c] Reference group = female officers
[d] Reference group = Asian officers
[e] Reference group = female participants
[f] Reference group = Asian participants
[g] Reference group = participants with no police contact

Table 4.5. Multilevel mixed-effects logistic regression models where *y* is the rating of police officer; values represent odds ratios for university student sample and MTurk sample.

	Dependent Variable									
Independent Variable	Aggressive (S.E.)		Approachable (S.E.)		Friendly (S.E.)		Respectful (S.E.)		Accountable (S.E.)	
	Students	MTurk	Students	MTurk	Students	MTurk	Students	MTurk	Students	MTurk
Marked Vehicle:	3.073***	1.380**	1.303**	1.597***	0.737***	1.108	1.929***	1.657***	3.424***	3.161***
Black & White[a]	(0.260)	(0.137)	(0.105)	(0.158)	(0.058)	(0.106)	(0.169)	(0.167)	(0.305)	(0.342)
Marked Vehicle:	3.603***	1.227*	1.073	1.464***	0.467***	0.913	1.554***	1.571***	3.353***	3.057***
White & Blue[a]	(0.306)	(0.124)	(0.086)	(0.145)	(0.037)	(0.088)	(0.134)	(0.158)	(0.298)	(0.330)
Unmarked Vehicle[a]	1.662***	1.283**	0.715***	0.839*	0.590***	0.693***	0.795**	0.910	0.972	0.945
	(0.119)	(0.105)	(0.046)	(0.066)	(0.038)	(0.054)	(0.054)	(0.072)	(0.067)	(0.077)
# Groups	307	251	307	251	307	251	307	251	307	249[b]

*$p < 0.05$ **$p < 0.01$ ***$p < 0.001$

[a] Reference group = occupying an unrelated police vehicle

[b] Note that the two participants who identified as other gender were excluded from this model by Stata

Table 4.6. Multilevel mixed-effects logistic regression models where *y* is the rating of police officer; values represent odds ratios.

	Dependent Variable
Independent Variable	Competent (S.E.)
Civilian Attire[a]	0.125***
	(0.010)
Marked Vehicle: Black & White[b]	2.028***
	(0.224)
Marked Vehicle: White & Blue[b]	2.049***
	(0.226)
Unmarked Vehicle[b]	0.811*
	(0.069)
Male Officer[c]	1.203*
	(0.087)
White Officer[d]	0.970
	(0.135)
Hispanic Officer[d]	0.997
	(0.178)
Black Officer[d]	1.036
	(0.183)
Age	1.021
	(0.014)
Male Participant[e]	0.716
	(0.191)
Other Gender Participant[e]	3.706
	(5.507)
White Participant[f]	2.504
	(1.292)
Hispanic Participant[f]	1.977
	(1.370)
Black Participant[f]	3.268
	(2.008)
Other Race Participant[f]	3.950
	(3.032)
Socioeconomic Status	1.019
	(0.151)
Financial Aid	0.968
	(0.267)
Negative Police Contact[g]	0.368
	(0.265)
Positive Police Contact[g]	1.154
	(0.325)
Both Neg. & Pos. Police Contact[g]	0.695
	(0.584)

Constant	2.253
	(1.538)
# Observations	6024
# Groups	251

*$p < 0.05$ **$p < 0.01$ ***$p < 0.001$

[a] Reference group = uniform attire
[b] Reference group = occupying an unrelated police vehicle
[c] Reference group = female officers
[d] Reference group = Asian officers
[e] Reference group = female participants
[f] Reference group = Asian participants
[g] Reference group = participants with no police contact

Table 4.7. Differences in the proportion of images rated as given dependent variables when officer exhibited a neutral expression versus smile by officer pose and gender; N = 92 for university student sample and N = 98 for MTurk sample.

