

Firearm Availability and Violent Death: The Need for a Culture Change in Attitudes toward Guns

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*There are two conflicting positions toward gun ownership in the United States. Proponents of stricter gun control argue that guns are responsible for 32,000 gun-related deaths each year and that the introduction of stricter gun control laws would reduce this death toll. Gun rights advocates argue that the general availability of guns reduces homicide rates, due to deterrence and because guns are effective means of self-defense. **Based on a review of the evidence, I draw the following conclusions: Gun prevalence is positively related to homicide rates.** There is no evidence for a protective effect of gun ownership. In fact, gun owners have a greater likelihood of being murdered. Furthermore, gun ownership is associated with an increased risk of serious injuries, accidental death, and death from suicide. The evidence on the effectiveness of gun control measures has not been encouraging, partly because the influential gun lobby has successfully prevented the introduction of more effective measures. A federal registration system for all firearms would address many limitations of present gun control measures. To mobilize public opinion, a culture change in attitudes toward firearms is needed.*

In the morning of December 12, 2012, in Newtown Connecticut, the 20-year-old Adam Lanza killed his sleeping mother with four shots to her head with a .22 caliber-Savage Mk I-F bolt-action rifle (Sedensky, 2013). He then took a Bushmaster .223 caliber-model XM15-E2S rifle with high-capacity 30 round clips, a Glock 10-mm handgun, a Sig-Sauer P226 9-mm handgun, and an Iz mash Saiga-12 semiautomatic Shotgun from the legally owned weapons collection of his mother and drove to the “Sandy Hook” elementary school. Leaving the shotgun in his car, he used the Bushmaster to shoot 20 children and 6 staff members.

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He committed suicide immediately afterward. His motive for the Sandy Hook shooting remains unknown.

Like the Columbine, Virginia Tech, and Aurora shootings before, the Sandy Hook shooting was seen by many as yet another proof for the need of stricter gun control laws in the United States. President Obama announced that he would make gun control a central issue of his second term. He also created a gun violence task force headed by Vice President Biden (Crabtree, 2012). In contrast, some gun rights advocates interpreted the Sandy Hook shooting as evidence for the need for a further relaxing of gun control. As the Executive Vice President of the National Rifle Association (NRA) Wayne LaPierre argued, the only thing that stops a bad guy with a gun is a good guy with a gun. He suggested that teachers should be armed and armed police men should be stationed in every school of the nation (Bushman, 2012; Memmott, 2012). In his opinion, guns have a deterrence effect and gun-free spaces should be reduced, because they attract criminals.

According to anecdotal evidence, gun sales increased in the week after the shooting, apparently because gun enthusiasts feared a tightening of gun control laws (David, 2012).¹ However, this fear proved mostly unjustified. Although Connecticut, Maryland, and New York introduced stricter gun control laws, many other states actually further relaxed their laws. And the two laws introduced in Congress in 2013 were both defeated. One was a bipartisan law to introduce universal background checks, the other to ban assault weapons of the type that had been used for the Sandy Hook killing (Weisman, 2013).

These responses to the Sandy Hook shooting are yet another illustration of the two diametrically opposed positions toward gun ownership and gun control that exist in the United States. With an estimated 270–310 million guns (legally and illegally held) in private hands, the citizens of the United States are by far the best armed people in the world (GunPolicy.org, 2014)². U.S. Americans own **nearly twice as many guns as the citizens of Yemen (54.8 per 100 people)**, the world number 2 in private gun ownership and **more than twice the number of guns owned by the citizens of Switzerland (45.7)**, the number 3 in private gun ownership

¹ The gun sales increase following mass shootings has recently been demonstrated in a study that assessed the link between six mass shootings that took place between 2000 and 2010 and gun acquisition, using Federal weapons background checks as proxy measure (Wallace, 2013). The study found mass shootings associated with an increase in monthly background checks. However, this increase was typically delayed by several months and of temporary nature.

² GunPolicy.org is a comprehensive and accessible Web source for published evidence on armed violence, firearm law, and gun control. It is hosted by the Sydney School of Public Health of the University of Sydney. It is funded by the Swiss Federal Department of Foreign Affairs and the Rowntree Foundation (York). The information it provides is thoroughly referenced. The other relevant Web site is The Small Arms Survey.org, an independent research project located at the Graduate Institute of International and Development Studies in Geneva, Switzerland. Both sources agree with regard to the top international gun ownership rates.

(GunPolicy.org, 2014)³. Proponents of stricter gun control argue that the general availability of guns is responsible for the fact that there are 32,000 gun-related deaths in the United States each year. They further add that with **4.7 homicides per 100,000 people in 2012 (FBI, 2012), the homicide rate in the United States is considerably higher than in most European countries** (e.g., United Kingdom: 1.03; Germany: 0.8; GunPolicy.Org, 2014). They believe that a reduction of the private gun ownership would result in a substantial reduction of these unnecessary killings.

In contrast, gun rights advocates argue that, “the basic premise of the gun control movement, that easy access to guns causes higher crime is contradicted by the facts, by history and by reason” (Lampo, 2000). And they offer a number of facts to support their position: First, there are many countries that have higher homicide rates than the United States, even though their gun ownership rates are lower. To give just one extreme example, Honduras has 6.2 guns per 100 people, but 85.5 homicides per 100,000 (GunPolicy.org, 2014). Second, there are countries such as Switzerland that have a low homicide rate (0.73 per 100,000) despite a high rate of gun ownership (GunPolicy.org, 2014). And finally, homicide rates in the United States increased steeply between 1983 and 1993 to decline again toward the end of last century, whereas rates of gun ownership have been relatively stable during this period or have even declined (Figures 1 and 2). The problem with these arguments is that by implying that guns are the single cause of gun violence the opponents of gun control present a straw man that can be easily defeated. Although easy access to guns contributes significantly to an increase in homicide rates, it is neither the single, nor even the most important determinant of homicide.

In this article, I discuss the role of firearm availability in violent death. I mainly focus on homicide, the domain where the role of guns has been most debated. I argue that, even though access to **guns is not a primary cause of homicide, the general availability of guns contributes substantially to U.S. homicide rate**. In developing this argument, I first review legal definitions of the different forms of criminal homicide. I then present a theoretical analysis of the different psychological processes through which access to guns can influence the homicide risk. Then, I review empirical evidence that supports the assumption that easy access to guns increases the homicide rate. After that, I review evidence that contrary to the belief of many gun owners in a protective effect of guns, gun ownership might actually increase their risk of being murdered. I then briefly discuss the impact easy access to guns has in increasing rates of other gun-related deaths (suicide and accidental gun death). In a final section, I argue that gun control alone cannot solve this problem as long as the ownership of the 300 million guns that are in

³ Some U.S. Americans own multiple weapons; only between 33.1% (General Social Survey [GSS]; Smith, Laken, & Son, 2014) and 42% (Gallup, 2014) of American households own a gun.

