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## Re(Searching) the Truth About Our Criminal Justice System: Some Challenges

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## Re(searching) the Truth About Our Criminal Justice System: Some Challenges<sup>1</sup>

Janet M. Ruane<sup>2</sup>

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*This article considers the current face-off between “facts vs. alternative facts” as it relates to research on lethal encounters between police and minority citizens. I begin by reviewing major measurement challenges for those studying lethal police shootings and potential improvements for how we document police shootings. I also consider the increasing reliance on use of body cams and surveillance videos for what they may (or may not) bring to improving documentation of police/citizen encounters. Next I address a larger issue that provides the context for the “facts vs. alternative facts” dilemma: science’s loss of standing as the recognized superior way of knowing about the world. Growing distrust in science, special interest research, paradigm shifts, and science illiteracy are all considered as reasons for the slippage of science as a credible knowledge source. Additionally, key traits of science (i.e., its inherent skepticism and tentative stance) may actually support the all-too-popular view that science no longer has an edge in producing valid and reliable information. I make a case for the need to reform what some see as a broken culture of science and for social researchers to commit to a serious agenda of replication of studies and findings.*

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**KEY WORDS:** crowd-sourced data collection; culture of science; failure to replicate; FBI’s Supplementary Homicide Reports (SHR); vested interest research; video surveillance.

### INTRODUCTION

We are living in interesting but also disturbing times. Jeffrey Goldberg, editor of *The Atlantic*, recently noted the public’s current albeit unusual relationship with the truth, one where demonstrable lies are nonetheless accepted by some, even many, as true. To be sure, we have just come off a presidential campaign where candidate lies did not “move the needle” with their supporters—truth was whatever the candidate claimed. This new “alternative facts” reality has not faded in the months since the inauguration. Indeed, in the first 100+ days of the Trump presidency, the discussion of “fake news” and its impact on the 2016 election as well as the ongoing investigations into Russian influence on the 2016 elections have been embraced by many with a notable sense of urgency. If we are at a point where we think everyone is entitled to their own “facts,” then the difference between facts and propaganda becomes very problematic.

<sup>1</sup> *Editor’s Note:* This article is part of a special issue of *Sociological Forum* titled, “Whose Lives Matter? Violence, Social Control, and the Racial Divide.” For other articles featured in the issue, see Auyero and Sobering (2017), Carter, Parker, and Zaykowski (2017), Cerulo (2017), Henricks and Harvey (2017), LeCount (2017), Ray, Marsh, and Powelson (2017), Roschelle (2017), Scarborough (2017), Sewell (2017), Sykes, Piquero, and Gioviano (2017), and Torres, Cannito-Coville, and Rodriguez (2017).

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Our current truth predicament is arguably at the heart of the present crisis in our criminal justice system. This is a crisis fueled by all-too-frequent lethal encounters between police and minority citizens and the accompanying narratives about who is at fault and whose lives really matter. In the final days of September 2016, the country watched a video of a Tulsa, Oklahoma, motorist, Terence Crutcher, being tasered, shot, and killed while his hands were raised and he stood alongside his stalled vehicle. The officer who shot Crutcher thought the victim was reaching for a gun, but no gun was found in the car.<sup>3</sup> The day after the Oklahoma shooting, Americans learned of yet another shooting of a black motorist in Charlotte, North Carolina. Again, two different “truth” narratives emerged. Keith Lamont Scott was waiting in his car to pick up his son at a school bus stop. Police claimed that the victim was carrying a gun (in an open-carry state) and that he failed to respond to police orders to drop the gun. The victim’s family says that Scott did not own a gun, and witnesses said the victim was holding a book. Scott was fatally shot as he slowly backed away from his car. Following the Scott shooting, there were three nights of protests in Charlotte.<sup>4</sup> As these two back-to-back incidents show, claims about the truth of shootings are often at odds.

