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Implicit Attitudes, Explicit Attitudes, and Priming: A Preliminary Analysis of Factors Affecting Use of Force Decisions

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IMPLICIT ATTITUDES, EXPLICIT ATTITUDES, AND PRIMING: A PRELIMINARY ANALYSIS OF FACTORS AFFECTING USE OF FORCE DECISIONS

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Abstract

This study examines the effects of priming, situational factors, and attitudes on deadly force decision making. A small sample of undergraduates completed high-fidelity deadly force simulations. Simulation results were compared across experimental conditions and various attitudinal and demographic factors. Participants were generally accurate when assessing the threat posed by suspects. Participants primed to expect a threat were more accurate in their decisions but were no more likely to shoot an unarmed suspect. Participants were more accurate when responding to unarmed suspects. Participants more likely to exhibit implicit bias were less accurate. Several attitudinal and demographic traits were associated with deadly force decision accuracy, including gender, race, fear of crime, institutional confidence, approval of use of force, motivation to control prejudice, firearm experience, and experience with first-person shooter video games. Qualitative comparative analysis of variables suggests that, within the context of the simulations employed in this study, the threat indicated by the dispatch message was more important to the resulting decision than the suspect's race. The results are then discussed in relation to the existing literature and in the context of social identity theory.

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Chapter 1: Introduction

On November 22, 2014, police officers responded to reports of an armed African American male. Officers Timothy Loehmann and Frank Garmback confronted 12-year-old Tamir Rice. A surprised Rice reached for his waistband before being shot by Loehmann. Rice later died from the wound and was subsequently found to possess only an orange-tipped toy pistol, not a real handgun as initially reported and as believed by Loehmann.

On April 4, 2015, Walter Scott was pulled over by police officer Michael Slater during what should have been a routine traffic stop. Scott fled from Slater on foot, resulting in a pursuit. Slater caught up to Scott, and a scuffle ensued before Slater fired his taser. Scott attempted to flee again. Slater then drew his service handgun and fired eight times. The unarmed Scott was struck five times and died at the scene.

On July 6, 2016, Philando Castile was pulled over by police officer Jeronimo Yanez. Yanez requested that Castile provide his driver's license and vehicle registration. Castile notified Yanez that he was carrying a firearm, leading to a tense exchange when a nervous Yanez mistakenly believed Castile was reaching for the firearm instead of his wallet. Yanez fired his service weapon seven times, striking Castile five times. Castile died shortly after.

Since 2015, approximately 1000 Americans have died each year during encounters with police officers (Killed by Police, 2020). While fatalities are relatively rare occurrences among police-citizen encounters (Tregle, Nix, & Alpert, 2019), many have aroused controversy because of racial differences between the officers involved and the deceased. Fatal incidents involving Caucasian officers and African American civilians have been particularly controversial. In the examples described above, Tamir Rice, Walter Scott, and Philando Castile were all African American, whereas officers Timothy Loehmann and Michael Slater were Caucasian, and

Jeronimo Yanez was Hispanic. Each of these incidents sparked public outrage, leading to protests and calls for change amid concerns of police brutality and biased treatment towards racial minorities. These were only some of the incidents to result in controversy and community unrest, contributing to what are now increasingly tense police-community relations and growing demands for change in police policies and tactics.

Why have such incidents occurred? One explanation stems from social identity theory, which argues that perceivers identified with an in-group will subconsciously maintain an ingroup-against-outgroup boundary by categorizing others (Tajfel & Turner, 1979). Relating to police use of force, social identity theory suggests that people categorize others based on various group memberships, such as race or gender. This is true for people from all walks of life, but police serve a unique societal role as law enforcement officers (Smith & Alpert, 2007). This role facilitates an ingroup-against-outgroup bias based on the roles of "officer" and "civilian." This role also places police officers in a position where using heuristics for decision making is common, even if it occurs subconsciously. When heuristics lead an individual to treat another person more or less favorable on the basis of group membership, an implicit bias is taking effect.

This paper seeks to contribute to the current body of knowledge surrounding officer-involved shootings by presenting a pilot study rooted in social identity theory and aimed at examining both implicit bias and deadly force decision making. Numerous prior studies have examined implicit biases and deadly force, but prior studies have often employed methodologies that lack realism or have failed to consider how priming effects may play into implicit biases and deadly force decisions. This study tests the combined effects of priming, implicit attitudes, and explicit attitudes on decisions to use deadly force by priming participants towards or away from a threat response and having them complete high-fidelity first-person shooter simulations. This

general method is relatively unexplored in the use of force literature but offers significant exploratory possibilities and should be further utilized when studying deadly force incidents at the micro-level.

This paper first examines the literature surrounding police use of force and implicit bias. Then, the methods employed in the pilot study are described before the results of the study are summarized. Finally, the results are considered in the context of the prior research, and both implications and future research directions are discussed.

Chapter 2: Literature Review

Police Use of Force in the United States

Police represent the point at which government and citizens typically interact, as well as representing the government's right to use force to control behavior (Dunham & Alpert, 2015). Their primary responsibility is the maintenance of social order through the enforcement of laws. Sunshine and Tyler (2003, p. 514) define an institution's legitimacy as a "property of authority or institution that leads people to feel that that authority or institution is entitled to be deferred to and obeyed." Police legitimacy has generally been conceptualized as a combination of a perceived duty to obey police, positive attitudes towards police officers, and general trust in police (Sunshine & Tyler, 2003; Tyler & Huo, 2002). Police primarily derive their legitimacy from their position as the "state-authorized keepers of social order" (Terrill, Paoline, & Gau, 2016, p. 61) and use this position to gain citizen compliance. However, the persuasiveness of police legitimacy has its limits, and, when police legitimacy is not enough, police have a state-legitimized right to use force. This authorization is very broad, typically only dependent on whether the officer believes force should be used. Police use of force does not require consent from the person on whom force is used, and there are very few occasions in which a person may legally resist the use of force.

The use of force by police officers is understood to be a relatively rare occurrence, representing only a minute fraction of police-citizen encounters. In fact, fewer than 2% of citizens who come into contact with police report having had force used or threatened against them (Eith & Durose, 2011). In a study examining two years' worth of use of force investigations across three medium-sized American police departments, Bozeman et al. (2018) found that force was used during only .086% of service calls and .78% of arrests. Close to half of

the use of force incidents consisted of unarmed physical force, such as grabbing or pushing. Nearly a third involved the use of conducted electrical devices (i.e., tasers), while only .4% of force incidents involved the use of a firearm. Deadly force incidents represent only a fraction of all use-of-force incidents (Bozeman et al., 2018; Tregle et al., 2019). Approximately .0015% of all face-to-face police-citizen interactions result in a civilian fatality (National Police Foundation, 2016). Even among police-citizen contacts resulting in firearm use, most such incidents do not result in a fatality (Klinger, 2012).

Factors affecting use of force patterns come in four categories: individual, situational, organizational, and ecological. At the individual level, use of force is considered in terms of the characteristics of the officers involved. Force is more likely to be used by officers who are male, less-educated, less experienced, authoritarian, cynical, egocentric, and impulsive, as well as by officers who have a tough demeanor, a prior history of misconduct, a hostile view towards citizens, and the attitude that crime-fighting is "real" police work (as cited in Mears, Craig, Stewart, & Warren, 2017; Miller, 2015; Nix, Campbell, Byers, & Alpert, 2017; Worrall, Bishopp, Zinser, Wheeler, & Phillips, 2018).

At the situational level, use of force is considered in terms of the characteristics of both the suspect and the encounter. Force is most likely to be used when police are responding to domestic disturbances, robberies-in-progress, burglaries-in-progress, traffic stops, personal disputes, and drug busts (as cited in Miller, 2015). Force is more likely to occur in situations involving officer-initiated contact, fatigued officers, and the presence of additional officers or citizens at the scene (as cited in Mears et al., 2017; Miller, 2015; Worrall et al., 2018). Force is also more likely when situations involve suspects who are young, male, aggressive, hostile, mentally ill, or under the influence of drugs or alcohol (as cited in Miller, 2015; Nix et al., 2017).

At the organizational level, use of force is considered in terms of the characteristics of the police agencies involved, including their policies, practices, and personnel. Use of force is less common within agencies that hold higher education standards, administer more restrictive use of force policies, and require mandatory reporting of use of force incidents (as cited in Mears et al., 2017; Nix et al., 2017). Use of force is more common within agencies serving areas with higher crime rates (as cited in Nix et al., 2017).

At the more macro-ecological level, use of force is considered in terms of the broader environment within which encounters occur. This level has seen the fewest studies conducted. Use of force has been found to be more common in disadvantaged neighborhoods and in neighborhoods with higher crime rates, especially higher homicide rates (as cited in Mears et al., 2017; Nix et al., 2017). The general principle stemming from the ecological perspective is that police officers are more likely to use force when in areas that they would be more likely to perceive as dangerous.

Deadly Force in the United States

The results of analyses of the national frequency of fatal police-citizen encounters often vary by the source employed. Different sources use different methodologies, focus on different variables, and thus report slightly different findings. Fatal Encounters (2020) reports 25,932 fatalities between January 2001 and April 2019, with a high of 1,840 in 2018. Among these, the overwhelming majority (71%) died by firearm, while 20% were struck by a vehicle, 3% died from a taser, and less than 1% each died from asphyxiation, being beaten, falling from a height, being stabbed, or being exposed to chemical agents. *The Washington Post* (2020) and the Killed by Police (2020) databases record only fatal officer-involved shootings and report an average of 988 such fatalities each year since 2015. The Mapping Police Violence project (2020) reports an

average of 1097 police-related fatalities each year since 2013. The estimated lifetime risk of police-related fatality is 52 of every 100,000 males and 3 of every 100,000 females (Edwards, Lee, & Esposito, 2019). This risk peaks for individuals in the 20 to 35 age range and declines with age.

Keeping in mind that the likelihood of use of force increases with subject resistance (Fridell, 2017), it is important to consider the threat posed by subjects during fatal interactions. The Mapping Police Violence project (2020) reports that 13% of the subjects killed during police interactions in 2017 were unarmed. *The Washington Post* (2020) reports that 5% of subjects killed in 2018 were completely unarmed, 3% only possessed a toy, and 32% were attempting to flee. Among the fatalities in 2019, *The Washington Post* reports 4% of subjects were unarmed, 3% only possessed a toy, and 33% were attempting to flee.

Variation among the sources makes it difficult to draw firm conclusions. Taken together, police-related fatalities have occurred anywhere from 1000 to 1800 times each year since 2013, though several sources (Killed by Police, 2020; Mapping Police Violence, 2020; *The Washington Post*, 2020) point to the lower end of that range. The vast majority of fatalities are shootings, followed by vehicle-related fatalities and taser-related fatalities. The risk of a police-related fatality is highest for individuals between the ages of 20 and 35. While there is substantial variation in the relative amount of subjects who were armed, it appears that a significant number (anywhere from 13% to 37%) may not have posed an immediate threat when killed.

A growing number of controversial officer-involved shootings involving racial minorities have fueled the belief that minorities are subject to greater amounts of police force (Morrow, Berthelot, & Vickovic, 2018). Analysis of the representation of certain racial groups requires a context for comparison. While the appropriate benchmark for comparison is debated (see Tregle

et al., 2019), it is worth noting that African Americans comprise 12% of the American population, and Caucasians and Hispanics comprise 61% and 18%, respectively (United States Census Bureau, 2018). Among the police-related fatalities presented by the Mapping Police Violence project (2020) for the year 2017, 27% were African American, 21% were Hispanic, and 48% were Caucasian. Among the unarmed subjects, 34% were Caucasian, 33% were African American, and 23% were Hispanic. According to *The Washington Post* (2020), in 2018, 45% of police-related fatalities were Caucasian, 23% were African American, 17% were Hispanic, and 11% were unspecified. Regarding the apparent threat posed by these subjects, 8% of the Caucasians were unarmed, as were 10% of the African Americans and 10% of the Hispanics. In 2019, 37% of the fatalities were Caucasian, 23% were African American, 16% were Hispanic, and 20 % were unspecified. Additionally, 8% of the Caucasians were unarmed, as were 6% of the African Americans and 6% of the Hispanics. Among the 25,932 fatalities listed by Fatal Encounters (2020) from 2001 to 2019, 31% were Caucasian, 21% were African American, 13% were Hispanic, and 34% were unspecified. Analyses using these numbers are very much hindered by the large number of "unspecified" within each data set, but it would appear that African Americans are overrepresented among police-related fatalities in comparison to their relative population.