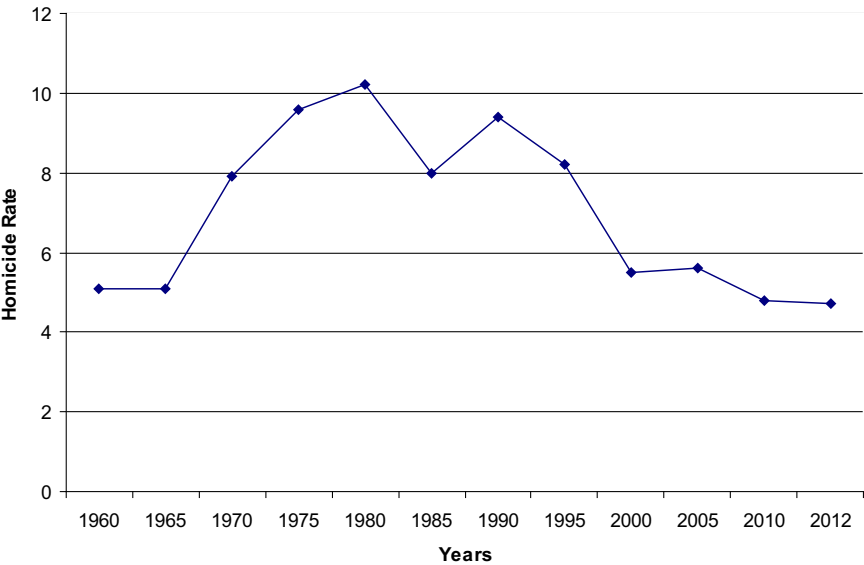


Fig. 1. U.S. homicide rates (per 100,000) 1960–2012 (Disaster Center, 2014).

US Household Gun Ownership Rate

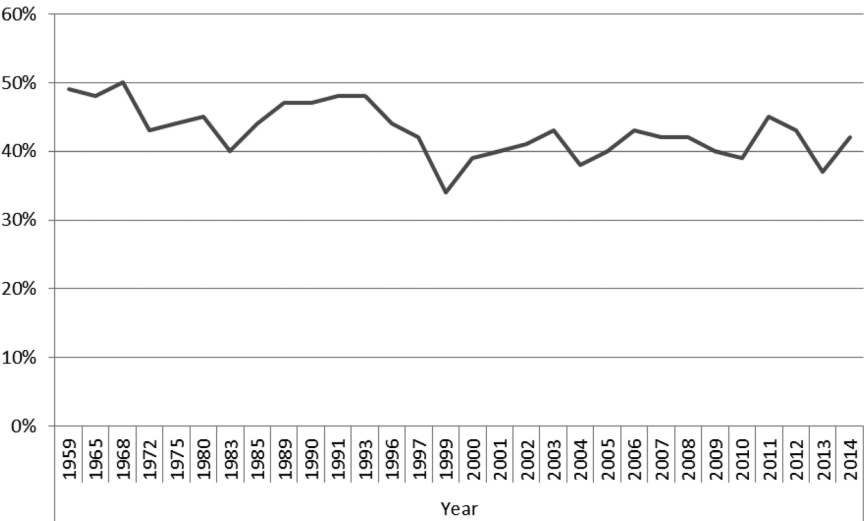


Fig. 2. Percent U.S. households owning guns 1959–2014 (Gallup, 2014).
This graph is an interpretation of data compiled by Gallup, Inc. However, Gallup, Inc. had no part in the creation of this graphic interpretation.

private hands in the United States is unknown. I suggest that a federal system of compulsory gun registration would go a long way to reducing criminal gun ownership. But to make the introduction of such a system politically possible, a cultural change in attitudes toward guns would be needed.

Legal Definitions of Homicide

The Federal Bureau of Investigations (e.g., FBI, 2012) defines criminal homicide as the “willful (nonnegligent) killing of one human being.” A person commits criminal homicide, if he or she intentionally, knowingly or with criminal negligence causes the death of another person. All forms of criminal homicide require the intention to kill, but they differ in terms of the degree of premeditation. Premeditation refers to the amount of forethought involved in the planning of the killing. The most serious form of criminal homicide is first-degree murder, a homicide that is both intentional and premeditated. When the killing is intentional but lacks premeditation, because a person is provoked under circumstances likely to provoke any reasonable person and kills in the “heat of passion,” the court might decide on a second-degree murder charge or—depending of the degree of the mitigating circumstances—even on a voluntary manslaughter charge. The distinction between the different forms of criminal homicide parallels the psychological distinction between intentional behavior that is the result of deliberation (i.e., premeditated) and intentional behavior that is impulsive and reflects spur of the moment actions (e.g., Strack & Deutsch, 2004).

Guns and Homicide: A Theoretical Analysis

The defining aspect of all forms of homicide is the intention to kill another person. Guns are a means to reach this goal, but are not a primary determinant (i.e., not a homicide motive). People are unlikely to commit murder to try out their new gun. According to the criminological literature, the major determinants of homicide are structural factors of society such as resource deprivation, racial heterogeneity, social disintegration, and percentage of young people in a population (e.g., Fajnzylber, Lederman, & Loarza, 2002; Land, McCall, & Cohen, 1990; McCall, Land, & Parker, 2010; Tcherni, 2001). Criminologists present a great deal of empirical evidence that these factors account for substantial variance in homicide rates. However, they fail to address the question how these macrolevel factors influence a perpetrator’s intention to commit murder. This failure leaves unanswered the question of whether the lower homicide rate in Switzerland is due to the fact that there are fewer underprivileged young individuals or to the fact that these individuals do not consider murdering others as an effective strategy to address their problems.

In a classic reorientation of thinking about the influence of culture on behavior, Swidler (1986) argued that “culture influences action . . . by shaping a repertoire or ‘tool kit’ of habits, skill, and styles from which people construct ‘strategies of action’” (p. 273). There is some indication **that gun violence is to a greater extent a part of the cultural tool kit in the United States than it is in other Western countries such as Switzerland (or the rest of Europe)**. For example, unlike citizens of the United States, Europeans do not have the right to own guns (GunPolicy.org, 2014). Only licensed gun owners may lawfully acquire and possess firearms and they are required to prove genuine reasons for this possession (e.g., hunting, high personal risk). Moreover, in contrast to the United States, in Europe only individuals in high-risk professions can use need for self-defense to justify an application for a gun license (GunPolicy.org, 2014). Furthermore, the idea apparently prevalent among some gun right advocates that gun-free zones are dangerous places, because only the “bad guys” have guns there, would be totally alien to Europeans, because in Europe all public spaces are gun-free (except for the police). Carrying guns in public places—concealed or otherwise—is not permitted for civilians in Europe and most other Western developed countries. In Britain not even the police routinely carry guns. These differences suggest that the fear of being killed and the need of carrying a gun for self-defense might be more prevalent among Americans than it is among Europeans and that therefore the idea of using a gun for killing people may be more accessible to U.S. citizens than it is to Europeans.

There are two pathways by which the availability of firearms can influence homicide rates, namely, **by increasing the probability that the intention to commit homicide is being formed**, and by **increasing the probability that the execution of a homicidal intention actually results in a murder**. These processes will be discussed in the next two sections.

The Influence of Gun Availability on the Formation of Homicidal Intentions

One way by which guns can influence the formation of homicidal intentions is their efficacy as murder instruments. The **adoption of an end-state as a goal is not only determined by the desirability of the end-state** but also by **the perceived probability of attaining it** (e.g., Kruglanski, Chernikova, Rosenzweig, & Kopetz, 2014). Because use of a gun is seven times more likely to result in a killing than the use of other (personal) weapons (Zimring, 2004), access to a gun substantially increases the success rate of the execution of homicidal intentions. By increasing the success of the execution of a homicidal intention, guns are also likely to increase the probability that such an intention will be adopted. If a person would find it desirable to kill another person, he (or she) would only form the intention to do so, if he (she) thinks that there is a high probability of achieving this goal (and getting away with the killing). The **possession of a gun might “give some**

people the courage to attempt aggressive acts they would otherwise be too afraid to attempt” (Kleck & Hogan, 1999, p. 276).

