Psychology of Violence

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When Mass Shootings Fail to Change Minds About the Causes of Violence: How Gun Beliefs Shape Causal Attributions

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Objective: We developed and tested a gun-blame attribution model to explain why mass shootings do not change attitudes toward gun control among gun owners and/or conservatives. For a mass shooting to increase gun control support, individuals must attribute the shooting at least partly to gun availability. Such attributions are unlikely for individuals who believe that there would be less crime if more people had guns. ***Method:*** After two mass shootings, we assessed political orientation, gun ownership, the belief that widespread gun ownership reduces crime, causal attributions about the mass shootings, and attitudes toward gun control (Orlando, $N = 1756$; El Paso, $N = 910$). Data were analyzed using multiple regression (Study 1) and path analyses (Study 2). Demographic information is reported in the Supplemental Material. ***Results:*** Across both shootings, political conservatism and gun ownership positively predicted a belief that widespread gun ownership reduces crime, which subsequently predicted less blaming of gun availability for mass shootings and less support for stricter gun laws. ***Conclusions:*** Findings support our gun-blame attribution model. Mass shootings predict people's attitude toward stricter gun laws if they attribute the mass shooting to gun availability. Such attributions are unlikely for U.S. gun owners and/or conservatives, who are more likely to believe that widespread gun ownership reduces crime. To the extent that this belief is ideological, persuasion-based psychological interventions are unlikely to be as effective as political intervention.

Keywords: belief gun ownership reduces crime, political orientation, mass shooting, support for stricter gun laws, gun-blame attributions

Supplemental materials: https://doi.org/10.1037/vio0000431.supp

A predictable reaction to any mass shooting is a call by survivors, family members, and politicians for stricter gun control laws (e.g., Shabad, 2016). In this article, we propose a psychological explanation for why such calls have been unsuccessful: if mass shootings are to change attitudes toward gun control, people need to believe that ease of access to firearms is a risk factor for mass shootings. Unless one makes this attribution, increased gun control is unlikely to be perceived as a solution. Given that a majority of Republicans and gun owners subscribe to the belief that, if more people had guns, there would be less crime (and thus also fewer mass shootings, PEW, 2017a), mass shootings will not persuade them of the need for stricter gun control laws. After a literature review that supports the association between gun ownership/political orientation and the belief that widespread gun ownership reduces crime, we report data from studies of two U.S. mass shootings, which support our hypothesis.

After the mass shooting in Boulder, Colorado (March 22, 2021), the second mass shooting in 1 week, Steve Chaggaris at Aljazeera (2021) commented. "The political rhetoric in the wake of these shootings has become all-too familiar—a postmassacre cycle featuring Democratic calls for stricter controls followed by Republican outrage at the idea and/or alternative proposals that do not involve stricter controls . . . ." A similar pattern emerges at the state level. A study on the impact of mass shootings that occurred between 1989 and 2014, on state-level gun policy, observed that a single mass shooting led to a 15% increase in the number of firearm bills introduced within 1 year following the mass shooting (Luca et al., 2020). However, this legislative action did not result in stricter gun control laws. Rather, in states controlled by Republicans, there was a doubling in laws that *loosened* gun control in the year after mass shootings, with no significant change in Democratic-controlled states.

Mass shootings appear to have only slight effects in public opinion polls. Gallup (2020) reported that, in the last three decades, Americans' preferences for stricter gun control typically peaked after mass shootings and then decreased as the memory of the shooting had faded. Thus, during the COVID-19 related lull in mass shootings, support for stricter gun laws declined to 57%, its lowest level since 2016 (Gallup, 2020). However, this decline has mainly been due to a 14-point drop for Republicans, of whom only 22%

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favored stricter gun laws in November 2020. In contrast, 85% of Democrats favored stricter gun laws.

That mass shootings do not increase gun owners' support for gun control was previously reported in a cross-sectional study, which measured support for gun control immediately before and after the 2016 Orlando nightclub shooting (Stroebe et al., 2017a). Whereas people who did not own guns were more supportive of stricter gun laws after the shooting, gun owners showed no change. However, this analysis mainly focused on gun owners versus nonowners and did not assess political orientation as possible moderator.

Why Should Mass Shootings Change Attitudes Toward Gun Control?