Research examining potential racial disparities in deadly force has yielded mixed findings. Ross's (2015) analysis of data taken from the United States Police-Shooting Database determined that armed African Americans were 2.9 times as likely to be shot as armed Caucasians, and armed Hispanics were 1.6 times as likely to be shot as armed Caucasians. Unarmed African Americans were 3.5 times as likely to be shot as unarmed Caucasians, and unarmed Hispanics were 1.7 times as likely to be shot as unarmed Caucasians. Nix et al. (2017)

analyzed fatal officer-involved shootings from 2015 and found that, while twice as many Caucasians were killed as African Americans, more unarmed African Americans were killed than unarmed Caucasians. Adjusting for relative population revealed an overall fatality rate that was twice as high for African Americans. Durán and Loza's (2017) analysis of officer-involved shootings in Denver County found that African Americans and Hispanics were 3.9 times and 3 times, respectively, as likely to be shot as Caucasians. Edwards et al. (2019) estimate that the lifetime risks of being killed during a police interaction is 2.5 times higher for African American men and 1.3 to 1.4 times higher for Hispanic men than for Caucasian men. The lifetime risk for African American females is 1.4 times higher than that of Caucasian females. Tregle et al. (2019) compared African American and Caucasian fatalities against various benchmarks. Across population, African Americans are 3 times as likely to be killed as Caucasians. The disparity shifts to 2.4 to 2.5 times as likely across street stops, 3 times as likely across police-initiated interactions, and 3.4 to 3.5 times as likely across traffic stops. Across arrests, African Americans are 1.2 to 1.4 times as likely to be killed as Caucasians.

In contrast, several studies have also yielded results that counter the idea of a racial disparity favoring Caucasians. Morrow et al. (2018) analyzed the relationship between the ethnic composition of police precincts in New York City and use of force incidents within these precincts, finding that the ethnic composition of a precinct appeared to have no effect on the likelihood of use of force. Fryer (2019) analyzed officer-involved shootings and taser discharges and found no evidence of racial disparity in either. Worrall et al. (2018) compared officer-involved shootings to non-shooting cases using data from a large southwestern police department and found that, after controlling for officer and situational characteristics, African Americans were only 33% as likely to be shot as suspects from other racial groups. Nix et al. (2017) found

no racial differences in terms of citizens who were attacking police when killed. Tregle et al. (2019) found that African Americans are less likely than Caucasians to be killed during a police interaction involving either a violent crime or a weapon-related offense. In addition, their finding that evaluating fatalities across different benchmarks changes the magnitude of any potential disparity raises the question as to whether the proper benchmark has yet been identified. This leaves open the possibility that identification of an even more specific benchmark would provide the best means for analysis and could either prove or disprove concerns of disparity.

Public Attitudes Towards Police Use of Force

Many recent controversial cases of police use of force have led to public outcry, demonstrations, and even riots. Public perceptions have become so inflamed that non-profit organizations have developed in opposition to perceived police brutality, such as Campaign Zero and Black Lives Matter. Given recent events, it has become clear that public perceptions of police and police use of force may be just as important as the actual occurrence of force. In general, police tend to find lower support among minorities (Callanan & Rosenberger, 2011; Decker & Wagner, 1985), women (Correia, Reisig, & Lovrich, 1996), and younger people (Hadar & Snortum, 1975). Heavily publicized use of force incidents (e.g., the shootings of Tamir Rice, Walter Scott, and Philando Castile) negatively affect public perceptions in general, but this effect is more pronounced among non-Caucasians (Jefferis, Kaminski, Holmes, & Hanley, 1997).

Most citizens report approving the use of force in "some situations" (Trahan & Russell, 2017). However, Caucasians are more likely to approve the use of force than other racial groups, and this pattern has persisted since the 1970s (e.g., Cullen et al., 1996; Trahan & Russell, 2017). Males are more likely to approve than females (Girgenti-Malone, Khoder, Vega, & Castillo,

2017), and older people are more likely to approve than younger people (Jefferis et al., 1997). Conservatives are more likely to approve than liberals and independents (Callanan & Rosenberger, 2011). Citizens who hold positive views of police are more likely to gauge use of force incidents as justifiable, as are people who approve of racial profiling by police (Jefferis, Butcher, & Hanley, 2011; Patton, Asken, Fremouw, & Bemis, 2017). People with a strong social dominance orientation tend to attribute more responsibility for use of force incidents to the citizens involved and thus tend to be more supportive of police use of force (Gerber & Jackson, 2017; Perkins & Bourgeois, 2006). People who report either a high fear of crime or a strong view of police legitimacy tend to be more approving of use of force, and those scoring high in right-wing authoritarianism are more likely to approve uses of force that would legally be deemed excessive (Gerber & Jackson, 2017).

An important factor affecting the approval of use of force is the relative threat posed by the suspect. Among both Caucasians and African Americans, support for use of force increases as the threat posed by the suspect increases (Trahan & Russell, 2017). People are more likely to approve force used against a subject whose behavior suggests dangerousness, but are far less likely to approve when the subject's behavior is non-violent (Cullen et al., 1996). Miethe, Venger, and Lieberman (2019) had participants assess the excessiveness and justifiability of officers' actions within short video clips displaying use of force incidents. In accordance with prior research, they found that force is less likely to be perceived as excessive when incidents involve subjects accused of dangerous offenses.

Even when the suspect poses a real threat, the response from the officer matters. Perkins and Bourgeois (2006) found that, as the number of shots fired during an incident increases, the likelihood that the incident will be perceived as excessive force increases. In other words, the

perceived acceptability of an officer-involved shooting could be a matter of whether one or multiple shots are fired. However, as the number of officers involved in the incident increases, the likelihood of a perceived misuse of force actually decreases. This seems to reflect a perceived diffusion of responsibility across the officers involved. Patton et al. (2017) found that citizens were more likely to perceive an officer's actions as excessive when the officer uses profanity.

How Controversial Use of Force Incidents Affect the Societal Function of Police

Tyler's process-based model of regulation (as cited in Nix et al., 2017) maintains that citizens are more likely to comply when they perceive police as a legitimate authority. This is where the concept of police legitimacy comes from: the acceptance of police authority by citizens (Terrill et al., 2016). Police legitimacy relies heavily on procedural justice, the perception of the legal process and the treatment received as fair and respectful. Essentially, citizens are more likely to view the criminal justice system as just if they believe the process is fair and they will be treated with respect. People who believe they received unfair treatment or unclear explanations for why they were treated so are less likely to have positive perceptions of police (Correia et al., 1996). It is here that the police's right to use force to gain citizen compliance becomes a double-edged sword. On the one hand, the proper use of force can both yield compliance and enhance legitimacy in the eyes of the public.

At the same time, the use of force can also weaken perceptions of procedural justice, thereby compromising police legitimacy, when used in excess or in inappropriate situations. Citizens can accept negative outcomes if they believe the process was fair (Terrill et al., 2016), but use of force incidents have a relatively high potential of being perceived negatively. Besides undermining police legitimacy and police-community relations, improper use of force can yield other consequences (Mears et al., 2017). Improper or excessive force can cause physical and

psychological harm to citizens. Such incidents can consume police resources through the costs associated with training, litigation, and formal sanctions. Such incidents can lead to de-policing, whereby police departments reduce their emphasis on law enforcement in order to avoid further public criticism.

Even when the use of force is deemed justifiable by formal authorities, it is often more the public's perception of the incident that matters, as opposed to the objective reality. The Ferguson Unrest exemplifies this. In Ferguson, Mississippi in 2014, African American civilian Michael Brown was fatally shot by Caucasian police officer Darren Wilson. The shooting itself fostered significant tension and civil unrest that subsequently erupted into violent clashes between protesters and police after a grand jury ruled against indicting Wilson. Many citizens believed Wilson unnecessarily shot Brown and believed the justice system had failed by not trying Wilson as a criminal. Thus, formal procedures ruled the shooting to be non-criminal, but the public perceived a criminal misuse of police authority against a young African American.

Controversial deadly force incidents, though rare, are therefore impactful because they fuel the perception that the use of force is differentially applied to minority groups (Morrow et al., 2018). Keeping in mind that procedural justice is about perceived fairness, most use of force incidents are not harmful to procedural justice. Stickle (2017) even found that people who experienced physical force from officers were more likely to believe the officers acted appropriately compared to those who had not experienced force. However, the perception that police use of force is unequally applied to different social groups is a different matter. This perception decreases perceptions of procedural justice because such differential treatment cannot be fair.

Essentially, a racial disparity in use of force patterns implies that a person's race makes the person more or less likely to experience the use of force. Individuals who believe their race results in negative treatment from police then become distrustful of police. Through this process, controversial use of force incidents damage police-citizen relations and threaten police legitimacy. As police legitimacy decreases, so too does the police's ability to maintain social order because citizens are less inclined to comply with police authority. This makes a thorough understanding of police use of force, its application, and when unnecessary deadly force incidents can be avoided all extremely important.

Social Identity Theory

Social identity theory argues individuals identified with an in-group will subconsciously maintain an ingroup-against-outgroup boundary by categorizing others (Tajfel & Turner, 1979). Group identification affects self-perceptions, as people often define themselves in terms of group membership. Group membership encourages positive evaluations of the ingroup, increasing the likelihood of collective action while also increasing self-esteem. The mere perception that one belongs to an ingroup is enough to cause individuals to engage in behaviors that favor the ingroup over outgroups (e.g., Tajfel, Billig, Bundy, & Flament, 1971; Turner, 1975). Ingroup bias has even been shown among children (Vaughan, Tajfel, & Williams, 1981).

Protecting positive evaluations of the ingroup requires accurate categorizations of new people, both to avoid mistakenly including an outgroup member in the ingroup and to maximize the distinction between the positively evaluated ingroup and the less positively (or even negatively) evaluated outgroup (Blascovich, Wyer, Swart, & Kibler, 1997). This can lead to the development and reinforcement of outgroup prejudices and is presumably where discrimination arises from: favorable comparison and treatment towards the ingroup, sometimes to the

detriment of outgroups. Tajfel and Turner (1979) emphasize that ingroup-against-outgroup biases do not require intergroup competition in order to arise. Instead, these biases can arise in any situation in which group-based differences are relevant.

When applied to police use of force, social identity theory suggests officers categorize targets according to group membership. The primary categorization is between officer and civilian, based on the unique societal role served by police officers (Smith & Alpert, 2007). Further categorizations can occur when the officer and target differ across race, gender, age, and so on. These quick, subconscious categorizations are based on heuristics. Heuristics are cognitive shortcuts, and a number of different heuristics have been identified in psychological research.

The availability heuristic refers to the situations whereby judgments are based on how easily relevant examples come to mind (Tversky & Kahneman, 1974). For example, one might assess the probability of a plane crashing by remembering plane crashes from the news, despite plane crashes being very rare events in actuality. The representativeness heuristic refers to shortcuts in information processing in which the group membership to which something belongs is judged based on how similar it is to prototypes of a category (Tversky & Kahneman, 1974). For example, people asked to guess the career of an individual described as shy, withdrawn, orderly, and detail-oriented are more likely to guess that the described individual is a librarian than a rock-and-roll musician because the described individual more closely fits the prototypical image of a librarian, despite the fact that these personality traits do not prevent the described individual from being something other than a librarian.

Stereotyping is a type of heuristic that involves organizing the social world into categories (Fiske, 1998). In other words, stereotyping is making generalizations about social groups. Stereotyping often involves the use of both the availability and representativeness

heuristics. For example, people might be stereotyped as dangerous because they fit the prototypical image of a dangerous person (the representativeness heuristic) or because they look similar to individuals who have committed dangerous acts (the availability heuristic).