The Sandy Hook shooting is a case in point. What would Adam Lanza have done without the easy availability of his mother’s weapons? If he had only a knife at his disposal, would he have formed the intention to kill children and staff members at Sandy Hook? However, it is also important to note that if Lanza had not had the desire to kill, it is unlikely that the easy access to guns would have induced him to commit these murders. As Kruglanski et al. (2014) stated in their analysis of motivational readiness, “whereas some motivational readiness may exist in the absence of expectancy (of Want satisfaction), no readiness will be present in the absence of desire” (p. 377).

A second process by which gun accessibility can influence homicidal intentions is through the priming of aggressive thoughts and aggressive behavioral scripts. For most people, the concept of guns is linked in memory to concepts of aggression and hostility. Guns, and particular handguns, are tools to hurt or kill people. Therefore, when the concept of a gun is being activated, concepts as well as behavioral scripts that are closely linked in memory to the concept of gun will be activated as well (Anderson, Benjamin, & Bartholow, 1998). Scripts are well-rehearsed sequences of associated concepts that often involve goals and action plans (Anderson et al., 1998). The increased accessibility of these aggressive thoughts and aggressive scripts can increase the likelihood of aggression by biasing the interpretation of an interpersonal interaction in terms of aggressive meaning or by making the aggressive solution to an interpersonal conflict appear more appropriate (Anderson et al., 1998).

Early evidence for this hypothesis was provided by the classic study of Berkowitz and LePage (1967) on the “weapons effect.” These researchers demonstrated that individuals, who had been angered by another experimental participant, reciprocated more aggressively when a gun (rather than a tennis racket) was visibly present in the laboratory. Several teams of researchers have since replicated these findings. According to a meta-analysis of these findings by Carlson, Marcus-Newhall, and Miller (1990), aggression-related cues increase aggressive responding in experimental settings even in the absence of negative affect. However, this cue effect occurs more strongly when participants have previously been negatively aroused.

A direct test of the priming interpretation of the weapons effect was conducted by Anderson and colleagues (1998), who assessed the impact of weapon primes on the accessibility of aggressive target words. In support of the priming interpretation, they found that the accessibility of aggressive as compared to nonaggressive words was higher when the prime stimulus was a weapon word rather than a neutral word. Further support for the behavioral effects of exposure to firearms comes from a study by Klinesmith, Kasser, and McAndrew (2006). These authors demonstrated that handling a gun for 15 minutes (compared to a toy)

increased the testosterone level in male participants. These males later behaved more aggressively toward other participants than the men, who had handled the toy. And most persuasively, testosterone levels mediated the effects of handling the gun on aggressive behavior.

Since committing murder reflects a substantially higher level of aggression than the aggressive behaviors used in experimental studies (e.g., administering hot sauce or loud noise), one would expect that the presence of a weapon is only likely to prime murderous thoughts if there is already considerable anger toward another person (i.e., motivational readiness). In such a situation of conflict and anger, and potentially under the influence of alcohol, the presence of a gun might be responsible for priming the aggressive thoughts and aggressive scripts involving that gun that finally morph the motivational readiness into a killing impulse.

The Influence of Gun Availability on the Execution of Homicidal Intentions

Of the deadly weapons that are readily available in the United States, guns are the most effective. Guns are much more likely to cause death than a similar attack with a knife—the next most dangerous weapon (Zimring, 2004). Use of a gun has the added benefit that it does not require close personal contact with the victim. It is therefore not surprising that even though “guns are only used in 4% of crimes, and only 20% of violent crimes, they are responsible for 70% of killings” (Zimring, 2004, p. 34). If guns were not available, the same distribution of homicidal intentions would result in considerably fewer homicides. This has become known as the “instrumentality hypothesis.”

With first-degree murder committed after extensive planning and deliberation, it should not matter whether the perpetrator already owned a gun before the murder as long as it is easily possible to acquire one. In contrast, with second-degree murder or voluntary manslaughter, when the intention to kill is the result of a spur of the moment decision, household gun ownership should be an important factor that facilitates the execution of the intention. If a person is enraged and perhaps under alcohol influence wants to kill another person, he or she may not act on this intention (or at least not be successful in executing the intention), if there is no immediate access to a gun. Thus, if neither opponent in a violent conflict had had a gun, there might have been heated arguments, perhaps even physical aggression resulting in serious bodily harm, but nobody would have been killed.

Guns and Homicide: Empirical Evidence

The following two sections review evidence on the two competing assumptions about gun ownership and homicide, namely, (1) that easy access to guns increases the risk of committing a homicide or (2) that gun ownership protects individuals and lowers their risk of becoming homicide victims.

Does Easy Access to Guns Increase the Risk of Committing Homicide?

From a methodological perspective, the strongest evidence for the hypothesis that owning a gun increases the chance that one commits a homicide would come from experimental studies in which individuals would be randomly assigned to either a condition of gun ownership or a condition without guns. One would then have to observe over the next decades, how many homicides would be committed by the members of each group. Obviously such an experiment is not feasible. Even if one could randomly assign guns to people, with 4.7 homicides per 100,000 individuals, homicide is a very rare event and these groups would therefore have to be extremely large. The relative rarity of homicide also precludes the next strongest study design, namely, a longitudinal cohort study.

To circumvent the group size problem in the study of rare events, epidemiological research uses the case-control methodology. Instead of waiting for people to develop a rare disease, one compares a group that already has that disease with a suitable control or comparison group without the disease. Such a study is retrospective because it starts at the end point and looks back at the causes that led to this point. It also suffers from the shortcoming of all nonexperimental research that the validity of any conclusion will depend on the validity of the assumption that case and control groups differ only in terms of the crucial variable (or that all other differences can be statistically controlled). Translated to the issue of gun ownership and homicide, one would need a group of individuals, who committed murder and compare them to a nonmurderous comparison group with regard to the rate of gun ownership.

In an **ingenious study**, Kleck and Hogan (1999) compared the rate of gun ownership of a sample of more than 13,000 inmates of state prisons who had committed murder between 1988 and 1991 and had been interviewed with regard to gun ownership with the gun ownership rates of a national representative sample of more than 12,000 individuals interviewed for the General Social Survey (GSS), a face-to-face survey conducted by the University of Chicago. This research design is suitable for addressing the question whether gun ownership will increase the likelihood that a person commits criminal homicide. Because the validity of the outcome of such a study depends on whether the two samples are comparable with regard to all factors that predict gun ownership, the authors tried to control for all factors known to be important predictors of gun ownership (Jones, 2013). It would have been preferable to use criminals, who have not committed any murders as comparison group; but the wide availability of guns in the general population may make this perhaps an unnecessary restriction. **Controlled for sex, race, age, Hispanic ethnicity, personal income, marital status, education, whether the subject resided in the South, had any children under 18, or was a military veteran, the authors found that “the odds of a person with a gun killing are about 1.36 times as high as the odds among persons without a gun”** (Kleck & Hogan,

1999, p. 266). Thus, owning a gun was associated with a 36% increase in the likelihood that a person committed criminal homicide.

Most other studies of the role of gun ownership in homicide have used a weaker ecological design. These studies related the rates of gun ownership at the international or national level to homicide rates at the same level and reported some kind of measure of the association between these two rates across different countries or different states. The fact that there are countries that have high rates of gun ownership but low rates of homicide and also countries with rates of gun ownership that are lower than those of the United States but much higher homicide rates indicates that the correlation between these two types of rates across countries is less than perfect. Given that homicide rates are determined by a range of structural factors that differ widely between countries, associations between these rates are unlikely to be very close, particularly if countries are chosen that vary widely with regard to their economic and/or cultural characteristics (Stroebe, 2013).

