A Bird's Eye View of Civilians Killed by Police in 2015

Further Evidence of Implicit Bias

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Research Summary

We analyzed 990 police fatal shootings using data compiled by The Washington Post *in 2015. After first providing a basic descriptive analysis of these shootings, we then examined the data for evidence of implicit bias by using multivariate regression models that predict two indicators of threat perception failure: (1) whether the civilian was not attacking the officer(s) or other civilians just before being fatally shot and (2) whether the civilian was unarmed when fatally shot. The results indicated civilians from "other" minority groups were significantly more likely than Whites to have not been attacking the officer(s) or other civilians and that Black civilians were more than twice as likely as White civilians to have been unarmed.*

Policy Implications

We implore the U.S. government to move forward with its publication of a national police use-of-force database, including as much information about the officers involved

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as possible. We further suggest police departments use training programs and community activities to minimize implicit bias among their officers.

Keywords
police, deadly force, race, implicit bias

Policing in America is in the midst of a legitimacy crisis, having faced immense scrutiny in recent years resulting in large part from several highly publicized deadly force incidents captured on video (e.g., most recently, Keith Lamont Scott in Charlotte, NC and Terence Crutcher in Tulsa, OK). These videos have gone "viral" on social media and have led to unprecedented levels of public discontent with the police (Weitzer, 2015). This discontent has fueled violence toward police officers: in July 2016 in Dallas, for example, a peaceful protest turned deadly when five officers were fatally shot and another nine wounded.[1] One specific concern is that minorities are disproportionately shot and killed by the police. For example, Black Lives Matter (n.d.) has proclaimed on its website that "Black lives are systematically and intentionally targeted for demise" and that "[e]very 28 hours a Black man, woman, or child is murdered by police or vigilante law enforcement." These statements imply that the police are overtly prejudiced toward minorities, which is certainly possible but unlikely. The results of experimental studies, however, have suggested that officers might be *implicitly* biased against minorities and more likely to use force against them as a result (i.e., the "implicit bias" effect; see Correll, Park, Judd, and Wittenbrink, 2002; Cox, Devine, Plant, and Schwartz, 2014; Payne, 2001). At the same time, the results of more recent research have pointed to evidence of a "counter bias" effect, whereby officers seem more hesitant to use force against minorities (James, James, and Vila, 2016; James, Vila, and Klinger, 2014). Mixed findings have been produced in prior studies examining the relationship between civilian[2] race and police use of deadly force (Goldkamp, 1976; Jacobs and Britt, 1979; Klinger, Rosenfeld, Isom, and Deckard, 2015; Sorenson, Marquart, and Brock, 1993), but importantly, the focus has been on either single cities or national-level data that have noted flaws (Swaine and Laughland, 2015; Williams, Bowman, and Jung, 2016). Consequently, our knowledge of race and police deadly force at the national level is limited. Although many claims have been made, three empirical questions remain unanswered: (1) How often do civilians die by police gunfire in the United States? (2) Among those shot and killed, were minority civilians less likely

1. Ten days later, three Baton Rouge police officers were ambushed and killed. There is growing concern about a "war on cops," but a recent article suggested that felonious killings of police officers do not seem to be increasing (Maguire, Nix, and Campbell, in press).

2. Here and throughout this article, we use the term "civilian" to refer to individuals not employed by a law enforcement agency.

than White civilians to have been attacking the police or others? (3) Among those shot and killed, were minority civilians more likely to have been unarmed than White citizens?

One reason for our absence of knowledge is the lack of national data available that would allow researchers to address adequately such questions. Ironically, it was only after the August 2014 death of Michael Brown in Ferguson, MO, that Federal Bureau of Investigation (FBI) Director James Comey became aware that his agency does not collect reliable data pertaining to civilians killed by the police (Comey, 2015). Although the FBI through its Uniform Crime Reports (UCR) Program keeps a record of justifiable homicides (i.e., the killing of a felon by a law enforcement officer in the line of duty), reporting is voluntary and not all agencies participate. According to *The Guardian,* only 224 agencies (or approximately 1% of all agencies) reported a killing to the FBI in 2014 (Swaine and Laughland, 2015). Indeed, academic research findings have suggested that the FBI's data underestimate the prevalence of civilian deaths at the hands of police (Fyfe, 2002; Klinger, 2012b; Klinger et al., 2015; Planty et al., 2015; Williams et al., 2016). Criminologists have implored the U.S. government to develop a national database on officer-involved shootings (see, e.g., Alpert, 2015a; Fyfe, 2002; Geller and Scott, 1992; Klinger et al., 2015)—and recently proposed bills offer promise—but for now, the state of knowledge concerning police deadly force in the U.S. remains "a national embarrassment" (Alpert, 2015b).

Although the government has failed to provide the necessary information on police shooting deaths, at least two media outlets have developed national data sets. *The Washington Post* and *The Guardian* have developed repositories of reported officer-involved shootings and other use-of-force incidents resulting in civilian deaths. These resources afford researchers an opportunity previously unavailable: the ability to analyze all civilian deaths at the hands of the police on a national scale over an extended period of time. The purpose of the present study is twofold: The first is to analyze the data on civilians shot and killed by police in 2015, and the second is to determine whether minority civilians shot and killed by police were more or less likely to have been (a) attacking the police or (b) unarmed at the time of their death. Such an analysis will allow for a more informed dialogue about the extent and nature of civilian deaths at the hands of police in America. We believe it will also provide a meaningful contribution to our knowledge concerning the "implicit bias" effect, given that studies to date have relied on research carried out in laboratory settings or with data from a single agency.

Literature Review

Police Use of Force

Police use of force is a controversial topic with a rich history. For decades, researchers have sought to provide a better understanding of the use of force by police officers (Adams et al., 1999; Alpert and Dunham, 1997, 2004; Bayley and Garofalo, 1989; Bittner, 1970; Fridell and Lim, 2016; Fyfe, 1988; Klinger, 1997; Legewie and Fagan, 2016; Reiss, 1971; Westley, 1953). This line of research has generally been used to examine the issue from one of

four perspectives: individual (e.g., Paoline and Terrill, 2004), situational (e.g., McCluskey and Terrill, 2005), organizational (e.g., Smith, 2004), or ecological (e.g., Fridell and Lim, 2016). The individual perspective holds that there is something about particular officers (e.g., their background or outlook) that makes them more likely to resort to using force in a given interaction (Muir, 1977). The findings from this research indicate that officers with higher levels of education are less likely to use force (Lim, Fridell, and Lee, 2014; Paoline and Terrill, 2004, 2007; Terrill and Mastrofski, 2002) perhaps because these officers are better equipped to defuse a situation without having to resort to physical coercion. Officer gender and race, on the other hand, seem to be unrelated to use of force (Engel and Calnon, 2004; Lawton, 2007; McCluskey and Terrill, 2005). To date, experience has been negatively correlated with police use of force: those who have been in law enforcement longer seem not only less likely to use force (Paoline and Terrill, 2007), but also they tend to have less favorable attitudes toward using force (Kop and Euwema, 2001). Furthermore, a positive correlation between experience and certain types of force (e.g., electronic control devices—see Fridell and Lim, 2016) has been suggested by some researchers, whereas still others have failed to find a significant relationship (Lawton, 2007; Sun and Payne, 2004). Thus, beyond the effect of officer education on use of force, the evidence pertaining to individual officer characteristics is mixed at best.