Usually, heuristics are helpful. They save time and cognitive resources as humans process the world around them. However, these shortcuts are susceptible to error (Epstein, 1994; Mears et al., 2017) and can thus be harmful when responding to emotionally arousing stimuli or in situations where particular outcomes can have disastrous consequences, such as deciding when to use deadly force. Stereotyping relates to implicit bias when these generalizations lead an individual to act differently towards the target group. All people are susceptible to implicit biases, but police officers are more often in a position where such biases can have disastrous results because police departments have a state-legitimized right to use force (Dunham & Alpert, 2015).

Priming

Priming refers to the "phenomenon in which exposure to one stimulus influences how a person responds to a subsequent, related stimulus" (Psychology Today, 2019). The mind could be conceptualized as a network of nodes connected by pathways. Each node represents a concept or idea. Activation of a node makes it easier to activate nearby, related nodes. Priming can be thus be thought of as the early activation of a concept making it easier to activate related concepts.

Priming research often involves presenting individuals with a stimulus (e.g., a word or image) and assessing how the subconscious associations activated by the stimulus affect participants' attitudes or performance on a task. In one of the earliest priming studies, Higgins, Rholes, and Jones (1977) found that prior exposure to personality traits made people more likely

to categorize ambiguous behaviors as representative of those personality traits. For example, prior exposure to the word "rude" made people more likely to categorize ambiguous behaviors as rude. Fazio, Sanbonmatsu, Powell, and Kardes (1986) found that priming individuals with the name of an object makes it easier to activate attitudes relating to the object. For example, showing the word "snake" makes it easier to identify a negative word, like "disgusting."

The effect of priming is not absolute, as it is affected by the surrounding circumstances. When primes categorically match stimuli, the resulting judgments are faster, but primes have a much lesser effect when primes and stimuli are not similar (Banaji & Hardin, 1996). When people are aware that they are being primed, they can consciously work against the prime's influence. However, when they are not consciously aware that they are being primed, it is difficult to avoid applying the prime to subsequent stimuli (Lombardi, Higgins, & Bargh, 1987). Higgins, Bargh, and Lombardi (1985) tested the relative effects of frequency and recency in priming, and found that, when forced to make an immediate categorization, a recent prime has more influence than a more frequently occurring prime. However, when given time between the primes and the subsequent categorization task, more frequently occurring primes have more influence than the most recent prime.

Priming has been applied to stereotype research, often by showing individuals a face or a word and then asking them to identify other words or items. Priming individuals with a representation of a stereotyped group (e.g., being shown a category-relevant word, such as black) activates stereotype-relevant information and makes the processing of stereotype-relevant information faster than the processing of non-stereotype-relevant information (e.g., Dovidio, Evans & Tyler, 1986).

Primes related to stereotyped group members have consistently been shown to facilitate quicker responses to negative words (as cited in Payne, 2001). Priming participants with African American faces leads participants to identify firearms more quickly (Judd, Blair, & Chapleau, 2004; Payne, 2001). Under time constraints, African American primes lead to more frequent mistakes when differentiating firearms from other objects (Amodio et al., 2004; Payne, 2001; Payne, Lambert, & Jacoby, 2002). Wheeler and Fiske (2005) found that priming individuals with African American faces and asking participants to categorize these faces subsequently made stereotypical information about African Americans more easily accessible. Similarly, when race is made salient, the accessibility of racial stereotypes becomes easier, and mistakes become more likely on identification tasks (Payne et al., 2002). This effect has been seen among multiple racial groups, including Caucasians (e.g., Amodio et al., 2004; Payne et al., 2002), African Americans (Correll et al., 2007; Kahn & Davies, 2011), and Koreans (Park & Kim, 2015).

Implicit Bias

Implicit bias refers to subconscious group-based attitudes. Generally, implicit biases are ingroup-against-outgroup notions existing below an individual's explicit awareness, and they go hand-in-hand with stereotyping. People associate stereotypes to relevant groups, which can then affect perceptions of and actions towards these groups. Implicit biases are not necessarily a matter of outward hostility, as these subconscious attitudes can exist within people who consciously reject prejudice and still result in behaviors similar to those produced by explicit biases (Fridell, 2016; Fridell & Lim, 2016). Implicit bias research is a relatively young field, as the concept itself did not emerge until Devine (1989) presented the idea of automatic, subconscious processing as an explanation for between-group prejudices.

In more recent decades, implicit biases have been measured through several methods. One is through the use of the implicit association test (IAT). The IAT measures implicit associations between concepts and attitudes by analyzing differences in response times to related items (Project Implicit, 2019). Another way is through analysis of responses to items on both the Modern Racism Scale (MRS) and the Motivation to Control Prejudice Scale (MPCS). The general idea of this method is that individuals with a greater motivation to avoid appearing prejudiced will compensate for their negative attitudes when completing tasks that might reveal bias (Dunton & Fazio, 1997). Thus, people with both high MCPS scores and low MRS scores could be attempting to avoid appearing prejudiced, but these prejudices would later be revealed during subsequent behavioral tasks. It is important to note though that this method is useful for indicating the presence of implicit attitudes but not for giving absolute or relative measures of attitudes (Wittenbrink, Judd, & Park, 1997). Implicit associations can also be indicated by differential responses to targets equivalent in all aspects except some variable, such as race or gender.

Prior research has consistently found that people tend to show implicit bias favoring their own group (e.g., Vaughan et al., 1981). Wang et al. (2014) had Chinese participants rate the facial expressions and emotional intensity of Caucasian and Chinese faces, finding that these participants displayed an implicit preference for Chinese faces, their own ingroup, over faces from the Caucasian outgroup. Dunham (2011) had participants rate racially ambiguous faces as either black or white and found that people tend to associate ambiguous figures with the outgroup. In this case, Caucasian participants were more likely to categorize ambiguous faces as African American than as Caucasian. Hutchings and Haddock (2008) found similar results

among a sample of British undergraduates, with racially ambiguous faces more likely to be judged as a member of the racial outgroup.

Besides using behavioral measures, implicit bias has been implied at the neurological level. The amygdala, a part of the brain involved in emotional learning and fear responses, shows increased activity in response to unfamiliar faces and outgroup members (Stanley, Phelps, & Banaji, 2008). Correll, Urland, and Ito (2006) found that event-related potentials (i.e., electrical responses in the brain) differentiate according to the viewed target's race. James, Klinger, and Vila (2014) measured alpha suppression, a subconscious neurological threat response, and found people are more likely to exhibit a threat response towards African American targets. Research on the effects of stress has yielded mixed findings. Some argue stress conditions impair decision making and make reflexive responses (i.e., responses based on cognitive shortcuts) more likely (Arnsten, 2009), whereas others argue stress may facilitate discriminatory ability (Akinola & Mendes, 2012). Similar to some of the stress-related research, Hunsinger (2011) found that inducing fear led to a higher likelihood of racially biased decisions.

Implicit Bias and Deadly Force

Research concerning implicit biases in deadly force decision making has come in three categories. The first involves drawing inferences from official police data by analyzing the relative frequency of various racial groups being involved in deadly force incidents. This is not considered a very strong approach to studying implicit bias because official police data cannot isolate variables, is highly dependent on the accuracy of the report, and typically does not include comparable, non-shooting cases (James, Vila, & Daratha, 2013; Johnson, Cesario, & Pleskac, 2018; Worrall et al., 2018).

The second category uses computer-based simulations, where participants viewing a computer screen are presented with armed and unarmed targets imposed on a background. Participants then decide whether or not to shoot the target by pressing corresponding buttons on a keyboard. This method, known as the first-person shooter task (FPST), was pioneered by Joshua Correll. Studies using this method have generally found that undergraduate students and adult civilians decide to shoot African American targets more quickly than Caucasian targets, as well as taking longer to decide not to shoot unarmed African American targets than unarmed Caucasian targets (Correll, Park, Judd, & Wittenbrink, 2002; Correll et al., 2006; Correll et al., 2007; Lima, Araujo, & Poderoso, 2018). Unarmed African American targets are more likely to be mistakenly shot than unarmed Caucasian targets (Correll et al., 2002; Correll, Wittenbrink, Park, Judd, & Goyle, 2011), whereas armed Caucasian targets are more likely to be mistakenly spared than armed African Americans (Correll et al., 2011; Lima et al., 2018; Ma & Correll, 2011). Police officers performing the FPST generally outperform civilians on such tasks; they respond more slowly to African American targets but show no biases in their ultimate decisions, suggesting police officers may have a higher threshold for deciding when to use deadly force (Correll et al., 2007; Johnson et al., 2018; Lima et al., 2018; Ma & Correll, 2011). Korean civilians asked to play the role of a Caucasian police officer react more quickly to armed African American targets (Park & Kim, 2015). Providing a target's racial information before the task, often information police would receive from a dispatcher, reduces racial bias in FPST performance among both undergraduate students and police officers (Johnson et al., 2018). Researchers using this method have generally attributed this pattern of results to participants relying on automatic processing, allowing stereotypic associations between danger and African

Americans to drive the effect of race on shooting decisions, especially when forced to make decisions under time constraints (e.g., Correll, Hudson, Guillermo, & Ma, 2014).

The third category of research investigating implicit bias in deadly force was largely pioneered by Lois James and was meant as a means of providing greater realism than Correll's computer-based FPST. This line of research is known as the high-fidelity FPST and involves participants role-playing as police officers and interacting with targets projected onto a screen. Participants carry a mock handgun and must decide if deadly force is necessary by interacting with targets and firing the mock weapon in response to armed targets.

Experimental research on deadly force using the high-fidelity FPST has yielded findings that are largely contradictory to those of Correll's computer-based method. For example, James et al. (2013) found that both police officers and civilians were slower to shoot African American targets and were more likely to mistakenly shoot unarmed Caucasians than either unarmed African Americans or unarmed Hispanics. James et al. (2014) found longer response times when civilians were presented with African American targets, but there were no differences seen in the actual shooting behavior. James, James, and Vila (2016) found police officers were slower to shoot African American targets and less likely to shoot unarmed African Americans, but more likely to shoot armed African Americans. Thus, instead of finding evidence of implicit racial biases leading to biased deadly force decisions against African Americans, the experimental research using the high-fidelity FPST suggests there is a cognitive process at play that may result in behavior favoring African Americans. James et al. (2016) termed this a "reverse racism effect," but other scholars (e.g., Roussell, Henne, Glover, & Willits, 2019) have condemned this term as both a misnomer and an incorrect interpretation of their findings.

Taken together, the existing research on implicit bias within deadly force decision making has yielded mixed results. When this is combined with the mixed findings and incomplete data appearing within the use of force literature, the reality is that the presence of implicit bias within policing is not clear. However, whether implicit bias is occurring within policing is an important issue worthy of research, important enough that many police agencies have begun implementing implicit bias training. Such training typically involves the use of simulations (using systems similar to those used in the high-fidelity FPST research), exposure to counter-stereotypes, role-playing, recognizing personal biases, and therapy (see Fridell, 2016; Fridell & Lim, 2016; Whitfield, 2019).

Limitations of Prior Research

The prior research on police use of force and its correlates suffers from several major limitations. For assessing research questions in this substantive area, studies that utilize official use of force data to make inferences on decision making and potential biases are only useful for assessing macro-level patterns, and, even then, they are flawed. There is also currently no existing national reporting system for use of force incidents, even though scholars have been calling for such a system for years (e.g., Alpert, 2016; Koper, 2016; Nix et al., 2017). This forces studies using official data to attempt comparisons across a limited number of individual places or agencies. In the absence of a government-mandated reporting system, tracking efforts have improved since 2015 due to the efforts of the *Washington Post*, *The Guardian*, and crowd-sourced projects such as Mapping Police Violence and Killed by Police (Lim, 2017). As discussed above, there are differences across even these sources due to their varying resources and methodologies.

As far as micro-level analysis (e.g., examining decision-making and event-level predictors of deadly force), official sources are of little use. Researchers cannot observe deadly force encounters because of their rarity and the danger inherent to such events. Official data are collected in the aftermath of an event, as opposed to when the event is happening. Official data are dependent on the honesty, accuracy, and reliability of the individuals and departments involved. Official data offer no experimental control and do not consistently record all relevant variables (James et al., 2013). Few studies (e.g., Worrall et al., 2018) are able to compare deadly force incidents to non-force incidents, making it difficult to assess which factors make the difference in whether an incident ends with or without deadly force.

