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Mass Shootings and the Salience of Guns as Means of Compensation for Thwarted Goals

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Between 2016 and 2017, Americans suffered 3 of the deadliest mass shootings in modern history by a lone gunman: the Orlando nightclub shooting, the Las Vegas strip shooting, and the Texas church shooting. We studied American gun owners in the wakes of these tragedies, theorizing that a byproduct of the salience of mass shootings is to increase the salience of guns as means of individual empowerment and significance. We hypothesized that this increase in salience would be especially relevant in the context of thwarted goals, because such individuals may be seeking a compensatory means to interact more effectively with their environment. In 4 studies of U.S. gun owners ($N = 2,442$), we tested whether mass shooting salience interacted with thwarted goals to predict justification to shoot suspected criminals, as well as ideas about armed vigilantism and perceptions that guns are means of empowerment. The thwarting of goals was either experimentally induced via failure on an achievement task (Study 1), or measured via perceptions of disempowerment in society (Studies 2–4). Mass shooting salience was measured via perceptions of mass shooting threat, as well as temporal proximity and social proximity to specific mass shooting events. Across studies, results indicated an interaction between thwarted goals and mass shooting salience; temporal proximity yielded mixed results. Altogether, thwarted goals motivate people to seek effectiveness and mattering, and guns are more likely to be perceived as means to such ends when mass shootings loom large in the mind.

Keywords: mass shootings, guns, motivation, empowerment, social influence

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Nietzsche once famously warned that anyone who fights with monsters should take care not to also become a monster, for “. . . when you gaze long into an abyss, the abyss also gazes into you” (Nietzsche, 1886). This adage suggests that there is danger to allowing a threat to occupy the mind, in that people may begin to mirror the threat and assimilate its corrupting features.

A century later, mass shootings regularly appear in media headlines and researchers report increases in both the deadliness and frequency of such violence (Cohen, Azrael, & Miller, 2014; Krouse & Richardson, 2015). There are even potential contagion effects, in the sense that mass shootings are often followed by a brief period of similar incidents of violence in the community (Towers, Gomez-Lievano, Khan, Mubayi, & Castillo-Chavez, 2015). Accordingly, psychologists note that media sensationalizing of mass shootings could be spreading dangerous ideas about guns—namely, that they are means to achieve personal power, fame, or significance (Bushman et al., 2016; Perrin, 2016). So far, however, there is little psychological research testing these claims. Furthermore, beyond the extreme cases in which certain individuals get inspired to engage in copycat violence (by becoming mass shooters themselves), there could also be a more general process in which people seek to *appropriate* the symbolic power of guns to address their own psychological needs. Research is needed to explain the general process through which other individuals, for whom mass shootings loom large in the mind, come to see guns as a means to empower themselves.

The pursuit of symbolic power, via guns, may be especially important in the context of thwarted goals. The thwarting of goals can stimulate a shift toward more assertive means to interact with

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N. Pontus Leander developed the study concept. All authors contributed to the study design and data collection. N. Pontus Leander, Maximilian Agostini, and Jannis Kreienkamp performed the data analysis and all authors contributed to the interpretation. All authors approved the final version of the manuscript for submission.

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the environment as part of a compensatory effort to reestablish a sense of effectiveness and mattering (Kruglanski et al., 2013, 2014; Leander & Chartrand, 2017); such motivated responses can even fuel efforts to empower oneself through aggression and violence. In this vein, Kruglanski and colleagues' (2013) quest for significance model proposes that various psychological needs (e.g., for efficacy, achievement, control, respect, etc.) are all subsumed by a generalized need for effectiveness and mattering. When this need is frustrated by personal failure, broadly defined, it motivates individuals to restore significance via whatever means seem most promising for that purpose. Whereas violence is not the only means to feel empowered and significant, it is a rather direct and primordial means. Based on a modification of significance quest theory, the present work argues that the specific form of violence must fit the value system of the individual's group. Although violent extremists might expect their ingroup to value terrorist acts against unarmed civilians, U.S. gun owners will be aware that society abhors the killing of innocent people. Thus, gun owners will mainly seek to empower themselves through societally valued narratives involving guns—such as shooting criminals, engaging in vigilantism, and protecting the innocent. Such narratives may provide a sense of efficacy and respect—and hence significance.

Thwarted Goals and the Search for Means of Compensation

The present research examines how the salience of mass shootings shapes gun owners' perceptions of their guns and their affordances, especially in the context of thwarted goals. Research increasingly suggests that guns are often perceived by their owners as sources of empowerment, particularly against insecurity and perceptions of a threatening world (Jiobu & Curry, 2001; Mencken & Froese, 2017). We theorize that when a mass shooting is highly salient, gun owners who are struggling with failure and hardship and, thus, seeking to empower themselves, may unintentionally assimilate or appropriate the idea that guns offer power and hence bestow significance on their owners.

