Words Matter: Mental Models and Mass Killings

Erin Powers[2], Laura Cabrera[1,2], Derek Cabrera[1,2,*]

[1] Cornell University, College of Human Ecology, Cornell Institute for Policy Affairs, Ithaca, NY
[2] Cabrera Research Lab, Ithaca, NY

* Correspondence: dac66@cornell.edu
Citing this Case: Powers, E., Cabrera, L., & Cabrera, D. (2016) "Words Matter: Mental Models and Mass Killings". *Cognitive Case Study Series*. Cornell University, Ithaca, NY.

Abstract

Part of the *Cognitive Case Study Series* from Cabrera Research Lab, this case explores the distinctions made, relationships and systems identified, and perspectives taken in popular and academic discourse with respect to the increase of mass killings in the United States.

A "cognitive case study"—inspired by the cases used in business and policy schools that involve students in real-world problem solving—is designed to engage students in metacognition (thinking about thinking). Cognitive cases introduce the cognitive patterns underlying our mental models, and then encourage us to explore how our and others' mental models affect our emotions, behavior, action, and even our reality. These cases explore a broad range of topics, from politics to social issues to the physical sciences to everyday phenomena, with the purpose of enabling readers to see the cognitive structures at play across a variety of realms.

Introduction

The issue of mass killings in the United States is receiving ever increasing attention and is fraught with controversy. It begins with word choices and definitions, which of course affect (1) statistics on human death and injury (what is included and what is left out when calculating the incidence of violent events) but also (2) our understanding of the very causes and nature of such events. This in turn often impairs our ability to have fruitful dialogue about the problem. These violent events are variously referred to as mass killings, mass shootings, mass murders, active shooter events, etc. "Mass shooting" is used most frequently in the media, yet there "is no official set of criteria or definition for a mass shooting, according to criminology experts and FBI officials." [1] This makes it nearly impossible to compare statistics on these violent events, and different definitions align with different political agendas, making claims regarding numbers and trends inherently suspect. Moreover, headlines often add qualifiers to denote the attack might have been terrorism, committed by non-native Americans or immigrants, by mentally ill individuals, by youth obsessed with video games, etc. This issue is fraught not only with a multitude of perspectives, but also with errors in distinction making.

The deadliest mass killing with guns in modern American history occurred on June 12, 2016, at Pulse, a popular gay nightclub in Orlando, Florida. 49 were killed and 53 were injured, with hostages trapped inside for nearly three

hours during a standoff between the perpetrator and police. [2] June was the most violent month of 2016 to date in terms of mass shootings,[1] with 95 deaths and 211 injuries. [3] 2015, another particularly violent year, saw 372 mass shootings, resulting in 475 dead and 1,870 wounded. [4]

To put recent events in historical and global context, a 2016 study found that from 1966 to 2012, almost one third of the world's 292 mass shootings occurred in the United States. [5] The author frames this another way: "While the U.S. has 5% of the world's population, it had 31% of all public mass shootings." [5] Pappas [6] notes this "strange paradox" of rising active shooter events (indiscriminate public shootings of multiple individuals), given that overall violent crime rates are down in the United States.

The FBI reported in 2014 that for the period 2000-2013 active shooter events have occurred with increasing frequency. "In the first seven years of the study, there were an average of 6.4 active shootings per year, while in the last seven years of the study, there were 16.4 incidents per year." [5] On the other hand, the Crime Prevention Research Center [7] disputes claims that the US is uniquely prone to mass killings. First, they argue that if you consider mass bombings, several countries "face many more bombings than the US does." Moreover, they argue that the United States is not the most violent in terms of mass shootings, when you view the numbers as a proportion of the total population: "There were 55% more casualties per capita from mass public shootings in EU than US from 2009-15." [7]

A 2014 Harvard Public Health study found that 2011 marked a turning point: "According to our statistical analysis of more than three decades of data, in 2011 the United States entered a new period in which mass shootings are occurring more frequently." The authors report that claims that mass shootings are stable (i.e., not increasing) are based on the inclusion of gang and domestic violence incidents, which are far more prevalent than mass killings such as those in Orlando, Sandy Hook, etc. Finally, however defined, the death toll from mass killings pales in comparison to other types of violence. Berkowitz and colleagues [8] report that deaths attributable to mass shootings make up less than half of 1 percent of the people shot to death in the US. Remember that in 2015, there were 475 deaths from mass shootings; according to the Gun Violence Archive, more than 12,000 people were killed that year by guns (more than half of those by suicide).

Confusion and Politics Around Terminology

As with all social and political debates, our terminology implicitly cues causal narratives. Imagine, for example, that you want to report on a mass killing. If you want to emphasize the issue of gun violence you could call the perpetrator a "lone gunman," but if you want to elicit the mental illness theme, you could call him a "crazed murderer." Alternatively, he might be a "video game-obsessed loner," a "black shooter," "white supremacist," or "Islamic Extremist." The reality is that these acts of mass violence are attributable to multiple factors, but our tendency is to isolate one, unconsciously or consciously, often for cultural or political reasons. Included throughout the case are a variety of images (usually found on social media) related to mass killings, some of which represent linear reasoning, while others cleverly deconstruct common arguments.