These shootings followed on the heels of other widely covered shootings that occurred over the summer of 2016. In July 2016, local police stopped Philando Castile for a broken taillight. Castile informed the police that he had a concealed weapon permit and was carrying a gun. He was shot by an officer as he reached for his wallet. Cell phone video footage of the shooting (recorded by the victim’s fiancée) was nationally aired. This killing followed one day after another controversial shooting in Louisiana. In Baton Rouge, Alton Sterling was fatally shot by police who were responding to a 911 call about a man with a gun. Sterling was known in the community for selling CDs outside of a convenience store. Once again, video of the shooting emerged and quickly spread across media sites. The video showed police officers on top of a restrained Sterling before the fatal shooting. These two back-to-back shootings prompted many protests across the nation, including a rally in Dallas, Texas. While the Dallas rally started out as a peaceful, even friendly, event (police and civilians were shown in friendly conversational exchange and some were snapping photos together), it took a tragic turn when five Dallas police officers were killed by a lone assassin. During a long standoff with the police, the Dallas shooter said his killing of the Dallas officers was in response to the earlier lethal encounters between the police and Alton Sterling and Philando Castile.

The Dallas shootings galvanized the nation and prompted a presidential response. In his address at the memorial for the victims of the Dallas shootings, President Obama spoke of our knowing certain things to be “true”—that is, that our nation is not as divided as it seems, that police work under difficult circumstances, and that racial bias still exists in some Americans’ hearts, minds, and

<sup>3</sup> The officer who killed Crutcher was later charged with manslaughter but was acquitted of the charges in May 2017.

<sup>4</sup> In December 2016, the local district attorney announced that no charges would be brought against the officer who shot Scott after it was determined that Scott did indeed have a gun and failed to comply with police orders to drop the weapon.

actions. Despite the president's eloquent reflections on what we "know," there is a clear divide over what people hold to be true. What we "know" to be "true" seems to be more problematic than President Obama's words would suggest. The ensuing debate over whose lives matter reveals a profound gap between those who feel justified in the call for social justice reform and those who want protestors to stop their charges of racial injustice.<sup>5</sup> Protestors of police actions and defenders of police action each "know" different things to be true. This point is not surprising to those who understand how significant perception and context are to what we see and how we react to the world around us. But surely, there must be some "corrective" lens we can use to bring us closer to the actual truth.

### *Science to the Rescue?*

Historically, the corrective lens that has aided our search for truth has often taken the form of sound scientific research. Faced with "truth" battles, science has often (albeit slowly) won the day when we have been faced with conflicting traditional or authoritative or commonsense notions of what we know to be true. Conflicts regarding the sun- versus earth-centered view of the universe, conflicts about the age of the universe, about the causes of stomach ulcers, and about the harmful effects of aerosol CFCs on the ozone have all been resolved by convincing scientific evidence. And so as we search for the truth with regard to what we know about police violence vis-à-vis minorities, we might expect that empirical data and scientific research on the topic will help us find the truth.

Not surprisingly, then, in the aftermath of the Dallas shootings, many media outlets turned to formal research for some "truth" about police killings. For instance, a working paper by Legewie and Fagan (2016) was circulated. This study found that police-involved killings of blacks but not non-Hispanic whites are higher in cities characterized by ethnic/racial polarization. The Legewie and Fagan study also found the black-on-white crime rate to be a significant predictor of police shootings. A study by Ross (2015) also received media attention in the days after the Dallas shooting. Ross's study also found empirical evidence of racial bias in police shootings: unarmed black Americans are about 3.5 times more likely to be shot by the police than their unarmed white counterparts while armed blacks are nearly three times more likely to be shot than armed whites. In this same period, however, another study by Harvard economist Roland Fryer (2016) questioned the accuracy of findings that suggest racial motivations were driving police shootings. This study was featured in the *New York Times* and received attention on some of the morning news/talk shows. Fryer's research found evidence of racial bias in non-lethal police encounters but no evidence of racial bias in police shootings per se. A few weeks after the Dallas shootings, a study by Miller et al. (2016) was featured by

<sup>5</sup> The day after the Dallas shootings, Texas lieutenant governor Dan Patrick offered that those with big mouths caused the Dallas attack on police. Former congressman Joe Walsh advised Black Lives Matter "punks" (as well as President Obama) to watch out as real America would be coming after them for all of their "hatin' on cops." He also asserted that claims of racial injustice at the hands of the police only serve to hurt the cause of equality.

several media outlets. This study also concluded that minorities are no more likely than whites to be killed or injured during police stops.