An understanding of the situational perspective shifts the focus to the suspect. Black (1976), for example, argued that the police are more likely to use coercive force against members of the lower class (e.g., the poor, minorities, and youth). Suspects who are mentally ill, under the influence of drugs or alcohol, noncompliant, or otherwise disrespectful are also at a greater likelihood of having force used against them in part because the police view these suspects as more deserving of punishment (see also Van Maanen, 1974). Officers are more likely to use force when there is evidence that a crime has been committed (McCluskey and Terrill, 2005) or when the suspect is armed (Johnson, 2011), under the influence of drugs/alcohol (Engel, Sobol, and Wordon, 2000), or resistant (McCluskey and Terrill, 2005). The evidence is not so clear-cut with respect to gender: the police are more likely to use force against males (Engel and Calnon, 2004; Kaminski, DiGiovanni, and Downs, 2004; Lim and Lee, 2015; Lim et al., 2014), according to some researchers, whereas others have indicated no relationship exists between the decision to use force and suspect gender (Engel et al., 2000; Lawton, 2007). Results from research exploring the effect of suspect race on police use of force have been mixed as well. Minority suspects have a greater likelihood of being subjected to force (Engel and Calnon, 2004; Robin, 1963; Terrill and Mastrofski, 2002), according to some researchers, whereas others have found no relationship between suspect race and use of force (McCluskey and Terrill, 2005; Sun and Payne, 2004), and still others have suggested that race effects wash away when accounting for other variables such as compliance (Garner, Maxwell, and Heraux, 2002). Further complicating matters, Black suspects seem more likely to resist arrest and/or be combative than White suspects (Belvedere, Worrall, and Tibbetts, 2005; Engel, 2003; Kaminski and Sorenson, 1995),

which may explain any observed racial disparities in force applied by the police. Given the current state of affairs in the United States, it is imperative that researchers continue to consider whether suspect race significantly influences police use of force.

The organizational perspective seeks to explain variation in officer use of force using agency-level characteristics. Police agencies—with their formal policies, standard operating procedures, and system of rewarding and disciplining officers—encourage officers to handle similar encounters in a consistent manner (Wilson, 1968). When longitudinal research has been conducted in single cities, restrictive deadly force policies yield fewer instances of deadly force (see, e.g., Alpert, 1989; Fyfe, 1979; Sherman, 1983). In using a national probability sample of 265 agencies, Alpert and MacDonald (2001) found that agencies that required supervisors to complete use-of-force forms experienced significantly lower rates of force than did agencies that allowed officers to complete such forms on their own. Importantly, however, these authors also found that the violent crime rate exerted the strongest influence on use of force. Smith (2004) found that more "formal" agencies (i.e., those with a greater number of written rules) did not experience significantly fewer police killings; nevertheless, the hours of field training required was positively associated with police killings. Again, the evidence with respect to the relationship between organizational variables and police use of force is mixed, and more research is needed to help shed light on the topic.

Finally, the ecological perspective asserts that police behavior, including the decision to use force, varies according to the broader context of where the incident takes place (Bayley and Mendelsohn, 1969; Klinger, 1997; Smith, 1986; Terrill and Reisig, 2003). That is, officers are more likely to use force in areas that they perceive as more dangerous. Bayley and Mendelsohn (1969) suggested that the police are more apt to use coercion and make arrests in neighborhoods with high levels of crime, and Terrill and Reisig (2003) later demonstrated that police in two cities were more likely to use greater levels of force on suspects in neighborhoods characterized by disadvantage and high homicide rates (see also McCluskey, Terrill, and Paoline, 2005; cf. Lim et al., 2014). These effects were observed regardless of differences in officer age, education, and training. Furthermore, the relationship between suspect race and level of force used was mediated by neighborhood context. Klinger et al. (2015) found that neither economic disadvantage nor racial composition of neighborhoods influenced police shootings, but the rate of firearm violence exerted a significant curvilinear effect. That is, neighborhoods with moderate levels of firearm violence experienced the greatest number of police shootings over a 10-year span. Beyond these few studies, empirical research regarding the ecology of police force has been scant.

At a minimum, then, the results from this body of research have suggested that police use of force is an intricate issue with many factors potentially affecting its occurrence. Each of the four perspectives—individual, situational, organizational, and ecological—have received varying amounts of support. Up to this point, we have discussed police use of force generally. We now turn our attention to the most serious level of force: deadly force.

Deadly Police Force

Deadly force by police has been a concern for the American public for many decades (Alpert and Fridell, 1992; Fyfe, 1988; Goldkamp, 1976; Klinger, 2012a) and has come to the forefront again because of several highly publicized civilian deaths (Nix and Wolfe, 2015, 2016; Pyrooz, Decker, Wolfe, and Shjarback, 2016; Wolfe and Nix, 2016). Unfortunately, we do not have a good understanding of police use of deadly force because existing national data reported by the government are flawed. The approach taken in prior reviews and research has been to rely on either UCR data or on the National Vital Statistics System (NVSS), and generally, researchers have concurred that police use of deadly force is positively correlated with violent crime (Jacobs and Britt, 1979; MacDonald, Kaminski, Alpert, and Tennenbaum, 2001; Sherman and Langworthy, 1979; Smith, 2003, 2004; Sorenson et al., 1993). Nevertheless, the findings from subsequent research have demonstrated that both the UCR and the NVSS underestimate the frequency with which civilians are killed by police. Planty et al. (2015), for example, suggested the police kill about twice as many civilians in a given year than UCR and NVSS data indicate. As such, the findings from studies that have used these data must be interpreted with caution.

Furthermore, as Fyfe (1978: 32) pointed out, *deadly force* encompasses much more than just civilian deaths at the hands of police: it is "physical force *capable* of or *likely* to kill; it does not always kill." As noted, this is a second limitation of prior research because the police are using deadly force every time they fire their weapon—even if the suspect is wounded and survives or the bullets miss the suspect altogether. In Miami-Dade during the mid-1980s, Alpert (1989) found that only 31% of suspects shot at were hit by a bullet. In St. Louis, from 2003 to 2012, Klinger et al. (2015) found that police were on target only 49% of the time and that only 16% of all suspects fired at were killed.