Our model is rooted in the idea that human beings have a basic psychological need to have effective interactions with their environment. This need goes by many names: White (1959) described it in terms of competence or effectance (see also Deci & Ryan, 2000; Sheldon, Elliot, Kim, & Kasser, 2001); Bandura (1997) described it in terms of self-efficacy and wanting to exercise agency upon the world; control motivation theorists describe it in terms of establishing personal control over outcomes (e.g., Kay, Sullivan, & Landau, 2014); and power theorists describe it as a general striving for agency (i.e., personal power; van Dijke & Poppe, 2006). What binds these concepts is the idea that people want to believe in their capability to produce clear effects in their environment. When this need is threatened, such as when one's normative goal pursuits are thwarted, individuals seek alternative means to empower themselves and demonstrate that they are a force to be reckoned with.

Guns may provide such a means. We base this idea on past work suggesting that thwarted goals increase willingness to consider aggressive or violent behaviors, because they provide a sense of efficacy. For example, if one cannot restore efficacy directly in a thwarted goal domain, one can restore it indirectly by engaging in

unrelated acts of displaced aggression (Leander & Chartrand, 2017). People may be especially likely to turn to guns because thwarted goals (and disempowerment generally) increase their willingness to consider means that promise to restore a sense of power. For example, mass shooters often appear to be motivated by chronic or situational goal obstructions (e.g., frustrated achievement goals, negative social interactions, aggrieved sense of success entitlement, etc., Bushman, 2017; Lankford, 2016; Levin & Madfis, 2009); in some cases, mass shooters may target symbols of their disempowerment (e.g., schools, workplaces, and groups) in a displaced attempt to restore a sense of power or control.

The notion that thwarted goals motivate the compensatory pursuit of symbolic power, through violent means, connects to and extends Kruglanski and colleagues' *Quest for Significance* theory of violent extremism. To date, research into significance quest theory has mainly examined the special case of how significance loss increases individuals' susceptibility to violent radicalization and attraction to terrorist groups (Kruglanski, Chen, Deschesne, Fishman, & Orehek, 2009, 2013; Webber et al., 2018). We presently investigate the possibility that the same general model could be applied to everyday gun owners. If guns are indeed symbols of individual empowerment (Jiobu & Curry, 2001; Mencken & Froese, 2017), then it is conceivable that Americans who own guns (i.e., those who have the means available) may turn to them when their goals are thwarted. However, it may take an external stimulus, such as a mass shooting, to increase the salience of using guns to increase their sense of effectiveness and mattering.

Process Considerations and Moderators

The premise of our model is that when a mass shooting looms large in the mind, it heightens the salience of guns as a means of personal empowerment. The means-appropriation process we propose is akin to other processes of assimilation and social contagion, whereby mere exposure to a behavior, such as violence, can suffice to activate or heighten the salience of similar (violent) ideas in the perceiver's mind; this, in turn, increases the likelihood that the individual will adapt and apply those ideas to their own situation (e.g., Huesmann, 2012). Our prediction that *thwarted goals* will facilitate the process is in harmony with past work suggesting that assimilation and social contagion are often moderated by the motivational self-relevance of the salient behavior (e.g., Aarts et al., 2004; Weingarten et al., 2016). For example, in a study on blame contagion, Fast and Tiedens (2010) found that observing someone blame others for failure, ostensibly to protect their self-image, mainly only increased perceivers' subsequent blaming if they had an unmet need to protect their own self-image. We accordingly argue that goal-thwarted individuals have an unmet need for power, so when confronted with the power of a mass shooter, they are more sensitive to the idea of using guns to empower themselves.

We further predict that mass shootings must be sufficiently salient for goal-thwarted individuals to demonstrate any such means-shift toward guns. It is presently unclear how assimilation could occur from threatening figures, especially given past work suggesting that assimilation and social contagion effects are moderated by social closeness to the actor (e.g., interpersonal closeness or ingroup membership, Leander, Shah, & Chartrand, 2009; Lorsch, Aarts, Payne, & Jefferis, 2008). Most people may not feel

socially close to a mass shooter. Yet, there are other forms of psychological closeness that may produce similar effects: Liberman and Trope (2014) theorize that social closeness is but one dimension of a more general principle of *psychological distance* between the self and any given person, object, or event. According to the theory, different dimensions of distance are positively correlated in the mind: spatial proximity corresponds with perceptions of interpersonal closeness (Maglio & Polman, 2014), probability of an event corresponds with expectations of it occurring in close temporal, spatial, and social proximity (Wakslak, 2012); even emotional intensity increases perceptions of an event's psychological proximity (Van Boven, Kane, McGraw, & Dale, 2010). When applied to threat perceptions, the severity of the threat posed by a stranger or outgroup predicts estimates of its physical closeness (Cole, Balcetis, & Dunning, 2013; Xiao & Van Bavel, 2012), and reactions to a disease threat are stronger when manipulating various dimensions of proximity to the threat (spatial, temporal, social, or probability, White, Johnson, & Kwan, 2014). Thus, people need not be socially close to the perpetrator of a mass shooting to be influenced; other dimensions of psychological distance may suffice—such as the salient threat of being in a mass shooting, spatiotemporal proximity to an attack, or even social closeness to the victims of a recent attack.