As these studies show us, turning to research does not yet provide the resolution we might hope for on the question of police misconduct. Instead, turning to the data for a sure path to the truth turns out to be quite challenging for several reasons. To start, “doing science” can be messy and complicated; it is not the neat endeavor depicted in many texts on research methods. One major source of complication is tied to the central task of science: developing accurate and reliable measures needed for answering research questions. Science depends on measurement—if measurement is impossible, so too is the scientific enterprise. Until very recently, researchers wanting to conduct research on police shootings have been faced with a major obstacle to such research: inadequate data sources for documenting lethal police force. Researchers have had to rely on government data sources that came up “short” on accuracy and reliability. For instance, many studies of police violence have relied on the FBI’s Supplementary Homicide Reports (SHR) for documenting police killings. The SHR is an optional report that can be submitted along with Uniform Crime Reports (UCR) data. Like the UCR data, the SHR is based on *voluntary* police-generated reports. The SHR is criticized for offering a narrow view of officer-involved deaths (it offers only data on justifiable police homicides) and for its lack of “incident-based” details (i.e., it does not indicate whether victims were armed at the time of the incident). Critics of the SHR data maintain that it seriously underreports police involved deaths—that is, those estimating the underreporting of police shootings maintained that the SHR reflects only 30%–50% of all such incidents (Banks et al. 2015; Klinger et al. 2015; Williams, Bowman, and Jung 2016).<sup>6</sup> Perhaps not surprisingly, studies utilizing this limited database have reached varying results, with some finding that lethal police shootings are related to race and others finding that race does not matter (Collins 2016a; Klinger et al. 2015).

The other major source of government data about homicides is provided by the Centers for Disease Control and Prevention (CDC). The CDC maintains the National Vital Statistics System’s (NVSS’s) Fatal Injury Reports—a program that is legally responsible for reporting mortality statistics (U.S. Department of Justice 2014). Unlike the SHR, the NVSS report is based on *mandatory* filings by state vital statistics registration systems. Using information from filed death certificates, the NVSS data offer basic demographic data about the deceased (age, race, ethnicity, marital status, etc.) as well as information on the causes of death and nature of injuries. In general, the NVSS reports more homicides than are recorded by the SHR (reflecting the impact of mandatory vs voluntary reporting by the respective agencies). But for those studying lethal police encounters with citizens, NVSS data have a key limitation given the fact that they do not include details about perpetrators of homicides.

<sup>6</sup> In 2015, former Federal Bureau of Investigation (FBI) director James Comey said this about the state of tracking police/citizen violence: “The FBI tracks and publishes the number of ‘justifiable homicides’ reported by police departments. But, again, reporting by police departments is voluntary and not all departments participate. That means we cannot fully track the number of incidents in which force is used by police, or against police, including non-fatal encounters, which are not reported at all” (Comey 2015).

The CDC also maintains another database that is relevant to police violence: the National Violent Death Reporting System (NVDRS). Created in 2002, the NVDRS culls information from multiple sources (medical examiners, coroners, law enforcement agencies, crime labs, and vital statistics records) to provide more details about a range of violent deaths (homicides and suicides as well as deaths by undetermined intent). While the NVDRS offers more comprehensive information than other databanks, it has yet to meet its goal of providing data for all 50 states (CDC 2016).

### *Improving Documentation—Expanded Data Resources*

These imperfect data resources have meant that researchers wanting to do more thorough analysis of police shootings needed to work on assembling new, more complete data sets for documenting police/citizen violence. In 2015, then FBI director James Comey acknowledged the problem of understanding police citizen violence given the lack of reliable data sources: “How can we address concerns about ‘use of force,’ how can we address concerns about officer-involved shootings if we do not have a reliable grasp on the demographics and circumstances of those incidents? We simply must improve the way we collect and analyze data to see the true nature of what’s happening in all of our communities” (Comey 2015). Consequently, in recent years we have seen efforts to assemble more complete databases that supplement official statistics with more innovative crowd-sourcing and Internet search techniques for “counting” or documenting lethal police-citizen encounters.