The computer-based FPST offers some improvement in analyzing deadly force decisions, as the nature of the FPST offers experimental control and comparison between shooting and non-shooting cases. However, this method (e.g., Correll et al., 2002; Correll et al., 2006; Johnson et al., 2018) lacks realism. Use-of-force studies are meant to inform the scientific community as to when deadly force is likely in the real world, as well as how deadly force incidents can be reduced. However, a simulation in which participants sit in front of a computer, view a static image, and press buttons is nothing like what officers experience in the real world. There is no interaction with the suspect, and it is difficult to examine the interplay of situational factors. Most importantly, the act of pressing a button seldom resembles the act of pulling a trigger aimed at another person. Thus, results based on these computer tasks must be taken with caution.

While high-fidelity FPST simulations (e.g. James et al., 2016; James et al., 2014; Luini & Marucci, 2015) are more realistic than the computer-based FPST simulations, they have not been used to their full potential. Besides James's (2018) inclusion of sleep restriction and Luini and Marucci's (2015) inclusion of emotional arousal, analysis of situational and systemic influences

has been limited within the high-fidelity FPST research. Of particular importance is the very limited use of priming within FPST procedures. Testing differential responses to targets provides useful information, but this information is incomplete when studies do not investigate all aspects of implicit bias, including priming.

Officers are primed whenever they receive any details about an impending interaction from dispatchers, witnesses, or some other source. This information includes the who, what, where, and when of the situation. Because such information is received before the interaction, this information very likely influences officers' perceptions as they navigate the proceeding interaction. This perceptual influence becomes even more important when we consider that the information provided to police dispatchers by reporting citizens may not be accurate. This could be because of misidentification by the reporting citizen, errors in translation, or even falsified details meant to elicit a faster police response. When the reported information is incorrect, the information then forwarded from dispatchers to officers is incorrect and may affect the resulting police-citizen interaction.

Johnson et al. (2018) incorporated visual dispatch messages into a computer-based FPST procedure and found that FPST performance improved when such prior information was given. However, the dispatch primes used in their study were always accurate and never misleading. In addition, this was done within the computer-based methodology, not the more realistic high-fidelity FPST. Luini and Marucci (2015) primed civilians and police officers with emotionally arousing images in a high-fidelity FPST study, but this prime was unrelated to dispatchers. To date, only Taylor (2020) has used an auditory dispatch message to prime participants in a high-fidelity FPST study. Taylor utilized a sample of police officers and found that officers seemed to rely heavily on the dispatch information when confronted by suspects posing ambiguous threats.

In addition, dispatch information that incorrectly warned participants of an armed suspect led to a greater likelihood of a mistaken shooting. These results point to the importance of dispatch information and the affect such information has on officers' perceptions. With this in mind, there is a need to conduct more high-fidelity FPST research that further investigates different types of primes (e.g., auditory messages), situational variables, and the potential for misleading primes (i.e., dispatch messages based on incorrect information).

Summary of the Prior Literature

Police use of force is a relatively rare occurrence among police-citizen interactions, and deadly force is rare among use of force incidents. However, many such incidents have incited controversy. One source of controversy has been racial differences between the officer and the deceased. Whether force is differentially applied against various racial groups remains underdetermined, as the research has yielded mixed results. What is apparent here is that African Americans are overrepresented among police-related fatalities compared to their relative population. Another problem has been that the threat posed by the citizen was objectively questionable, or perhaps even that the threat posed was misperceived by the officer. It is evident from the existing data that deadly force has been mistakenly applied in some instances, as demonstrated by the substantial number of cases involving citizens who were unarmed or fleeing. Thus, mistakes have happened, with some more questionable than others.

The larger issue is that controversial incidents damage public perceptions of police. Even if deadly force is not actually applied differentially across racial groups, the widespread perception that there is a disparity (or even that there could be) reduces procedural justice and confidence in police. In turn, police legitimacy decreases. As police legitimacy decreases, the ability of the police to effectively serve their function is decreased because the citizenry they

serve becomes less willing to cooperate. Legitimate uses of deadly force are thus less the concern of this body of research. Rather, it is the incorrect applications of deadly force. Understanding and reducing mistaken deadly force incidents is the first step to regaining public confidence.

Social identity theory provides an explanation for why these mistakes may occur. Under social identity theory, people maintain ingroup-against-outgroup boundaries, and these boundaries affect how people perceive and act towards others. Applying this to police use of deadly force, police officers already categorize themselves as an ingroup and citizens as an outgroup. When further categorizations (e.g., race, gender) are added to the mix, the perceptual boundary widens between individuals in an encounter. Negative perceptions of the outgroup, including perceptions of dangerousness, become even more likely, and the encounter has a greater potential to turn hostile. This opens the possibility that perceptual errors become more likely when additional categorizations are added to the situation.

The existing literature provides some support for this application of social identity theory. Participants presented with an African American (an outgroup in most cases due to their minority status) face are more likely to mistakenly perceive a weapon and decide to use deadly force in computer simulations. FPST-simulation-based research has seldom incorporated priming, which may enhance the effect of stereotypes and other similar outgroup perceptions, but such research has yielded mixed, and often contradictory, results regarding racial bias. The current literature suffers from problems relating to scenario realism and an infrequent use of priming mechanisms. Addressing these shortcomings would provide a firm contribution to our knowledge of deadly force incidents. Such incidents may be relatively rare in police work, but, when they occur, they are often avoidable and can be very impactful on public perceptions of police.

The Current Study

The purpose of this pilot study is to examine various factors that contribute to the likelihood of making a mistake within the context of deadly force decision making. This study contributes to the current knowledge by examining the interacting effect of priming and race on use-of-force decisions in a series of high-fidelity FPST simulations. The study addresses some of the limitations discussed above by (1) utilizing a high-fidelity FPST to provide the most realistic setting possible within academic research, (2) including an auditory priming mechanism that simulates the information a police officer would receive from a dispatcher before arriving on scene, and (3) considering the real-world possibility of misleading primes (i.e., officers being provided incorrect information) by having the threat indicated by the prime being unrelated to the actual threat posed by the FPST suspect. This study also considers numerous variables that may affect perceptions of dangerousness, including approval of use of force, political ideology, fear of crime, racial bias, motivation to control prejudice, institutional confidence, social group affiliation, and demographic attributes. Also of interest is the use of measures of racial bias and motivation to control prejudice as a proxy for implicit bias. This study is guided by the following research questions:

Research Question 1) How accurate are participants' threat assessments when making the decision to shoot or not shoot a suspect in high-fidelity FPST simulations?

Research Question 2) Does priming participants to expect a threat make the mistaken use of deadly force more or less likely?

Research Question 3) Are participants more or less accurate in their responses to armed or unarmed suspects?

Research Question 4) Do racial ingroup-against-outgroup biases influence the accuracy of deadly force decisions?

Research Question 5) Do particular attitudinal traits or demographic characteristics influence the likelihood of making mistakes in deadly force decisions?

Chapter 3: Methodology

Research Design

This study utilized a between-subjects, repeated-measures, experimental design that tested participants' reactions to highly realistic video scenarios relating to deadly force judgment. The experiment itself followed a 2 (prime threat) X 2 (suspect race) X 2 (suspect threat) design. Participants completed a questionnaire that included various attitudinal and demographic items before completing a short series of deadly force role-playing simulations. Each simulation required the participant to hear an auditory prime in the form of a dispatch message, interact with a suspicious person, and make a real-time decision as to whether to fire their service weapon.

Participants

A small convenience sample of undergraduate students was recruited to participate in this pilot study. Participation in this study was made available to students enrolled in several undergraduate criminal justice courses at the University of Nevada, Las Vegas (UNLV). While a random sample of undergraduate students would have been desirable, random sampling was not feasible due to time and resource constraints that necessitated that participants volunteer their time, thus making it so that the likelihood of participation could not be equal across participants. Extra credit was offered in order to encourage participation. It was originally intended to gather a sample of 100-200 students. However, the on-site research labs were forced to close early in the data collection process due to public health concerns relating to the COVID-19 pandemic.

As a result, the sample was limited to seven participants. Two participants identified as male, and the other five identified as female. Six participants were in the 20 to 29 age range, with the other participant under twenty years old. In terms of race, one participant identified as African American, one as Caucasian, one as Asian, and four as Hispanic. Three participants

identified as democratic, with two identifying as republican and two as independent. Five of the participants were majoring in criminal justice. None of the participants had children, but all except one reported having siblings. None of the participants had experience in law enforcement, and one reported military experience. None of the participants reported having family members in law enforcement, but four reported family members serving in the military. Three participants reported regularly participating in first-person shooter video games, with three reporting past experience and only one reporting no such experience. Three participants reported being experienced with using firearms, with two others reporting having used firearms once or twice and two reporting no prior experience. Finally, only one participant reported having ever taken part in a use of force simulation.

Materials

The Prime

This study utilized auditory primes in the form of recorded dispatch messages. These messages were created by having a female volunteer record messages into a microphone. These messages were then saved to a flash drive and were played through speakers in the simulation laboratory. There were two messages: an armed threat and a neutral threat. The "neutral threat" message indicated that the police department had received multiple reports of a suspicious person. The suspicious person was described as a young male wearing a dark blue hoodie, and an address and cross streets were given. The "armed threat" message was the same except the dispatcher added that witnesses reported the suspect possessed a handgun and advised the participant to proceed with caution. Despite the message providing an address, participants did not need to move anywhere. The address was given for situational context and enhanced realism. Participants were not required to verbally respond to the message. They simply listened to the

message, and the simulation began seconds after the message ended. Finally, it is worth noting that the message conveyed in the prime (i.e., armed or neutral) was unrelated to whether or not the suspect would be armed in the simulation.

The Survey

The survey was a 70-item questionnaire administered through Qualtrics. The first item asked participants to enter an assigned four-digit code meant to serve as a participant identification code. Three items measured perceptions of police efficacy, which refers to perceptions of the police's "ability to protect citizens, solve crime, and prevent crime" (Worrall, 1999, p. 47). Three items measured perceptions of procedural justice (e.g., "The police treat citizens with respect"). Three items measured perceptions of police legitimacy (e.g., "The police can be trusted to make decisions that are right for your community"). Four items were taken from the Modern Racism Scale (MRS) (e.g., "Affirmative action has given minority groups more opportunities than they deserve"). Eight items were taken from the Motivation to Control Prejudice Scale (MCPS) (e.g., "It's important to me that other people do not think I'm prejudiced"). All police efficacy, procedural justice, police legitimacy, MRS, and MCPS items were answered on a three-point Likert scale (i.e., agree, unsure, disagree).

Twelve items asked participants to indicate whether they would approve of the use of force in different scenarios. Ten of these twelve items were taken from Gerber and Jackson (2017). The remaining two were meant to resemble the scenarios that would occur in the simulations (e.g., "A police officer points a gun at a suspect who has reached into his pocket"). Half of the twelve items were situations that would generally be considered reasonable uses of force (e.g., "A police officer strikes a citizen who has attacked the officer"). The other half were situations that would generally be considered cases of excessive force (e.g., "A police officer

uses force to intimidate a suspect into giving a statement"). All twelve items were answered on a three-point Likert scale (i.e., approve, unsure, disapprove).

Eight items asked participants to indicate which from among a pair of opposite social groups they most identified with (e.g., "Religious people or Non-religious people"). Participants could also indicate that they identified with both groups equally. Six items measured institutional confidence (e.g., "How much confidence do you have in the police?") and were answered on a three-point scale (i.e., no confidence, some confidence, a great deal of confidence). Two items measured fear of crime (e.g., "How concerned are you about having someone break into your home?") and were answered on a three-point scale (i.e., not concerned, moderately concerned, very concerned). Demographic questions included gender, age, race, income, political party, major, whether the participant has children, whether the participant has siblings, law enforcement experience, whether the participant has family in law enforcement, military experience, whether the participant has family in the military, whether the participant has interest in a military or law enforcement career, experience with firearms, experience with first-person shooter video games, and experience with use of force simulations. Finally, participants were asked if they or someone close to them had ever been the victim of a property crime, had been the victim of a property crime within the past year, had ever been the victim of a violent crime, and had been the victim of a violent crime within the past year.