The Present Research

We conducted four studies on American gun owners to examine how thwarted goals interact with salience of mass shootings to increase ideas about assertive gun use. The present research was conducted between June 2016 and November 2017, when Americans suffered three of the deadliest mass shootings by a lone gunman in modern U.S. history: the 2016 Orlando nightclub shooting (49 killed, 53 wounded), the 2017 Las Vegas strip shooting (58 killed, 851 wounded and injured), and the 2017 Texas church shooting (26 killed, 20 wounded). We studied U.S. gun owners in the wakes of these tragedies, theorizing that the psychological influence of mass shootings will often be a product of thwarted goals interacting with psychological proximity to such violence. That is, first, the perceiver must be sufficiently motivated to be searching for means to address their psychological needs for efficacy and significance; second, mass shootings must be sufficiently vivid or salient to invoke the idea of using guns as means to such ends. We further theorized that the salience of a mass shooting need not inspire ideas about copycat violence per se to be influential; such salience could merely increase ideas about using guns to pursue psychological needs unrelated to safety—such as an unfulfilled desire to experience effective interactions with the environment and to show the world that one matters.

Salience of mass shootings was operationalized via different dimensions of psychological proximity, including individual differences in the perceived threat of mass shootings generally (i.e., perceived realness of such threats to the self), as well as temporal proximity and social proximity to specific mass shooting events. The external thwarting of goals was either experimentally induced (Study 1) or measured via generalized sense of disempowerment in society (Studies 2–4). We predicted that the external thwarting of goals and the salience of mass shootings would interactively affect endorsement of assertive gun use. We further predicted that the increase would be mediated by perceptions that guns are means of personal empowerment and ideas about vigilantism. The theoretical model is presented in Figure 1.

All data were collected before analysis and all manipulations and exclusions are reported. The full surveys are available in the [online supplemental material](#). Study 1 was an exploratory study, conducted in response to the Orlando Nightclub shooting in 2016, and it focused on establishing the interaction of thwarted goals and the *perceived threat* of mass shootings. Study 2 was conducted 1 year after the Orlando Nightclub shooting (but before the 2017 mass shootings in Studies 3 and 4); it served as a conceptual replication in which we additionally explored whether perceived *temporal proximity* to mass shootings moderates the predicted effect. Study 3 was conducted in response to the 2017 Las Vegas strip shooting using an objective measure of temporal proximity to the mass shooting (namely, days since the attack). Study 4 was conducted in response to the 2017 Texas church shooting using a measure of *social proximity* to the shooting (namely, whether participants were frequent churchgoers). These factors could increase psychological proximity and, thus, the salience of mass shootings, and thereby increase the likelihood of assimilating ideas that guns are means to power and, thus, significance.

Study 1: Orlando Nightclub Shooting

Study 1 was conducted in the days immediately following the 2016 Orlando nightclub shooting, in which a gunman killed 49 people and wounded 53 others at the Pulse nightclub in Orlando, FL. At the time, it was the deadliest mass shooting by a lone gunman in modern U.S. history. The aim of the study was to test whether the salient threat of mass shootings interacts with thwarted goals to predict participants' subsequent ideas about assertive gun use. We first measured gun owners' perceived likelihood of being present in a mass shooting. We then instantiated a thwarted goal through a manipulation of failure on an achievement-oriented cognitive task. The main dependent measure was justification to shoot a suspected home intruder—a violent narrative relevant to

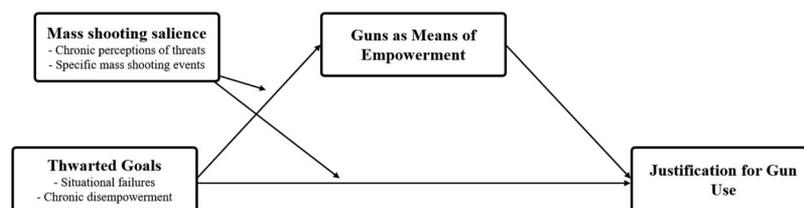


Figure 1. Conceptual model about the interactive effects of thwarted goals and mass shooting salience on justification for gun use, as mediated by beliefs that guns are means of personal empowerment.

gun owners, but one that is unrelated to the threat of mass shooters per se.