Finally, as Klinger et al. (2015) pointed out, using national-level data results in aggregation bias. In their analysis of police shootings in 355 census block groups over a 10-year period, 208 blocks (58.6%) did not experience a single police shooting during that timeframe. Thus, national-level data are problematic because they mask heterogeneity within much smaller units of analysis, such as cities or census blocks. The alternative is to get a "worm's-eye view" of civilians killed by police by restricting analysis to one city, a group of cities, or one state. Klinger et al. (2015) provided one of the most sophisticated studies to date using a worm's-eye view, but unfortunately, it is impossible to know the generalizability of their findings. In other words, their study cannot provide any insight as to how often or how many civilians were killed by police nationwide. Given the recent emergence of national-level data collected by the media and Web-based crowdsourcing projects, it is important for researchers to examine the nature and extent of civilian deaths at the hands of the police.[3]

3. Ironically, it was *The Washington Post* that conducted one of the most comprehensive studies on police shootings. On November 15, 1998, the newspaper started a series of articles evaluating police shootings

Implicit or counter bias? Much of the debate surrounding police use of deadly force in recent years has centered on the impression that Black civilians are disproportionately killed by the police. Many publicized incidents involve White officers and Black civilians: Michael Brown in Ferguson, Walter Scott in North Charleston, Tamir Rice in Cleveland, and Philando Castile in Falcon Heights, MN. Although it is possible that some police officers harbor explicitly biased attitudes toward minorities, psychological researchers have demonstrated that less conscious attitudes also influence police behavior (Dovidio, Glick, and Rudman, 2005; Kahn and McMahon, 2015). Smith and Alpert's (2007) report of unconscious profiling offered one possible explanation for why police would be more inclined to use deadly force against Blacks. According to the researchers, police officers over time become *unconsciously* biased toward minorities through social conditioning (i.e., repeated contact with minorities involved in deviance) or illusory correlation mechanisms (as it applies here, the tendency to overestimate the correlation between race and crime; see also Hamilton and Gifford, 1976). In other words, the police, who are trained in the first place to be suspicious, become conditioned to view minorities with added suspicion.[4]

Although up to this point national data have not permitted researchers to assess adequately whether the police are more likely to use deadly force against minority civilians, important insight about the "implicit bias" effect has been exposed through experimental research. Payne (2001), for example, randomly presented study participants with an image of a White or a Black face and then briefly flashed an image of either a gun or a tool. They were instructed to identify the object as a gun or a tool as quickly as possible. Results demonstrated that participants were faster to identify an object as a gun when they had been primed with a Black face than when they had been primed with a White face. They were also more likely to identify tools mistakenly as guns when they had been shown a Black face. In a separate study, undergraduate students played a videogame whereby they were randomly presented with one of four images: a White man holding a gun, a White man holding some other object, a Black man holding a gun, or a Black man holding some other object. The participants were instructed to determine whether the man was holding a gun and react by pressing a "shoot" or "don't shoot" button as quickly as possible. Findings included that participants shot more quickly at armed Black men than at armed White men, and they decided not to shoot unarmed Whites more quickly than unarmed Blacks (Correll et al., 2002).

The results of these studies have suggested that race (or color) is an important factor in determining whether a suspect is perceived to be a threat and, in turn, whether to shoot the person. Nevertheless, the participants in these studies were college students and the findings might not be generalizable to police officers, who should be trained extensively on how to

in the Washington Metropolitan Police Force. See washingtonpost.com/wp-srv/local/longterm/dcpolice/deadlyforce/police1full.htm.

4. For a review of prejudice and racial profiling more broadly, see Wilson, Dunham, and Alpert (2004).

assess and respond to threats. Moreover, pressing one of two keyboard buttons to simulate the decision to shoot or not shoot is a far cry from pulling the trigger of a gun.[5]

That said, Cox and colleagues (2014) addressed these limitations by randomly assigning 54 police officers to complete a shooter simulation (using a realistic gun) in one of two neighborhoods: the first a predominantly non-White, high-crime neighborhood, and the other a predominantly White, low-crime neighborhood. Officers were told they were responding to a call with armed criminals nearby, and then they were presented with a series of pictures and video simulations. Results indicated that officers were faster to shoot armed Black suspects in the picture trials but slower to shoot them in video trials presumably because they had a longer response window and therefore more time to exercise caution. James and colleagues (2014; James, James, et al., 2016) provided further evidence of a "reverse racism" or "counter bias" effect, which means that officers are in fact more *hesitant* to use force against minorities for fear of the media backlash it could create. In these studies, police officers completed a simulator that involved "highly realistic, custom-made, high-definition video scenarios" that "depicted domestic disturbances, vehicle stops, robberies in progress, and investigations of suspicious persons/circumstances" (James, James, et al., 2016: 7). Participating officers were armed with a modified Glock model 22s, which had infrared emitters that registered shot placement on the video screen and the exact time (in milliseconds) the officer pulled the trigger. The researchers found that officers were slower to shoot armed Black suspects than armed White suspects and that they were less likely to shoot unarmed Black suspects than unarmed White suspects.[6]

Collectively, the research results leave us with more questions than answers. There are sound theoretical principles to consider that Black civilians are disproportionately considered a threat by the police (Smith and Alpert, 2007), but empirical support for the implicit bias effect has been mixed (Correll et al., 2002; Cox et al., 2014; James et al., 2014; James, James, et al., 2016; Payne, 2001). Previous research findings have left us with the critical questions: (a) How often civilians are killed by the police, and (b) are minority civilians more likely than White civilians to pose a threat to police by attacking them and/or being armed with a deadly weapon?

The Current Study

The primary contribution of the present study is that it represents one of the first analyses of civilians shot and killed by police using national-level data other than the data from the UCR or the NVSS. By using data collected by *The Washington Post*, we were able to provide

5. It is also important to mention that researchers have shown that violent video games increase aggressive behavior in young adults (see Anderson and Bushman, 2001).

6. Interestingly, these studies were completed *before* Michael Brown's death in Ferguson in 2014.

a breakdown of the characteristics of deadly shootings that occurred in 2015.[7] Second, we used these data to consider whether minority civilians killed by police gunfire were more likely to have *not* been attacking the police or more likely to have been unarmed at the time of their death, which based on prior literature would suggest implicit bias on the part of the police. Simulation data or single-agency use-of-force data have been relied on in prior studies. Officers who participate in simulation studies are not in any real danger and in fact might exert more caution in "shooting" minority suspects simply because they do not want to be labeled prejudiced by their command staff. Our analysis provides insight as to whether the implicit bias effect manifests itself in the real world where officer safety is an immediate concern. Although we could not determine whether officers were quicker or more likely to fire their weapon at minority suspects, we argue that if minorities were more likely to have *not* been attacking the police/other civilians, or more likely to have been unarmed, this would indicate the police exhibit implicit bias by falsely perceiving minorities to be a greater threat to their safety (i.e., threat perception failures; see Fachner and Carter, 2015). Specifically, we sought to answer the following three research questions with the current study:

R1: What are the individual, city, and agency characteristics of all fatal shootings by police in 2015?