The Use of Force Simulations

The high-fidelity FPST used in this study is similar to the shooting simulators used in law enforcement training across the United States. This FPST is housed in a research laboratory on the UNLV campus and is operated by the faculty of UNLV's Department of Criminal Justice. The FPST room is set up so that participants face a blank wall. A projector behind the

participants projects simulations onto the wall. Participants stand approximately twelve feet from the wall and are slightly off-center so as not to block the projector. The on-site researcher selects the specific scenario (in this case, the videos and dispatch messages are randomly assigned) and monitors the simulation from another room. Participants are outfitted with police equipment, including a carbon-dioxide-powered mock handgun. The mock handgun is a realistic replica that resembles a Glock. It has the weight and feel of a real handgun, but it does not discharge any projectiles. An infrared laser (not visible to the participant) outfitted at the end of the barrel registers the timing and accuracy of the shot fired. This FPST is similar to the ones that have been used in prior research (James et al., 2016; James et al., 2014; James et al., 2013; Johnson et al., 2018).

The FPST scenarios are dynamic, interactive videos that have been filmed with amateur actors. Four videos were filmed for this study. Each video was filmed from a first-person perspective that makes it appear as if the participant is viewing everything through the officer's eyes. The same African American actor was used to portray the suspect in two of the videos (one armed, one unarmed), with the same Caucasian actor used in the other two videos (one armed, one unarmed). All four videos were filmed in the same location. However, to avoid the possibility of the simulations being repetitive, the African American suspect's videos were filmed in a different area within the same location as the Caucasian suspect's videos. In other words, the Caucasian suspect was always confronted in a walkway leading to a backyard, whereas the African American suspect was always confronted in the backyard. Slight changes were made to the background of each video using tarps and wooden slabs. The general aesthetic was not altered across videos.

Each scenario takes 47 to 55 seconds to complete, during which the participant arrives on scene, approaches the suspect, and interacts with the suspect. The suspect always acts in a suspicious, agitated manner towards the participant. In scenarios involving an armed suspect, the suspect will eventually draw a firearm, and participants must shoot the suspect before the suspect can shoot. In scenarios involving an unarmed suspect, the participant may feel threatened by the suspect's behavior, but the suspect possesses no weapon with which to harm anyone. Instead, the suspect will draw a harmless object, such as a cell phone or wallet. The simulation ends once the held item is revealed.

Procedure

Participants registered to participate in the study through the UNLV Department of Criminal Justice's research lab website. The study was presented as a two-part study, with both parts completed consecutively. Participants arrived at the designated on-campus computer laboratory to complete the survey. Participants were assigned a four-digit identification number in order to preserve confidentiality. The survey was completed on a computer, with an on-site researcher available to answer questions. The first page of the survey included a consent form and required that participants give consent before continuing to the rest of the survey. The survey took participants between six and thirteen minutes to complete.

Upon completion of the survey, participants were led by the on-site researcher from the computer laboratory to the simulation room. The simulation room was located in the same building but on a different floor. Upon arrival at the simulation room, participants were given a new consent form that outlined the tasks required for the second part of the study. This form required a written signature. Participants were then asked if they had ever been involved in an active shooter situation, as individuals who had previously been through such experiences could

have been at a greater risk of psychological distress during the simulations. No participant indicated having such an experience. Participants were then outfitted with a mock police uniform that included a utility belt, a flashlight, a hat with "Police" stitched on the front, a holster, and the mock service weapon. Participants were then instructed where to stand (indicated using tape on the floor). Participants were briefly instructed on the responsibilities of a police officer, the rules of engagement (i.e., deadly force should not be used unnecessarily, but as a means of defending oneself or others from threat of harm), how to de-escalate a situation, and how to use the mock service weapon.

Participants then completed a practice simulation involving fake targets with human-shaped outlines, similar to the paper targets that would be used at a shooting range. The practice simulations were meant to allow participants the opportunity to get comfortable with using the mock service weapon and its calibration (i.e., to practice their accuracy). Participants were then randomly assigned to complete two of eight possible simulations. Participants were instructed to have their service weapon drawn from the beginning of the simulation. This was to ensure that response failures during the simulations were due to delays in decision making and not due to difficulties in drawing the weapon from the holster. After each simulation, the on-site researcher questioned the participant to ensure the participant was not distressed and was able to continue. The on-site researcher also performed a manipulation check that asked participants to describe the dispatch message, the suspect's appearance, the object in the suspect's hand, and whether the participant had seen the suspect before.

After completing the simulations, participants were debriefed. The debriefing was designed to be an open-ended discussion in which participants were encouraged to talk through what happened during the simulations. Participants were asked what they thought of the study

and their experiences, what they thought the study was about, what they enjoyed about the study, and whether they felt the study's procedure was unique. Participants were allowed to ask questions and were questioned about their feelings in order to ensure there was no emotional distress. To reduce the risk of any emotional distress, it was strongly emphasized that the results of the simulations, as well as any actions taken while completing the simulations, were due to the conditions imposed in the simulations themselves and not due to the participant's character or personal traits. Before being thanked and dismissed, participants were given a handout with the contact information for the study's primary investigator, the university's institutional review board, and the free counseling services offered by the university to its students. Participants also received a credit form to give to their instructors in order to receive extra credit for their time spent. Completion of both the survey and simulations earned two credits, one credit each. All participants successfully completed both parts of the study, and no participant indicated any sign of emotional distress. Completion of the simulations and debriefing took between 15 and 25 minutes, making the entire study require less than 45 minutes to complete.

Measures

There are three independent variables in this study: prime threat, suspect race, and suspect threat. Prime threat refers to the auditory prime heard by participants prior to the simulation in the form of a dispatch message. The prime was either an "armed threat" message or a neutral message. Suspect race refers to the race of the suspect encountered during the simulation. In this study, the suspect is either a Caucasian male or an African American male. Suspect threat refers to whether the suspect encountered during the simulation was armed or unarmed.

The dependent variable in this study is decision accuracy. Decision accuracy refers to whether the participant correctly assessed the threat posed by the suspect and responded appropriately. During simulations involving armed suspects, the correct response was to perceive the suspect's handgun and fire the service weapon. To fail to fire in time was an incorrect decision. During simulations involving unarmed suspects, the correct response was to refrain from firing the service weapon. To fire the service weapon was an incorrect decision. It is important to note that the accuracy of the decision was what mattered. All shots fired were recorded, and the decision was treated as final once the service weapon's trigger was pulled. The accuracy of the shot itself was not relevant to this variable and thus was not measured.

All other variables were measured by scoring participants' responses to items on the attitudinal survey. Police legitimacy was measured by combining responses from the three police legitimacy items into a single composite measure. This composite measure was then coded as bivariate high-low police legitimacy. The same process was followed for measuring procedural justice, police efficacy, approval of reasonable force, approval of excessive force, approval of force in general, and general institutional confidence. For most of these variables, the cutoff point determining whether a participant was coded as high or low was a composite measure of .5. However, if all participants scored above .5, the cutoff was set at .75. Likewise, if all participants scored below .5, the cutoff was set at .25. Bivariate coding of composite measures was necessary in order to perform a qualitative comparative analysis (see Analytical Strategy below).

Items from the Modern Racism Scale (MRS) and Motivation to Control Prejudice Scale (MCPS) were included to provide a proxy for implicit bias. The optimal measure of implicit bias would have been the use of an IAT, but resource limitations precluded the use of this tool. Both the MRS and MCPS have been used in prior studies assessing racial attitudes and prejudices

(e.g., Correll et al., 2002; Fazio, Jackson, Dunton, & Williams, 1995; Payne, 2001). While each is an explicit measure of attitudes, explicit measures such as these can be used to indicate the presence of implicit attitudes (Wittenbrink et al., 1997). Dunton and Fazio (1997) argue that individuals highly motivated to avoid appearing prejudiced will compensate on measures or tasks that would otherwise reveal negative attitudes. This suggests that individuals who both score high on the MCPS and low on the MRS are more likely to be attempting to avoid appearing prejudiced than to actually be non-prejudiced in their views. In other words, individuals are monitoring their responses to appear non-biased. If such individuals then displayed a decision pattern that disadvantaged a person of a different race (e.g., a Caucasian participant mistakenly shooting an unarmed African American suspect during an FPST simulation), an implicit bias can be inferred. Thus, the MRS and MCPS are included to help indicate the potential presence of implicit bias.

McConahay, Hardee, and Batts (1981) caution that some MRS items are too reactive to be effective because they present socially undesirable attitudes. Because of this, only four items were borrowed from the MRS, and they were slightly reworded to reduce reactivity. The original items referred specifically to African Americans (e.g., It is easy to understand the frustrations of black people in America). For this study, these items were edited to refer to minority groups in general (e.g., It is easy to understand the frustrations of minority groups in America). Similarly, only eight items were taken from the MCPS. Items that were deemed repetitive or less aligned with the study's research questions were removed. Like the composite variables described above, MRS and MCPS items were scored as composite measures and were then binary coded as high-low variables.

Analytical Strategy

The small sample size available for this study precludes the use of traditional statistical methods (e.g., ANOVA, regression modeling). Instead, this study utilizes a basic form of qualitative comparative analysis (QCA). QCA originated in the field of comparative sociology as a means of bridging case-oriented and quantitative approaches (Ragin, n.d.). QCA analyzes causal configurations leading to particular outcomes and is best-suited for small data sets. Among the benefits of QCA are the ability to identify multiple ways in which outcomes can occur and the ability to identify variables that are sufficient, necessary, or both (Davies, 2020). QCA is performed by first identifying relevant outcomes and conditions before constructing a truth table that considers all identified conditions. Conditions are then assessed for consistency across cases to identify which factors matter and to eliminate factors with no causal relevance. After removing unnecessary conditions, the remaining table is analyzed using special software (e.g., fsQCA) or through the conjunctive analysis of case configurations within SPSS (see Miethe, Hart, & Regoeczi, 2008).

For this study, crosstabs were created for each independent variable (prime threat, suspect race, suspect threat) before a truth table was constructed to include all three independent variables. Bivariate crosstabulations were also used to assess the relationship between decision accuracy and the various measures from the attitudinal survey. Due to the small sample size, tests of statistical significance were not included in this study. Instead, linguistic modifiers (e.g., "no differences," "small differences" [<10% difference], "notable differences" [>10% and <20% difference], and "substantial differences" [>20% difference]) are used to describe the magnitude of the observed differences. The use of these types of decision rules for assessing the magnitude of differences in small-sample studies are common in QCA and other methods of conjunctive analysis (see Miethe et al., 2008).

Chapter 4: Results

Several analyses were conducted to assess the research questions underlying the current study. The results of these analyses are summarized below.

Univariate and Bivariate Results

The first research question asks about the relative accuracy of individual's decisions in the high-fidelity FPST scenarios. The results of this study indicate that participants were generally accurate in their decisions, with the vast majority (86%) of participants making the correct decision regarding whether to shoot (see Table 1).

Table 1: General Decision Accuracy.

	Overall Accuracy
Correct	86% (12)
Error	14% (2)
Total	100% (14)

The second research question asks about the influence of priming on decision making. Substantial differences were seen across prime categories. Participants always (100%) made the correct decision when primed to a threat, but a substantial minority (40%) made mistakes in the neutral threat condition (see Table 2). In other words, when primed to a threatening situation

(i.e., dispatch call mentions a suspect with a gun), participants always shot the armed suspect. However, when they received a neutral prime, a notable proportion (40%) of participants made an incorrect decision by failing to shoot the armed suspect.

Table 2: Main Effect of Prime on Decision Accuracy.

	"Threat" Prime	**Neutral Prime**
Correct	100% (9)	60% (3)
Error	0% (0)	40% (2)
Total	100% (9)	100% (5)

This study's third research question asks whether FPST participants are more accurate when responding to an armed suspect or an unarmed suspect. As shown in Table 3, there are substantial differences in participant's accuracy in "shoot/not shoot" decisions based on the suspect's threat level. In particular, participants always (100%) made the correct decision to not shoot an unarmed suspect, but they mistakenly failed to shoot an armed suspect in a substantial minority (40%) of the simulations.

Table 3: Main Effect of Suspect Threat on Decision Accuracy.