	Aggressive†		Approachable‡		Friendly‡		Respectful‡		Accountable‡	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
In a Police Vehicle										
Students (Difference)	0.64***	0.60***	0.64***	0.53***	0.77***	0.74***	0.23***	0.30***	0.10*	0.08
MTurk (Difference)	0.31***	0.35***	0.47***	0.44***	0.65***	0.60***	0.18***	0.23***	0.08	0.04
On a Bicycle										
Students (Difference)	0.39***	0.26***	0.45***	0.42***	0.68***	0.63***	0.22***	0.29***	0.11*	0.03
MTurk (Difference)	0.38***	0.17**	0.47***	0.38***	0.60***	0.60***	0.18***	0.18***	0.05	0.09
Standard Uniform (SU)										
Students (Difference)	0.71***	0.61***	0.60***	0.60***	0.83***	0.85***	0.23***	0.30***	0.09	0.12*
MTurk (Difference)	0.55***	0.41***	0.51***	0.54***	0.66***	0.76***	0.20***	0.27***	0.17***	0.11*
SU + High-Visibility Vest										
Students (Difference)	0.37***	0.47***	0.32***	0.47***	0.55***	0.78***	0.17***	0.25***	0.07	0.16**
MTurk (Difference)	0.28***	0.24***	0.37***	0.39***	0.52***	0.64***	0.11*	0.26***	0.11*	0.10*
SU + Load-Bearing Vest										
Students (Difference)	0.63***	0.53***	0.57***	0.63***	0.76***	0.86***	0.26***	0.32***	0.17***	0.11*
MTurk (Difference)	0.45***	0.41***	0.54***	0.50***	0.69***	0.68***	0.23***	0.22***	0.12*	0.10*
SU + Sunglasses										
Students (Difference)	0.59***	0.67***	0.63***	0.62***	0.77***	0.85***	0.29***	0.32***	0.14**	0.20***
MTurk (Difference)	0.52***	0.48***	0.57***	0.54***	0.74***	0.69***	0.23***	0.21***	0.04	0.15**
SU + Baseball Hat										
Students (Difference)	0.63***	0.41***	0.62***	0.46***	0.82***	0.71***	0.27***	0.25***	0.13*	0.11*
MTurk (Difference)	0.48***	0.33***	0.49***	0.44***	0.78***	0.60***	0.24***	0.16**	0.10*	0.04
SU + Black Gloves										
Students (Difference)	0.66***	0.63***	0.62***	0.58***	0.82***	0.78***	0.32***	0.29***	0.14**	0.07
MTurk (Difference)	0.46***	0.45***	0.55***	0.52***	0.73***	0.65***	0.23***	0.21***	0.08	0.07

*$p < 0.05$ **$p < 0.01$ ***$p < 0.001$

Table 4.8. Proportion of images rated as competent by officer pose and gender, with differences between neutral and smiling proportions tested at the $p < 0.05$ level; N = 98.

	Competent‡	
	Male	Female
In a Police Vehicle		
Neutral	0.79	0.84
Smiling	0.92	0.89
Difference	**0.13****	**0.05**
On a Bicycle		
Neutral	0.82	0.76
Smiling	0.88	0.87
Difference	**0.06**	**0.11***
Standard Uniform (SU)		
Neutral	0.87	0.82
Smiling	0.93	0.89
Difference	**0.06**	**0.07**
SU + High-Visibility Vest		
Neutral	0.83	0.79
Smiling	0.93	0.81
Difference	**0.10***	**0.02**
SU + Load-Bearing Vest		
Neutral	0.83	0.82
Smiling	0.94	0.92
Difference	**0.11****	**0.10***
SU + Sunglasses		
Neutral	0.83	0.80
Smiling	0.94	0.89
Difference	**0.11****	**0.09***
SU + Baseball Hat		
Neutral	0.82	0.84
Smiling	0.93	0.91
Difference	**0.11****	**0.07**
SU + Black Gloves		
Neutral	0.82	0.81
Smiling	0.91	0.86
Difference	**0.09***	**0.05**

*$p < 0.05$ **$p < 0.01$ ***$p < 0.001$

‡ H_a: diff < 0

Table A4.1. Multilevel mixed-effects logistic regression models where *y* is the rating of police officer; values represent odds ratios.