R2: Among those fatally shot, were minority civilians more likely than White civilians to have *not* been attacking the police or other civilians?

R3: Among those fatally shot, were minority civilians more likely than White civilians to have been unarmed?

Method

Data

Data analyzed in the current study were ascertained from three sources. The primary data source is *The Washington Post*'s National Police Shooting Database. In 2015, *The Post* began compiling data on the characteristics of incidents in which a civilian was shot and killed by the police in the United States. The data were collected by a team of journalists employed by *The Post* who scoured Web-based news articles, public records, Internet databases, and civilian reports to identify all civilians killed by a firearm, discharged by an officer acting in the line of duty, in 2015.[8] These data are one of the first nationally representative samples of

7. Unfortunately, these data are limited to police shootings that resulted in the death of a civilian. Ideally, we would like to be able to investigate each instance in which a police officer decided to pull the trigger, but to date, these are the best available data pertaining to police shootings at the national level.

8. An anonymous reviewer suggested that *The Post's* database may be biased because of missing cases. Although it is certainly possible that *The Post* did not identify every fatal shooting, it should be noted that its total number of deadly shootings aligns very closely with other databases such as that of *The Guardian*. Those compiling the data were tasked with collecting data on *all* fatal shootings, not simply those that were highly publicized. Indeed, *The Washington Post* was awarded a Pulitzer Prize in early

persons killed by the police[9] and contain baseline information on 990 incidents including the demographics of civilians killed (e.g., age, race, and mental illness), circumstances surrounding the event (e.g., civilian armed/unarmed and threat level), the agency responsible for the shooting, and the location of the event.[10] The 2012 UCR and the 2008 Census of State and Local Law Enforcement Agencies (CSLLEA) were used to obtain additional data pertaining to city- and agency-level characteristics.

Dependent Variables

Official data (e.g., UCR and NVSS) has typically been analyzed to examine the impact of agency- and city-level variables on the aggregate number of civilians killed by police agencies (Smith, 2003, 2004). By using *The Post* data, we additionally examined two unique dependent variables that serve as indicators of threat perception failure. First, we examined whether civilians shot and killed by the police were attacking law enforcement or another civilian prior to their death. This variable was created using information collected by *The Post's* research team indicating the level of threat posed by civilians immediately before their demise. To gather this information, several members of *The Post's* research team reviewed each incident and attempted to reach consensus on whether an attack was in progress based on information ascertained from online news resources (e.g., news articles), statements made by public officials, and when necessary, phone calls to police officials. Specifically, the team collected data regarding whether civilians were (a) firing a gun at a person (police officers or other civilians), (b) attacking with nongun weapons, (c) pointing/brandishing a firearm, (d) posing other threats (e.g., brandishing a knife/sharp object, refusing to drop a nongun weapon, driving a vehicle at a person, or moving quickly/lunging toward an officer without a deadly weapon), (e) making furtive movements, (f) fleeing, or (g) accidentally shot by police.[11] These categories were hierarchical, such that the team members started with "firing

2016 for the collection and publication of its data. The newspaper has also committed to collecting data through 2016. See washingtonpost.com/graphics/2016/pulitzer-prize-winner-and-finalist/.

9. Other endeavors to collect data on persons killed by the police have been undertaken by *The Guardian's* "The Counted" project, as well as by killedbypolice.net and fatalencounters.org, both crowd-sourcing projects. Both sources include *all* deaths caused by both *on-* and *off-duty* police officers, including deaths that resulted from being struck by police vehicles, Tasers (Taser International Inc., Scottsdale, AZ), deaths in custody, firearms, and other actions by the police contributing to citizen deaths. Although these data sources provide a comprehensive picture of police-involved deaths, *The Post's* data are unique in that they only include cases in which citizens were killed by *on-duty* police officers who intended to use deadly force.

10. Although perceived threat level on the part of the officer involved is part of the equation to determine whether a shooting is justified, we are primarily limited to the information gleaned from news reports by *The Post's* research team. Note also that no data pertaining to the demographic characteristics of the officers involved in each shooting were compiled.

11. Although the behaviors included in item *d* certainly represent a threat to officers or others, we argue they do not constitute an attack. The threat posed is less imminent than are those behaviors in items *a* through *c*, and it is therefore feasible that officers may have been able to use less than lethal force in

a gun" and worked their way down, assigning the first category that applied to each incident. In a small number of cases, *The Post* could not reach consensus; these cases were deemed an undetermined threat level. For the present study, incidents were coded as an *attack* if, prior to their demise, civilians were firing a weapon at a person, attacking with nongun weapons, or pointing/brandishing a firearm. *Non-attack* is a dichotomous measure of whether an incident *did not* fit into one of these three categories (1 = *non-attack*, 0 = *attack*). Second, we examined whether civilians were armed with a deadly weapon at the time of their death. *The Post* coded civilians as armed when they were in possession of a firearm, knife, sharp object, or some other deadly weapon (e.g., blunt object). Based on this information, we operationalized *unarmed* as a dichotomous variable (1 = *unarmed*, 0 = *armed*).[12]

Independent Variables

Civilian Race/ethnicity. Our key independent variable was the race/ethnicity of civilians killed by the police. Mixed results concerning police officer bias have been produced when using single-agency data: evidence of implicit bias has been found by some researchers, whereby officers perceive minorities as a greater threat (Correll et al., 2002; Cox et al., 2014, Fridell and Lim, 2016; Payne, 2001), but others have pointed to a counter-bias effect whereby officers are more hesitant to use force against minorities (James et al., 2014; James, James, et al., 2016). To assess the relationship between race/ethnicity and our measures of threat perception failure (i.e., the dependent variables *non-attack* and *unarmed*), we created two dummy variables—*Black* and *Other race/ethnicity* (e.g., Hispanic/Latino, Asian, Pacific Islander, and Mixed)—with *White* serving as the reference category. Significant race effects would be indicative of implicit bias in fatal shootings by police officers in 2015.

Control Variables

We also included several control variables in our multivariate statistical models to maximize the likelihood of generating unbiased estimates. Control variables included in the analysis were grouped into three categories: (a) civilian characteristics, (b) city characteristics, and (c) agency characteristics.

Civilian Characteristics. We controlled for three civilian characteristics: civilian age, whether the civilian displayed signs of mental illness, and whether the civilian was armed/attacking the officer(s) or others.[13] *Age* was measured continuously, whereas *mental*

these situations. As an example, officers are discouraged from shooting into vehicles because of the dangerousness of doing so and the ease with which they could sidestep the vehicle in most scenarios. Yet just to be sure, we ran supplementary analyses whereby the cases included in item *d* were placed in the attack category. Results remained substantively the same even when correcting for potential small-sample bias and using multiple missing data imputation methods (available upon request).