We hypothesized that failure would interact with mass shooting threat, in that failure only increases justification to shoot among those for whom mass shootings are highly salient. However, we theorized that the reason for such moderation was based on mass shootings giving rise to ideas that guns are means of empowerment. Therefore, we further predicted that the increased justification to shoot would be mediated by a corresponding increase in the perception that guns are means of personal empowerment, which would illustrate that the attraction to the violent narrative of stopping a suspected criminal is linked to compensation for an unrelated goal failure experience.

Method

Participants. Participants were recruited online via the market research firm Qualtrics Panels. We recruited 450 male American gun owners to ensure sufficient statistical power to detect small effects of our two predictors: the failure manipulation and mass shooting threat salience. Power was maximized by focusing on gun owners (the relevant subpopulation) within 3–10 days of the Orlando mass shooting (a relevant context).¹ A prescreening questionnaire further ensured that participants were at least minimally aware of the Orlando shooting, in addition to being gun owners (“Do you own a gun?”, yes/no).² We focused on men because they are more likely than women to own guns (Gallup, 2013). Participants were otherwise stratified based on region of country, age, education, and income to ensure a broad sample across the United States. Twenty-three additional respondents were excluded for providing unusable data (e.g., straight lined responses, nonsensical text entries).³

Procedure. The informed consent form stated that our purpose was to assess beliefs, attitudes, and experiences regarding gun ownership, the use of firearms, and the Orlando mass shooting. Participants first completed a questionnaire battery that included our moderator variable (mass shooting threat salience), which was assessed in counterbalanced order with what types of guns they owned and their reasons for gun ownership. The survey also included questions speculating on the gunman’s motivations and what might have prevented the shooting. Participants then completed the task failure manipulation and the dependent measures.

Mass shooting threat. The proposed moderator, perceived likelihood of being present during a mass shooting, was added to the end of a scale measuring perceived lifetime risk of assault (Stroebe, Leander, & Kruglanski, 2017a).⁴ In this scale, participants are asked, “What do you estimate is the likelihood the following will happen in your lifetime (in your future)?” This question is followed by ratings of perceived likelihood of various types of violent crime (being mugged, violently attacked, or having one’s home invaded by an armed burglar, each rated 1 = *not at all* to 7 = *extremely likely*); to explore our mass shooting prediction we added a new item, “You will be present during a mass shooting” ($M = 2.69$, $SD = 1.67$). Scores on the mass shooting item were significantly lower than the general measure of violent crime threat ($M = 2.69$ vs. $M = 3.51$, $t(449) = -12.59$, $p < .001$), so we treated it as a separate moderator.

Failure task manipulation. To induce a thwarted achievement goal (and, thus, a need for empowerment), participants were

randomly assigned to receive an impossible (vs. easy) cognitive test. Past research observed that achievement goals can be experimentally thwarted by manipulating whether participants are asked to work on difficult (vs. easy) puzzles from Raven’s (1962) Progressive Matrices (Bongers, Dijksterhuis, & Spears, 2009). It was presented as a test of general cognitive ability, and that “Higher cognitive ability is linked to a person’s intellectual capacity, career potential, and frequency of goal success across the lifespan.” Participants in the failure condition (vs. control/success) were instructed “. . . the standard is to solve each puzzle in 12 (vs. 36) seconds. Therefore, if you do not answer a given puzzle, you will be given a new one after about 17 (51) seconds.” The test itself included nine puzzles from Raven’s Progressive Matrices (Raven, 1962). Participants in the failure condition received two puzzles of medium difficulty, then five puzzles that were too hard to realistically solve in 17 s, and finally two impossible puzzles. Participants in the control condition instead received nine easy puzzles. Before each puzzle was a loading screen with a stylized image of a brain and other subtle cues to imply a context of intellectual achievement.

Manipulation check. Participants then rated their affect and general attitudes toward guns, neither of which had any impact on the present results. We nevertheless examined the affect ratings to ensure that the failure manipulation was indeed experienced as aversive. Participants rated their hostile affect (angry, irritated, and frustrated; $\alpha = .89$), anxiety (tense, anxious, and nervous; $\alpha = .86$), and quiescence (calm, relaxed, and serene; $\alpha = .79$, see Schaefer, Nils, Sanchez, & Philippot, 2010). As to be expected, the failure manipulation increased hostile and anxious affect and decreased quiescent affect (all F s > 9.29 , $ps < .002$, $\eta_p^2 = .02-.06$). This suggests the failure manipulation was successful at producing

¹ To maximize power, via our methods, our questionnaires were developed in consultation with two gun-industry professionals to minimize biased language and terminology; we also used dependent measures directly relevant to gun use and validated our indicator of thwarted goals either with a manipulation check (Study 1) or construct validity tests (Studies 2-4).