The expectation that mass shootings should persuade Americans of the need for stricter gun control laws assumes that everyone blames the shootings (at least partly) on ease of access to firearms. Although it might seem obvious—to liberals and gun control proponents—that a terrible mass shooting should result in attitude change toward support for stricter gun control laws, such attitude change is neither obvious nor logical to people who believe there would be less crime, if more people had guns. Such change may require individuals to make a *gun-blame attribution*; that is, they would have to believe that stricter gun control laws would have made a difference. People are only likely to make this attribution if they believe stricter gun control laws reduce the risk of gun violence. However, blaming gun availability is inconsistent with the pro-gun belief that an armed citizenry reduces violent crime. As stated by Wayne LaPierre, the executive vice president of the National Rifle Association (NRA), "The only thing that stops a bad guy with a gun is a good guy with a gun" (Columbia Broadcasting System [CBS], 2012).[1]

This opinion seems to be shared by many Republicans and gun owners. In a 2017 survey by the PEW Research Center, 56% of Republicans (vs. 15% of Democrats) agreed there would be less crime, if more Americans owned guns (PEW, 2017b). The agreement among Republican leaning gun owners was even higher, namely 71% compared to only 24% among Democrat leaning gun owners (PEW, 2017b). Similarly, only 22% of Republicans and 24% of gun owners (but 68% of Democrats and 58% of gun nonowners) agreed there would be fewer mass shootings if it were harder to legally obtain guns (PEW, 2019).

There is also evidence, from earlier opinion polls, that is consistent with the assumption that political party affiliation polarizes attitudes, around gun control, after mass shootings. In the year 2000, when asked whether protecting the right of Americans to own guns was more important than controlling gun ownership, 38% of Republicans (vs. 20% of Democrats) considered the right to own a gun more important; in 2017—despite several high-profile mass shootings—agreement among Republicans was up to 76% (vs. 22% among Democrats; PEW, 2017b). By Fall 2020, there was a record-high 63-point gap in attitudes toward stricter gun control laws between Republicans and Democrats (Gallup, 2020). Whereas Democrats maintained high levels of support for gun control after a period of mass shootings, support decreased among Republicans.

A study by Barney and Schaffner (2019) found support for a polarization due to ideology. These researchers were initially concerned with a reanalysis of findings, reported by Newman and Hartman (2019), that people's geographical proximity to a mass shooting determined whether their support for gun control increased. Barney and Schaffner (2019) instead observed an interaction of geographic distance and political orientation, indicating "that mass shooting events may cause Democrats to become more supportive of increasing gun control regulations while Republicans become less supportive of doing so" (p. 1563).

Although Rogowski and Tucker (2019) failed to find evidence of such polarization after the Sandy Hook shooting, this could have been due to asking whether federal law should ban the possession of handguns, except by law enforcement personnel. Given that the Sandy Hook shooter used a semiautomatic rifle and not a handgun, this question was not necessarily relevant to that shooting. Furthermore, there is much less support for a ban on handguns and, at 31%, the gap between Democrats and Republicans on handguns is smaller than the gap in support for stricter gun laws (Gallup, 2020).

It is interesting to note that the polarizing effect, of party affiliation, could be moderated by the level of anxiety aroused by a mass shooting, as well as the framing of questions in opinion polls. Joslyn and Haider-Markel (2018) argued that anxiety inhibits people's reliance on habitual information processing and increases support for institutions perceived as protective. In support of their hypotheses, they found that anxiety substantially decreased the difference between conservatives and liberals in blaming mass shootings on gun availability, with anxious conservatives increasing their blame on gun availability. Importantly, anxiety also increased support for stricter gun laws among conservatives.

Haider-Markel and Joslyn (2001) pointed out that the response to mass shootings could be moderated by the answer alternatives offered in opinion polls. Participants asked to rate potential reasons for a recent school shooting were told that "many people blame violence on Television" or "blame weak gun control laws" for the shooting. Not surprisingly—given the suggestive formulation, which is likely to act as a prime—they found that the first alternative elicited more blame of TV violence and the second more blame of gun control laws. Given that professional opinion polls would have simply offered both alternatives as potential reasons, they should have avoided the kind of priming response reported by these authors. However, most interesting was the finding that the priming effect interacted with political orientation. Whereas Republicans were only influenced by the TV violence prime, Democrats responded only to the gun control law prime. Since primes are assumed only to increase the cognitive accessibility of information stored in memory, this finding provided interesting information about the relevant memory content of Republicans and Democrats.

Next to the liberal-conservative split, gun owners may also resist attributing mass shootings to a lack of stricter gun control laws, because owning a gun is fundamentally important to their identity and sense of freedom. In an opinion poll, half of all gun owners said guns are important for their social identity and 74% perceived the right to own guns as essential to their personal sense of freedom (PEW, 2017a). Thus, gun ownership provides a social identity that involves significant psychological, social, and political attachments. Indeed, Joslyn and Haider-Markel (2017) argued, that in view of this strong identification with other gun owners as their in-group, gun owners should tend to make self-serving attributions when asked

[1] This slogan became so popular that the NRA sold "Good Guy with a Gun" T-shirts—now on sale for $2.95 at the official NRA store.

about the causes of mass shootings. "For the case of violence involving guns, gun owners should be less likely to blame guns or gun culture, but instead deflect blame toward the other influences acting upon the shooter" (p. 433).