12. Note that civilians who grabbed an officer's firearm were coded as armed.

13. That is, in the regression model where *unarmed* is the dependent variable, we control for whether the civilian was attacking the officer(s) or others. In the regression model where *non-attack* is the

illness was measured dichotomously (1 = displayed signs of mental illness). *Armed* (1 = yes) and *attack* (1 = yes) are also measured dichotomously.

City and Agency Characteristics. Based on the results presented in prior literature, we would expect police shootings to be impacted by regional characteristics, violent crime rates, the size of the city/jurisdiction, and agency characteristics (Smith, 2003, 2004). Accordingly, we controlled for UCR region with three dummy variables: *Northeast*, *Midwest*, and *West* (*South* serves as the reference category because of its larger population, higher levels of violent crime, and the role of race in its history). The violent crime rate per 100,000 residents for each jurisdiction was also obtained from the 2012 UCR[14] and was measured by using two dummy variables for *moderate crime* (1 = 25th to 74th percentile) and *high crime* (1 = 75th percentile or higher; *low crime* [below the 25th percentile] serves as the reference category).[15] With respect to jurisdiction size, *large city* was a dichotomous variable indicating that the jurisdiction had a population of 100,000 or more residents. Finally, we used data from the CSLLEA to control for agency size and whether an agency operated its own training academy. *Large agency* indicated that the officer involved in the shooting was employed by an agency with 1,000 or more full-time sworn police officers, and *In-house academy* (1 = yes) indicated that the involved officer's agency operates its own training academy (as these academies typically exceed state-mandated minimum hours, and the results of prior research have suggested officers who undergo more hours of training are less likely to use force; see Lim et al., 2014).

Analytic Strategy

Our analyses proceeded in two steps. First, to provide a comprehensive examination of civilian-, city-, and agency-level characteristics of all fatal shootings by police in 2015, we present descriptive univariate statistics. This descriptive analysis was critical because to the best of our knowledge this was the first study that used *The Washington Post* data to provide a baseline understanding of the characteristics surrounding incidents in which civilians were shot and killed by police. Second, because our measures of threat perception failure—*non-attack* and *unarmed*—are dichotomous, we estimated two multivariate logistic regression models using StataSE 14 (StataCorp, College Station, TX). These analyses allowed us to provide context to the most controversial police shootings—when civilians

dependent variable, we control for whether the civilian was armed. Note also that given the very small number of females present in the data, and consistent with reviewer recommendations, we elected not to control for gender.

14. Four UCR measures were used to create the violent crime rate variable: (1) robbery, (2) aggravated assault, (3) forcible rape, and (4) murder.

15. We realize this only allowed us to compare the 990 incidents to each other in terms of the various jurisdictional crime rates, but we think it provides useful information nonetheless, allowing us to determine whether, for example, civilians were more likely to attack officers or be armed in jurisdictions with higher rates of violent crime.

did not pose an imminent threat to law enforcement or others. We first examined whether race was associated with the likelihood of a civilian having *not attacked* the officer(s) or other civilian(s), net of control variables. Then, we estimated a second logistic model that regressed our race and control variables onto the *unarmed* dependent variable. In short, these analyses examined whether race was significantly associated with our measures of threat perception failure (as significant race effects would be suggestive of implicit bias), net of other theoretically important factors.[16]

After several diagnostic tests were conducted, no harmful levels of collinearity were found to be present in the multivariate models. First, all bivariate correlations fell below an absolute value of .70 (Tabachnick and Fidell, 2013). Second, all variance inflation factors from the multivariate models fell below 2.1, which was well below the recommended threshold of 4.0 (Tabachnick and Fidell, 2013). Finally, all condition indices fell below the recommended threshold of 30 (Mason and Perrault, 1991).

Results

The first step of our analysis was to provide an in-depth understanding of deadly police shootings on a national scale. Table 1 displays the characteristics of the 990 police fatal shootings that occurred in the United States in 2015.[17] Most civilians shot and killed were male (95.8%), White (50.0%), and between the ages of 25 and 34 (31.4%; mean = 36.7). Slightly less than half of these deadly shootings occurred in the South (42.8%). The overwhelming majority of civilians shot and killed were armed with a deadly weapon (82.4%),[18] but it should be noted that 93 civilians (or 9.4%) were unarmed. Nearly three fourths of these civilians were attacking the officer(s) or other civilians at the time of the deadly shooting—either firing a gun (27.7%), attacking officers without a gun (e.g., physically assaulting them, 15.7%), or pointing/brandishing a gun (30.4%). Less severe threats to officer/public safety included brandishing or refusing to drop nongun weapons (16.5%) and furtive movements (3.5%). A few civilians who were shot and killed were either fleeing (1.1%) or accidentally shot (0.7%). Approximately 1 in every 4 of these civilians displayed signs of mental illness.

Table 2 provides information about city- and agency-level characteristics of the deadly shootings. More than 700 different agencies were involved in at least one shooting, the

16. Similar to how prior studies were conducted (e.g., Legewie and Fagan, 2016; Smith, 2003, 2004), we employed listwise deletion to handle cases with missing race, UCR, and/or CSLLEA data, and as such, the sample was reduced to $N = 599$. Nevertheless, to check the robustness of our findings, we performed supplementary analyses—first using hot deck imputation (Myers, 2011) and again using multiple imputation with chained equations (White, Royston, and Wood, 2011). The results remained substantively the same and are available upon request.

17. The total was 990 as of February 15, 2016.

18. Note that 33 individuals in this category were in possession of a toy/replica firearm.

TABLE 1

Characteristics of All Civilians Involved in Fatal Police Shootings in 2015 (*N* = 990)

Characteristics	*n*	%
Civilian Gender		
Male	948	95.8
Female	42	4.2
Civilian Race		
White	495	50.0
Black	258	26.1
Other	210	21.2
Unknown	27	2.7
Civilian Age		
Younger than 18	18	1.8
18–24	163	16.5
25–34	311	31.4
35–44	210	21.2
45 or older	277	28.0
Unknown	11	1.1
UCR Region[a, b]		
Northeast	68	6.9
Midwest	136	13.7
South	424	42.8
West	362	36.6
Civilian Armed With		
Deadly weapon[c]	816	82.4
Vehicle	54	5.5
Unarmed	93	9.4
Unknown	27	2.7
Threat Level		
Firing a gun	274	27.7
Attacking with nongun weapons	155	15.7
Pointing/brandishing a gun	301	30.4
Other threats (e.g., brandishing knife, refusing to drop a weapon, driving vehicle at a person, or moving quickly toward an officer)	163	16.5
Furtive movement	35	3.5
Fleeing	11	1.1
Suspect accidentally shot	7	0.7
Undetermined	44	4.4
Civilian Showed Signs of Mental Illness		
Yes	248	25.0
No	742	75.0

[a]Note that there are 9 states in the Northeast, 12 in the Midwest, 18 in the South (including Washington, DC), and 13 in the West.
[b]The approximate population of each region according to 2012 U.S. Census Bureau estimates are as follows: Northeast, 55.8 million; Midwest, 67.3 million; South, 117.3 million; and West, 73.6 million.
[c]This category includes 33 individuals who were armed with a toy/replica gun.