*Crowd-Sourcing Databases* Today, researchers can utilize the Fatalencounters.org database which was initiated by a journalist, D. Brian Burghart, who was incredulous that no national database on police violence existed. Burghart took steps to fill this data gap with his innovative crowd-sourcing and Internet searching technique. His work produced a much higher count of lethal police encounters and prompted other groups to follow suit (e.g., *The Guardian*’s The Counted, the Killed by Police database). These new data sources clearly highlight the need for and importance of better data collection strategies as they document counts of police violence that far exceed the counts offered by more traditional sources (Kaste 2016). Consider, for instance, that between 2003 and 2007, the Bureau of Justice Statistics (BJS) reported an average of 688 people dying each year while being arrested by police. But the Fatal Encounters database puts the count of fatal police shootings at 991 for 2015 and 963 for 2016 (*Washington Post* 2016).

The good news is that new “crowd-sourcing” counting techniques are now part of official counting strategies of the BJS. In 2015, the bureau redesigned the Arrest-Related Deaths (ARD) program and adopted a new two-phase data collection technique to combat the underreporting of earlier ARD statistics. In the first phase of data collection, BJS reviews open-source information (news outlets and agency documents). In the second phase, the BJS surveys law enforcement agencies and medical examiners/coroners to confirm ARD. For a three-month period (June–August 2015), the revamped ARD count identified 425 ARD—12% more than the numbers

produced by other open-source reviews. For a 12-month period, the BJS estimated 1,900 arrest-related deaths for 2015 (this count includes homicides, suicides, accidents, and medical conditions) (Banks et al. 2016).

In addition to crowd-sourcing techniques, efforts are also being made to find alternate, non-law enforcement data sources for documenting injurious and lethal encounters with the police—sources that are outside the efforts and statistics of law enforcement agencies and the BJS. In their study of police shootings, Ted Miller and his colleagues at the Pacific Institute for Research and Evaluation relied on data from a Department of Health and Human Services initiative (Healthcare Cost and Utilization Project), designed to help policy researchers improve our health-care system (Collins 2016b). Using diagnostic injury codes, Miller and his colleagues estimated that in 2012, roughly 54,000 were injured to the point of needing hospital treatment and more than 1,000 were killed in legal police intervention incidents.

With a new commitment to collecting better data on police shootings, we will no doubt start seeing reports that are providing a corrective lens on police shootings. Consider, for instance, the BJS preliminary report in December 2016 that estimates the count of arrest-related deaths at just under 2,000 for the year 2015. Of these estimated arrest-related deaths, 64% were classified as homicides, 18% as suicides, and 11% as accidents. Still no demographic information about these deaths was provided in this most recent report (Banks et al. 2016). The new expanded, crowd-sourced databases will support detailed analysis of both perpetrators and victims, as well as about the context of police violence (Hirschfield 2015; Hughey 2016; Rosenfeld 2016; Ross 2016). And so we are now seeing studies that link police force to core American values of self-reliance and individual moral responsibility, to ethnic/racial polarization, and black-on-white crime and other correlates to help us “situate” and better understand the dynamics of lethal exchanges (Hirschfield 2015; Legewie and Fagan 2016).

*Video Documentation* There are other developments that *should* further assist in the accurate documentation of fatal encounters with the police. Consider, for instance, the rapid growth in surveillance technology. Law enforcement agencies currently have a wide range of surveillance options ranging from ubiquitous traffic intersection cameras to police cars equipped with automatic license plate readers and dash cams to officers outfitted with body cams and even to the use of surveillance drones (Wheeler 2016). At first glance, the benefits of surveillance technology seem obvious and positive. Street surveillance cameras led to a quick arrest in the September 2016 pressure cooker bombing in the Chelsea section of New York City and street cameras captured the images of the Tsarnaev brothers as they left explosive devices along the Boston Marathon route in 2013. Support for increasing the use of the body cam and dash cams is tied to the belief that these devices will increase transparency in police-citizen encounters.<sup>7</sup> In the aftermath of the Michael Brown killing in 2014, the U.S. Department of Justice pledged \$20 million to police agencies for purchasing up to 50,000 body cameras, and again in 2016 the department awarded

<sup>7</sup> One recent study utilizing experimental design to assess the impact of body cams in a California police department found a marked decrease in police use of force in the group of officers wearing body cams (Ariel, Farrar, and Sutherland 2015).



yet another \$20 million grant (BBC News 2016; Phippen 2016). And so while a 2013 National Institute of Justice study found that 75% of departments *did not use* body cameras (NIJ 2016), a 2015 survey conducted by the Major Cities Chiefs Association and Major County Sheriffs' Association found that 95% of responding departments were committed to or had already implemented body cam technology (Maciag 2016).