There are marked differences in average gun ownership as well as in homicide rates between the 50 States of the United States. For example, New Hampshire has a homicide rate of 1.1 per 100,000, whereas Louisiana has a rate of 10.8 (FBI, 2012). The percentage of individuals owning a gun is 3.8% in Washington, DC compared to 59.7% in Wyoming (Behavioral Risk Factor Surveillance System [BRFSS], 2001). Studying the association of gun ownership rates with homicide rates within the United States rather than internationally has the advantage that there is less cultural diversity between the 50 States than between the countries compared in many international studies: U.S.-states have the same language and the same legal system and are therefore much more comparable than countries from Africa, Asia, Europe, North America, South America, and Oceania that are often compared in international studies (e.g., Konty & Schaefer, 2012). However, one problem with conducting this kind of research in the United States is that there are no requirements for a registration of firearm sales or ownership in most states. Researchers have therefore had to use survey data or gun ownership proxies (i.e., indirect measures) to assess levels of gun ownership. One frequently used indirect measure for gun ownership, the Cook Index (Cook, 1979), is based on the average percent of homicides involving a gun and the percent suicides involving a gun. But a comparison of different indirect measures of gun ownership found that the number of firearm suicides divided by all suicides (FS/S) compares best with survey measures (Kleck, 2004).

In an earlier article (Stroebe, 2013), I reviewed eight U.S. national studies of the association between gun ownership and homicide (Gius, 2009; Hoskins, 2011; Kaplan & Geling, 1998; Miller, Hemenway, & Azrael, 2007; Moody & Marvell, 2005; Price, Thompson, & Dake, 2004; Stolzenberg & D'Alessio, 2000) and one study conducted in Canada (Bridges & Kunselman, 2004). With one exception

these studies reported a positive association between gun ownership and homicide rates (although only for illegal guns in the case of Stolzenberg & D'Alessio, 2000).

In the meantime, a more comprehensive analysis of the relationship between rates of firearm ownership and homicide in the United States has been conducted by Siegel, Ross, and King (2013), who assessed this relationship for the 30-year period from 1981 to 2010 for all 50 States. Because survey data on gun ownership are only available for a small part of this period, they used the percentage of suicides committed with a firearm as indirect measure of gun ownership (FS/S).⁴ The outcome variable was the age-adjusted firearm homicide rate, obtained from the Centers for Disease Control and Prevention's Web-based Injury Statistics Query and Reporting System database. They controlled for a whole range of factors identified in previous studies as being related to homicide rates (e.g., proportion of young males, proportion of Blacks, poverty status, unemployment, income inequality, per capita alcohol consumption, divorce rate, and violent crime rate). They found that in addition to gun ownership rates, the percent Blacks, income inequality, violent and nonviolent crime rates and incarceration rates proved to be significant predictors of homicide rates. Controlling for these five factors, their multivariate analysis indicated that for each one-percentage point increase in gun ownership proxy, the firearm homicide rate increased by 0.9%. Importantly, rates of gun ownership were unrelated to nonfirearm homicides.

Similar findings have been reported by two other studies that used survey data of state-level firearm ownership from the BRFSS. Based on firearm ownership data for the year 2001, Miller et al. (2007), found a 3.3% increase in firearm homicide victimization for each one-percentage point difference in household firearm ownership. Monuteaux, Lee, Hemenway, Mannix, and Fleegler (2015), who used the BRFSS for the years 2001, 2002, and 2004 also reported a strong association between these two variables.

Since these findings derive from cross-sectional studies they merely demonstrate an association between gun ownership rates and homicide rates and are thus open to several interpretations. In addition to the hypothesis that gun ownership increases homicide risk, the observed association could be due to some third variable interpretation, or to the influence of homicide rates on gun availability (i.e., reverse causality). The third variable interpretation is not very plausible, because such a variable would have to be associated with rates of gun availability and rates of gun-related homicides, but unrelated to nongun homicides and the various control variables used in the two studies.

⁴ The FS/S measure correlates .80 with survey estimates of gun ownership in the 50 States from the BRFSS for the years 2001, 2002, and 2004. Siegel, Ross, and King (2014a) developed a new proxy measure that adds per capita hunting licenses to the original proxy measure. This new proxy correlated .95 with the state-level gun ownership data from the BRFSS. However, a replication of the 2013 study using the new proxy by Siegel, Ross, and King (2014b) did not change the estimate of the association between gun ownership and homicide rates.

More plausible is the assumption that homicide rates influence rates of gun ownership given that more than half of gun owners claim the need for self-defense as reason for owning a gun (Cook & Ludwig, 1998). The increased gun sales after mass shootings provide support for this interpretation (Wallace, 2015). However, there is a great deal of evidence that suggests a causal influence of gun availability on homicide rates and cannot be explained by reverse causality. Most importantly, the fact that the association is only found for gun-related homicides and (as will be discussed below) for homicides of nonstrangers (i.e., victims that have a personal relationship with the perpetrator) is inconsistent with the assumption of reverse causality. If it were fear of crime that led to an increase in gun sales, the association should be found for all homicides, regardless of the murder weapon and regardless of the relationship between victims and perpetrators. Furthermore, the findings of the Kleck and Hogan (1999) study are also not amenable to an explanation in terms of reverse causality. And in the study described earlier, Monuteaux et al. (2015) found firearm availability in 2001 significantly related to increased homicide rates in 2002 and 2004. This is consistent with the assumption that the association of gun availability and homicide rates was due to guns increasing homicides rather than the other way round, they. Finally, the finding that gun ownership rates have been steadily declining since the 1960s despite doubling of homicide rates (and a more than doubling of rates for rape, robbery, and aggravated assault) between the 1960s and the 1990s is also inconsistent with the assumption that it is the homicide rate that motivates people to buy guns for self-defense.

It is important to note, however, that both interpretations can be valid with each accounting for part of the association between gun ownership and homicide rates: A perceived increase in homicide rates could motivate people to buy guns and this increase in gun ownership could increase homicide rates. The findings of a study by Duggan (2001) support this assumption. Using subscription rates for one of the largest U.S. gun magazines (Guns & Ammo) as indirect measure of gun ownership, Duggan (2001) examined the association between changes in gun ownership and changes in violent crime. He found that a 10% increase in gun ownership in the current year was associated with a 2.14% increase in gun (but not nongun) homicide rates the following year. The effect of lagged homicide rates on gun ownership was significant, but much weaker. A 10% increase in homicide rates is associated only with a 0.2–0.3% increase in gun ownership.

To conclude, there is a great deal of evidence from cross-sectional studies that rates of gun ownership are positively related to rates of homicide. This association is ambiguous with regard to causal direction. It is consistent with both, the hypothesis that gun ownership increases homicide rates as well as with the assumption that high homicide rates motivate people to buy guns for protection (i.e., reverse causality). Although there is support for both interpretations, the impact on gun availability on homicide rates appears to be much stronger than the effect of perceived increase in homicide rates on gun purchases.

Does Gun Ownership Have a Protective Effect?

Apart from the fact that owning a gun is a constitutional right, the main argument used to justify gun ownership is self-defense. The Supreme Court of the United States in the landmark decision *District of Columbia v. Heller* (554 U.S. 570, 2008) held that the Second Amendment to the U.S. Constitution protects an individual's right to possess a firearm for self-defense. This raises the interesting question whether owning a gun is actually an effective means of self-defense. Three types of evidence will be discussed, namely, (1) the frequency of defensive gun use (DGU), (2) the association between gun availability and stranger versus nonstranger homicides, and (3) case-control studies comparing gun ownership of homicide victims and individuals, who were not victims of homicides.