A Gun-Blame Attribution Model

Building on these claims, as well as the attribution model developed by Joslyn and Haider-Markel (2017), we propose that the links between gun ownership and conservatism, to lower support for stricter gun control laws, can be partially explained by the causal attributions gun owners and conservatives make about mass shootings, particularly whether they blame (or downplay) gun availability as a likely cause. Causal attributions are the process whereby perceivers arrive at conclusions about the causes of actions or events (Heider, 1958; Kelley, 1967). With its focus on differences in the belief about the association of gun ownership and crime, as the central variable that determines whether mass shootings change people's attitudes toward stricter gun control, our model complements the social identity propositions of Joslyn and Haider-Markel (2017) by focusing on whether certain individuals believe that guns are means to safety rather than a threat to safety. Whereas the social identity implications, of being a gun owner, may be a starting point for how individuals prefer to respond to a mass shooting, our model considers how a specific belief mediates that response—namely whether people believe that there would be less crime if more people owned guns. Thus, our model focuses on different psychological processes and can apply to different groups of people who may be receptive to such a belief. Although gun owners are more likely than nonowners to believe there would be less crime, if more people had guns, the overlap is not complete. Fifty six percent of Republicans hold this belief, but only 41% own guns (PEW, 2017a). And 29% of those Republican gun owners do not believe that more gun ownership would reduce crime in the USA (PEW, 2017a). Among the 15% of Democrats, who own guns, only 24% believe in the value of armed citizenship (i.e., 24%; PEW, 2017a).

Figure 1 presents our gun-blame attribution model. The model makes three predictions:

Hypothesis 1: The belief that widespread gun ownership reduces crime will be more strongly associated with support for stricter gun control laws after a mass shooting. Mass shootings are unlikely to increase support for stricter gun control laws among individuals who believe that widespread gun ownership reduces crime.

Hypothesis 2: The belief that widespread gun ownership reduces crime will mediate the link between gun ownership and political orientation on support for stricter gun control laws.

Hypothesis 3: The effects of this belief will be itself be mediated by tendencies to blame or attribute mass shootings to gun availability.

The Present Studies

Two psychological surveys were conducted in the context of the 2016 Orlando nightclub mass shooting and the 2019 El Paso Walmart mass shooting. Study 1 took place immediately before and after the Orlando nightclub shooting. Study 1 tests whether the occurrence of the Orlando mass shooting moderates the relationship between a belief that widespread gun ownership reduces crime and attitudes toward stricter gun control laws (Hypothesis 1). Study 2 tests the mediator hypotheses (Hypotheses 2 and 3), using both the survey conducted after the Orlando mass shooting and a second survey conducted after the El Paso shooting. Study 2 tests the full gun-blame attribution model for both shootings, predicting that conservatism (or gun ownership) predicts agreement with the belief that widespread gun ownership reduces crime, which in turn predicts lower gun-availability attributions for the respective mass shootings, which ultimately predicts (lower) support for stricter gun control laws.

For all studies, the protocols, materials, data analysis, and reproducible analysis code are available via our OSF repository (Agostini et al., 2021).

Study 1: The Orlando Mass Shooting and Support for Stricter Gun Control Laws

In June 2016, a 29-year-old security guard with an immigration background killed 49 people and wounded 53 others in a nightclub in Orlando, Florida. At the time, it was the deadliest mass shooting by a lone gunman in U.S. history. Due to the terrible coincidence that some of us were finishing a survey of male U.S. gun owners and nonowners just before this mass shooting occurred, we happened to collect data on support for stricter gun control laws just before and immediately after the shooting (Stroebe et al., 2017a, 2017b).[2] In both samples, we measured respondents' belief that widespread gun ownership would reduce crime as well as their support for stricter gun control laws. The primary aim of Study 1 was to test whether the belief, that gun ownership reduces crime, more strongly predicted support for stricter gun laws *after* the Orlando shooting (Hypothesis 1).