² It is possible that some participants reported minimal awareness of the Orlando shooting simply because the prescreen question informed them about it. We dropped this screening criterion from future studies and simply measured their levels of knowledge of the event. In Study 3, just 1.05% of the participants reported no knowledge of the Las Vegas shooting; excluding these participants had no bearing on any of the results. In Study 4, all participants reported at least some knowledge of the Texas shooting.

³ We did not expect the predicted effects to replicate among gun nonowners; however, when we conducted Study 1, we also conducted a similar study on gun nonowners ($N = 471$). In brief, none of the reported effects were replicated in the nonowner study (see [online supplemental material](#) for full results). This is hardly surprising because nonowners do not possess the relevant means (guns), they may not be familiar with the sense of power a gun affords, and some might even be ideologically opposed to gun use by private citizens (Gallup, 2013; Stroebe et al., 2017a). We reflect on our samples and their generalizability in the General Discussion.

⁴ It so happened that in the days leading up to the Orlando tragedy, we had collected data for a study on gun ownership and fear of crime ($N = 404$). The prior study used the same methods reported here but did not measure mass shooting threat specifically. It yielded no direct effects of failure or interactions of failure and perceived lifetime risk of assault (see [supplemental analyses](#)). This helps to suggest that the specific threat of mass shootings needs to be salient.

an aversive psychological state. Self-reported affect otherwise had no bearing on the results and will not be discussed further.⁵

Dependent measures. We had predicted that any increased justification for gun use would be mediated by a corresponding perception that guns are empowering. Before assessing the main dependent measure, we assessed the extent to which participants perceived guns as means to increase their efficacy. Participants were asked, “How effective is gun possession as a means of . . .” and then rated various uses for guns. The variable of interest was “Personal empowerment” (rated 1 = *not effective at all* to 7 = *extremely effective*; $M = 4.56$, $SD = 1.93$). The empowerment item was appropriately embedded among several other items to minimize suspicions regarding our interest in empowerment.

The main dependent variable measured *justification to shoot*; that is, the extent to which participants believed it was justified to discharge a firearm in a potential home invasion scenario (Stroebe et al., 2017a). Participants first read: “If a person encounters an intruder, in his home, in the middle of the night, how justified is it for him to . . .” and on separate screens, they rated “. . . fire a warning shot to scare off the intruder” (1 = *not at all justified* to 7 = *totally justified*) “. . . shoot and wound the intruder,” “shoot and kill the intruder,” plus two controversial uses based on “stand-your-ground” laws, “shoot the intruder, even if the intruder is already trying to flee the home,” and “. . . shoot the intruder, even if the homeowner is otherwise alone and can get out safely” (overall $M = 5.12$, $SD = 1.32$, $\alpha = .80$). Participants subsequently completed questionnaires and were fully debriefed at the end of the study.

Results

A regression analysis predicted the belief that guns are empowering from the failure manipulation, perceived likelihood of being present during a mass shooting (standardized), and their interaction. Results indicated no direct effect of failure per se, $B = 0.10$, 95% confidence interval (CI) $[-0.08, 0.27]$, $t(446) = 1.07$, $p = .286$, but rather a direct effect of perceived likelihood of being present during a mass shooting, $B = 0.36$, 95% CI $[0.19, 0.54]$, $t(446) = 4.07$, $p < .001$, which was qualified by a theoretically consistent two-way interaction with the failure manipulation, $B = 0.21$, 95% CI $[0.03, 0.38]$, $t(446) = 2.31$, $p = .021$. As illustrated in Figure 2 (left panel), simple slopes analyses indicated that failure increased beliefs that guns are empowering only at higher levels of perceived likelihood of being present during a mass shooting (1 SD), $B = .30$, 95% CI $[0.05, 0.55]$, $t(446) = 2.39$, $p = .017$, and not at lower levels of perceived likelihood (-1 SD), $B = -0.11$, 95% CI $[-0.36, 0.14]$, $t = -0.88$, $p = .380$.

A second regression analysis indicated the same pattern for justification to shoot. Results again indicated no direct effect of failure per se, $B = 0.07$, 95% CI $[-0.05, 0.19]$, $t(446) = 1.20$, $p = .230$, but rather a direct effect of perceived likelihood of being present during a mass shooting, $B = 0.17$, 95% CI $[0.05, 0.29]$, $t(446) = 2.73$, $p = .007$, which was qualified by a two-way interaction, $B = 0.19$, 95% CI $[0.07, 0.31]$, $t(446) = 3.13$, $p = .002$. As illustrated in Figure 2 (right panel), simple slopes analyses indicated that failure increased justification to shoot at higher levels of perceived likelihood of being present during a mass shooting (1 SD), $B = 0.27$, 95% CI $[0.10, 0.44]$, $t(446) = 3.06$, $p = .002$; failure had no effect at lower levels of perceived

likelihood (-1 SD), $B = -0.12$, 95% CI $[-0.29, 0.05]$, $t(446) = -1.37$, $p = .173$.