Defensive gun use. One way to address the question whether gun ownership has a protective effect is through self-reports about DGU. Based on a small survey, which asked respondents whether they had engaged in DGU during the last year, Kleck and Gertz (1995) arrived at an estimate of 2.5 million DGUs per year for the total U.S. population. This estimate is twice as high as the estimated number of crimes committed each year with firearms according to the Bureau of Statistics of the U.S. Department of Justice (Cook & Ludwig, 1998).

The problem with such surveys is that DGUs are very rare events so that there are very few reports of DGU even in a reasonably large sample. For example, in a survey modeled after Kleck and Gertz (1995), Cook and Ludwig (1998) arrived at a similar estimate of the population prevalence of DGU. Applying the criteria used by Kleck and Gertz for excluding respondents (e.g., because DGU was part of military or protective service work) Cook and Ludwig were left with just 19 respondents who reported DGUs. Population projections were then calculated by multiplying the sample-based prevalence estimate by the adult population in the United States. With a 95% confidence interval, Cook and Ludwig (1998) estimated that between 0.3% and 1.5% of Americans (between 0.6 and 2.9 million) were involved in DGUs in 1994. With such a small number of respondents, even a few false claims could result in an extreme increase in the overall estimate of DGU.

A more reliable estimate of the prevalence of DGUs comes therefore from a study by McDowall and Wiersema (1994) who based their estimate on the data for the years 1987–1990 of the National Crime Victimization Survey, a multistage probability sample of 59,000 housing units in the United States. This survey collects evidence on six crimes: rape, robbery, assault, burglary, personal and household larceny, and motor vehicle theft. Victims, who report seeing an offender, are then asked about whether they did something about the incidence, while it was going on. The authors calculated the national prevalence by weighing the criminal incident count by the population at risk. During the period of the study, there were an estimated 258,460 incidents of firearm resistance; during the

same period there were an estimated 143,995,448 incidents of crime. Thus, less than 0.2 % of the victims defended themselves with a gun. Considering violent crimes alone (i.e., rape, robberies, and assault) 0.83% of victims used firearms for self-defense. Similar results were reported by Planty and Truman (2013) based on data from the National Crime Victimization Survey for the period from 2007 to 2011. During this period, there were 235,700 instances of violent victimizations where the victim used a firearm to threaten or attack an offender. This amounted to approximately 1% of all nonfatal violent victimizations during this 5-year period. There was even less firearm resistance to property crimes. The 103,000 instances of reported DGU amounted to 0.1% of all property crimes during that period.

These findings are consistent with an analysis of 743 death from firearms investigated during a 6-year period in King County, Washington (Kellermann & Reay, 1986). Of these 398 occurred in the home where the firearm involved was kept. Of these 333 were suicides, 50 were homicides, and 12 were accidental deaths. Only two of these killings (0.5%) involved the shooting of an intruder during an attempted burglary. These studies suggest that DGUs are very rare and that criminal have little to fear from armed victims.

Gun ownership and stranger versus nonstranger homicides. A stranger homicide is a homicide where the victim did not know the offender or knew the offender only by sight. With a nonstranger homicide, the victim is either related to, well-known, or casually acquainted with the offender. That most homicides are conducted by family or friends of the victim have been known for a long time, but mainly from studies of smaller samples of homicides (e.g., Wolfgang, 1958). Siegel et al. (2014c) replicated this finding in their study of the homicides conducted in the United States between 1980 and 2008 of which the relationship between victim and offender was known (approximately 60% of all homicides)⁵. They reported that only one fifth of all homicides were stranger homicides. In other words, four-fifth of these homicide victims were murdered by husbands, wives, mothers, fathers, sons, daughters, brothers, sisters, other family members, neighbors, or acquaintances.

People who report that they own a gun for self-defense have never been asked to specify, whom they are afraid of. However, it seems plausible to assume that they want to be armed to defend themselves against burglars or robbers rather than family members, friends, or acquaintances. Therefore, if guns were effective means of defending oneself against homicide attempts, higher gun ownership rates should be associated with lower rates of homicides committed by persons

⁵ A study that used data from initially unsolved homicides that were later solved found that the proportion of stranger to nonstranger homicides remained unchanged. As the authors note, these “findings help negate the ongoing myth that unsolved homicides are disproportionately stranger homicides” (Quinet & Nunn, 2014, p. 271).

unknown to the victim (stranger homicides). To test this prediction, Siegel and colleagues (2014c) assessed the association between gun ownership rates in the 50 U.S. States between 1980 and 2008 (using the same gun ownership proxy as in the earlier study of Siegel et al., 2013). They found that gun ownership rates were unrelated to rates of stranger homicides but positively associated with nonstranger homicides. They concluded that their findings “challenge the argument that gun ownership deters violent crime, in particular, homicides” (Siegel et al., 2014c, p. 1918).

These findings also fail to match the typical self-defense situation described in the regular column “The Armed Citizen,” which the *American Rifleman*, the flagship magazine of the NRA, has published regularly since the 1920. This column reports instances in which law-abiding citizens have used guns to defend their family or their property against armed intruders. O’Neill (2007) analyzed the structure of these stories, which contain three character types: “(1) the perpetrator, (2) the victim, and (3) the hero. The category of “the perpetrator” fits nicely into a three-part typology. There is (1) the armed burglar, (2) the violent maniac, and (3) the wild animal. And, although the perpetrator does come in different shapes and sizes, each and every manifestation is irrational, nameless, and faceless.” (p. 462). Although these stories might be true, the findings discussed earlier suggest that such events must be quite rare.

Gun ownership and the risk of becoming a homicide victim. The most direct source of evidence for a protective value of owning a gun would come from studies of the relationship between gun possession and the risk of becoming a homicide victim. If owning a gun offered an effective protection against becoming the victim of a homicide, then gun owners would be less likely to be victimized than people, who do not own guns. This question has been examined with case-control studies that compared gun ownership rates among homicide victims (the cases) with ownership rates of matched control groups of individuals, who did not become victims (Branas, Culhane, Richmond, Ten Have, & Wiebe, 2009; Cummings, Koepsell, Grossman, Savarino, & Thompson, 1997; Dahlberg, Ikeda, & Kresnow, 2004; Grassel, Wintemute, Wright, & Romero, 2003; Kellermann et al., 1993). If gun ownership had a protective effect, there should be fewer guns owned by members of the case sample than by individuals belonging to the control sample.

The first case-control study of homicide victimization has been conducted by Kellermann et al. (1993). Case participants in the study were the residents of three counties, who had been murdered at home during a 5-year period. Control participants were matched to case studies in terms of age, sex, race, and neighborhood. Individuals living in a home with a firearm were nearly three times as likely to be murdered as individuals living in a home where no guns were being kept. A majority of these homicides was committed in the context of a quarrel and case

Table 1. Information about Gun Ownership and Location of Homicide in Case-Control Studies of the Accessibility of Firearms and Risk of Homicide Victimization

<i>Authorship</i>	<i>Gun ownership</i>	<i>Location of homicide</i>
Branas et al., 2009	Personal	Outside home
Cummings et al., 1997	Personal & Household	Unspecified
Dahlberg et al., 2004	Household	Home
Grassel et al., 2003	Personal	Unspecified
Kellermann et al., 1993	Household	Home
Wiebe, 2003	Household	Unspecified
Wintemute et al., 1999	Personal	Unspecified

subjects more commonly consumed alcohol and previous periods of violence were reported more frequently by members of case households. Only half of the murders were committed with firearms, but only these homicides were increased by gun ownership.