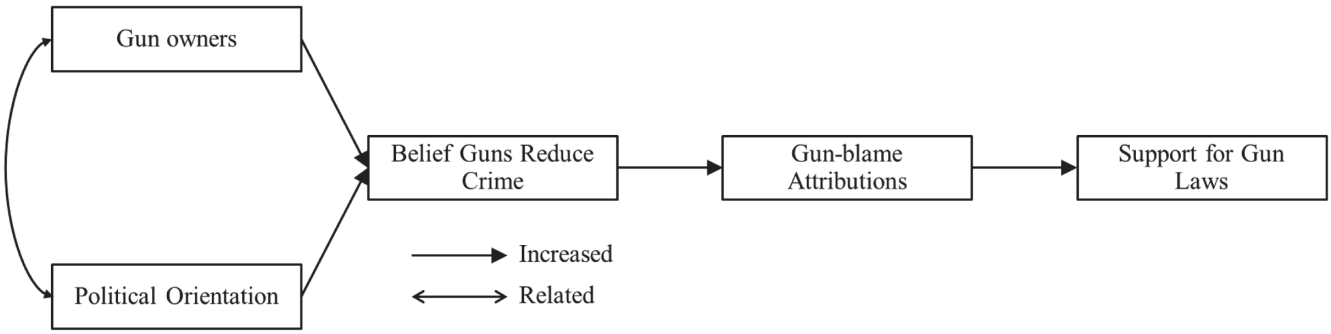
Method

Participants

Participants were 1,877 U.S. men, recruited through the online research firm Qualtrics Panels. One hundred twenty-one participants were excluded due to filling out the survey on the day of the shooting ($n = 81$), missing data ($n = 9$), or low-quality responses (e.g., straight lining, $n = 31$). The final sample size was $n = 1{,}756$. Of the total sample, $n = 835$ completed the study before the mass shooting ("pre-Orlando") and $n = 921$ completed it afterward ("post-Orlando"). Participants were prescreened to include equal numbers of gun owners and nonowners (prior to exclusions), with maximum quotas for region of country, age, education, and income. Full pre–post Orlando demographics are available in the Supplemental Material (Table S1). The only difference was that, unlike the pre-Orlando sample, the post-Orlando sample had no age difference between gun owners and nonowners (explored further in the Online Appendix). A sensitivity analysis using a 2×2 between-subjects design with one numerator degree of freedom and four groups,

[2] The data of this study have already been used in two publications (Stroebe et al., 2017a, 2017b). The findings of Stroebe et al. (2017a) reported earlier in this article, focused on the impact of this mass shootings on gun owners' support for stricter gun laws (i.e., a main effect). Stroebe et al. (2017b) Used the pre–post Orlando data to test our model of defensive gun ownership. The data collected after the mass shooting were simply used to show that our model could be replicated in a second data set.

Figure 1
Attribution Model



showed that this sample size is able to detect even small two-way interactions (partial-eta squared ~ .003) with 80% power (Faul et al., 2007).

Procedure

The first part of the study was conducted online between May 31 and June 11, 2016. Just as data collection was nearing completion, the Orlando nightclub shooting happened on June 12. We decided to collect a second sample rather than recontacting the original sample. The main reason was concerns that asking respondents the same set of questions only days after the first survey would result in response bias.

Measures

Gun ownership was assessed at the beginning of the questionnaire by asking participants whether they owned a gun (yes/no). Political orientation was assessed by asking respondents about their political orientation and to locate themselves on a dimension from "1: extremely liberal" to "9: extremely conservative",[3] $M = 5.09$, $SD = 2.19$. Belief in the crime-reducing effect of greater gun availability was assessed with the question: "In general, if more people had guns, there would be less crime," $M = 3.85$, $SD = 2.14$. Responses ranged from "1: strongly disagree" to "7: strongly agree." Support for stricter gun control laws was measured with three items (a) "In general, do you believe the laws covering the sale of firearms should be made more strict, less strict, or kept as they are now?", ("1: much less strict" to "7: much more strict"), (b), "Do you support or oppose some kind of registry of all guns, at least at the state-government level?," ("1: strongly oppose a gun registry" to "7: strongly support a gun registry"), (c) "Do you support or oppose laws that create 'gun-free zones' at schools and other public places?," ("1: strongly oppose 'gun-free zones'" to "7: strongly support 'gun-free zones'"), $\alpha = .75$, $M = 4.88$, $SD = 1.58$.

Results

We tested whether the association between the belief that gun ownership reduces crime and support for stricter gun control laws was indeed stronger after the Orlando mass shooting. Any between-groups differences, pre-versus-post Orlando, would be consistent with attitude change rather than a stable belief system. A multiple regression analysis predicted *support for stricter gun control laws* from the belief that widespread gun ownership reduces societal crime ("belief guns reduce crime," standardized), *pre–post Orlando* (coded −0.5, 0.5), and the interaction of that belief and pre–post Orlando. The model explained a significant proportion of variance in support for gun control laws, $R^2_{adj} = .23$, $F(3, 1752) = 174$, $p < .001$. There was no direct effect of pre–post Orlando *per se*, $\beta = .11$, 95% CI [−0.03, 0.24], $t(1752) = 1.58$, $p = .114$, $\eta^2_{part} = .001$; but, as expected, there was a strong direct effect of the belief that guns reduce crime, $\beta = -.75$, 95% CI [−0.81, −0.68], $t(1752) = -22.58$, $p < .001$, $\eta^2_{part} = .23$, and a theoretically consistent interaction between that belief and pre–post Orlando, $\beta = -.13$, 95% CI [−0.26, −0.002], $t(1752) = -1.99$, $p = .047$, $\eta^2_{part} = .002$.