To be sure, we have high expectations of the benefits of video evidence for discerning the truth of police-citizen encounters. Still the mere presence or use of surveillance technology does not offer a quick or sure fix for documenting police-citizen encounters. Videos do not necessarily tell the whole story if for no other reason than critical events often occur "off camera." And while we might all "see" the same video, the "confirmation bias" guarantees that we may well differ in our interpretations of what we see (McEvers 2017). Consider also that there is no standard policy regarding use of or access to police videos. The decisions about what kind of encounters should be videotaped, the sanctions for "failure to record," the length of time for tape storage, and public access to tapes are all issues that can vary widely from one law enforcement agency to another. To date, 15 states have passed legislation that addresses when and where body cameras can be used. Eighteen states have legislation regarding the storage of footage. When no state policies exist, local law enforcement agencies are free to set their own policies. Furthermore, the issue most relevant to transparency—that is, public access to police videos—is by no means guaranteed. As of 2017, seventeen states currently have legislation that restricts public access to footage (Urban Institute 2017). Again, in the absence of state policies, police agencies make their own decisions about the release of such videos.

As encouraging as the changes we have seen in issues of measurement and technology for offering improved ways of documenting and understanding police use of lethal force, I fear that neither will be the great panacea for battling the current crisis of confidence in our criminal justice system. There are other obstacles that work against scientific research and improved technological tools working to uncover the truth.

### *Growing Distrust in Science*

The elusive nature of truth and the subsequent undermining of trust in our criminal justice system transcend problematic data sources or the lack of clear standard policies regarding technological tools. Rather, our current problematic relationship with the truth and trust is also linked to a larger, overarching development we have witnessed in the last few decades regarding the *value of science* and research. While once enjoying a respected position in our society (parents of the 1950s and 1960s and their baby boom children were confident that science would help us win the space race), today science and its rigorous methods for discerning facts and growing our knowledge base is under attack. Between 1966 and 2012, the percentage of Americans reporting great confidence in scientists fell from 76% to 34% (Harding 2014). A 2013 *Huffington Post* poll found that only about one-third of Americans reported having "a lot" of trust in the information we get from



scientists (Swanson 2013). A 2015 Pew study revealed a marked decrease in the percentage of scientists who think this is a good time for science: 76% felt this way in 2009 but only 52% in 2014. A review of recent presidential campaigns clearly shows just how much science has fallen from its former place of esteem.<sup>8</sup> Putting distance between themselves and science has been the default position for many of the recent Republican candidates vying for the presidency as well as many of the nominees vying for cabinet positions. Indeed, denying the science of climate change appears to be a hallmark of the Republican Party today: only 27% of Republicans (vs 71% of Democrats) agree that the earth is warming because of human activity (Burleigh 2015). Just over 20% of core Trump supporters believe in human-based global warming (Harmon 2017). Indeed, resistance to science by Trump's core supporters may well reveal the depth of resistance to science for some—science is seen as a challenge to people's cultural identity—to their sense of who they are (Kahan 2014). Perhaps the most telling indicator of the fall of science is President Trump's 2018 budget proposal that severely cuts funding for science (Reardon et al. 2017).