Since then five similar studies have been published (Branas et al., 2009; Cummings et al., 1997; Dahlberg et al., 2004; Grassel et al., 2003; Wintemute et al., 1999). Firearm ownership was either determined through interviews with family or friends (Dahlberg et al., 2004; Kellermann et al., 1993; Wiebe, 2003) or through recorded gun purchases (Cummings et al., 1997; Grassel et al., 2003; Wintemute et al., 1999). Table 1 summarizes the information about gun ownership and the location where the homicide took place. A recent meta-analysis of these studies arrived at an odds ratio of 2 (CI, 1.56–3.02) for becoming a homicide victim for individuals who had access to guns (Anglemyer, Horvath, & Rutherford, 2014). Thus, rather than indicating a protective effect of gun ownership, these findings appear to show that personal or household gun ownership doubles the risk of becoming a homicide victim.

In interpreting these findings, one needs to distinguish between household and personal gun ownership. The fact that Dahlberg et al. (2004) reported that household gun ownership increased the homicide risk only for persons living with others but not for persons living alone combined with the fact that nearly a third of the homicides occurred during a family argument could suggest that the household gun was used for the murder. Similarly, Kellermann et al. (1993) reported that gun ownership was most strongly associated with homicide at the hands of a family member or intimate acquaintance, but not with homicides by more distant acquaintances of strangers. These findings suggest that living in a household in which a gun is easily accessibly increases the risk of becoming the victim of a gun homicide.

Two of the four studies that were unspecific with regard to the location of the murder involved homicide victims who most likely personally owned a gun (Grassel et al., 2003; Wintemute et al., 1999). The finding that they had a higher risk of becoming homicide victims than controls, who did not own a gun, speaks against a protective effect of gun ownership. However, one would have liked to

know for homicides outside the home whether the decedent carried a weapon at the time of the murder (Cummings et al., 1997; Grassel et al., 2003; Wiebe, 2003; Wintemute et al., 1999).

The only case-control study that ascertained that the homicide victim owned the gun and carried it at the time of the murder unfortunately used control group that was very problematic (Branas et al., 2009). The case participants in this study were individuals who had been in an assault in Philadelphia during the years 2003–2006. Individuals who were in possession of a gun were 4.46 times more likely to be shot in an assault than those not in possession, and 4.23 times more likely to be fatally shot. In an assault where the victim had at least some chance to resist, the likelihood of being shot was 5.45 times greater for individuals in possession of a gun. The members of the control group were sampled from all of Philadelphia through random dialing (Wintemute, 2010). As a result, there were marked differences between the two groups: Case participants were more often Hispanic, more frequently working in high-risk occupations, less educated, and had a greater frequency of arrests. Most problematic, however, was that 83% of the case participants were outdoors and in areas where more Black, Hispanics, and unemployed individuals resided compared to only 9% of the controls. Although the authors tried to statistically control for these confounding factors, it is doubtful whether these controls were satisfactory.

Even if one disregards the study of Branas et al. (2009), the findings of the other case-control studies allow two conclusions, one firm and one tentative. First, there is no evidence that gun ownership offers protection against becoming a victim of a homicide. Second, one can conclude tentatively that gun ownership actually increases the risk of victimization. Although this second conclusion is rather tentative, it is interesting to speculate about the processes that might be responsible for such an increase in homicide risk. The association between household gun ownership and homicide victimization is likely to reflect the general phenomenon that individuals are most likely to be murdered by people with whom they have a personal relationship (Siegel et al., 2014c; Wolfgang, 1958). As discussed earlier, easy access to a gun increases the likelihood that a family conflict escalates and finally results in a homicide, particularly when the perpetrator is under alcohol influence.

More intriguing are the cases, in which the person who owned the gun became the victim of a homicide (e.g., Grassel et al., 2003; Wintemute et al., 1999). There are at least two ways to explain such an association. First, gun owners might possess attributes (or behave in ways) that increase the likelihood of homicide victimization. This explanation would assume that owning a gun is part of a general risk-prone behavior pattern that increases the likelihood of a person getting killed. (If this were true, these people would have a greater likelihood of being killed, even if they did not own a gun.) Second, easy access to a gun might prime behavior

patterns that increase the likelihood of getting murdered. There is evidence for both these explanations.

Support for the first assumption comes from a study that examined the extent to which the decision to own a gun is influenced by genetic factors. Using twin study methodology, Barnes, Boutwell, and Beaver (2014) assessed the concordance in gun ownership of 214 monozygotic (MZ) and 315 dizygotic (DZ) twin pairs. The logic underlying this kind of study is that MZ twins share all their genetic material whereas DZ twins share only half. If gun ownership is to some extent determined genetically, one would expect less concordance in gun ownership between DZ than MZ twins. The concordance rate for DZ twins (.18) was lower than that for MZ twins (.35) suggesting that handgun ownership was at least partially heritable.

To understand the finding that genetic factors influence gun ownership one has to remember that they influence personality traits, which in turn influence lifestyle variables. These lifestyle variables might affect the decision to own a gun, but at the same time, influence other variables that increase an individual's risk of becoming involved in violence. There is evidence that firearm owners are more likely to be heavy drinkers than people, who do not own firearms (Wintemute, 2011). This finding is particularly disturbing, because alcohol is a risk factor for domestic violence (Hemenway & Richardson, 1997). Heavy drinkers are also more likely to apply for a license to carry a concealed weapon (Schwaner, Furr, Negrey, & Seger, 1999). Among White U.S. citizens, gun ownership has also been found related to symbolic racism (O'Brien, Forrest, Lynott, & Daly, 2013). Using data from the American National Election Study, a representative probability sample of U.S. voters, these researchers found that "for each 1 point increase in symbolic racism, there was a 50% greater odds of having a gun in the home" (p. 7).

In support of the second explanation, the presence of a gun is likely to increase aggression-related cognitions and the probability of people behaving aggressively. The feeling of power that the possession of a gun might confer on the owner might exacerbate this tendency. Studies of road rage provide evidence to support this assumption. People who carry firearms in their cars are more likely than others to behave aggressively toward other drivers by making obscene gestures or following other cars aggressively (Hemenway, Vrinotis, & Miller, 2005; Miller, Azrael, Hemenway, & Solop, 2002). Although this could all be part of the general risk-prone behavior pattern that induced the person to purchase a gun in the first place, it would follow from the earlier theoretical discussion of priming effect, that this behavior pattern was triggered by the presence of the gun.

Gun Ownership and Homicide: Conclusions

There is no empirical support for two major assertions of the gun rights advocates, namely, that the availability of firearms reduces homicide rates and that owning a gun protects individuals against becoming victims of homicides.

According to the evidence reviewed here, **firearm availability is positively related to homicide rates, particularly to nonstranger homicides**. Even though there is some indication that part of this association is due to high homicide rates motivating people to buy guns for self-defense, most of the association appears to be due to a causal influence of guns on homicide rates.

With regard to the role of guns in self-defense, the evidence suggests that **people who live in households where there are guns and/or own guns themselves have an increased risk of becoming victims of homicides**. Whereas the increased risk of homicide victimization of people, who live in a household where a gun is available is easily explained, it is less clear why people, who personally own a gun should run an increased risk of homicide victimization. The most probable reason is that gun owners engage in lifestyles that expose them to greater risk of getting involved in violent interactions. **It is also likely that the feeling of power conferred by gun ownership also encourages them to escalate aggression in such interactions**.