	Dependent Variable					
Independent Variable	Aggressive (S.E.)	Approachable (S.E.)	Friendly (S.E.)	Respectful (S.E.)	Accountable (S.E.)	Competent (S.E.)
Civilian Attire[a]	0.757***	0.368***	0.767***	0.177***	0.118***	0.084***
	(0.042)	(0.021)	(0.042)	(0.011)	(0.008)	(0.006)
High-Visibility Vest[b]	0.453***	2.656***	3.016***	2.352***	2.771***	2.087***
	(0.037)	(0.224)	(0.245)	(0.205)	(0.249)	(0.193)
Load-Bearing Vest[b]	1.434***	1.095	0.928	1.797***	3.287***	3.410***
	(0.110)	(0.085)	(0.071)	(0.152)	(0.301)	(0.331)
Black Gloves[b]	2.047***	0.534***	0.514***	0.612***	0.799**	0.857
	(0.156)	(0.041)	(0.039)	(0.049)	(0.066)	(0.075)
Male Officer[c]	1.258***	0.961	0.992	0.950	0.923	1.053
	(0.070)	(0.054)	(0.055)	(0.057)	(0.058)	(0.069)
White Officer[d]	0.807*	1.105	0.894	0.943	0.658**	0.806
	(0.087)	(0.121)	(0.102)	(0.108)	(0.080)	(0.104)
Hispanic Officer[d]	1.025	1.058	0.773	0.905	0.641**	0.768
	(0.141)	(0.148)	(0.111)	(0.134)	(0.100)	(0.127)
Black Officer[d]	0.795	1.223	1.333*	1.300	0.914	1.154
	(0.109)	(0.169)	(0.188)	(0.192)	(0.142)	(0.188)
Age	0.986	1.027**	1.035**	1.007	1.026*	1.025
	(0.010)	(0.010)	(0.012)	(0.011)	(0.012)	(0.013)
Male Participant[e]	1.226	1.063	0.865	0.783	0.832	0.723
	(0.309)	(0.201)	(0.197)	(0.170)	(0.195)	(0.179)
Other Gender Participant[e]	2.103	0.426	0.432	2.061	11.975	3.809
	(2.189)	(0.418)	(0.519)	(2.532)	(16.942)	(5.321)
White Participant[f]	0.358**	1.183	1.388	0.953	1.692	1.607
	(0.139)	(0.435)	(0.625)	(0.404)	(0.776)	(0.766)
Hispanic Participant[f]	0.487	0.927	1.734	1.217	1.419	1.136
	(0.253)	(0.459)	(1.040)	(0.694)	(0.870)	(0.726)
Black Participant[f]	0.606	0.518	0.810	0.379	0.946	1.495
	(0.279)	(0.224)	(0.430)	(0.189)	(0.514)	(0.849)
Other Race Participant[f]	0.459	0.472	0.662	1.012	1.603	1.363
	(0.261)	(0.255)	(0.436)	(0.633)	(1.087)	(0.963)
Socioeconomic Status	1.101	1.021	0.951	0.948	0.883	0.803
	(0.123)	(0.107)	(0.121)	(0.115)	(0.115)	(0.111)
Financial Aid	1.335	0.650*	0.716	0.641*	0.680	1.014
	(0.275)	(0.126)	(0.168)	(0.144)	0.164	(0.259)
Negative Police Contact[g]	2.211	0.411	0.963	0.346	0.384	0.304
	(1.191)	(0.210)	(0.602)	(0.202)	(0.241)	(0.201)
Positive Police Contact[g]	0.705	1.811**	1.387	0.856	1.189	0.938
	(0.149)	(0.365)	(0.335)	(0.197)	(0.295)	(0.245)

Both Neg. & Pos.	4.463*	0.304*	0.452	0.165**	0.245	0.767
Police Contact[g]	(2.786)	(0.180)	(0.324)	(0.110)	(0.177)	(0.599)
Constant	1.462	1.605	0.482	9.954***	4.377*	6.134**
	(0.751)	(0.782)	(0.284)	(5.575)	(2.645)	3.892
# Observations	8032	8032	8032	8032	8032	8032
# Groups	251	251	251	251	251	251

*$p < 0.05$ **$p < 0.01$ ***$p < 0.001$

[a] Reference group = uniform attire
[b] Reference group = without any of the listed accoutrements
[c] Reference group = female officers
[d] Reference group = Asian officers
[e] Reference group = female participants
[f] Reference group = Asian participants
[g] Reference group = participants with no police contact

Table A4.2. Multilevel mixed-effects logistic regression models where *y* is the rating of police officer; values represent odds ratios.