Having discussed the implications of the words used, it is important to acknowledge that there is disagreement about the definition of terms, which

[1] Note: "mass shooting" is the author's language and there are definitional issues associated with the term that we address in the next section *Confusion and Politics around Terminology*. Our repeating the terminology of authors does not imply agreement with its usage.

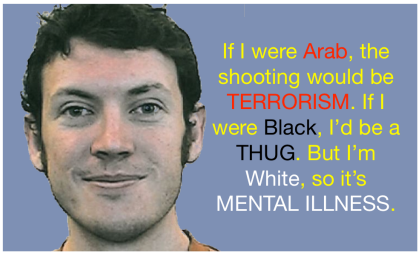

Figure 1: Terminology implicitly cues causal narratives and reveals biases

feeds into confusion about the nature and extent of violence and whether it is increasing or decreasing. The media and academics both tend to use the FBI's definition of "mass murder" and adapt it for the term "mass shootings." [9] The FBI definition of mass murder follows:

> Generally, mass murder was described as a number of murders (four or more) occurring during the same incident, with no distinctive time period between the murders. These events typically involved a single location, where the killer murdered a number of victims in an ongoing incident (e.g., the 1984 San Ysidro McDonalds incident in San Diego, California; the 1991 Luby's Restaurant massacre in Killeen, Texas; and the 2007 Virginia Tech murders in Blacksburg, Virginia) (Morton, n.d.).

In a *Washington Post* blog "What Makes a 'Mass Shooting' in America?" Ingraham [10] explains recents shifts in government terminology.

> The FBI used to consider someone a "mass murderer" if they killed four or more people during one event, regardless of weapons used. But starting in 2013, federal statutes defined "mass killing" as three or more people killed, regardless of weapons.

Willingham notes that congressional reports, however, sometimes exclude gang-related or domestic incidents and focus on "gunmen who select victims indiscriminately." [5] Since 2014, the FBI been using yet a different category, "active shooter events:"

> The agreed-upon definition of an active shooter by U.S. government agencies—including the White House, U.S. Department of Justice/FBI, U.S. Department of Education, and U.S. Department of Homeland Security/Federal Emergency Management Agency—is "an individual actively engaged in killing or attempting to kill people in a confined and populated area." [11]

In a 2008 booklet containing advice on how to respond to active shooter situations, the Department of Homeland Security specifies the full definition of "active shooter," which includes: "in most cases, active shooters use firearms(s) and there is no pattern or method to their selection of victims." [12] It is a curious distinction to name these "active *shooter* incidents if other weapons might be involved.

Beyond governmental statistics, there are three different data sources commonly used to report mass killings. *Mother Jones* maintains a database of mass shootings and employs the most restrictive definition. According to their criteria, "a shooting becomes a mass shooting if the gunman kills four or more people (excluding himself); if he acts alone; and if the shootings take place in public, including workplaces, schools, churches and the like." [10]

The nonprofit Gun Violence Archive, which also tracks US shootings, defines mass shooting as "FOUR or more shot and/or killed in a single event [incident], at the same general time and location, not including the shooter." [10] The Gun Violence Archive "does not parse the definition to exclude any type of gun violence such as gang shooting or domestic violence. The definition is purely numerical and reflects ALL shootings which reach that statistical threshold." [3]

Then there is Mass Shooting Tracker, which describes itself as a crowd-sourced database of U.S. Mass shootings. Their definition follows: "a mass shooting is an incident where four or more people are shot in a single

shooting spree. This may include the gunman himself, or police shootings of civilians around the gunman." [3] Mass Shooting Tracker statistics also differ in that they include the death of perpetrators, which FBI definitions do not. The rationale for the Mass Shooting Tracker is that the FBI definition excludes many important types of mass killings. As Berkowitz and colleagues note in a *Washington Post* article on the math of mass shootings, no database out there "is comprehensive, because a repository of comprehensive data doesn't exist. A 2013 investigation by *USA Today* found that even the FBI's data on mass killings is only about 57 percent accurate. [8]

To sum up the problem, mass killings as a phenomenon are referred to by different terms, and the most prevalent term—"mass shootings"—has different definitions:

> There are no official definitions of a mass shooting, and varying ways of tracking the data—by fatalities, by total victims—can make finding trends in this type of violence difficult. A person who arms himself with enough ammo to take out dozens but who only manages to kill one or two people would not be included in federal statistics that track crimes with four or more victims. The term "mass shooting" also encompasses a range of crimes with a variety of motivations. A gang drive-by that kills multiple people would count, though the root cause is very different from the kind of rampage killings that occur regularly in schools, churches and theaters around the country. [6]

Figure 2: When you change the way you look at things, the things you look at change.