	Armed	**Unarmed**
Correct	60% (3)	100% (9)
Error	40% (2)	0% (0)
Total	100% (5)	100% (9)

The fourth research question concerns the influence of the suspect's race on the accuracy of decisions in FPST scenarios. As shown in Table 4, there are no differences seen in the accuracy of decisions based on the suspect's race alone, at least not within these simulations. In particular, a substantial majority (86%) of the "shoot/don't shoot" decisions were accurate regardless of the suspect's race. When both the race of the suspect and participant are considered, a notable difference in accuracy was observed (see Table 5). Participants always made the correct decision (100%) when the suspect was of the same race as the participant, but these decisions were less accurate (83%) when the suspect was of a different race than the participant.

Table 4: Main Effect of Suspect Race on Decision Accuracy.

	Black	**White**
Correct	86% (6)	86% (6)
Error	14% (1)	14% (1)
Total	100% (7)	100% (7)

Table 5: Effect of Race Similarity on Decision Accuracy.

	Same Race as Suspect	**Different Race than Suspect**
Correct	100% (2)	83% (10)
Error	0% (0)	17% (2)
Total	100% (2)	100% (12)

Regarding the measures used to approximate bias and assess the group-based differences associated with social identity theory, notable differences were seen. All high-MRS decisions (100%) were correct, but only 83% of low-MRS decisions were correct (see Table 6). Mistakes were rare (10%) among high-MCPS decisions but were more frequent (25%) among low-MCPS decisions (see Table 7). A clear majority (75%) of high-MCPS, low-MRS decisions (those most

likely to possess implicit bias) were correct, but participants not falling into this category were more accurate, registering correct decisions 90% of the time (see Table 8).

Table 6: Decision Accuracy Across Modern Racism Scale (MRS) Scores.

	High MRS	**Low MRS**
Correct	100% (2)	83% (10)
Error	0% (0)	17% (2)
Total	100% (2)	100% (12)

Table 7: Decision Accuracy Across Motivation to Control Prejudice Scale (MCPS) Scores.

	High MCPS	**Low MCPS**
Correct	90% (9)	75% (3)
Error	10% (1)	25% (1)
Total	100% (10)	100% (4)

Table 8: Decision Accuracy for High MCPS, Low MRS Participants.

	High MCPS, Low MRS	**All Others**
Correct	75% (3)	90% (9)
Error	25% (1)	10% (1)
Total	100% (4)	100% (10)

The final research question asks whether particular attitudinal traits or demographic characteristics are associated with decision accuracy in FPST simulations. Among the study participants, their individual accuracy rates were associated with some personal and attitudinal attributes (e.g., race, gender, institutional confidence) but not others (e.g., age, income). In particular, participants were more prone to erroneous decisions if they reported low use of force approval, a low MRS score, a high MCPS score, high institutional confidence, identifying more with non-white than white people, or no concern with either being assaulted or burglarized (see Table 9). In addition, participants were more prone to erroneous shooting decisions when they were male, Hispanic, Republican or Independent, experienced with first-person shooter video games, experienced with firearms, or had no military members in their family (see Table 10).

Table 9: Attitudinal Variables Showing Substantial Differences in Decision Accuracy.

	Percent Accuracy (N)		**Percent Accuracy (N)**	
Low Force Approval	50% (2)	<	80% (5)	**High Force Approval**
Low MRS	67% (6)	<	100% (1)	**High MRS**
Low MCPS	80% (5)	>	50% (2)	**High MCPS**
Low Institutional Confidence	100% (2)	>	60% (5)	**High Institutional Confidence**
Identifies with White People	100% (1)	>	67% (6)	**Identifies with Non-White People**
Not Concerned About Burglary	0% (2)	<	100% (2)	**Very Concerned About Burglary**
Not Concerned About Assault	50% (2)	<	100% (2)	**Very Concerned About Assault**

Table 10: Demographic Variables Showing Substantial Differences in Decision Accuracy.

	Percent Accuracy (N)		**Percent Accuracy (N)**	
Male	50% (2)	<	80% (5)	**Female**
Hispanic	50% (4)	<	100% (3)	**Non-Hispanic**
Democrat	100% (3)	>	50% (4)	**Republican or Independent**
No Family in Military	33% (3)	<	100% (4)	**Family in Military**
No First-Person Shooter Video Game Experience	100% (1)	>	67% (6)	**First-Person Shooter Video Game Experience**
No Firearm Experience	100% (2)	>	60% (5)	**Firearm Experience**

QCA Results

The truth table in a QCA analysis provides a summary of all possible configurations of the independent variables that may influence differences in the outcome variable. In this study, the three experimental conditions (prime threat, suspect threat, and suspect race) represent the

independent variables and the likelihood of making the correct decision in the FPST scenarios is the dependent variable. By examining the impact of each variable across different contexts (i.e., profiles of case configurations), QCA provides a clear method for assessing the merits of a focus on the “main effect” of each of the independent variables in the analysis or whether context-specific effects are more appropriate. The truth table for the current study is shown in Table 11.

As shown in Table 11, there is substantial variation in the relative accuracy of decisions across all eight possible combinations of the independent variables. Three major conclusions are derived from this analysis. First, as shown in Profiles #1-4, regardless of the threat level or race of suspect, persons who were given an armed dispatch always made the correct decision (i.e., shooting an armed suspect and not-shooting an unarmed suspect). Second, as shown in Profiles #7-8, correct decisions to "not shoot" were also always made when the dispatch was neutral and the suspect was unarmed, regardless of the race of the suspect. Third, as shown in Profiles #5-6, errors in decision making occurred when persons were primed with a neutral message but were placed in a threatening situation, regardless of the race of the suspect. These types of context-specific effects are often blurred when analyses focus solely on the main effects of each variable. This analysis shows that, within each comparison of the bivariate patterns, the nature and magnitude of the influence of each variable often depends on the nature of the other variables in the truth table.

Table 11. Conjunctive Profiles of Predictors of Accurate Decisions in High-Fidelity FPST Scenarios.

Profile #	Condition A (Armed Threat Dispatch)	Condition B (Armed Suspect)	Condition C (Black Suspect)	Cases	Proportion of Cases Exhibiting Correct Decision
1	Yes	Yes	Yes	1	1.00
2	Yes	Yes	No	1	1.00
3	Yes	No	Yes	4	1.00
4	Yes	No	No	3	1.00
5	No	Yes	Yes	1	0.00
6	No	Yes	No	2	0.50
7	No	No	Yes	1	1.00
8	No	No	No	1	1.00

Chapter 5: Summary of Results and Discussion

A pilot study had a small sample of undergraduate participants complete high-fidelity simulations in which they had to decide whether or not to use deadly force against a suspicious suspect. Simulations varied in terms of whether the suspect was armed or unarmed, whether the suspect was black or white, and whether participants heard a neutral priming dispatch message or a high-threat priming message. Participants always correctly refrained from shooting unarmed suspects, but a substantial minority of participants failed to shoot armed suspects in time. All of the decision errors were instances of failing to shoot an armed suspect, as opposed to mistakenly shooting an unarmed suspect. The vast majority of participants made the correct decision across both black and white suspects. Taken together, the strongest main effects were seen in the neutral prime and armed suspect conditions, and suspect race appeared to have no main effect at all. These findings suggest that, in the context of the deadly force simulations used in this pilot study, the suspect's race was less important than both the information received before encountering the suspect and the actual threat posed by the suspect.

The effect of the prime warrants further discussion. The finding that more mistakes occurred after receiving a neutral prime than after a high-threat prime contradicts the general findings of priming research (e.g., Amodio et al., 2004; Judd et al., 2004; Payne, 2001; Payne et al., 2002). Prior research suggests that high-threat primes facilitate weapon identification. This would have led to faster responses against armed suspects and a greater likelihood of mistakenly shooting unarmed suspects. However, the latter did not happen within this study. Perhaps the high-threat prime encouraged participants to pay greater attention to the threat posed by the suspect. At the same time, perhaps the neutral dispatch message provided participants with a

false sense of security that left them susceptible to failing to perceive the threat posed by the suspect.

Social identity theory provides an explanation as to how and why implicit biases can affect deadly force decisions. Keeping in mind that social identity theory's emphasis on group boundaries suggests the importance of racial differences between participants and suspects, case outcomes were assessed to reflect whether the participant and suspect were of the same race. In cases where the suspect and participant were of the same race, all participants made the correct decision. In cases where the suspect was of a different race than the participant, the vast majority still made the correct decision, but there were mistakes. This is consistent with social identity theory. By asking participants to role-play as police officers and confront suspects, an ingroup-against-outgroup boundary was created (i.e., officer against suspect). An additional ingroup-against-outgroup boundary comes into play when the participant and suspect belong to different racial categories. Social identity theory suggests these situations are the ones most likely to result to result in mistakes, as stereotypes will affect perceptions of the outgroup-member suspect.

However, the type of mistake seen was not consistent with social identity theory. It would be expected that group-based boundaries and stereotypes relating to perceived dangerousness would have made participants more likely to mistakenly shoot unarmed suspects when the suspect was of a different racial category than the participant. This did not happen. Participants were no more likely to shoot unarmed suspects when the suspect was of the same or of a different race. The mistakes seen were failures to shoot armed suspects. In other words, participants were more likely to fail to shoot an armed suspect when the suspect was of a different race than the participant. The reason for this finding is not clear, but these decisions appear not to have been a matter of race-based stereotypes of dangerousness. Perhaps

participants were overly cautious when dealing with different-race suspects. Perhaps participants in these scenarios were cognizant of racial boundaries and thus hesitant to decide too quickly. Either way, differences were seen in cross- and same-race comparisons, but not in the manner that social identity theory would suggest.

Decision accuracy was also considered in the context of explicit measures of prejudice. Decisions made by high-MRS participants were more accurate than were those made by low-MRS participants, and decisions made by high-MCPS participants were more accurate than those made by low-MCPS participants. It is possible that high MRS and high MCPS participants were better at monitoring suspect threat. It is also possible that these participants possessed greater situational awareness. It was also theorized that participants who were both high MCPS and low MRS were most likely to possess implicit biases because of a greater need to monitor how they are perceived. Decisions made by these participants were less accurate than those made by their counterparts, but it must be emphasized that decision mistakes were not incidents of mistakenly shooting unarmed members of racial outgroups. These were failures to shoot armed suspects. Thus, it is possible that these participants were too cautious or compensated too much in their decision making. It is also possible that the occurrence of high MCPS and low MRS has become an unreliable proxy for the presence of implicit bias. Either way, this study has found no evidence that implicit biases lead to decisions favoring mistaken shootings.

The findings from this study show both consistencies and departures from the prior FPST research. Unlike studies relying on computer-based FPSTs (e.g., Correll et al., 2002; Correll et al., 2006; Correll et al., 2007), this study found no evidence of a behavioral bias favoring Caucasians over African Americans within the context of deadly force decision making. These computer-based studies were, at the time, believed to indicate the presence of implicit racial

biases. High-fidelity FPST studies (e.g., James et al., 2016; James et al., 2014; James et al., 2013) contradicted the findings of the computer-based studies, instead finding a behavioral bias that seemingly favored African Americans over Caucasians. This study is consistent with James' line of high-fidelity FPST studies in that this study finds no anti-black behavioral bias. However, this study departs from this line of research by finding no pro-black behavioral bias either. This study also finds mixed agreement with Taylor's (2020) findings. The finding that participants made more accurate decisions when presented with an armed-threat prime is consistent with Taylor's finding that officers seemingly rely on dispatch information to aid decision making. However, this study did not find that dispatch information erroneously warning participants of an armed suspect led to a greater likelihood of a mistaken shooting. These differences may reflect the fact that this study utilized an undergraduate sample, whereas Taylor (2020) used a sample of police officers.

Finally, this study's findings seem to be consistent with Johnson et al.'s (2018) finding that priming information can actually reduce racial biases within FPST performance. Johnson et al.'s study was a computer-based FPST study that utilized visual primes, suggesting that this finding may be consistent across both types of FPST research and across multiple types of primes. However, it is worth noting that the primes used in Johnson et al.'s study were always accurate, whereas the primes used in this study were unrelated to the actual threat posed by the suspect. These findings would then support Johnson et al.'s suggestion that providing prior information to police officers may reduce ambiguity and aid the collection of evidence before making decisions. The results of this pilot study would suggest that more information, even if inaccurate, is better than no information at all within the context of these simulations.