We theorized that any increase in justification to shoot would be because of thwarted goals increasing motivation to empower oneself and mass shootings increasing the salience of using guns as means to such ends. As such, the observed increase in justification to shoot should directly correspond with the increased belief that guns are empowering. A moderated mediation analysis tested whether the two-way interactions on both dependent variables were related (PROCESS Model 8, 5000 resamples, bias-corrected bootstrap CIs, Hayes, 2012). The overall index of moderated mediation was reliable, $B = .004$, 95% CI $[0.01, 0.09]$. Tests of the conditional indirect effects indicated a reliable indirect effect (failure \rightarrow belief that guns are empowering \rightarrow justification to shoot) at 1 SD perceived likelihood of being present during a mass shooting, $B = .30$, 95% bias-corrected bootstrap CI $[0.03, 0.27]$, but not at -1 SD perceived likelihood, $B = .09$, 95% CI $[-0.08, 0.27]$.⁶ The increased justification to shoot was mediated by an increased belief that guns are empowering.

Discussion

Results supported our hypotheses: failure interacted with mass shooting threat to predict increased justification to shoot a suspected home intruder, and the increased justification to shoot was mediated by a corresponding increase in perceptions that guns are means of empowerment. Note also that, although there was a direct effect of mass shooting threat on both variables—potentially implying a general effect of mass shooting threat, it was qualified by the two-way interaction. Especially under conditions of failure and higher mass shooting threat did participants show increased empowerment beliefs and justification to shoot.

The results are, consequently, in line with our theorizing: First, there had to be an external goal obstruction to motivate a search for means to increase one’s efficacy over the environment. Second, mass shootings had to be a sufficiently looming threat to make salient the idea of using guns as means to such ends. This suggests that the social psychological impact of mass shootings may include making salient and accessible the idea that guns are a means to empowerment.

There were also limitations of the first study. First, although the failure manipulation appeared to increase motivation for empowerment, it may also have caused fatigue or self-regulatory depletion, which can impair inhibition of violent impulses (e.g., DeWall, Baumeister, Stillman, & Gailliot, 2007). Although the pursuit of empowerment and reduced inhibition may not be entirely independent (e.g., Smith, Jostmann, Galinsky, & Van Dijk, 2008), fatigue is an alternative mechanism. A different instantiation of thwarted goals could help to provide convergent validity that a subjective sense of goal frustration is indeed a predictor of the process we are testing.

⁵ That the failure manipulation led to shifts in self-reported affect, but the affect measures did not predict subsequent endorsement of violence, is consistent with the results of Leander and Chartrand (2017). They argue that when thwarted goals increase displaced aggression, it is often a product of motivation, not negative affect per se.

⁶ The full pattern of mediation is in Figure S1 (supplemental analyses).



Figure 2. Study 1 (Orlando nightclub shooting): Effects of the failure manipulation and perceived likelihood of being present during a mass shooting (threat proximity), on beliefs that guns are effective means of personal empowerment (left panel) and justification to shoot a home intruder (right panel). The black line is the thwarted goal condition (experimental task failure); the gray line is the control (experimental task success). Error bars are SEs of the regression. The Y-axis starts at the scale midpoint.

A second limitation is that the present study did not account for temporal proximity to the Orlando shooting. Our model assumes that the threat of mass shootings need only loom large in the mind to increase ideas about using guns as means of psychological empowerment. However, it is unclear how and whether temporal proximity to the Orlando shooting contributed to the results. In the present study, 70% of the data were collected on a single day, just 3 days after the shooting, and there was no moderating effect of time. This is not inherently problematic for our model, but it means that proximity is assumed. In Studies 2 and 3 we, consequently, sought to assess the stability of the effects in conceptual replications and also test whether a boundary condition of our model is indeed temporal proximity to a mass shooting, be it merely perceived (Study 2) or actual number of days since a high-profile shooting occurred (Las Vegas, Study 3).

Study 2

A cross-sectional study was conducted about a year after the Orlando nightclub shooting. The first aim was to replicate the main finding of Study 1 – that thwarted goals and the salient threat of mass shootings interactively increase ideas about gun use. The second aim was to increase the convergent validity and ecological validity of our model.