Using DSRP to Deconstruct Complex Phenomena

In Systems Thinking Made Simple, the Cabreras [13] explain that four simple rules called DSRP underlie systems thinking and are the building blocks of cognition itself: making Distinctions and recognizing Systems, Relationships, and Perspectives. The Distinctions Rule—"Any idea or thing can be distinguished from the other ideas or things it is with" [13]^{p47}—is comprised of two elements: an "identity" (any thing or idea) and an "other" (that which is not the thing or idea). The distinctions rule draws attention to the fact that by focusing on one thing (the identity) we are automatically excluding other things (the other). As the Cabreras write, "Distinction-making simplifies our thinking, yet it also introduces biases that may go unchecked when the thinker is unaware." [13]^{p47}

The second rule—Systems—"Any idea or thing can be split into parts or lumped into a whole" [13]^{p45}—is composed of two elements, wholes and parts. The process of thinking entails organizing parts into coherent wholes, or deconstructing wholes into their constituent parts. Understanding multiple causality requires recognizing the systemic nature of most phenomena.

This leads to the third rule, Relationships: "Any thing or idea can relate to other things or ideas." [13]^{p45} Relationships are composed of two elements: action and reaction. To understand how systems operate requires deep understanding of the interrelation of parts and of systems themselves. The better we understand the relationships between the parts of a system, the greater the odds that we won't fall victim to focusing just on proximate causes or employing linear causality in general.

Intimately related to D, S, and R is the taking of perspectives, which is often done unconsciously. The Perspectives rule—"Any thing or idea can be the point or the view of a perspective" [13]^{p45}—consists of two elements: the view (that which is "seen") and the point ("the seer"). Using any of other simple rules of cognition—distinctions, systems, and relationships—involves taking perspectives, whether we know it or not.

Ultimately, many of the problems associated with solving complex issues are attributable to our mental models and perspectives. Issues like the rise of mass killings in the US are often made intractable because of our implicit mental models. Our mental models can be formed unwittingly or due to others' purposeful manipulation of distinctions, systems, relationships, and perspectives. To better discuss, understand, and address mass killings, we should be watchful for the following distinction errors:

- Situations where the *same* terms may have different meanings
- Situations where *different* terms may have the same meanings
- Comparing statistics when terms have different meanings (i.e., "comparing apples to oranges")

We should also be mindful of terminology and statements that marginalize the other or their perspective—including unwittingly. Conscious application of the DSRP structures (metacognition) entails awareness that when you change the way you look (i.e., perspectives) at things, the things you look at change (i.e., the distinctions, relationships, and systems).

Statements and Perspectives about Mass Killings

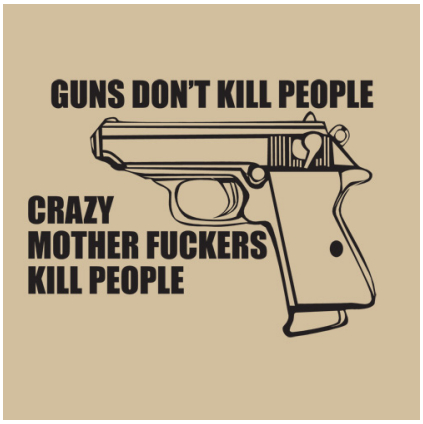

Figure 3: Framing the Debate: Gun Control or Mental Illness?

In addition to the confusion caused by the different definitions lurking within the same terminology, the issue of mass killings is highly contested and politicized. Before addressing some of the proposed causes of mass killing, it is illustrative to read a sampling of statements and writing that reflects the diversity of perspectives on the issue. These statements frequently follow incidents of mass violence. For example, House Speaker Ryan after the San Bernardino shootings commented, "What we have seen—and a common theme among many of these mass shootings—is a theme of mental illness ... And we need to fix our mental illness laws, our policies. They're outdated." [14] In a FoxNews article titled "'Training simulation:' Mass killers often share obsession with violent video games," Associate Professor of Psychology Bruce Bartholomew argues:

> More than any other media, these video games encourage active participation in violence ... From a psychological perspective, video games are excellent teaching tools because they reward players for engaging in certain types of behavior. Unfortunately, in many popular video games, the behavior is violence. [14]

A *Rolling Stone* article titled "How the NRA Paved the Way for the Orlando Shooting" opines:

> The greatest threat to our homeland security today is the National Rifle Association, a front group for the firearms industry that

> derails gun-safety measures and perversely profits with each new mass shooting. [15]

Louisiana politician Bobby Jindal has spoken at length about the causes of mass shootings, blaming a culture of violence connected to Hollywood movies and video games celebrating violence:

> We glorify sick and senseless acts of violence in virtually every element of our pop culture ... We celebrate and document every kind of deviant behavior and we give out awards to producers who can push the envelope as far as possible. Rape, torture, murder, mass murder, all are cinematic achievements. ... We have generations of young boys who were raised on video games where they compete with other young boys around the country and the world to see who can kill the most humans. ... [W]e are completely fine with them watching people get murdered and raped on the internet after school, and we are willing to let them go to the basement and join a fantasy world where they pretend they are killing people for 2 hours after school. [16]

An *Atlantic* article titled "The Case for More Guns (and More Gun Control)" reported different views on mass killings and the issue of gun control. The first—given by the Democratic governor of Colorado, John Hickenlooper, after the Aurora massacre—argued that stricter gun laws would not have stopped the shooter. "If there were no assault weapons available and no this or no that, this guy is going to find something, right? He's going to know how to create a bomb." The second, by the father of a boy killed in the Columbine shooting, argues Americans are attached to guns due to ignorance and immaturity:

> "We're a pretty new nation. We're still at the stage of rebellious teenager, and we don't like it when the government tells us what to do. People don't trust government to do what's right. They are very attracted to the idea of a nation of individuals, so they don't think about what's good for the collective." [17]

Republican presidential nominee Donald Trump, in a speech about the Orlando shooting, argued that his opponent Hillary Clinton's "plan is to disarm law-abiding Americans, abolishing the Second Amendment, and leaving only the bad guys and terrorists with guns." [18] Most recently following the killings in Orlando, General Stanley McChrystal [19] wrote the following in an op-ed piece for the *New York Times*:

> We Americans are not a uniquely bloodthirsty people. We do not have more violent video games or movies than other countries. We do not have more dangerously mentally ill individuals than other countries. We are not unique in facing down the threat of global terrorism and active shooters. But we have uniquely high rates of gun deaths and injuries that make us stand out in the worst of ways. Our communities should not feel like war zones. Our leaders can start by doing more to keep guns out of the hands of those who cannot be trusted to handle them responsibly. That must be our mission.

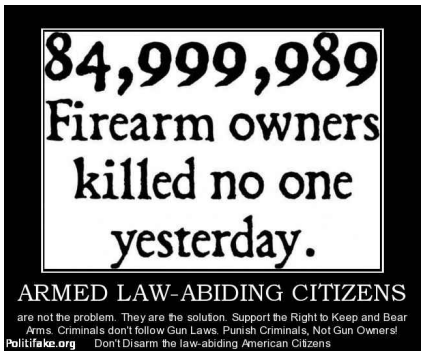

Figure 4: Discussions of Mass Killings Often Involve the 2nd Amendment

Statements by the US President and Speaker of the House aptly capture the politicization of mass killings. On January 4, 2016, the White House Office of

the Press released the provisions laid out by the executive order signed by President Obama meant to reduce gun violence in response to 2015's violent year. The statement read "The most important thing we can do to prevent gun violence is to make sure those who would commit violent acts cannot get a firearm in the first place." The statement then specified a number of actions the administration would take to have more effective background checks, including increasing the National Instant Criminal Background Check System (NICS) examination staff by 50%, and requiring that anyone "engaged in the business of selling guns" have a license and conduct background checks. Known as the "common-sense" gun safety reform, the initiative also proposes a $500 million investment in mental health care, accessibility, and engagement. In response to this executive order, House Speaker Ryan released a statement:

> From day one, the president has never respected the right to safe and legal gun ownership that our nation has valued since its founding. He knows full well that the law already says that people who make their living selling firearms must be licensed, regardless of venue. Still, rather than focus on criminals and terrorists, he goes after the most law-abiding of citizens. His words and actions amount to a form of intimidation that undermines liberty. No matter what President Obama says, his word does not trump the Second Amendment. [20]

CAUSES OF MASS KILLINGS

> "Every time a mass shooting takes place in America, things get decidedly more political for a while. On one end of the spectrum, liberals start decrying gun laws as the catalyst for US mass homicides, while conservatives point their fingers at violent movies and video games. And both sides turn to that glorious excuse above all other excuses—'It's obviously mental health-related.'" [21]

Mental Illness

A *New York Times* op-ed warns against blaming mental illness for gun violence, noting that mass shootings are a small fraction of all gun violence and "mental illness is not a factor in most violent acts." [22] They express the concern that "Blaming mental health problems for gun violence in America gives the public the false impression that most people with mental illness are dangerous, when in fact a vast majority will never commit violence." Addressing mass shootings specifically, they wrote:

> Estimates of the percentage of mass shooters who are mentally ill vary widely, as both "mass shooting" and "mental illness" can be difficult to define. One recent analysis of murderers who killed or intended to kill four or more people found that 22 percent of male killers exhibited evidence of mental illness (the share was higher among women, but the sample was much smaller). Another analysis, by the group Everytown For Gun Safety, found that in about 11 percent of shootings between January 2009 and July 2015 in which four or more people were killed, concerns about the killer's mental health had been reported to a doctor or other authority before the crime took place.

Dr. Jeffrey Swanson, one of the leading researchers on mental health and violence, reported the characteristics of adolescent male mass murderers based on a 2001 study: "70 percent were described as a loner. 61.5 percent had problems with substance abuse. 48 percent had preoccupations with weapons; 43.5 percent had been victims of bullying. Only 23 percent had a documented psychiatric history of any kind–which means three out of four did not." [23]

A 2015 article in the *American Journal of Public Health* titled "Mental Illness, Mass Shootings, and the Politics of American Firearms" explores the complex issues surrounding the tendency to attribute mass shootings to mental illness [24]. They acknowledge a reason for the linkage: "Reports suggest that up to 60% of perpetrators of mass shootings in the United States since 1970 displayed symptoms including acute paranoia, delusions, and depression before committing their crimes." [25] However—related to the previously discussed distinction problem arising from differing definitions employed—the authors argue: "Notions of mental illness that emerge in relation to mass shootings frequently reflect larger cultural issues that become obscured when mass shootings come to stand in for all gun crime and when 'mentally ill' ceases to be a medical designation and becomes a sign of violent threat." [25] Indeed, the authors demonstrate that the official diagnostic criteria for schizophrenia have changed along with cultural understandings, largely influenced by white attitudes toward violence by black activists in the 1960s, such that the psychiatric diagnosis of schizophrenia changed from one marked by docility and social withdrawal to being epitomized by violence. This encouraged professionals and the public to equate violence with mental illness. The authors make a series of important points that are neglected in discussions of mental health and violence, including:

Figure 5: Mental Health Issues are Frequently Discussed as Causes of Killings

- The percentage of crimes involving guns are lower for those diagnosed with mental illness than for persons without such diagnosis.
- "A number of the most common psychiatric diagnoses, including depressive, anxiety, and attention-deficit disorders, have no correlation with violence whatsoever." [25]
- Individuals diagnosed with serious mental illness are far more likely to be victimized than to perpetrate violence. [25]
- "Credible studies suggest that a number of risk factors more strongly correlate with gun violence than mental illness alone. For instance, alcohol and drug use increase the risk of violent crime by as much as 7-fold, even among person with no history of mental illness." [25]
- Since mass shootings are statistical aberrations (i.e., are not representative of most gun violence), "basing gun crime-prevention efforts on the mental health histories of mass shooters risks building "common evidence" from "uncommon things." [25]
- Prescriptively, empowering psychiatrists to predict which individuals will commit violence asks them to evaluate complex social-psychological phenomena they are ill-positioned to assess. As Swanson writes: "psychiatrists using clinical judgment are not much better than chance at predicting which individual patients will do something violent and which will not." [25]

- The 32,000 handgun-related deaths per year occur "far from the national glare" and have a "disproportionate impact on lower-income areas and communities of color." [25]

Media Coverage, Obsession with Fame, and Contagion

Cultural issues are also addressed in the debates around mass killings—sometimes via the suggestion that violent video games and movies have created a culture of violence, sometimes addressing other traits deemed "uniquely American." Regarding the paradox of reduced rates of violent crime but increased rates of active shooter events, Pappas [6] argues: "The reasons for these numbers are complex, researchers say, but the data suggest that the availability of guns, and perhaps the American obsession with fame, may be to blame." Pappas [6] elaborates the "fame" argument for the prevalence of mass killings:

> Gun ownership can't be the entire story, though, given that overall violent crime is decreasing. There seems to be something that sets mass shootings apart. One possibility is the American preoccupation with fame. Studies have found that Americans are more interested in fame than people of other nationalities are. A 2007 Pew Research survey of 18- to 25-year-olds found that about half said that getting famous was a top priority for their peers. Television shows increasingly promote fame as a value, research has found, and pop lyrics are becoming more narcissistic. A 2010 review of research studies found that modern college students display less empathy than students of the late 1970s. These studies fit a general pattern of research showing that narcissism is on the rise.

Based on the work of Adam Lankford, a criminal justice professor at the University of Alabama, Pappas [6] reports that "many mass killers explicitly cite fame as their motivation: A quick Google search for 'wanted to top Columbine' reveals multiple news articles about killers or would-be killers mentioning the 1999 school shooting as their inspiration." She quotes Lankford: "We know that a lot of public mass shooters, particularly when they're young, have admitted that they really want to be famous, and that killing is how they're going to do it." [6]

Swift [22] implicates media coverage: "The importance that the media bestows upon mass killers, even posthumously, is why these mass shootings take place." Media coverage has also been addressed as part of "contagion studies" of mass killings:

> In July, researchers presented a terrifying idea: mass killings and school shootings may be contagious. Using a mathematical contagion model typically applied to the spread of diseases, the study found that 30 percent of mass killings and 22 percent of school shootings appeared to have been inspired by previous events. One possible reason, says lead author Sherry Towers, is media coverage. [25]

Another way of stating this is that "For every five school shootings...one is inspired by a past school shooting." [6] The study author clarified that in cases "that didn't get a lot of media attention there was no contagion, and in the ones where we did see a lot of media attention, that's where we saw the contagion."[25]

Pappas [6] quoted the prescription of one expert: "Absent a sudden shift in gun policy, decreasing the notoriety of mass killers may be the best defense. Media reports should focus on the victims and not name the killers."

Violent Video Games

While politicians of all stripes tend to implicate violent video games in public acts of violence, this tendency is more prevalent among conservatives [26]. *Mother Jones* reported a press statement by NRA Executive Vice President Wayne LaPierre after the Sandy Hook Elementary shooting that put the blame for mass violence squarely on violent video games:

> Guns don't kill people. Video games, the media, and Obama's budget kill people ... There exists in this country, sadly, a callous, corrupt and corrupting shadow industry that sells and stows violence against its own people through vicious, violent video games with names like Bulletstorm, Grand Theft Auto, Mortal Kombat, and Splatterhouse. [27]