The correlations between decision accuracy and several other variables also require further discussion. Four patterns among these variables are especially noteworthy.

First, participants reporting high approval of use of force outperformed those reporting low approval of use of force. Perhaps these high-approval participants were more comfortable with the idea of using force in these simulations. Thus, they may have been more capable of correctly assessing suspect threat and more willing to use deadly force when necessary.

Second, participants reporting a high fear of crime were more accurate than were those reporting no fear of crime. It is possible that these high-fear participants were more discerning in their threat assessments because of their concerns with being victimized themselves. It is also possible that such high-fear participants are more likely to have already themselves considered what they should do when confronted with an armed threat, and these simulations provided the opportunity to put these considerations into practice.

Third, participants experienced with playing first-person shooter video games were less accurate than were those reporting no such experience. Perhaps experience with this type of video game makes participants overly comfortable with making deadly force decisions within high-fidelity simulations, leading to a greater willingness to fire or even to a lower concern for the consequences of a mistake. It is also possible that experience with these video games acculturate individuals to the use of violence, providing a lower decision threshold necessary for these participants to decide to use deadly force. There is also the possibility that these experiences reduce the perceived realism, and thus the seriousness, of high-fidelity simulations.

Fourth, participants reporting experience with the use of firearms were less accurate in their decisions than were participants reporting no such experience. It is possible that participants experienced with firearms possess a better understanding of both the gravity of shooting

decisions and the grave, unfixable consequences of mistaken shootings. Consequently, this may have made such participants more cautious in the use of deadly force and more likely to fail to decide to shoot in time.

The finding that decision accuracy varied across types of dispatch messages points to the importance of both the accuracy and the manner in which information is presented to police officers by dispatchers. While high-threat primes did not lead to mistaken shootings of unarmed suspects within the context of these experimental simulations, these results should not be taken to suggest that such incidents do not happen in the real world. The findings of this pilot study are the results of a limited number of experimental simulations. It is very plausible that analysis of a larger sample and a greater number of cases would have revealed some such outcomes. If not warning participants about armed suspects could lead to mistaken threat assessments (which happened within this study), it is very possible that mistakenly warning participants about unarmed suspects can lead to mistaken assessments as well.

There are real-world examples highlighting the importance of the accuracy of police dispatch messages. It is obviously critical that officers be notified when a suspect is armed. However, the controversial police shootings of both Tamir Rice and John Crawford (Balko, 2014) were both instances where police officers were informed the suspect was armed, only to later find that the deceased suspect possessed only a toy firearm. Despite these real-world examples and considering that police officers are often provided information about the situation and the suspect by dispatchers before arriving on scene, there is surprisingly very little research on police dispatch (Gardett et al., 2016), and there is still a relatively small body of research concerning deadly force decision making. The findings from this pilot study suggest that further research in both fields is necessary.

In the meantime, reducing the number of controversial and avoidable deadly force incidents requires solutions implemented at multiple levels. At the individual level, one solution is to focus on the officers most likely to be involved in use of force incidents. Some characteristics of these officers cannot easily be addressed, but others can. Officers who have prior histories of misconduct, who show impulsive tendencies, or who show hostility towards citizens are more likely to use force (see Mears et al., 2017; Miller, 2015). These officers should not be placed in the position where they frequently interact with citizens. These individuals are likely better suited for administrative or behind-the-scenes work than for working on the streets. At the situational level, one factor that can be addressed is to increase the use of de-escalation techniques (see Jefferis et al., 1997; Police Use of Force Project, 2016). Another is to improve officer training for dealing with individuals experiencing mental health crises, as a significant number of fatal police-citizen encounters involve citizens experiencing mental illness (Fagan & Campbell, 2020).

At the organizational level, steps must be taken to make changes within the police culture. Several aspects of police culture are conducive to unnecessary uses of force, including hypermasculinity, contemptuous views toward citizens, and the narrative that police work is inherently dangerous and unpredictable (Fagan & Campbell, 2020). Changing these aspects will take time and will require that leadership within police agencies be willing to embrace changes. Positive gains can start with increased officer education standards and the adoption of more restrictive use of force policies (see Mears et al. 2017; Nix et al., 2017; Police Use of Force Project, 2016).

At the macro-ecological level, the general idea has been that use of force is more likely when officers are working within neighborhoods they perceive as more dangerous (see Mears et

al. 2017; Nix et al., 2017). Changing perceptions and attitudes is difficult. The first step is to train officers to focus more on the situation at hand and to avoid allowing location and demographic factors to influence threat assessments. Many departments have begun implementing scenario-based judgment training that utilizes audio-visual simulations similar to the ones used in this study (see Fagan & Campbell, 2020; Fridell, 2016; Fridell & Lim, 2016).

Within this macro-ecological context, another major step to reduce use of lethal force situations is to improve police-community relations. The number of controversial deadly force incidents occurring within recent years necessitates that police agencies increase their efforts to enhance citizens' trust and to build partnerships with the communities they serve. Officers will feel less threatened when working in communities that have good relationships with local police. Some ways of accomplishing this include increased transparency concerning use of force, more frequent positive police-citizen encounters, educating the public on the research and realities of policing, and greater diversity among police officers.

Chapter 6: Limitations and Their Implications for Future Research Directions

As is true of most research studies, there are several limitations of this pilot study that restrict substantive inferences from the observed findings. These limitations and their implications for future research are summarized below.

Sample Size and Composition

A major limitation of this study involves characteristics of the sample. In particular, the sample size was small and included only college students. Seven participants completing two simulations apiece only amounted to fourteen cases. This study originally intended for a sample of 100 to 200 participants, but this was made impossible once the university temporarily closed its campus in response to the COVID-19 pandemic. The sample was also a convenience sample of undergraduate students recruited from criminal justice courses. Even if the sample was larger, this sort of sample still would only allow for tentative conclusions because this would not have been a sample representative of police officers, Americans, or even undergraduate students. This sample was sufficient for a pilot study, but future studies should (1) use a much larger sample, (2) use a more diverse, representative sample, and (3) examine differences between various groups, such as examining differences between police officers and citizens.

Simulation Procedure

Potential flaws in the simulation procedure may have resulted in the occurrence of testing effects. In particular, all participants completed two simulations, but all mistakes occurred during the first simulation. In addition, all mistakes were failures to shoot armed suspects. While all participants were allowed to practice using the mock handgun, it is very possible that this practice was too short for participants to become comfortable with the procedure before completing the real simulations. This leaves the possibility that the mistakes seen during the pilot

study were less about the simulations and independent variables, but more a matter of participants being uncomfortable with the procedure. Thus, future studies using high-fidelity FPST procedures should consider incorporating more extensive practice trials, especially trials that help participants become accustomed to interacting with the suspects.

Data Collected for the Simulations

This study recorded the results of simulations and attempted to draw inferences purely based on recorded outcomes. It may be useful to ask participants to explain their thoughts and to walk the researcher through the factors that affected their ultimate decision. It could be that participants are paying attention to different factors besides the variables under study, such as things the suspect said, inflections in the suspect's voice, or slight movements. Thus, future high-fidelity FPST studies should consider briefly interviewing participants about their thought processes and reasons for their particular responses.

Future studies should also modify the manipulation checks in order to make them more effective. In this study, participants were asked after each simulation to describe what they heard the dispatcher say, what the suspect looked like, and what the suspect had in his hand. The manipulation check was treated as a simple checklist to ensure the participant was paying attention. As long as the participant gave a response that was descriptive enough to show that he or she was paying attention, that item was checked off. This method was adequate for ensuring participant data was only recorded if the participant was paying attention, but it would be better to actually record participants' responses. Doing so would allow participants to highlight themselves what factors they paid attention to throughout the simulations. This could be accomplished by having participants complete open-response, paper-and-pencil questionnaires after completing each simulation. It would also likely be better to perform the manipulation

check for the dispatch message immediately after the message is heard, instead of at the end of the entire simulation.

Attitudinal Survey Measures

Rather than using more comprehensive indices of key theoretical concepts, this pilot study employed only a limited number of items to measure some of these concepts. In particular, procedural justice, police efficacy, and police legitimacy were all measured on the basis of only three items each. It is possible that the resulting composite measures did not truly capture the intended concepts. This is also possible for the fear of crime measures, which were measured using only two items each. Future studies should consider whether including more items would result in stronger measures of the intended concepts.

Measures of Implicit Bias

This study used the MRS and MCPS scales to proxy implicit bias. While this decision finds some support in the literature and was the best available measure for this pilot study, it is highly debatable whether these items are actually identifying the presence of an implicit bias. The idea was that the occurrence of a high-MCPS, low MRS participant mistakenly shooting an unarmed suspect of a different race is the scenario most likely to have been the result of implicit bias. However, this outcome never occurred within this study. Even if it did, implicit bias is not the only possible explanation for that outcome. It is conceivable that a self-monitoring, non-prejudiced person could fit this profile and make the same mistake. The best measure of implicit bias available is the IAT developed by Harvard University, though even this method has its critics. Future high-fidelity FPST studies should continue exploring ways to identify and measure implicit bias. In the meantime, the preferable tool should be the IAT.

Analytical Strategy

Because of the previously discussed small sample size, traditional tests of statistical significance were not feasible for use in this study. QCA is an optimal method for assessing data of this nature and from such a sample (Ragin, n.d.). However, a very limited form of QCA was conducted in this study. In particular, QCA analysis was conducted through a series of crosstabulations run through SPSS instead of a software program designed specifically for QCA, such as fsQCA. In addition, the QCA was conducted through nominal sets consisting of binary coded variables. While this was suitable for this study, the observed impact of many of the variables measured might have been blurred by this binary coding of quantitative measures. There is a form of QCA that can assess "fuzzy sets" consisting of partial group membership categories (e.g., .5, .8) as opposed to just the binary coding (0,1). Thus, future studies should consider both traditional tests of statistical significance and more robust QCA's using "fuzzy sets." This would allow for the examination of variation within outcomes and variables instead of analysis based on mere presence or absence.

Racial and Ethnic Categories of the Suspects in the Simulations

Within this pilot study, the suspect race was experimentally manipulated to represent only black and white suspects. While controversial use of force incidents often involve white police officers and black citizens, this phenomenon is not limited to Caucasians and African Americans. It is also worth noting that only two of the seven sample participants were Caucasian or African American, meaning five of the subjects were presented with a member of a racial outgroup in all of their simulations. Future studies should incorporate suspects from other racial categories.

Similarly, the only suspect demographic examined was suspect race. While race is a prominent characteristic upon which group categorizations can be drawn, it is not the only factor

that matters. Categorizations can be drawn on the basis of any physical or sociodemographic factor. Thus, future studies should manipulate other suspect variables, including gender, age, height, build, hairstyle, manner of dress, tattoo presence, etc. The more we learn about factors affecting decision making in the context of deadly force, the better we will be able to prevent potentially disastrous mistakes.

Internal Validity

Two elements of this study's design affect its internal validity and should be improved in future studies. First, the simulations used in this study are not consistent across all conditions. The simulations involving African American suspects all have the same background. They were filmed in one area of the set, in front of a wooden shed. They all have the same general script where the suspect claims to have been locked out of his own shed.

The background and script are different for the Caucasian suspects. For these simulations, the encounters are filmed in a walkway on the other side of the set, and the script involves the suspect claiming to be passing through the backyard as a shortcut to get home. The simulations were otherwise designed to be very similar, with suspects talking for the same amount of time, getting aggravated at similar times during the encounter, and acting similarly to each other. The differences in the backgrounds and the scripts were meant to prevent the simulations from seeming monotonous or repetitive, while still maintaining the appearance that the encounters were occurring within the same general area. However, these differences may present confounding variables such that differences in the background or the script may have affected participants' decisions. Future studies should keep simulation videos as similar as possible in order to isolate variables of interest.

The second issue of internal validity stems from the procedure itself. Circumstances arising from the emerging COVID-19 pandemic necessitated that only one researcher be present in the simulation laboratory. This means only a single researcher was present to instruct the participants, prepare the simulations, monitor participants during simulations, administer manipulation checks, and debrief participants. Thus, this was a single-blind procedure: participants were unaware of what conditions to which they had been assigned, but the interacting researcher was aware because the researcher had to select and start the simulations. The problem with a single-blind procedure is that it allows for the risk of contamination. By this, it is possible that something the on-site researcher said or did during interactions with participants could have affected resulting decisions because the researcher was aware of which simulations were selected and what the correct decisions would have been.