The interaction suggests a pre–post Orlando difference in the link between the belief that guns reduce crime and support for stricter gun control. Indeed, simple slopes analyses indicated that the already-strong negative association that was observed pre-Orlando ($\beta = -.68$, 95% CI [−0.78, −0.59], $t(1752) = -14.22$, $p < .001$), was even stronger post-Orlando, $\beta = -.82$, 95% CI [−0.90, −0.73], $t(1752) = -17.82$, $p < .001$. As illustrated in Figure 2, this was mainly driven by people who disagreed that beliefs that guns reduce crime (i.e., *−1 SD belief guns reduce crime*) becoming even more supportive of stricter gun control laws post-Orlando, $\beta = .24$, 95% CI [0.01, 0.42], $t(1752) = 2.52$, $p = .012$. Participants who believed that guns reduce crime (+1 *SD*) did not differ pre–post Orlando; they remained opposed to gun control laws to the same extent, $\beta = -.03$, 95% CI [−0.21, −0.16], $t(1752) = -0.29$, $p = .773$. This supports our model prediction that mass shootings only increase support for stricter gun control laws among people who do not believe that more widespread gun ownership would reduce crime in society. People who endorse this belief are not moved by mass shootings to support stricter gun control laws.

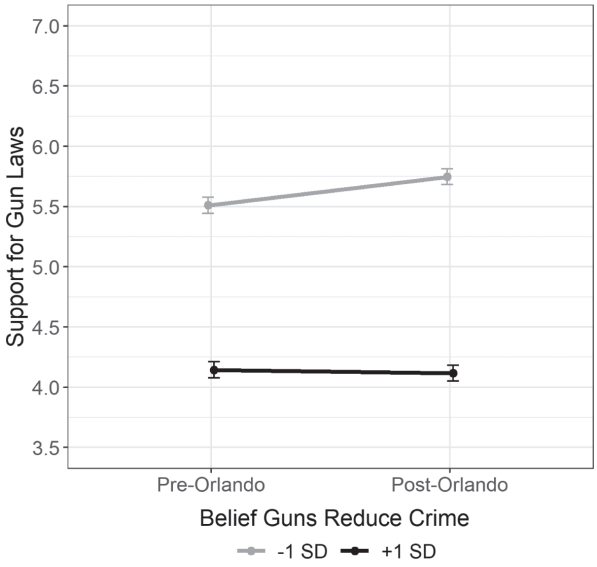
Discussion

This study supported the hypothesis that a mass shooting moderates the link between a belief that guns reduce crime and support

[3] Political orientation was measured in Study 1, but not part of any hypothesis tests until Study 2. We also assessed party membership. However, we think that these political beliefs are part of a conservative political orientation that is not restricted to party membership. In opinion polls this is typically reflected by the term Republican or Democrat "leaning" individuals. Political orientation has the additional advantage of being a continuous rather than a dichotomous variable.

Figure 2

Interaction Effect of Pre–Post Orlando With Belief Guns Reduce Crime (−1 SD, Gray Line; +1 SD Black Line) Predicting Support for Gun Laws



for stricter gun control laws. The interaction was not strong, but the simple slopes were consistent with the assumption that the mass shooting resulted in *attitude change* mainly among individuals who did not believe that widespread gun ownership is a means to reduce crime. This finding is intuitively plausible: Why should people, who believe that greater accessibility of guns would reduce crime, be persuaded by a mass shooting that stricter gun control laws are needed? If conservatives and gun owners are more likely to endorse such a belief, mass shootings are unlikely to increase their support for stricter gun control laws.

Study 2: Testing the Gun-Blame Attribution Model After U.S. Mass Shootings

In Study 2, we used data collected after the Orlando and the El Paso mass shootings, to test the full gun-blame attribution model. In the context of both shootings, we tested whether a belief that widespread gun ownership reduces crime *mediates* the link between gun ownership and political orientation on support for stricter gun control laws (Hypothesis 2), and whether the effect of this belief can be itself be explained or mediated by tendencies to attribute mass shootings to gun availability (Hypothesis 3).

Study 2a: Testing the Full Model After the Orlando Mass Shooting

Method

Participants. Participants were 910 U.S. men (gun owners and nonowners) recruited through the online research firm Qualtrics Panels. Of the 910 participants, we removed 16 due to missing data on key variables. Participants were prescreened to include both gun owners ($n = 435$) and nonowners ($n = 459$), with maximum quotas for region and country, age, education, and income. Demographics are reported in the Supplemental Material (Table S1).

Procedure. Most data were collected within the first week after the shooting.

Measures. The measures for gun ownership, political orientation, and belief that guns reduce crime are the same as described in Study 1.

Gun-Availability Attributions. Near the beginning of the survey, participants were asked for their perceptions of what might have motivated the gunman and their thoughts about what could have prevented the mass shooting. The items were based on media accounts at the time (13 items in total). These attributions were formulated for the specific mass shooting. For example, after the Orlando shooting, respondents were asked whether the mass shooting in the Orlando nightclub might have been prevented if stricter gun control laws had been in place and/or if better health care existed. With regard to motivating factors, respondents were asked, "What might have motivated the gunman to commit the mass shooting in Orlando" and then given alternatives, such as "ease of access to firearms." All items were consistently rated on a scale from: (*not applicable*), *−3: very doubtful, 0: neutral, 3: very possible*). We were specifically interested in two gun-availability attributions: whether the mass shooting might have been prevented if "... stricter gun control laws were in place" (Orlando: $M = -0.22$, $SD = 2.41$) and whether the gunman was motivated by "... ease of access of firearms" (Orlando: $M = 0.52$, $SD = 2.22$).[4] The gun-availability attributions were embedded among various other, sociocultural and psychological attributions, which we would use as covariates. Our model should apply to the gun-blame attributions irrespective of the other attributions.[5]