TABLE 2

City- and Agency-Level Characteristics of Fatal Police Shootings in 2015 (*N* = 990)

Characteristics	*n*	%
Agency Type		
Municipal	601	60.7
Sheriff	227	22.9
State	44	4.4
Federal	14	1.4
Multiple agencies	82	8.3
Other	16	1.6
Unknown	6	0.6
Crime Rate		
High	176	17.8
Moderate	331	33.4
Low	170	17.2
UCR data not available	313	31.6
Jurisdiction Size		
100,000 or more residents	413	41.7
Fewer than 100,000 residents	292	29.5
UCR data not available	285	28.8
Agency Size		
1,000 or more full-time officers	259	26.2
Fewer than 1,000 full-time officers	676	68.3
CSLLEA data not available	55	5.6
Agency Operates Its Own Basic Training Academy		
Yes	406	41.0
No	520	52.5
CSLLEA data not available	64	6.5

majority of which were municipal agencies (60.7%).[19] Slightly more than 25% of the 990 deadly shootings involved officers working for agencies that employ 1,000 or more full-time officers, whereas 43.8% involved officers employed by agencies that operate their own basic training academy. Almost 60% of fatal shootings in 2015 occurred in a jurisdiction with 100,000 or more residents. Finally, as mentioned, we split the shootings into three categories based on their crime rate according to the 2012 UCR. Roughly 18% of the deadly shootings involved officers employed in jurisdictions with *high crime,* whereas about 33% and 17% involved officers employed in jurisdictions with *moderate* and *low crime*, respectively.

19. Note that many agencies were involved in multiple deadly shootings (e.g., the Los Angeles Police Department was involved in 21 over the course of the year).

TABLE 3

Cross-Tabulations of Citizen Race With Armed/Unarmed and Attack/Non-attack[a]

Variable	White	Black	Other	Total
Armed	463	220	187	870
Unarmed	32	38	23	93
Total	**495**	**258**	**210**	**963**
Attack	395	183	131	709
Non-attack	83	63	66	212
Undetermined[b]	17	12	13	42
Total	**495**	**258**	**210**	**963**

[a] Twenty-seven cases are excluded from this table because of missing race information.
[b] Cases involving an undetermined threat level were excluded from multivariate regression models.

The next step of our analysis was to determine whether the data provided evidence of implicit bias. Table 3 provides a closer look at the intersection of race and (a) whether the civilian was armed or unarmed and (b) whether the civilian was attacking the officer/other civilians. Fifteen percent of Black civilians shot and killed by police last year were unarmed at the time of their death (Phi coefficient [φ] = .10, $p < .01$) compared with 6% of White civilians ($\varphi = .11$, $p < .01$) and 11% of other civilians ($\varphi = .02$, $p = .47$). In fact, although roughly twice as many White civilians died by police gunfire as Black civilians (495 vs. 258), *more unarmed Black civilians (38) were shot and killed than unarmed White civilians (32).* Similar findings emerged with respect to threat level: 24% of Black civilians ($\varphi = .04$, $p = .25$) and 31% of civilians from other racial/ethnic groups ($\varphi = .13$, $p < .01$) were *not* attacking the officer(s) or other civilians, whereas the same was true of approximately 17% of White civilians ($\varphi = .14$, $p < .01$). These simplistic findings provided preliminary evidence of an implicit bias effect, but they did not permit us to rule out the potential confounding influence of other relevant variables.

Accordingly, we next used multivariate regression models to predict our two measures of threat perception failure (see Table 4 for descriptive statistics of all variables used in this analysis).[20] Table 5 presents the results from a logistic model that regressed *non-attack* onto our two race variables along with 11 control variables that accounted for the potential confounding influences of whether the civilian was armed, age, mental illness, region, crime, size of jurisdiction, size of agency, and the officer involved was employed by an agency that operates its own basic training academy. The model was statistically significant (Wald $\chi^2 = 133.05$, $p < .01$) and helped explain roughly 11% of the variance in the outcome. In terms of race/ethnicity, civilians from other racial/ethnic groups were significantly *more* likely than

20. Note that 44 cases deemed "undetermined threat" were excluded from these analyses.

TABLE 4

Descriptive Statistics For Variables Used in Regression Equations ($N = 599$)

Variable	Mean	SD	Min	Max
Dependent Variables				
Non-attack	.26	—	0	1
Unarmed	.09	—	0	1
Independent Variables				
Black	.29	—	0	1
Other race	.25	—	0	1
Controls				
Armed[a]	.91	—	0	1
Attack[b]	.74	—	0	1
Age	35.7	12.3	15	83
Mental illness	.26	—	0	1
Northeast	.07	—	0	1
Midwest	.12	—	0	1
West	.41	—	0	1
High crime	.25	—	0	1
Moderate crime	.50	—	0	1
Large city	.60	—	0	1
Large agency	.33	—	0	1
In-house basic	.50	—	0	1

Notes. Max = maximum; min = minimum; SD = standard deviation.
[a]This variable is only used as a control in the regression model predicting *non-attack*.
[b]This variable is only used as a control in the regression model predicting *unarmed*.

Whites to have been in the *non-attack* group ($b = .81$, $p < .01$). The odds ratio reveals they were a little more than twice as likely as White civilians to have *not* been attacking the officer(s) or other civilians. The *Black* coefficient is positive but statistically nonsignificant, which means Black civilians were no more or less likely than White civilians to have been attacking the officer(s) or other civilians when they were fatally shot by police. These results provide support for an implicit bias effect with respect to non-Black minority groups. That is, civilians of other races/ethnicities were significantly more likely than Whites to have been fatally shot because of an apparent threat perception failure.

Our final multivariate analysis explored the factors associated with civilians having been unarmed at the time they were shot and killed by the police. Table 6 presents the results from a logistic model that regressed *unarmed* onto the race variables along with several controls. The model as a whole was statistically significant (Wald $\chi^2 = 115.86$, $p < .01$) and explained roughly 19% of the variance in the outcome. Black civilians ($b = .88$, $p < .10$) were significantly *more* likely than White civilians to have been unarmed when they were shot and killed by police, net of other factors. Indeed, the odds ratio indicates that Black civilians who died by police gunfire were more than twice as likely as Whites to have

TABLE 5

Logistic Regression Model Predicting Whether Fatally Shot Civilian Was *Not* Attacking the Officer(s) or Other Individuals

	Not Attacking		
Variable	***b***	**SE**	**OR**
Black	.36	.24	1.43
Other	.81***	.25	2.26
Armed	−2.23***	.47	.11
Age	.01	.01	1.01
Mental illness	.63***	.19	1.88
Northeast	−.27	.26	.77
Midwest	−.07	.33	.94
West	.11	.22	1.12
High crime	−.60	.43	.55
Moderate crime	−.51**	.21	.60
Large city	.14	.44	1.15
Large agency	.18	.31	1.20
In-house basic	.11	.38	1.12
Intercept	.21	.59	—
N		599	
Wald χ^2		133.05***	
McFadden's R^2		.11	

Notes. Entries are unstandardized regression coefficients (*b*), robust standard errors (SE) adjusted for clusters in 48 states, and odds ratios (OR).
** $p < .05$. *** $p < .01$.

been unarmed, holding all else constant.[21] This is further evidence of implicit bias as race was again significantly associated with one of our indicators of threat perception failure.