The present study sought to assess participants' thwarted goals and corresponding need for empowerment via their subjective sense of *disempowerment in society*; that is, a belief that external societal forces have made it harder for them to function effectively. A subjective sense of goal thwarting at the societal level should

produce the same pattern of results as the situational goal thwarting used in Study 1, with the assumption that the predicted pattern should not be idiosyncratic to any single operationalization of significance loss. Our reasoning is in harmony with prior work on significance quest theory, which indicates that different instantiations of failure, be it experimentally induced or measured in real world professional, economic, and relational domains (cf. Jasko, Lafree, & Kruglanski, 2016; Webber et al., 2018; Webber & Kruglanski, 2017), can all strengthen support for violence against an outgroup and/or unleash aggression against the perceived enemy of one's in-group.

Measuring disempowerment in society may be especially relevant for understanding surges in support for gun use by private citizens: criminologists have long theorized that social forces can thwart goals by blocking access to legitimate means for goal pursuit, or creating conditions of perceived inequity, which lead people to turn to violence as an alternative means to interact with the environment (Agnew, 1992). Social psychologists have accordingly theorized that perceived group disadvantage, alienation, and relative deprivation increases endorsement of violent action to reestablish personal significance (e.g., Kruglanski et al., 2009). However, our model assumes that a person's reference group determines the types of violent action that are deemed competent and appropriate. U.S. gun owners under economic distress often derive a sense of *moral* empowerment from their guns (Mencken & Froese, 2017), suggesting a desire to use such violence for a good cause. The economically disadvantaged may also tend to defend and justify the social and economic system they are strug-

gling in, leading them to redirect or displace their frustrations at convenient scapegoats (Azevedo, Jost, & Rothmund, 2017). As such, societal disempowerment may facilitate ideas about more assertive gun use, but for average gun owners it will probably be manifested in normatively heroic narratives of gun use against suspected violent criminals.

The main dependent variable was justification to shoot a suspected home intruder, but we added a second dependent variable assessing willingness to engage in heroic vigilantism against a range of “bad guys” in society. This could involve empowering narratives of drawing or discharging a firearm to save a helpless victim, overpower a gunman, or scare off suspected troublemakers. Disempowered individuals may be drawn to such narratives not simply because they are violent, but because they invoke notions of effectiveness and success (Kruglanski et al., 2013; Kruglanski, Jasko, Chernikova, Dugas, & Webber, 2017; Kruglanski et al., 2014). A willingness to be the “good guy with a gun” implies acting heroically, and part of the appeal of heroes is that they help people overcome social-psychological threats (Kinsella, Ritchie, & Igou, 2015). Whereas justification to shoot a home intruder focuses on how assertive or aggressive one might be in a self-defense scenario, vigilantism involves a more expansive narrative of heroic action rather than being purely about self-defense per se.

We hypothesized that disempowerment in society would interact with mass shooting threat to predict justification to shoot a home intruder and willingness to engage in vigilantism. However, in contrast to Study 1, which was conducted in the immediate aftermath of a deadly mass shooting, this study was conducted outside the context of a high-profile mass shooting. We were, therefore, concerned that even if people reported high levels of mass shooting threat, the lack of a recent shooting would minimize the salience of such violence. To assess whether temporal proximity to a mass shooting was an important determinant of its salience, we measured the perceived likelihood that another mass shooting would happen in the United States within the next month. We expected that the two-way interaction of disempowerment and mass shooting threat would be further qualified by perceived temporal proximity to another attack.

Method

Participants. There were 875 American handgun owners who were recruited online via the market research firm Qualtrics Panels. Participants were again recruited based on region of country, age, education, and income to get a broad sample across the U.S.A. The sample differed from that of Study 1: first, we only recruited handgun owners (i.e., pistols, revolvers) because handguns are optimal defensive weapons due to their portability and concealability. Second, this sample included both men ($n = 432$) and women ($n = 443$); gender did not moderate the results and will, therefore, not be discussed further. Third, we sought to double the sample size to accommodate the additional moderator (perceived proximity to the next mass shooting) while maintaining acceptable statistical power. Forty-five additional respondents were excluded for providing unusable data (i.e., straight lining, duplicate IP addresses, and nonsensical text entry responses), and two more had missing data on critical variables.

Procedure. The informed consent stated that our purpose was to assess beliefs, attitudes, and experiences regarding handgun ownership and the use of firearms. There was no experimental manipulation, so we focus on the hypothesis-relevant variables

below; the full survey is available in the [online supplemental materials](#). At the end of the survey, participants were debriefed about the nature of the study.