In his work, *Are We All Scientific Experts Now?*, Harry Collins (2014) argues that the shift away from the view of science as the most secure base for accurate knowledge can be traced back to a work reported to be the most widely read academic book of the twentieth century: Kuhn's (1962) *The Structure of Scientific Revolutions*. This work understood by many to mean that science is not as "special" or pure an endeavor as once thought and that empirical data were, in the end, open to "interpretative flexibility" (Collins 2014). This shift in thinking yielded a "relational theory of expertise," which saw the emergence of two new groups willing to push back against scientific knowledge. For instance, one group consists of those whose "expertise" is based on their own experiences, experiences that allow them to challenge scientific expertise as impractical or flawed. Another group is made up of "default" experts who come to understand that the "relational theory of expertise" means there are no real experts at all. Collins (2014) argues that such changes paved the way for a new zeitgeist where the general public is less and less willing to recognize science as a superior way of knowing.

The growing distrust in science is also tied up with another troubling development: the rise in vested interest research or what some call pseudo- or fraudulent science. Vested research is not so much concerned with discerning truth and facts as it is dedicated to *persuasion*. To be sure, vested interest research has been around for quite some time—we are now well aware of how the tobacco industry and the sugar industry used scientists as "hired guns" to produce findings that "cast doubt" on claims that tobacco or sugar were not good for our health (Diep 2016; Oreskes and Conway 2010). And we now know that the oil industry did some of the earliest research on climate change but elected to bury their findings, claiming they were too muddy to warrant a public airing. But what we have witnessed in more recent times is the remarkable spread of pseudo-science—it now seems that every special interest group has its own in-house research division ready to produce the findings the interest group needs or wants to advance its own political agenda. We are now

<sup>8</sup> It is perhaps worth noting that Hillary Clinton went on record as a believer in science and went on to lose the election.

in a hyperstate of point-counterpoint science. For any facts produced via traditional research, some group is ready to offer their own vested interest research to promote doubt. (Such groups learned well the lessons from early research efforts by the tobacco industry where executives launched a campaign to sell “doubt” about the harmful effects of cigarettes) (Oreskes and Conway 2010). Consider that the alt-right is using “science” to support their alt-fact claims about white supremacy (Krueger 2017). This pattern supports yet another development that undercuts the value of science—the tendency of so many in the public to think that all facts are nothing more than opinions. And as we know, everyone is entitled to their own opinion. And taking it one step further, senior presidential adviser Kellyanne Conway claims everyone is entitled to their own alternative facts.

This tendency of people being so willing to dismiss findings they don’t agree with as nothing more than differing opinions can itself be traced to yet another troubling trend—scientific illiteracy. There have been many writers sounding the alarm over scientific illiteracy and how it threatens our future (especially with regard to climate change). Over the last several years, numerous calls have been made to create a more science-focused society—one that would help bridge the gap between the scientific community and the public. This is a commendable idea but certainly not an easy one to implement especially when we face a public that is increasingly distrustful of science in the first place. And on further reflection, remedial science training may not work as intended.

### *A Crash Course in Science—A Solution?*

To be sure, there is strong support for bringing science back to the people. We can see this in recent efforts by museums to feature user-friendly exhibits and shows. We can see it in the array of web sources dedicated to bringing science to the general public (e.g., see Publisize, Futurity, and The Conversation). And we can see it in the repeated calls for science to improve its “communication” skills so as to foster public understanding. But even if we were able to give the public a giant crash course on the scientific method and convert them into true, fact-based believers, there are still some remaining obstacles to science winning the day—obstacles that are traced back to the defining traits of science. When one becomes a student of the traditional scientific method, one learns that skepticism is a hallmark of scientific thinking. Science largely works through an “error model” that promotes a critical review of research efforts that encourages the search for possible errors—design errors, measurement errors, sampling errors, analysis errors, and so on—that might threaten the accuracy of findings and results. In short, scientific training encourages skepticism—the very trait embraced by so many alt-fact and conspiracy theory believers.

In traditional science, skepticism is a good thing, a stance that stands on guard against false conclusions. Skepticism also feeds two other key traits of science: (1) the desire for replication to ensure the reliability of findings and (2) the provisional or tentative stance of science when drawing conclusions. Scientific research is a cautious, methodical process that resides in the world of *probabilities and likelihoods*

rather than the world of absolute certainties. Inherent in science's cautious, methodical nature is the insistence on the need for replication. In adopting the highest possible standard for discerning the truth, science will only trust findings that can be replicated. Trustworthy science takes time and "do overs." One-trick ponies have no place in science. Until that replication is achieved, science remains tentative in its conclusions and speaks in terms of levels of confidence and not in terms of certainty.