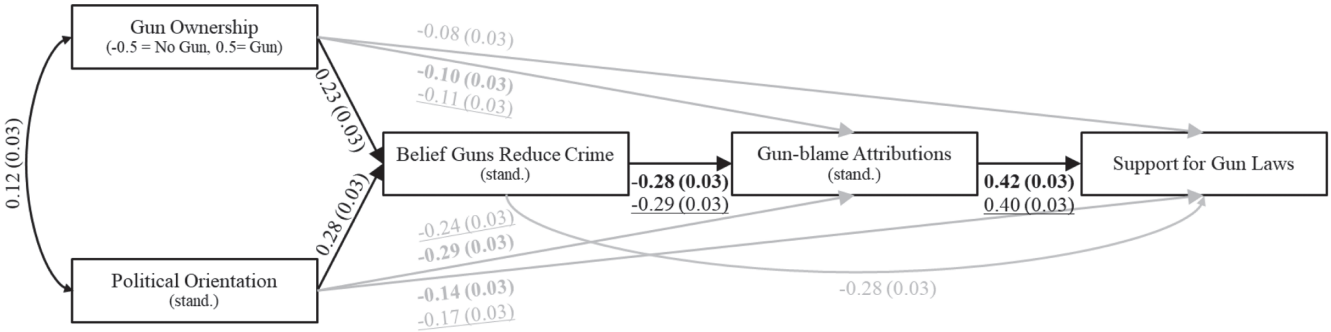
Results

Path analyses were conducted using *R* (R Core Team, 2018), *RStudio* (RStudio Team, 2016), lavaan (Rosseel, 2012), and semPlot (Epskamp, 2015). These analyses have no fit statistics as all possible paths are modeled. All direct paths were significant and almost identical for both gun-availability attributions (see Figure 3 for direct paths). Importantly, there were reliable indirect paths from *gun ownership/political orientation → belief guns reduce crime → gun-availability attributions → support for stricter gun control laws* (Table 1, columns three and four). Effects remained stable when controlling for the various other mass shooting attributions. Full results are in the Supplemental Material.

[4] We also asked whether the mass shooting could have been prevented, "if people at the location had been armed." When trying to combine the three items, scale reliability was not established. We, therefore, in line with our original plan report "motivated by ease" and "prevented if stricter gun laws" in the main text. The Supplemental Materials contain the "prevented if armed" attribution. In short, all results replicate when using the "prevented if armed" attribution.

[5] The items tapped into perceptions of motivation and potential prevention. For example, whether the shooting was motivated by "ideology/ISIS" and "religion," "compensation for inadequacy," "desire for power, significance, or attention," "mental illness," "cultural exposure to violence," "motivated by hatred of others; prejudice"; or whether the shooting could have been prevented if "there was more surveillance of suspected radicals," "society was more cautious of immigrants," "better mental health care existed."

Figure 3
Attributions Model for Orlando



Note. We report effects for both attributions: that the mass shooting could have been *prevented if stricter gun laws* were in place (bold) and that ease of access to firearms contributed to the gunman's motivation to perpetrate the shooting (underlined).

Study 2b: Testing the Full Model After the El Paso Walmart Shooting

We sought to replicate the model in the context of the El Paso mass shooting, which occurred on August 19, 2019 in a Walmart superstore. A white, American gunman killed 23 people and injured 23 others. The victims were mostly Hispanic. The FBI investigated the shooting as a hate crime.[6]

Method

Participants. Participants in the El Paso study were 433 male and female gun owners and 437 nongun owners (51% male) recruited by Qualtrics Panels. Demographics are reported in Table S3 in the online Supplemental Material.

Procedure. As with the Orlando study, Qualtrics Panels conducted this survey online within 3 weeks of the mass shooting.

Measures. As per the Orlando study, we measured political orientation ($M = 5.46$, $SD = 2.07$), gun ownership and belief that guns reduce crime, ($M = 3.43$, $SD = 1.30$). The support for stricter gun laws scale was reduced to two items, $r = .65$, 958% CI [.62, .69]. Since in contrast to the Orlando nightclub, Walmarts are not gun-free zones, we omitted the item about gun-free zones from the scale. Gun-blame attributions were measured the same way as in the Orlando study. Again, we were specifically interested in the two gun-*availability* attributions: whether the mass shooting might have been prevented if "... stricter gun control laws were in place" (El Paso $M = 0.26$, $SD = 2.41$) and whether the gunman was motivated by "... ease of access of firearms" (El Paso $M = 0.79$, $SD = 2.18$).