Gun Ownership and Other Firearm-Related Deaths

Because homicide is the one area of gun-related death where the role of access to firearms is being most debated, the main focus of this article is on the association of gun ownership and homicide. It is important to note, however, that suicide and not homicide is the major cause of gun-related mortality. In fact, there are nearly twice as many gun-related suicides than homicides in the United States. For example, in 2011 guns were used in 11,109 homicides, but 19,766 suicides (GunPolicy.Org, 2014). I therefore briefly discuss the association between gun ownership and suicide.

In their meta-analysis of the association between household ownership of a firearm and the risk for suicide among family members, Anglemeyer et al. (2014) reported an odds ratio of 3.24 (CI, 2.40–4.40).⁶ The odds of committing suicide were considerably higher in households that owned a firearm. Since their findings are based on overall suicide rates, they cannot be explained with the assumption that individuals with easy access to guns used guns instead of other means. If that had been the case, only gun-related suicide rates, but not overall rates should have been associated with household gun ownership. Further evidence ruling out the assumption that guns were used to substitute for other means of committing suicide comes from the fact that firearm ownership has consistently been found

⁶ Part of this association is likely to be due to persons, who purchase a gun intending to commit suicide. There is indeed some evidence from longitudinal studies that the risk of suicide is higher in the first weeks or even the first year after a gun purchase (Cummings et al., 1997; Wintemute et al., 1999). However, both studies, as well as the investigation by Grassel et al. (2003), found that the suicide risk remained increased for many years after the gun purchase, consistent with the assumption that the ready availability of a gun results in a general increase of the risk of death by suicide.

unrelated to rates of nonfirearm suicides (for a review, see Miller, Barber, White, & Azrael, 2013). If guns were merely used as a substitute, one should have found a negative association between gun ownership and suicides committed by other means.

So how do we explain the strong association of gun ownership and suicide? This relationship is likely to be due to the fact that guns are a much more effective means of committing suicide than any other method. There is evidence that one third to four-fifth of suicide attempts are impulsive and most people, who attempt suicide never repeat the attempt. More than 90% of people who survive suicide attempts do not go on to die by suicide (Miller & Hemenway, 2008). The problem is that more than 90% of all suicidal acts with firearms are fatal compared to fewer than 3% of suicide attempts using drugs or cutting (Miller et al., 2013). Thus, people who use firearms in their suicide attempts, rarely have the opportunity to change their minds. Miller and colleagues speculated that if only “1 in 10 of the approximately 22,000 persons who attempted suicide with firearms in 2010 (the 19,932 who died and the approximately 2,000 who survived) substituted drugs or cutting, there would have been approximately 1,900 fewer suicide death” (p. 951). If guns were not so widely accessible in the United States, there would probably be even fewer suicide deaths.

That this is no idle speculation is indicated by the findings of studies conducted in Switzerland and Australia that made use of the fact legal changes had resulted in considerable reductions in gun ownership in these countries (Leigh & Neill, 2010; Reisch, Steffen, Habenstein, & Tschacher, 2013). Following a mass shooting at Port Arthur in 1996, the federal government of Australia persuaded all states and territories to implement tough new gun control laws that made it illegal to own particular types of firearms. The government also instituted a gun buy-back program that compensated gun owners for the newly illegal firearms. This program resulted in the destruction of 650,000 firearms and a reduction of Australia’s firearm stock by around one fifth. In an analysis that used the fact that the number of guns withdrawn per 100,000 state residents differed substantially across different states and territories, Leigh and Neill (2010) concluded that the buy-back program led to a statistically significant reduction of firearm suicides of almost 80%, with no significant effect on nonfirearm suicides.⁷

In Switzerland, the reduction in firearm ownership was the result of legislation enacted in 2003 that halved the size of the citizen army and led to a substantial reduction in the number of service weapons available in Swiss households (Reisch et al., 2013). This reduction was associated with a substantial decrease in rates of

⁷ The buy-back program resulted in a similar reduction in homicides, but homicide is such a rare event in Australia (between 31 and 40 gun homicides per year; GunPolicy.org, 2014) that this effect was not statistically significant. The same problem arises in Switzerland, where with an annual total of between 15 and 20 gun homicides (GunPolicy.org, 2014), there is no hope of detecting an effect of the reduction in gun ownership.

firearm suicides in the most directly affected age group of men, aged 18–43 years. Whereas the overall suicide rate also declined in this age group, no such decline was observed in two control groups, namely, men 44–55 and women 18–44. There was also minimal evidence for method substitution.

Although a relatively minor cause of death, unintentional firearm injuries also contribute to firearm-related mortality. In 2011, 851 individuals died from unintentional firearm injuries, compared to 606 in 2010 (GunPolicy.org, 2014). But unintentional firearm deaths represent only a small proportion of the total number of unintentional firearm injuries. For example, in the same years there were 73,883 and 73,505 nonfatal firearm injuries (GunPolicy.org, 2014).

Gun availability is strongly associated with the frequency of unintentional firearm deaths (Miller, Azrael, & Hemenway, 2001; Wiebe, 2003). For example, Miller et al. (2001) analyzed the relationship between firearm availability (Cook's index; Cook, 1979) in the 50 U.S. States during the period from 1979 to 1997 with the number of unintentional deaths from firearms per state per year. States with a high level of firearm availability (e.g., Georgia, Kentucky, Arkansas, Tennessee, Mississippi, Louisiana) had nine times the incidence of unintentional firearm deaths compared to states with lower gun availability rates (e.g., Hawaii, Massachusetts, New Jersey). In a case-control study, Wiebe (2003) compared 84 unintentional shooting fatalities to 20 controls for each case subject. The controls were matched by sex, race, region of residence, and age group reported. The relative risk of death by unintentional gunshot wounds for an individual living in a home with a gun compared to one without was 3.7 (CI, 1.9–7.2).

Since I began this analysis with a discussion of the Sandy Hook shooting, I would like to justify why mass shootings have not been discussed more extensively. As Bagalman, Caldwell, Finklea, and McCallion (2013) concluded in a report for the U.S. Congress, “While tragic and shocking, public mass shootings account for few of the murders and non-negligent homicides related to firearms that occur annually in the United States” (p. 2). They estimated that over the last three decades public mass shootings have claimed 547 lives and led to an additional 476 injured. However, mass shootings appear to have been increasing in recent years. According to a study conducted by Cohen, Azrael, and Miller (2014) the rate of mass shootings has tripled since 2011. Whereas public mass shootings occurred on average every 200 days between 1982 and September 2011, they occurred every 64 days on average in the subsequent 3-year phase. A study of active shooter incidents in the United States between 2000 and 2013 conducted by the FBI (2013) also reported an increase during this time interval. Whereas 6.4 incidents occurred annually between 2000 and 2006, the average increased to 16.4 incidents per year between 2007 and 2013. The difference between mass killings and active shooter incidents appears to be mainly in the number of individuals killed.

Why Gun Control Alone Cannot Be the Solution

The development of effective measures to curb gun-related violence has been hindered by numerous state and federal laws and regulations that restrict the government's ability to collect and share information about gun sales, gun ownership, and gun possession (Leshner, Altevogt, Lee, McCoy, & Kelley, 2013). **Most problematic is the fact that there is no comprehensive federal system of gun registration. Outside of a few states and the District of Columbia where some or all guns have to be registered, the owners of the remainder of the 300 Million guns are unknown.** The law does not require that a record of the acquisition, possession, and transfer of privately held firearms are retained in an official register (GunPolicy.org, 2014). In fact, the amendment to the **Gun Control Act of 1968 prohibits the federal government from establishing an electronic database of the gun purchasers.** Furthermore, the **private sale of firearms is permitted and official background checks are not required for buyers of firearms in private sales.** In 1996, the United States even went one step further and **prevented all firearm-related injury research at the CDC by prohibiting the use of federal funding "to advocate or promote gun control."** In 2011, Congress enacted similar restrictions affecting the entire U.S. Department of Health and Human Services including the National Institute of Health (Kellermann & Rivara, 2013).