Discussion

Police use of force, particularly deadly force, has again moved to the forefront of national debate on police practices. In the wake of controversial killings of unarmed Black civilians (e.g., Michael Brown, Freddie Gray, and Philando Castile, to name a few), awareness groups such as Black Lives Matter and Campaign Zero have been formed by activists who allege that minorities are more likely than Whites to be victims of unjust police force. Their suppositions claim the police are overtly prejudiced against minority groups, that minorities

21. An anonymous reviewer pointed out that our regression model predicting *unarmed* may suffer from small-sample bias (i.e., a small number of cases in the "unarmed" category). We re-ran this model using *firthlogit* (available in Stata 14), a penalized maximum likelihood estimation method that has been shown to reduce small-sample bias (Firth, 1993; Heinze and Schemper, 2002). The results were substantively unchanged; Black civilians remained significantly more likely than White civilians to have been unarmed prior to their demise. The results of this analysis are available upon request.

TABLE 6

Logistic Regression Model Predicting Whether Fatally Shot Civilian Was Unarmed

	Unarmed		
Variable	***b***	**SE**	**OR**
Black	.88*	.46	2.41
Other	.11	.50	1.12
Attack	−2.27**	.47	.10
Age	−.02	.01	.98
Mental illness	−.40	.38	.67
Northeast	.19	.67	1.20
Midwest	.62	.48	1.85
West	.08	.52	1.09
High crime	.28	.42	1.33
Moderate crime	.56*	.34	1.76
Large city	−.17	.66	.84
Large agency	−.35	.40	.70
In-house basic	.40	.47	1.50
Intercept	−1.10	.67	—
N		599	
Wald χ^2		115.86***	
McFadden's R^2		.19	

Note. Entries are unstandardized regression coefficients (*b*), robust standard errors (SE) adjusted for clusters in 48 states, and odds ratios (OR).
*$p < .10$. **$p < .05$. ***$p < .01$.

are overrepresented in criminal activity or in areas that receive saturated levels of police patrol, or perhaps that police are biased against minorities. Unfortunately, the results of empirical research on police use of deadly force at the national level have been plagued by unreliable data, leaving us unable to assess accurately how often the police shoot and kill civilians, and whether minorities are unjustly killed by police at a higher rate than Whites. These issues were examined in the present study by using data collected by *The Washington Post* on all civilians who were shot and killed by police officers in 2015. Some of the findings warrant further discussion.

The Post's data indicate that 990 civilians were shot and killed by police officers in the line of duty last year. According to the U.S. Bureau of Justice Statistics, the police make contact with more than 40 million people each year. Out of these contacts, police force (or threatened force) is used in less than 2% of these interactions (Eith and Durose, 2011). Moreover, most use-of-force incidents do not result in a death even when police officers fire their guns (Alpert, 1989; Klinger, 2012b; Klinger et al., 2015). Thus, civilian deaths caused by police officers are extremely rare based on the overall number of police–civilian encounters. Additionally, as shown in the current analysis, most civilians killed by police

were armed with a deadly weapon or were actively attacking officers. Less than 10% ($N = 93$) of civilians shot and killed by police in 2015 were unarmed.

Mainstream media and advocacy groups, most notably Black Lives Matter and Campaign Zero, have alleged that police disproportionately use force and deadly force against minorities. *The Post* data showed that police killed almost twice as many Whites as Blacks; nevertheless, this is expected as Whites far outnumber Blacks in the U.S. population. In an effort to standardize these numbers, *The Guardian* divides the number of White and Black civilians killed by their respective population count. Presenting the number in this manner suggests that Blacks were killed at more than twice the rate of Whites in 2015 (7.2 per million to 2.9 per million, respectively). Similarly, *The Washington Post* recently stated, "When adjusted by population, [unarmed Black men] were seven times as likely as unarmed White men to die from police gunfire" (Lowery, 2016). We caution against using population as a benchmark because it does not account for each groups' representation in a variety of more relevant measures, including police–civilian interactions and crime. The use of self-report data in criminological research has resulted in the finding that Black citizens offend at higher rates (Blumstein, Cohen, Roth, and Visher, 1986; Loeber et al., 2015) and are overrepresented in citizen complaints/calls for service (Engel, Smith, and Cullen, 2012), police stops (Novak, 2004), and arrests (Brame, Bushway, Paternoster, and Turner, 2014; Kochel, Wilson, and Mastrofski, 2011). These and related benchmarks can be used to clarify the representation of minority deaths at the hands of police.

To this point, we echo the sentiments of scholars who have argued that a national use-of-force database is needed to examine these issues (Alpert, 2015a, 2015b; Klinger, 2012b; Klinger et al., 2015). Not just force that has resulted in death, which is what *The Post* and *The Guardian* have provided, but *all use-of-force incidents*. Collecting these data would contribute to a more informed discussion about whether the police disproportionately use force against minorities in all contexts. Recently, the FBI announced that it will begin compiling data similar to *The Post* and *The Guardian* databases, but we argue it should take the next step and track all use-of-force incidents. Furthermore, the FBI should not only collect offender characteristics but officer characteristics as well (e.g., race, age, gender, rank, education, and complaint history). Yet agencies have historically been reluctant to make their use-of-force data public, despite criminologists imploring them to do so for decades. Perhaps police leaders and politicians are concerned about the backlash that could result if their data uncover evidence of bias or excessive force. Whatever the case may be, the federal government may need to provide funding incentives to increase participation. Without more comprehensive data, we simply cannot determine whether the police disproportionately use force against minorities on a national scale.

Although we were limited to the 990 police shootings that resulted in death, we were able to analyze the data for evidence of implicit bias. Our findings showed that citizens in the *other* racial/ethnic group were significantly more likely than Whites to have *not* been attacking the officer(s) or other civilians and that Blacks were more than twice as likely as

Whites to have been unarmed when they were shot and killed by police. These findings suggest evidence of implicit bias in real-world scenarios. In line with previous police shooting simulation studies (see Correll et al., 2002; Cox et al., 2014; Payne, 2001), it seems that officers may have been more likely to experience threat perception failures in fatal shootings that involved minority civilians. That is, officers subconsciously perceived minority civilians to have been a greater threat than they were (Fachner and Carter, 2015).