Results

Results fully replicated the gun-blame attribution model observed after Orlando. All direct effects were reliable (Figure 4); importantly, there was also a reliable indirect effect of *political conservatism → belief guns reduce crime → (lower) gun-availability attributions → (lower) support for gun control laws* (Table 1, columns three and four). As per the Orlando study, gun ownership and political conservatism were both linked to (less) support for stricter gun laws via the belief that guns reduce crime (Hypothesis 2). Second, attributions related to gun availability at least partially mediated the effect between this belief and support for gun control laws (Hypothesis 3). Effects remained stable when controlling for all the other attributions. Full results are in the Supplemental Material. Thus, the gun-blame attribution model replicated in a second mass-shooting context.

We did not find evidence for gender meaningfully altering the theoretical conclusions in El Paso. We did observe a small difference between the gender groups in the model for "prevented if stricter gun laws", $\chi^2(9, N = 863) = 18.9$, $p = .026$. Further assessing path differences, the path from "belief guns reduce crime" to "support for gun laws" differed for men and women, $\chi^2(1, N = 863) = 6.57$, $p = .01$. Men had a slightly stronger effect, $b = -.32$, $SE = .04$, than women, $b = -.19$, $SE = .05$. However, for both subsamples the paths remained reliable and most importantly, all indirect effects were reliable for both men and women (for more information see the Supplemental Materials).

Discussion

Two independent tests of the mediator hypotheses supported our gun-blame attribution model, using samples collected after two high-profile mass shootings in the U.S. Conservatism and gun ownership were positively associated with the belief that widespread gun ownership would reduce crime in society, which in turn predicted lower support for stricter gun laws (Hypothesis 2). The indirect effect was further partly mediated by tendencies to blame or attribute mass shootings to gun availability (Hypothesis 3). Conservatism (and/or gun ownership) predicted a belief that more guns would reduce crime, which in turn predicted lower gun-availability attributions for mass shootings, which ultimately predicted (less) support for stricter gun laws.

General Discussion

This article presented and tested a psychological attribution model of the impact of mass shootings on support for stricter gun

[6] We also collected data for the Dayton mass shooting within this study. In short, all results replicate and are presented in the Supplemental Materials.

Table 1
Indirect Paths

Mass shooting	Indirect paths	Attributions	
Orlando		prevGunlaw	motEase
	Gun → Belief → Attrib	−0.07 (0.01)***	−0.07 (0.01)***
	Gun → Belief → Laws	−0.06 (0.01)***	−0.07 (0.01)***
	Gun → Belief → Attrib → Laws	−0.03 (0.01)***	−0.03 (0.01)***
	Pol → Belief → Attrib	−0.08 (0.01)***	−0.08 (0.01)***
	Pol → Belief → Laws	−0.08 (0.01)***	−0.08 (0.01)***
	Pol → Belief → Attrib → Laws	−0.03 (0.01)***	−0.03 (0.01)***
El Paso			
	Gun → Belief → Attrib	−0.08 (0.01)***	−0.10 (0.02)***
	Gun → Belief → Laws	−0.06 (0.01)***	−0.06 (0.01)***
	Gun → Belief → Attrib → Laws	−0.04 (0.01)***	−0.05 (0.01)***
	Pol → Belief → Attrib	−0.13 (0.02)***	−0.15 (0.02)***
	Pol → Belief → Laws	−0.10 (0.01)***	−0.09 (0.01)***
	Pol → Belief → Attrib → Laws	−0.07 (0.01)***	−0.07 (0.01)***

Note. Gun = Gun Owner; Pol = political conservativism; Belief = belief guns prevent crime; prevGunlaw = shooting could have been prevented if stricter gun laws were in place; motEase = shooting was motivated by ease of access to firearms; Attrib = Gun-blame attributions; Laws = support for stricter gun laws. *** $p < .001$.

control laws. According to this model, for mass shootings to increase support for stricter gun control laws, individuals must blame guns as one of the causes of a mass shooting. Such gun-blame attributions are unlikely for individuals who believe that gun ownership is a means to reduce crime. Given that conservatives and gun owners are more likely to endorse that belief, they are less likely than liberals to be persuaded by mass shooting of the need for stricter gun control laws.