	Dependent Variable					
Independent Variable	Aggressive (S.E.)	Approachable (S.E.)	Friendly (S.E.)	Respectful (S.E.)	Accountable (S.E.)	Competent (S.E.)
Civilian Attire[a]	0.807**	0.364***	0.577***	0.243***	0.155***	0.125***
	(0.053)	(0.024)	(0.037)	(0.017)	(0.011)	(0.010)
Marked Vehicle:	1.380**	1.597***	1.108	1.657***	3.161***	2.028***
Black & White[b]	(0.137)	(0.158)	(0.106)	(0.167)	(0.342)	(0.224)
Marked Vehicle:	1.227*	1.464***	0.913	1.571***	3.057***	2.049***
White & Blue[b]	(0.124)	(0.145)	(0.088)	(0.158)	(0.330)	(0.226)
Unmarked	1.283**	0.839*	0.693***	0.910	0.945	0.811*
Vehicle[b]	(0.105)	(0.066)	(0.054)	(0.072)	(0.077)	(0.069)
Male Officer[c]	1.425***	0.778***	0.787***	0.946	0.953	1.203*
	(0.097)	(0.051)	(0.051)	(0.063)	(0.067)	(0.087)
White Officer[d]	1.358*	0.645**	0.525***	0.831	0.781	0.970
	(0.181)	(0.083)	(0.069)	(0.106)	(0.104)	(0.135)
Hispanic Officer[d]	1.277	0.643**	0.551***	0.833	0.776	0.997
	(0.217)	(0.106)	(0.090)	(0.138)	(0.133)	(0.178)
Black Officer[d]	2.695***	0.415***	0.323***	0.663*	0.837	1.036
	(0.447)	(0.067)	(0.053)	(0.107)	(0.142)	(0.183)
Age	0.989	1.056***	1.038**	1.013	1.037**	1.021
	(0.012)	(0.013)	(0.013)	(0.012)	(0.013)	(0.014)
Male Participant[e]	1.172	1.009	1.070	0.630	1.064	0.716
	(0.275)	(0.236)	(0.264)	(0.149)	(0.264)	(0.191)
Other Gender	1.708	0.299	0.227	2.427	--	3.706
Participant[e]	(2.083)	(0.391)	(0.297)	(3.210)	--	(5.507)
White	0.284**	1.192	1.159	1.106	1.206	2.504
Participant[f]	(0.129)	(0.540)	(0.561)	(0.510)	(0.587)	(1.292)
Hispanic	0.502	0.798	1.815	1.089	0.788	1.977
Participant[f]	(0.303)	(0.485)	(1.176)	(0.670)	(0.514)	(1.370)
Black	0.512	0.777	0.831	0.547	0.862	3.268
Participant[f]	(0.274)	(0.418)	(0.475)	(0.298)	(0.497)	(2.008)
Other Race	0.564	0.212*	0.343	1.331	1.126	3.950
Participant[f]	(0.374)	(0.142)	(0.244)	(0.905)	(0.807)	(3.032)
Socioeconomic	1.213	1.058	0.927	1.075	0.967	1.019
Status	(0.159)	(0.138)	(0.128)	(0.141)	(0.134)	(0.151)
Financial Aid	1.249	0.913	0.820	0.806	0.793	0.968
	(0.301)	(0.220)	(0.208)	(0.196)	(0.203)	(0.267)
Negative Police	1.479	0.636	0.962	0.392	0.414	0.368
Contact[g]	(0.930)	(0.400)	(0.654)	(0.248)	(0.278)	(0.265)
Positive Police	0.670	2.515***	1.684*	0.713	1.355	1.154
Contact[g]	(0.167)	(0.631)	(0.441)	(0.177)	(0.355)	(0.325)

Both Neg. & Pos.	4.093*	0.226*	0.794	0.248	0.145*	0.695
Police Contact[g]	(2.917)	(0.164)	(0.615)	(0.180)	(0.112)	(0.584)
Constant	0.562	0.907	1.052	6.179**	1.766	2.253
	(0.336)	(0.548)	(0.667)	(3.768)	(1.131)	(1.538)
# Observations	6024	6024	6024	6024	5976[h]	6024
# Groups	251	251	251	251	249[h]	251

*$p < 0.05$ **$p < 0.01$ ***$p < 0.001$

[a] Reference group = uniform attire
[b] Reference group = occupying an unrelated police vehicle
[c] Reference group = female officers
[d] Reference group = Asian officers
[e] Reference group = female participants
[f] Reference group = Asian participants
[g] Reference group = participants with no police contact
[h] Note that the two participants who identified as other gender were excluded from this model by Stata

Table A4.3. Proportion of images rated as given dependent variables by officer pose and gender, with differences between neutral and smiling proportions tested at the $p < 0.05$ level; N = 98.