Figure 6: Media Coverage Frequently Focuses on Violent Video Games and Shootings

In an article titled "'Training simulation:' Mass killers often share obsession with violent video games," Jaccarino [27] discussed various high-profile mass murders in which the perpetrators' acts were anecdotally linked (sometimes through the killers' explicit claims of being influenced by these video games) to violent gaming. The early attempts of parents of victims to sue manufacturers of some of these games have been struck down. In 2001, the 6th US Circuit Court of Appeals ruled it "simply too far a leap from shooting characters on a video screen to shooting people in a classroom." [16] Research psychologist Dr. Gentile discussed the issue of violent video games and mass killing in terms of causality:

> I think it's the wrong question—whether there is a link between mass shootings and violent video game play. ... I understand people want to look for a culprit, but the truth of the matter is that there is never one cause. There is a cocktail of multiple causes coming together. And so no matter what single thing we focus on, whether it be violent video games, abuse as a child, doing drugs, being in a gang—not one of them is sufficient to cause aggression. But when you start putting them together, aggression becomes pretty predictable.

Moreover, while the "link between violence in video games and increased aggression in players is one of the most studied and best established in the field," there is "very limited research addressing whether violent video games cause people to commit acts of criminal violence." [28] The American Psychological Association Task Force on Violent Media studied this issue and concluded, "Violent video game play is linked to increased aggression in players but insufficient evidence exists about whether the link extends to criminal violence or delinquency." [29]

Prevalence of Firearms, Rates of Violence, and Gun Control

Pappas [6] addresses research on the correlates of mass shootings, particularly a recent study by Criminal Justice Professor Adam Lankford, who studied mass

Figure 7: A Meme: Guns Don't *Cause* Violence

Figure 8: Distinction-Making Errors in Gun Legislation

shooting events (defined as four or more killed) across 171 countries from 1966-2012. A key finding was that the rate of mass shootings did not correlate with the overall homicide rate, but it did with the prevalence of firearm ownership. Countries in which more people owned firearms had higher rates of public mass shootings. Lankford remarked: "That wasn't a shocking finding, but I guess what surprised me was it showed up no matter how many or what type of statistical tests I ran ... It was kind of unshakable." [6] Surprisingly, the link between firearm ownership and mass shootings remained when the US was removed from the analysis. In a *Washington Post* article titled "The Math of Mass Shootings," Berkowitz and colleagues [8] seek to provide a fuller understanding of the weaponry involved in mass shootings, which is another source of debate and confusion. They conducted an analysis on data compiled from Mother Jones (which employs a more restrictive definition of mass shootings) as well as Grant Duwe, who authored "Mass Murder in the United States: A History," and research by the *Washington Post*. Their intent was to produce a dataset of the deadliest cases, commencing with a University of Texas mass killing in 1966. The analysis included 126 events "in which four or more people were killed by a lone shooter (or two shooters in three cases)." The average number of deaths per incident was seven (often including the shooters), and the total number of victims was 869. The total number of guns involved was 244: "Shooters brought an average of four weapons to each shooting; one carried seven guns. We don't know how all the guns were acquired, but of the ones we know, 140 were obtained legally and 39 were obtained illegally." [8] The authors further detail the weaponry involved in these events:

> Shooters in the two deadliest mass shootings in U.S. history carried models of the country's most popular types of weapons. The gunman who killed 32 students and teachers at Virginia Tech on April 16, 2007, used a 9mm semiautomatic Glock 19 (and a .22-caliber Walther P22, another popular caliber). These guns, used by many law enforcement officers, are generally light, inexpensive, easy to conceal and require little strength to control. In this tally of weapons, 9mm semiautomatic handguns show up more than any other weapon. [8]

Many politicians and activists focus on gun control issues in the wake of mass killings, and in fact, gun sales consistently rise after such events as citizens become concerned that new gun restrictions will be put in place. Swift[21] offers a different perspective on the link between mass killings and gun control:

> Guns ARE components in all mass shootings in America, and there's no denying that high-powered AR-15s likely make it easier for mass killers to quickly make a whole lot more dead bodies. But looking at overall US homicide statistics on average, more people are killed by intentional blunt trauma than by assault rifles, and a growing number of mass shooting incidents since Sandy Hook...have been perpetrated by assailants using more mundane handguns and rifles.

Swift [21] notes that one assailant "actually *stabbed* three to death and shot three to death, though this gets buried in the media narrative for some reason." Noting the debates about whether assault weapons sales moratoriums or ammunition size limits would curb casualties, Swift [21] argues that a new assault-weapon ban would be ineffectual given the vast number of firearms already in circulation.

The Importance of Research and Multi-Causal Explanations

Authors of a recent Harvard Public Health study on mass killings address the complexities involved in the issue:

> Though we now know that public mass shootings have been occurring more often, the reasons why have yet to be identified. However we come to understand the complex factors that drive these events, it is unlikely that this recent shift is the result of social and cultural factors that have remained relatively constant over the past decade—such as the prevalence of mental illness. While many mass shooters had mental-health problems, as the *Mother Jones* data shows, there is no reason to believe that there has been an increase in mental illness rates in the last several years that could help explain the rise in mass shootings. (In fact, federal research on the prevalence of severe mental illness shows a decrease in recent years.) As we search for answers with the common goal of diminishing mass shootings, studying them effectively remains key, not least for gauging the success of any policies aimed at reducing the frequency and toll of these events. [30]

Figure 9: Inferring Causality from Correlation Hinders Understanding

Pearson [29] reports that "researchers charge that Congress doesn't treat gun violence as the critical public health issue that it is." Unfortunately, federal research on the causes of gun violence in the US has been suspended since "Congress cut out funding for gun research in the CDC's budget in the late 1990s after the National Rifle Association charged that the CDC's research was biased." [31]

Even absent adequate research, some scholars and social commentators are crafting explanations that take into account multiple factors. For example, Swift [21] summarizes Welner, a forensic psychiatrist who has worked with mass shooters and other murderers, concerning the complex etiology of mass killings.