So what might be gained from our launching a campaign to improve the scientific literacy of ordinary citizens? Well, consider this possible scenario: if in the name of improving scientific literacy, the public starts paying closer attention to the defining traits and essential concerns of science, what might be a likely outcome? The public may well realize that science has a *serious replication problem*, one that could ultimately undercut still more of the public's trust in science.

In early 2016, the Reproducibility Project made the news. This project, conducted by the Center for Open Science, involved more than 270 researchers across five continents. The project's agenda was to try to replicate the findings of 100 research articles published in the top three psychology journals. The result: a failure to replicate more than 60% of the studies (Samarrai 2015). Again in 2017, another attempt to assess the reliability of cancer studies also documented science's "failure to replicate" dilemma and provided additional warning against our assuming that the findings of any one study are indeed reliable (Apple 2017). These projects forcefully reinforced a point made over a decade ago by John Ioannidis who some regard as medicine's top myth-buster. In his 2005 article, "Why Most Published Research Findings Are False," Ioannidis directed our attention to the reliability problem of scientific research in general and to science's troubling "file drawer effect" in particular (burying inconvenient findings in file cabinets). In the last several years, more and more centers and projects are being funded to study what some call science's "broken culture." The funding for these endeavors often comes from the Arnold Foundation—founded by philanthropist John Arnold who is dedicating his money to the task of "fixing science." (The two reproducibility projects mentioned above received funding from the Arnold Foundation.)

As might be expected, the science crisis suggested by these reproducibility projects has experienced pushback from some members of the scientific community. Indeed some critics accuse Arnold of engaging in his own "vested research" agenda (Apple 2017). But Arnold and his "fix science" mission aside, there is some agreement in the scientific community that the need to replicate findings is a pressing one—nearly half of American Association for the Advancement of Science scientists agree that more replication is needed to improve the quality of scientific knowledge base (Pew 2015).

### *Changing the Culture of Science*

While replication is central to science's mission, it is all too often neglected by far too many researchers. The reward structure of science and academic institutions make replication efforts a less-than-attractive option for many researchers. Funding

cuts have heightened the competition for research monies and have even forced some researchers out of their fields of study. Others, in seeking a better chance of getting critical funding, look for projects that are new and groundbreaking and thus sidestep the replication task. Academic researchers look for research projects that will get them promoted (Apple 2017). Little aside from the values of science itself promotes the tedious and difficult task of replication projects. Indeed one reason offered for the failure to replicate results of the Reproducibility Project is the lack of clarity regarding the actual execution of original studies that is essential for faithful and accurate replication efforts. All of this forces me to conclude that there's a real possibility that *increasing* scientific literacy may only serve to *decrease* public trust in research *at least in the short run*.

And so, where does this leave us with our current pressing need to study violent and lethal police-citizen encounters? Perhaps we are left with a healthy dose of skepticism, but we are also left with a reasonable call for more research. What kind of research? Research dedicated to the mission of replication. It will ultimately be replication efforts that will build a reliable, trustworthy body of knowledge worthy of public trust and needed to inform smart policy. Answering the most pressing questions about our criminal justice system requires the building of a weighty, persuasive *body of studies/findings/evidence*, a body that will allow us to restore confidence in scientific research and ultimately enable us to assess the connection between race and police violence. In short, we must commit to the replication mission and resist thinking any one study establishes the truth. Accomplishing this may well require an overhaul of the culture of science—a culture that currently houses a reward structure that favors new and innovative “one study” research efforts over the tedious task of replication as well as a culture that needs to do a better job of combatting scientific illiteracy by instructing all but especially reporters and journalists on the critical questions that must be raised about any study that finds its way into the news. If there is one truth we might be able to agree on at this point in time, it is this: in order to combat the disturbing trends we have been witnessing for the last few decades, we must take seriously the research replication mission. We need to build a strong, irrefutable body of evidence that addresses our most pressing social issues. Such research efforts should help to restore trust in scientific research and help us do a better job of discerning truth from alternative facts about whose lives matter.

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