Care was taken to avoid saying anything to alert participants, but the use of a double-blind procedure would have prevented this possibility. In a double-blind procedure, neither the participant nor the interacting researcher knows which conditions have been assigned. This makes it so that the researcher cannot alert participants as to what comes next or what should have been done. This would require a second on-site researcher so that one researcher controls the simulations and the other interacts with the participants. Future studies should incorporate a double-blind procedure instead of the single-blind procedure used in this study.

External Validity

While the experimental nature of this study offers a significant degree of internal validity, this comes at the expense of external validity. The concern is how closely the simulations employed in this study actually resemble real-world deadly force incidents. Several factors detract from the realism of the scenarios used in this study. First, the time elapsed between the

dispatch message and the simulation was unrealistically short. In the real world, officers receive dispatch messages and must drive to the scene. Depending on the length of the drive, there could be a substantial delay before the resulting interaction occurs. In this study, the delay was only a matter of seconds. Future studies should consider incorporating longer delays between the priming dispatch message and the simulation. This could be done by conducting a manipulation check immediately after the prime is heard, by administering the prime before instructing participants on how to role-play as a police officer and complete the simulation, or by having participants complete some other time-occupying task before the simulation begins.

A second factor to address in future studies is the use of different contexts and backgrounds. The context accompanying the simulations in this study was that participants were investigating a suspicious person and encountering that person in a backyard. It would be useful to perform the simulations with different backgrounds (e.g., parking garages, parks, warehouses, dark alleys) and with different contexts (e.g., active shooter, burglary-in-progress, mental health check). The use of more backgrounds and contexts would provide results that are more robust due to the variety of situations in which police-citizen interactions occur.

A third factor for future studies to address is the use of different samples. This study utilized a sample of undergraduate students. While the use of such a sample is consistent with several prior deadly force studies (e.g., Correll et al., 2002; Correll et al., 2006; Lima et al., 2018), a sample of undergraduate students is not reflective of police officers, the very individuals typically tasked with making deadly force decisions. Even asking students to role-play as police officers should not be presumed to lead to results that are necessarily reflective of what police officers would do, either in the real world or even within these simulations. It is worth noting that a significant portion of the sample (two of the seven) reported having no prior experience

with firearms. Police officers, even relatively inexperienced ones, have typically undergone extensive training in the use of firearms. In addition, the more experience an officer has, the more interactions with citizens the officer likely has gone through. Thus, the results of this study come from a sample of laypeople who likely have never trained to manage hostile civilians and who lack the extensive firearm training of police officers. Future studies should seek to draw conclusions about police decision making by using samples of actual police officers or even by comparing officers' performance to that of citizens. The use of such samples would be more consistent with the prior high-fidelity simulation research (e.g., James, 2018; James et al., 2014; James et al., 2013; Taylor, 2020) and would enhance the applicability of the results.

A final way for future studies to maximize the realism of the simulations is to consider keeping participants to only one simulation each. Deadly force incidents are rare occurrences, rare enough that officers are not going to have to navigate multiple such incidents within the same shift. Officers who make mistakes during the incidents will for obvious reasons not get to try again moments later. Thus, it is unrealistic to have participants complete multiple scenarios. Instead, future studies should consider having participants complete a single simulation after completing sufficient training and preparation. Doing so would also help address the simulation consistency issue discussed above by allowing simulations to be created without concern for the simulations seeming monotonous or repetitive.

Although the factors discussed above can enhance the realism of the simulations and thus increase external validity, there are other elements of deadly force incidents that simply cannot be recreated within academic research. First, these simulations were designed to be immersive and to get participants' adrenaline flowing, but the participants were never in any real danger. Real-world deadly force decisions are made in response to perceived threats to one's safety, or

even to the safety of others. Simulations may be immersive, but there is no life-or-death moment involved. An armed suspect within these simulations is only a video. Thus, no matter how immersive the simulations may be, these are only realistic if participants believe they are in danger. For the sake of protecting participants from harm, simulated danger can only go so far. It is for this reason that it must again be emphasized that the results of this study are found within the context of the simulations employed and do not necessarily reflect real deadly force incidents.

Similar to the limited dangerousness of the scenario, the interpersonal dynamics of the simulations are of limited realism. Participants interacted with a video, not a real person. The suspects' responses were scripted and pre-recorded. Participants could not converse with the simulated suspects, and the statements made by suspects were meant to reflect the commands officers would typically give during such interactions. If participants deviated from typical officer commands, suspects' responses would not reflect this, resulting in statements that did not necessarily fit with participants' orders. This made for some awkward participant-suspect interactions. In addition, even though participants were encouraged to attempt to de-escalate confrontations and avoid relying on deadly force unless necessary, nothing the participants said or did would change how the suspect behaved during the simulation. No amount of de-escalation was going to alter what the suspect did at the end.

Finally, the consequences of these simulations are unrealistic. Whether the participant made the correct decision or not, there were only minute possible consequences. Failure to shoot an armed suspect during a simulation merely leads to the end of the simulation and to perhaps some self-reflection, whereas failure to shoot an armed suspect in the real world can result in injury or death to a police officer. Mistakenly shooting an unarmed simulated suspect does not

result in loss of life and administrative or even criminal consequences, all of which are possible depending on the circumstances of a mistaken police shooting. However, it is impossible to create truly realistic deadly force simulations in a laboratory setting, and there are not currently any better alternatives for studying deadly force decision making. For the time being, high-fidelity FPST simulations offer the most realistic conditions available.

Chapter 7: Conclusion

This pilot study examined deadly force decision making using high-fidelity FPST simulations. In line with the study's research questions, six conclusions are drawn. First, participants were generally accurate when assessing the threat posed by suspects, but mistakes did occur. Second, participants primed to expect a threat were more accurate in their decisions but were not more likely to mistakenly shoot an unarmed suspect. Third, participants were more accurate when the situation required that they refrain from shooting unarmed suspects, as opposed to shooting armed suspects. Fourth, participants whose responses to explicit measures of prejudice would indicate a higher likelihood of implicit bias were less accurate than other participants were. Fifth, several attitudinal and demographic traits were associated with deadly force decision accuracy, including gender, race, fear of crime, institutional confidence, approval of use of force, motivation to control prejudice, firearm experience, and experience with first-person shooter video games. Finally, a qualitative comparative analysis of situational factors suggested that, within the context of the simulations employed in this study, the threat indicated by the dispatch message was more impactful on the resulting decision than the suspect's race.

This study highlights the importance of police dispatchers to police-citizen interactions. Dispatch messages prime officers by providing information about what is happening, where the incident is taking place, and who is involved. This information, as well as how the information is presented, primes officers on what to expect and how to respond during the following interaction. These messages activate subconscious associations regarding dangerousness, likelihood of cooperation, and probable behaviors. These primed associations then affect how officers perceive and react to citizens. Incorrect dispatch information can either leave officers underprepared for a threat or overly expectant of a threat, both of which can lead to disastrous

consequences that later damage police-citizen relations. It is thus critical that responding officers be given the most accurate information possible so that they may process the situation and make the correct decision with minimal influence from subconscious associations.

This study also highlights the importance of training officers both to keep encounters from escalating to the need for use of force and to counter subconscious associations that may affect their decisions. These could be associations relating to gender, race, location, etc. One suggestion is the mandated use of de-escalation techniques (Jefferis et al., 1997; Police Use of Force Project, 2016). These techniques both reduce the likelihood of a use of force incident and increase the amount of time an officer has to gather and process information relating to situational threat. Similar to the audio-visual scenarios developed in the current study, scenario-based judgment training (Fagan & Campbell, 2020; Fridell, 2016; Fridell & Lim, 2016) uses simulations to condition officers to focus on situational threat over demographic factors. This is accomplished through exposing officers to counter-stereotypes, making officers manage ambiguous threats, and reducing the use of location as a diagnostic factor.

Deadly force incidents may be relatively rare occurrences within the wider context of police-citizen interactions, but many are avoidable, and these avoidable incidents are often the ones that produce the most controversy and public outrage. When deadly force leads to outrage, the result is damaged police-community relationships. When the community does not trust police officers or believes officers will not act in the community's best interests, citizens are less likely to cooperate with police. This, in turn, reduces the ability of the police to function effectively. Besides just the maintenance of police effectiveness, a better understanding of deadly force incidents will protect avoidable loss of life. When it is possible to identify factors that predict the risk of mistake, then situations leading to fatal mistakes are both foreseeable and avoidable.

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Curriculum Vitae

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Honors, Awards, and Professional Memberships

Summer 2020	Recipient, Criminal Justice Graduate Research Fund Award
Fall 2017—Spring 2018	Member, HonorSociety.org
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Fall 2013—Fall 2017	Recipient, Dean's Honor List
Fall 2013—Spring 2017	Recipient, Mary and John Hughes Provost Scholarship
Fall 2013—Spring 2017	Recipient, Provost's Scholarship
Fall 2013—Spring 2017	Recipient, Top 10% Incentive Scholarship

Publications and Presentations

Miethe, T. D., Forepaugh, C., & Dudinskaya, T. (In press). Carjacking. *Encyclopedia of Transportation*.

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Accepted Publications and Presentations

Forepaugh, C., & Miethe, T. D. (2020, November). *Priming cues, virtual reality simulations, and deadly force decision making*. Paper accepted for presentation at the Annual Meeting of the American Society of Criminology, Washington, D.C. Conference canceled.

Conferences Attended

November 2019 — American Society of Criminology Annual Meeting

Professional Experience

August 2018—Present — University of Nevada, Las Vegas: Department of Criminal Justice
Position: Graduate Assistant

- Collected data for a grant-funded project
- Created an Excel spreadsheet displaying collected data
- Graded homework for two introductory courses
- Organized tryout for university mock trial team
- Assisted mock trial director with organizing and hosting mock trial tournament

January 2018—Present — Clark County Umpire Association
Position: Senior Trainer, Youth Sports Official

- Led classroom instruction for young umpires
- Mentored young umpires to develop their confidence and technical skills
- Adhered to and enforced proper rules and regulations
- Resolved game-related problems and mediated conflicts between coaches and parents
- Monitored player safety
- Developed strong communication skills

October 2015—Present — Vegas Valley Baseball
Position: Youth Sports Official

- Adhered to and enforced proper rules and regulations
- Resolved game-related problems and mediated conflicts between coaches and parents
- Monitored player safety
- Developed strong communication skills

May 2017—March 2019 — NSF Grant #162588
Principal Investigator: Terance D. Miethe & Joel D. Lieberman
Position: Research Associate

- Administered surveys to participants
- Supervised other research associates
- Entered data into electronic database
- Responsible for logistics when out in the field

October 2018—December 2018 — Collaborative Interdisciplinary Research Award Grant:

"Displace or Diffuse? The Effect of Medical and Recreational Marijuana Legalization on Opioid Abuse and Other Substance-Related Crimes"
Principal Investigator: Seong Park
Position: Research Associate

- Collected crime and demographic data
- Organized data into format suitable for analysis

March 2011—December 2017 Las Vegas Umpire Association
Position: Youth Sports Official

- Adhered to and enforced proper rules and regulations
- Resolved game-related problems and mediated conflicts between coaches and parents
- Monitored player safety
- Developed strong communication skills

June 2012—August 2012 Semper Fi Landscaping
Position: Assistant Landscaper

- Ensured friendly environment and customer service for residents
- Maintained efficient work pace
- Responsible for carrying out various physical tasks
- Maintained customer properties

Volunteer Experience

February 2007—May 2015 Cheyenne Little League
Volunteer Activities:

- Youth baseball coach
- Field maintenance
- Concessions

September 2012—January 2013 On Deck Baseball Academy
Volunteer Activities

- Youth baseball coach

Additional Extracurricular Activities

February 2017—June 2017 Manager, Las Vegas Ballers, National Adult Baseball Association

June 2016—December 2016 Manager, Las Vegas Knights, National Adult Baseball Association