> Welner tells us that mass shootings are preventable endpoints marked by a pathway of resentment, social isolation, and profound despair. People get mad at "the world" for slighting them, slink away into self-imposed seclusion, and after reaching a point where they feel as if they'll never amount to anything, they begin to empower themselves through homicidal fantasies. Welner is adamant that at every point along that continuum, opportunities for interventions are possible.

Swift summarizes the "formula" for mass shootings: "hate + isolation + hopelessness = mass homicide ideation" with media coverage of mass killings as a trigger to action.

Similarly, in a 2012 *Psychology Today* article, Ramsland wrote: "In truth, there are many different types of motive for mass murder, ranging from revenge to despair to free-floating rage at the world. Some people develop visions of annihilation, while others seek headlines." She cautioned against quick reactions and simplistic explanations:

> Although the shooting in Aurora differs in many ways from the Columbine massacre, one thing is certain: pressure to identify a simple reason is a mistake. A motive for planned violence of this

> magnitude generally simmers for a while, absorbing support from multiple sources until it reaches the boiling point. If we want perspective that could help us understand and prevent, we'll need to be patient. It's unlikely that immediate post-incident observations will be definitive.

A recent public health article on mass killings aptly presents a more nuanced picture of the factors involved: "A growing body of data reveals that US gun crime happens when guns and people come together in particular, destructive ways." [32] The authors describe the necessity that all sides recognize that: "Gun crimes, mental illnesses, social networks, and gun access issues are complexly interrelated, and not reducible to simple cause and effect." [32]

In an article called "How to Slow Firearm Deaths Without Banning All Guns," *Scientific American* [31] made the case for additional research:

> We now find ourselves in a ... state of ignorance regarding gun fatalities. What factors shape the risk that a gun will be used for violence? What technologies (such as trigger locks) and policies (such as waiting periods) work best to reduce injuries and deaths? What is the relation—if any—between violent entertainment and actual violence? Guns...of course, are meant to kill, but why do they kill so many? ... [T]he nation is engaged in a fierce debate over how to reduce firearms deaths without infringing on the rights of citizens to bear arms. A critical first step is to conduct thorough and vigorous research on how to make gun ownership safer.

Questions

- What is the relationship between distinction making and perspective taking in the debates about mass killings? Provide some examples.
- Which perspective(s) do you find most compelling concerning the causes of mass killings, and what is the basis for your choice?
- How might we minimize the marginalization of perspectives that occurs in discussion of mass killings?

Figure 10: Woman's peaceful protest is met with armed force. *Reuters*

Task

- Journal your thoughts on the issues described herein and how they relate to the photograph in Figure 10 to the right
- Apply DSRP, the four simple rules of systems thinking, [13] to make some clear distinctions, organize parts, make relationships and take perspectives differently than are being made.
- Identify arguments and positions that rely on linear causality, and redress them by diagramming webs of causality.

References

1. Mark Follman. What exactly is a mass shooting? Mother Jones. 2012;.
2. Zambelich HA Ariel. 3 Hours In Orlando: Piecing Together An Attack And Its Aftermath. NPR. 2016 jun 26;.
3. Tracker MS. U.S. Mass Shootings, 2016. Mass Shooting Tracker. 2016;Available from: https://www.massshootingtracker.org/data.
4. Abbey Oldham. 2015: The year of mass shootings. PBS NewsHour. 2016 jan;Available from: http://www.pbs.org/newshour/rundown/2015-the-year-of-mass-shootings/.
5. AJ Willingham. U.S. home to nearly a third of world's mass shootings. CNN. jun;.
6. Stephanie Pappas. Why America is prone to mass shootings. Live Science. 2015 aug;Available from: http://www.livescience.com/51991-why-america-is-prone-to-mass-shootings.html.
7. Center CPR. Updated: Comparing death rates from mass public shootings and mass public violence in the US and Europe. CPRC. 2015 jun;Available from: http://crimeresearch.org/2015/06/comparing-death-rates-from-mass-public-shootings-in-the-us-and-europe/
8. Berkowitz B, Gamio L, Lu D, Uhrmacher K, Lindeman T. The math of mass shootings. Washington Post. 2016 jun;Available from: https://www.washingtonpost.com/graphics/national/mass-shootings-in-america/.
9. Mascia J. How redditors are changing the way the media counts mass shootings. The Trace. 2015 oct;Available from: https://www.thetrace.org/2015/10/mass-shooting-tracker-redditors-challenge-fbi-data/.
10. Ingraham C. What makes a 'mass shooting' in America? New York Times. 2015 dec;Available from: https://www.washingtonpost.com/news/wonk/wp/2015/12/03/what-makes-a-mass-shooting-in-america/.
11. Justice USDO. A study of active shooter incidents in the United States between 2000 and 2013. FBI. 2013 sep;Available from: https://www.fbi.gov/about-us/office-of-partner-engagement/active-shooter-incidents/a-study-of-active-shooter-incidents-in-the-u.s.-2000-2013.
12. of Homeland Security USD. Active shooter: How to respond. CNN Money; 2008. Available from: https://www.dhs.gov/xlibrary/assets/active_shooter_booklet.pdf.
13. Cabrera L, Cabrera D. Systems Thinking Made Simple: New Hope for Solving Wicked Problems. Ithaca: Odyssean Press; 2015.
14. Flores R. Paul Ryan pushes mental health bill after San Bernardino shooting. CBS News. 2015 dec;Available from: http://www.cbsnews.com/news/paul-ryan-pushes-mental-health-bill-after-san-bernardino-shooting/.