	Aggressive†		Approachable‡		Friendly‡		Respectful‡		Accountable‡	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
In a Police Vehicle										
Neutral	0.50	0.52	0.41	0.42	0.28	0.27	0.69	0.68	0.77	0.80
Smiling	0.19	0.17	0.88	0.86	0.93	0.87	0.88	0.92	0.85	0.84
Difference	**0.31*** **	**0.35*** **	**0.47*** **	**0.44*** **	**0.65*** **	**0.60*** **	**0.18*** **	**0.23*** **	**0.08**	**0.04**
On a Bicycle										
Neutral	0.48	0.31	0.41	0.54	0.32	0.34	0.72	0.72	0.77	0.77
Smiling	0.10	0.13	0.88	0.92	0.92	0.94	0.91	0.91	0.82	0.86
Difference	**0.38*** **	**0.17** **	**0.47*** **	**0.38*** **	**0.60*** **	**0.60*** **	**0.18*** **	**0.18*** **	**0.05**	**0.09**
Standard Uniform (SU)										
Neutral	0.69	0.57	0.39	0.37	0.23	0.17	0.70	0.66	0.73	0.78
Smiling	0.14	0.16	0.90	0.91	0.90	0.93	0.91	0.93	0.91	0.89
Difference	**0.55*** **	**0.41*** **	**0.51*** **	**0.54*** **	**0.66*** **	**0.76*** **	**0.20*** **	**0.27*** **	**0.17*** **	**0.11***
SU + High-Visibility Vest										
Neutral	0.40	0.38	0.55	0.49	0.39	0.28	0.80	0.62	0.77	0.73
Smiling	0.12	0.13	0.92	0.88	0.91	0.92	0.91	0.88	0.88	0.84
Difference	**0.28*** **	**0.24*** **	**0.37*** **	**0.39*** **	**0.52*** **	**0.64*** **	**0.11***	**0.26*** **	**0.11***	**0.10***
SU + Load-Bearing Vest										
Neutral	0.63	0.58	0.36	0.36	0.22	0.23	0.69	0.68	0.76	0.79
Smiling	0.18	0.17	0.90	0.86	0.92	0.92	0.93	0.91	0.88	0.89
Difference	**0.45*** **	**0.41*** **	**0.54*** **	**0.50*** **	**0.69*** **	**0.68*** **	**0.23*** **	**0.22*** **	**0.12***	**0.10***
SU + Sunglasses										
Neutral	0.67	0.65	0.29	0.29	0.19	0.19	0.65	0.63	0.77	0.72
Smiling	0.15	0.17	0.86	0.83	0.94	0.89	0.89	0.85	0.81	0.88
Difference	**0.52*** **	**0.48*** **	**0.57*** **	**0.54*** **	**0.74*** **	**0.69*** **	**0.23*** **	**0.21*** **	**0.04**	**0.15*** *
SU + Baseball Hat										
Neutral	0.69	0.47	0.41	0.45	0.16	0.30	0.66	0.74	0.82	0.80
Smiling	0.21	0.14	0.90	0.89	0.94	0.90	0.91	0.91	0.92	0.84
Difference	**0.48*** **	**0.33*** **	**0.49*** **	**0.44*** **	**0.78*** **	**0.60*** **	**0.24*** **	**0.16*** *	**0.10***	**0.04**
SU + Black Gloves										
Neutral	0.62	0.6	0.36	0.36	0.17	0.29	0.64	0.69	0.80	0.82
Smiling	0.16	0.15	0.91	0.88	0.91	0.94	0.88	0.91	0.88	0.89
Difference	**0.46*** **	**0.45*** **	**0.55*** **	**0.52*** **	**0.73*** **	**0.65*** **	**0.23*** **	**0.21*** **	**0.08**	**0.07**

*$p < 0.05$ **$p < 0.01$ ***$p < 0.001$

† H_a: diff > 0 ‡ H_a: diff < 0

	Competent‡	
	Male	Female
In a Police Vehicle		
Neutral	0.79	0.84
Smiling	0.92	0.89
Difference	**0.13****	**0.05**
On a Bicycle		
Neutral	0.82	0.76
Smiling	0.88	0.87
Difference	**0.06**	**0.11***
Standard Uniform (SU)		
Neutral	0.87	0.82
Smiling	0.93	0.89
Difference	**0.06**	**0.07**
SU + High-Visibility Vest		
Neutral	0.83	0.79
Smiling	0.93	0.81
Difference	**0.10***	**0.02**
SU + Load-Bearing Vest		
Neutral	0.83	0.82
Smiling	0.94	0.92
Difference	**0.11****	**0.10***
SU + Sunglasses		
Neutral	0.83	0.80
Smiling	0.94	0.89
Difference	**0.11****	**0.09***
SU + Baseball Hat		
Neutral	0.82	0.84
Smiling	0.93	0.91
Difference	**0.11****	**0.07**
SU + Black Gloves		
Neutral	0.82	0.81
Smiling	0.91	0.86
Difference	**0.09***	**0.05**

*$p < 0.05$ **$p < 0.01$ ***$p < 0.001$

† H_a: diff > 0 ‡ H_a: diff < 0