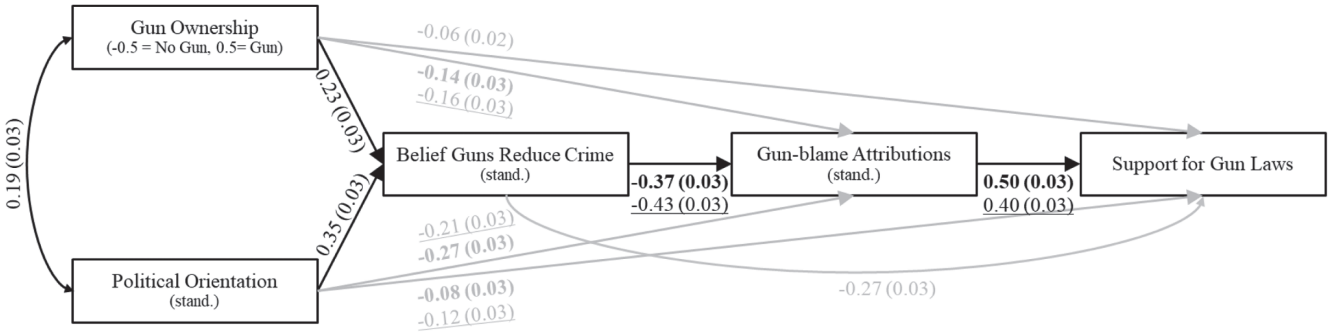
Using data collected before and after the Orlando night club shooting, we observed that the occurence of the mass shooting moderated the link between the belief that guns reduce crime and support for stricter gun control laws—but the effect was driven by those who did *not* believe that guns reduce crime. There was no difference in support for stricter gun control laws among those who endorsed armed citizenship. This finding has commonsense plausibility: if conservatives and gun owners believe there would be less crime and also fewer mass shootings if more people owned guns, a mass shooting will not persuade them of a need for stricter gun control laws.

We assessed the mediator hypotheses, of the gun-blame attribution model, following both the Orlando and the El Paso mass shootings. The belief that guns reduce crime predicted whether people attributed the mass shooting to the availability of guns, which in turn predicted (lack of) support for stricter gun control laws. This belief also mediated the association between conservatism/gun ownership and (lack of) support for stricter gun laws. Thus, because gun owners and conservatives are likely to believe in armed citizenship, they are less likely to blame guns for mass shootings and, consequently, less likely to support stricter gun control laws.

Limitations

A challenge of mass shooting research is that pre–post studies cannot be planned in advance, so we could never test our full model. Although we happened to collect data both before and after the Orlando mass shooting, we could only ask causal attributions afterward. One could ask such attributions in general, but it is

Figure 4
Attributions Model for El Paso



Note. We report effects for both attributions: that the mass shooting could have been *prevented if stricter gun laws* were in place (bold) and that ease of access to firearms contributed to the gunman's motivation to perpetrate the shooting.

questionable whether this is comparable to responses to a specific shooting. Another limitation of the Orlando study is that we did not have a "no mass shooting" control group, assessed at the same point in time. However, given that the Orlando shooting became national news within hours of occurring, such a control would not have been possible.

A skeptic could rightly argue that the path analyses are merely measures of established belief systems unaffected by specific mass shootings: Gun owners and conservatives, generally, believe that greater gun availability reduces crime, do not attribute mass shootings to gun availability, and oppose stricter gun control laws. In other words, the gun-blame attributions may not be independent mediating mechanisms that can be targeted for intervention, but all part of a belief system. It was, therefore, important that the pre–post Orlando study at least showed a significant pre–post difference in support for stricter gun control laws, at least among individuals who do not endorse the pro-gun belief. For gun owners and conservatives, a belief system that combines believing in the value of armed citizenship, (denial of) gun-availability-related causes, and (non) support of stricter gun control laws, might inoculate them from blaming guns for mass-shootings and, presumably, other gun-related deaths (Joslyn & Haider-Markel, 2017).

Future Research Directions

To adequately test the full model, a longitudinal study is likely required—such as an interrupted time-series design that happens to overlap with multiple mass shooting events. The proposed process could then be tested over time, within subjects, in a manner that allows for a simultaneous test of the full model wherein temporal precedence can be established and stable belief systems can be separated from situational fluctuations in specific beliefs.

The present study helps to establish items for the development of scales that apply across mass shooting contexts: Given our rapid response approach, our measures were brief or not fully validated prior to our studies, and we relied on fast online samples. The use of single-item measures and convenience samples could increase error variance in our samples. Nevertheless, we were able to replicate the basic model across multiple mass shooting events (a third is presented in the Supplemental Materials), while exchanging items that were conceptually related. Based on these developments, the model could be replicated with related or extended constructs.

Prevention and Policy Implications

The implications of our results are rather bleak, at least with respect to potential interventions. The need for safety and security is a fundamental need, which, at least for U.S. gun owners, appears to be linked to guns. The belief that widespread gun ownership reduces crime could be embedded in a belief system that links a diffuse belief in a dangerous world to the need to own a gun for self-defense (Altemeyer, 1988; Kreienkamp et al., 2021; Stroebe et al., 2017b). Nearly 70% of handgun owners report that they own their gun for self-defense (PEW, 2017b; Stroebe et al., 2017b). Any intervention aimed at reducing opposition to stricter gun control laws will thus have to change multiple, interrelated beliefs about the risks and causes of gun violence and the efficacy of armed citizenship to promote public safety. According to social psychological consistency theories, beliefs that are embedded in such extensive belief systems are difficult to change (e.g., McGuire, 1969, 1981).

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