15. Dickinson T. How the NRA paved the way for the Orlando shooting. Rolling Stone. 2016 jun;Available from: http://www.rollingstone.com/politics/news/how-the-nra-paved-the-way-for-the-orlando-shooting-20160615.

16. Feldman J. Jindal Blames 'Cultural Decay,' Video Games for Shootings: We Embrace 'Deviant Behavior'". MEDIAite. 2015 oct;Available from: http://www.mediaite.com/online/jindal-blames-cultural-decay-video-games-for-shootings-we-embrace-devi

17. Goldberg J. The case for more guns (and more gun control). The Atlantic. 2012 dec;Available from: http://www.theatlantic.com/magazine/archive/2012/12/the-case-for-more-guns-and-more-gun-control/309161/.

18. Qiu L. Donald Trump's speech on the Orlando shooting, fact-checked. PolitiFact. 2016 jun;Available from: http://www.politifact.com/truth-o-meter/article/2016/jun/17/donald-trumps-speech-orlando-shooting-fact-checked/.

19. McChrystal S. Home should not be a war zone. New York Times. 2016 jun;.

20. Ryan P. Statement on President Obama's Executive Order to Undermine Second Amendment. Speaker Ryan Press Office. 2016;Available from: http://www.speaker.gov/press-release/president-obamas-executive-order-guns-undermines-liberty.

21. James Swift. The real reason the US has so many mass shootings. Thought Catalog. 2014 may;Available from: http://thoughtcatalog.com/james-swift/2014/05/the-real-reason-the-us-has-so-many-mass-shootings/.

22. Board E. Don't blame mental illness for gun violence. New York Times. 2015 dec;Available from: http://www.nytimes.com/2015/12/16/opinion/dont-blame-mental-illness-for-gun-violence.html.

23. Beckett L. What we actually know about the connections between mental illness, mass shootings, and gun violence. Pacific Standard. 2014 jun;Available from: https://psmag.com/what-we-actually-know-about-the-connections-between-mental-illness-mas.6b23ycusp.

24. Metzl, Jonathan M and MacLeish KT. Mental Illness, Mass Shootings, and the Politics of American Firearms. Am J Public Health. 2015;105(2):240–249. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4318286/.

25. Kutner M. Mass shootings and news media: A connection? Newsweek. 2015 oct;Available from: http://www.newsweek.com/media-reporters-cover-mass-killings-umpqua-shooting-378866.

26. Kain EJ. The Truth About Video Games and Gun Violence. Mother Jones. 2013 jun;Available from: http://www.motherjones.com/politics/2013/06/video-games-violence-guns-explainer.

27. Mike Jaccarino. 'Training simulation:' Mass killers often share obsession with violent video games. Fox News. 2013 sep;Available from: http://www.foxnews.com/tech/2013/09/12/training-simulation-mass-killers-often-share-obsession-with-violent-vi html.

28. APA. APA review confirms link between playing violent video games and aggression. American Psychological Association. 2015 aug;Available from: http://www.apa.org/news/press/releases/2015/08/violent-video-games.aspx.

29. Carol Pearson. Most victims of gun violence in US not killed in mass shootings. Voice Of America. 2016 jun;Available from: http://www.voanews.com/content/experts-small-share-gun-deaths-involve-mass-shootings/3388541.html.

30. Cohen A, Azrael D, Meller M. Rate of mass shootings has tripled since 2011, Harvard research shows. Mother Jones. 2014 oct;Available from: http://www.motherjones.com/politics/2014/10/mass-shootings-increasing-harvard-research.

31. Scientific American. How to slow firearm deaths without banning all guns. Scientific American. 2013 mar;Available from: http://www.scientificamerican.com/report/the-science-of-gun-violence-and-gun-control-in-the-u-s/?WT.mc_id=SA_FB_HLTH_SR.

32. Katherine Ramsland. Mass murder motives: Reasons for mass shootings resist quick or simple analysis. Psychology Today. 2012 jul;Available from: https://www.psychologytoday.com/blog/shadow-boxing/201207/mass-murder-motives.