Our results have several relevant implications for policy and practice (for excellent reviews, see Fridell, 2016; James, Fridell, and Straub, 2016; Spencer, Charbonneau, and Glaser, 2016). Although it might seem difficult or even impossible to overcome prejudices that operate on a subconscious level, agencies can potentially reduce bias in several different ways, including, for example, intergroup contact (Allport, 1954). Reducing bias through contact requires that groups cooperate; have equal status and similar goals; and have the support of authorities, laws, or customs. Pettigrew and Tropp (2006), in a recent meta-analysis, provided strong evidence that intergroup contact can reduce prejudice—94% of the 696 samples they examined showed "an inverse relationship between intergroup contact and prejudice" (p. 766). Thus, police agencies might regularly sponsor activities that put the police in direct, *positive* contact with citizens, such as citizen–police softball tournaments or neighborhood block parties, which would permit officers to interact with minority citizens in an informal atmosphere. Alpert and Dunham (1998) suggested such a program, called Neighborhood Intervention and Community Evaluation (Miami NICE), in the late 1980s to help heal the wounds from civil disturbances (see also Duda, Klofas, and Drake, 2011). Community policing activities such as these are often viewed as a means of increasing citizen satisfaction, yet they have the added benefit of exposing officers to citizens *not* engaged in deviance. Relatedly, bias can be reduced via exposure to counter-stereotypic exemplars. Park and Glaser (2011), for example, found that after officers performed a modified shooting simulation that involved more armed White targets and unarmed Black targets, they demonstrated less bias on subsequent simulations. Finally, agencies could consider having their officers practice stereotype negation, which simply involves saying "no" in response to words or phrases consistent with racial stereotypes (e.g., "Black citizens are dangerous") and "yes" to words or phrases *inconsistent* with racial stereotypes (Kawakami, Dovidio, Moll, Hermsen, and Russin, 2000).

Agencies would also be wise to implement procedural justice training for their officers as researchers have consistently demonstrated that procedural justice is key to establishing trust and legitimacy in the eyes of the public (see, e.g., Jackson, Bradford, Stanko, and Hohl, 2012; Nix, Wolfe, Rojek, and Kaminski, 2015; Tyler, 1990; Wolfe, Nix, Kaminski, and Rojek, 2016). When citizens view the police as a legitimate authority, they are more likely to exhibit compliant behaviors (Murphy, Tyler, and Curtis, 2009; Papachristos, Meares, and Fagan, 2012), cooperate (Jackson et al., 2012), and accept police decisions in both the short (Tyler and Huo, 2002) and the long term (Tyler, Sherman, Strang, Barnes, and Woods, 2007). Every police–citizen interaction represents a teachable moment for both parties,

whereby citizens will judge how fairly they have been treated and officers will interpret citizens' responses to their actions (Bottoms and Tankebe, 2012; Tyler, 2011). Thus, it is imperative that the police emphasize procedural justice at every possible juncture. Indeed, many situations that escalate into the use of deadly force could perhaps be defused through procedural justice. For example, Owens, Weisburd, Alpert, and Amendola (2016) recently conducted an experiment in which they successfully implemented a low-cost procedural justice–centered training of officers in Seattle. Results indicated that trained officers were less likely to resolve incidents with arrest or force. Other results from research carried out in Greater Manchester suggested that officers who received procedural justice training reported more favorable attitudes toward using procedural justice in the field and subsequently had improved interactions with citizens (Wheller, Quinton, Fildes, and Mills, 2013). It is feasible that increased usage of procedural justice in the field could reduce the number of fatal encounters between officers and the public in the long term.

Departments could also benefit from adopting body-worn cameras (BWCs; Jennings, Fridell, and Lynch, 2014; Katz, Choate, Ready, and Nuňo, 2014). BWCs increase police transparency and legitimacy in the public eye, with some researchers suggesting that officers believe BWCs would improve their interactions with civilians (see Jennings et al., 2014). Indeed, by using a randomized controlled trial conducted in the Rialto Police Department, researchers demonstrated that officers wearing BWCs were less likely to use force against citizens and less likely to have complaints filed against them than were officers not equipped with BWCs (Ariel, Farrar, and Sutherland, 2015). Body-worn camera footage furthermore affords police agencies the opportunity to tell their side of the story after use-of-force incidents and review cases when complaints are lodged by citizens. As such, BWCs could aid in the development and maintenance of early warning systems meant to flag problematic behavior by officers (Walker, Alpert, and Kenney, 2000). Although there are certainly barriers to outfitting officers with BWCs, not the least of which are the costs associated with storing video footage and the fact that the footage is often limited, police leaders may find them a helpful tool in reducing/removing bias from within their ranks.

Limitations

This study is not without limitations. Most importantly, we only had data for the 990 police shooting incidents *that resulted in death*. It would be ideal to have national data on use-of-force incidents that did not result in death as well, as prior studies have suggested that civilian death only occurs in 15% to 25% of all police shootings (see, e.g., Klinger et al., 2015). With these data, we could more accurately assess whether deadly force is disproportionately used against Blacks, and we could more accurately determine whether implicit bias occurs in real-world police–civilian interactions. Additionally, we were only able to analyze data for a 1-year period. Future research would benefit from longitudinal data to assess police shooting trends over longer periods. This is especially important considering that 2015 was a period of great turmoil in American policing and might prove to be an

outlier over a more extended timeframe. Note, however, that Williams et al. (2016) recently suggested that annual totals of fatal police shootings have remained stable over the last 5 years. In any event, given the national debate currently surrounding police shootings, it was imperative to analyze the first year of *The Post's* data objectively to shed light on any apparent racial disparities. Finally, although we were able to control for the influence of several relevant variables, we could not account for everything as evidenced by the modest amount of variance explained by our regression models. For example, suspect death can be influenced by factors such as departmental policy on rendering lifesaving aid or the proximity of level-one trauma centers (Giacopassi, Sparger, and Stein, 1992; Hanke and Gundlach, 1995; MacKenzie et al., 2006). Yet without national data on nonfatal police shootings, we cannot determine whether the observed race effects would be washed away by the inclusion of these other variables.

Conclusion

Our analysis has contributed to an understanding of the extent to which civilians were fatally shot and killed by police in the U.S. in 2015, as well as to an understanding of the extent to which race was associated with two measures of threat perception failure: having *not* been attacking the police or other citizens and having been unarmed prior to being fatally shot. Flawed data have limited the empirical study of police deadly use of force at the national level for far too long. News media outlets have provided us with more accurate data on these incidents than has the research community. Nevertheless, more is needed to provide reliable and generalizable analyses of police-involved shootings. Fortunately, it seems that we are making steps in the right direction, and this study and the data from *The Washington Post* serve as baseline analyses for future research on civilians killed by police.

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