Given these loopholes, it is not surprising that the results of evaluations of the effectiveness of gun control measures have not been very encouraging (e.g., Kleck & Patterson, 1993; Kwon, Scott, Safranski, & Bae, 1997; Ludwig & Cook, 2000). Even the implementation of the Brady Handgun Violence Prevention Act that established a nationwide requirement for licensed firearm dealers to observe a waiting period and initiate background checks for handgun sales did not result in a reduction of homicide rates (Ludwig & Cook, 2000). **The Brady law does not apply to private gun sales and also regulates only new sales. With approximately 300 Million firearms already owned by U.S. Americans, new sales represent a small proportion** of the total number of firearms that are available.

The Need for a Culture Change in U.S. Attitudes toward Firearms

Braga, Wintemute, Pierce, Cook, and Ridgeway (2012) recently formulated the problem of effective gun control succinctly as follows: **"if we could find a way to keep guns out of the hands of 'bad guys' without denying access to the 'good guys,' then gun crimes would fall** without infringing the legitimate uses of guns" (p. 779). **A federal gun registration law that makes registration of all firearms compulsory would go a long way toward realizing this objective,** without infringing the second Amendment rights. In fact gun registration laws already exist in Hawaii and in the District of Columbia. Even the most far-reaching Supreme Court decision in "District of Columbia vs. Heller" stated explicitly that like most

rights, the second Amendment right is not unlimited. Thus, **federal gun registration of gun ownership and extended background checks would not interfere with the rights of U.S. citizens to own guns.**

Such a law would **help law enforcement agencies to retrieve firearms from people, who have become legally prohibited from possessing them** (e.g., through criminal convictions). It would also help to reduce illegal firearm sales and transfers, because gun owners could be held accountable for their guns. An owner, who knows that a gun can be traced back to him or her, would be less likely to transfer the firearm to potentially dangerous persons. Finally, such a law would deter straw purchases of a person permitted to buy guns purchasing it for some other individual. According to gun trafficking pathways identified through trace data of the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF), straw purchases from licensed dealers account for more than 40% of illegal guns. Another 27% are diverted through private sales (Braga et al., 2012). Finally, such a law would enable law enforcement officers to immediately identify whether a firearm is legal or illegally held.

This raises the question, why such a solution has not been adopted long ago. Obviously, it would take many years to achieve, but the benefits in reducing illegal gun markets and illegal gun ownership would justify this investment. Furthermore, gun registration is standard procedure in all other Western democracies. The problem in the United States is that such a measure would be unlikely to be passed by the U.S. Congress, even though the majority of U.S. citizens appear to favor many specific measures that failed to find a majority in the U.S. congress. For example, a CBS poll in December 2013 found that 85% of the people asked were in favor of “a federal law requiring background checks on all potential buyers.” Even more surprising—given that Republican are not only more often gun owners but are also more opposed to stricter gun control—this agreement was not moderated by party membership. A CBS poll conducted end of May 2013 found that 69% of those interviewed (Democrats 86%; Republicans 58%) thought that a bill on expanded background checks that did not receive enough votes in the U.S. Senate should pass if it came up for another vote,.

This majority is rarely heard. U.S. discourse about firearm has been dominated by gun right activists and their lobby organization, the NRA. That such dominance can be broken is indicated by the success of the “war against smoking” and the dramatic culture change in attitudes toward smoking achieved by this campaign (Stroebe, 2011). There are many parallels between the way the NRA influences public opinion and the strategies the tobacco industry used in fighting government attempts at tobacco control. Like the NRA, the tobacco industry invested thousands of dollars in campaign contributions to politicians, who supported their case. They also spent large sums of money to frame the public debate about smoking regulation around “rights and liberty” rather than health issues (Sweda & Daynard, 1996). By continually emphasizing the second Amendment rights to bear arms, the NRA

avoids a discussion of the fact that like most rights, this right is not unlimited. But whereas the tobacco industry has abandoned their attempts to question the scientific evidence that smoking is unhealthy, the NRA continues to argue against the association of gun availability and homicide risk.

Some of arguments that were responsible for the success of the antismoking campaign, namely, that smokers were not only damaging their own health but that exposure to their smoke was also endangering the health of others (i.e., passive smoking) could also be leveled against gun ownership.⁸ Whereas one third of gun owners report that they use their gun for hunting, nearly 50% see their guns as means for self-protection. It is this latter group that needs persuading and there are strong arguments that can be used:

- Gun owners have a higher risk of being murdered and an even greater risk of using their gun to commit suicide.
- Owning a gun endangers the lives of those who live in the same household.
- In addition to the more than 11,000 criminal homicides that were committed with guns in 2011, there were nearly 74,000 nonfatal gun injuries (GunPolicy.org, 2014). The risk of becoming the victim of an accidental shooting will be greater in a household where a gun is present.

Objectively, there is little need for the average U.S. citizen to carry a gun for self-defense. During the 1990s of the last century, crime rates have dropped up to 40% in the United States for all major crimes from homicide to rape, robbery, aggravated assault, and burglary, inspiring the criminologist Zimring (2008) to write a book about “The great American crime decline.” Not only has the risk of becoming victims of a violent crime become infinitesimally small, the evidence on DGU suggests that guns are rarely used against violent attackers.

Whereas a federal system of compulsory gun registration would reduce criminal gun ownership, a public health campaign emphasizing that gun ownership poses a risk to the owner as well as their family would target noncriminal gun owners, who own their guns for self-defense rather than hunting. If one would offer an advantageous buy-back program that includes the commitment of not buying another firearm in the foreseeable future, such an approach could result in an actual reduction in gun ownership rates. Although findings from similar voluntary buy-back programs have not been encouraging (e.g., Callahan, Rivara, & Koepsell, 1974), the fact that much more convincing evidence on the dangers of gun ownership is available today should increase the effectiveness of such a campaign.

⁸ Such a campaign would not be intended for gun rights activists, who arm themselves because they do not trust the government and who view their guns as an icon for democracy and personal empowerment (Bushman, 2012).

A reduction in legitimate gun ownership rates would be most likely to reduce incidence of violent death that are not the result of long-term planning (second-degree homicide, voluntary manslaughter, suicide, and accidental shootings). As discussed earlier, easy access to guns is most likely to facilitate murder, when people kill a partner or friend during a heated argument, often under the influence of alcohol. Reducing access to a gun should also reduce rates of suicide, because suicide is often committed out of impulse. Finally, such a reduction would reduce the rate of fatal and nonfatal gun accidents. In contrast, a decrease in first-degree murder seems less likely, because people, who plan a murder will hardly abandon their guns.

At the moment it does not look likely that we will ever find out. The gun lobby is simply too strong. But then the cigarette lobby was also exceedingly strong during the first half of last century and spent millions on persuading public opinion that smoking was a harmless pleasure without serious health consequences. And yet, the truth won in the long run. Whereas smoking was considered “cool” before 1965, smokers are now perceived by many as too weak to kick their habit. Nobody could have anticipated in 1965 that 47 years later smoking rates in the United States would have more than halved (from 42.5% to 18.1%). Thus, there might yet be a culture change in attitudes toward gun use in the United States.

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