Disempowerment in society. Three items assessed the external thwarting of goals: “Not a lot is done for people like me in America” (rated 1 = *disagree strongly* to 5 = *agree strongly*), “If I compare myself against other Americans, my group is worse off” (rated 1 = *disagree strongly* to 5 = *agree strongly*), and “Recent events in society have increased my struggles in daily life” (rated 1 = *not at all* to 5 = *a great deal*). There was also a fourth item, meant to be reverse coded (“People like me are appreciated in America”), but including it undermined scale reliability so we created an index for disempowerment in society with only the three items ($\alpha = .71$, $M = 2.97$, $SD = 0.95$, with two missing).⁷ Scale validation was conducted following the guideline of Flake, Pek, and Hehman (2017), which provides options for establishing substantive, structural, and external validity. With regards to substantive validity, the aim was to convey a subjective sense of goal thwarting; accordingly, each item explicitly assessed perceptions of disadvantage and struggle blamed on broader societal forces. The structural and external validity of this three-item scale were tested post hoc via an independent sample of 654 U.S. adults from Amazon’s Mechanical Turk. Full details are included in the [supplemental analyses](#), but in brief, structural validity was established first via item analyses, then by a factor analysis indicating that the three items successfully loaded onto a single construct, which was structurally independent of other, potentially related constructs. Finally, scale reliability tests indicated good reliability ($\alpha = .78$) with interitem correlations ranging from $r = .46$ to $r = .66$. External validity was then established via structural equation modeling, in which the scale correlated appropriately with other scales pertaining to lacking power and seeking power. Specifically, disempowerment in society predicted a lower sense of power ($\beta = -0.39$, 95% CI $[-0.48, -0.30]$, $p < .001$, see Anderson, John, & Keltner, 2012); yet, supporting our idea that disempowerment increases sensitivity to perceiving power in others, the scale predicted higher perceptions that a mass shooter possesses power ($\beta = 0.12$, 95% CI $[0.01, 0.24]$, $p = .04$, see Magee, 2009). Altogether, the scale validation supported our use of this scale as an indicator of thwarted goals and a corresponding search for means of empowerment.

Mass shooting threat. For the main moderator, participants reported the perceived likelihood of being present during a mass shooting (1 = *not likely at all* to 5 = *very likely*) and the extent to which they worried about being present in a mass shooting (rated 1 = *never worry* to 5 = *worry constantly*). Similar to Study 1, these items were embedded among other risk perceptions and worries over violent crime. The two items pertaining to *likelihood* and *worry* of being present during a mass shooting were combined into a single scale ($\alpha = .79$, $M = 2.64$, $SD = 1.15$).

Perceived temporal proximity of mass shootings. The additional moderator of mass shooting salience was measured with a single item, “What do you estimate is the likelihood that, in the next month, a mass shooting will occur somewhere in the USA?” (rated 1 = *not likely at all* to 5 = *extremely likely*, $M = 3.81$, $SD = 1.08$).

⁷ We separately assessed the perceived risk of losing one’s job, but this item had no bearing on the results, nor did it hang together with perceived disempowerment.

Dependent measures. The main dependent measure, justification to shoot, was a shortened version of the home intruder vignette used in Study 1: “If you encounter an intruder, in your home, in the middle of the night, how justified is it to . . .” On separate screens, they rated three responses “. . . shoot the intruder” “. . . shoot the intruder, even if the intruder is already trying to flee the home,” and “shoot the intruder, even if you are otherwise alone and can get out safely,” each rated 1 = *not at all justified* to 5 = *totally justified* ($M = 3.70, SD = 1.03, \alpha = .75$).

The second dependent measure was willingness to engage in gun-related vigilantism (“vigilantism”). Participants read, “Might you ever consider drawing or discharging a firearm to . . .,” and then rated each of three items, “Save a vulnerable stranger in distress,” “Stop an active shooter situation,” and “Deter intimidation by troublemakers,” on a 5-point scale (labeled Definitely not, Probably not, Might or might not, Probably yes, Definitely yes; $M = 3.76, SD = 0.81, \alpha = .64$). Scale validation was again conducted in accordance with the guidelines of Flake et al. (2017), with full details provided in the supplemental analyses.⁸ With regards to substantive validity, each item was meant to convey a proactive intervention with guns rather than an act of self-defense per se. Structural validity was ensured via item analyses, factor analysis, and reliability tests. In brief, the three items loaded reliably onto a single construct that was independent of an established scale pertaining exclusively to the right to kill in self-defense (i.e., to defend one self, one’s family, and/or one’s home; Cohen & Nisbett, 1997). External validity was demonstrated by showing that, unlike the right to self-defense scale, the vigilantism scale was positively correlated with beliefs about extrajudicial gun use, such as a right to take the law into one’s own hands against suspected violent criminals, or to shoot a suspected perpetrator of a mass shooting who has already surrendered. Altogether, the scale validation supported our use of this scale as an indicator of vigilantism.

Results

The focal aim was to replicate the two-way interaction pattern observed after the Orlando tragedy, but we added perceived temporal proximity to the next mass shooting as a moderator. There were only small positive correlations between all the independent variables (see Table 1), so we proceeded with the planned analyses. Separate regression analyses predicted vigilantism and justification to shoot from disempowerment in society (standardized), perceived threat of mass shootings (standardized), perceived prox-

Table 2
Summary of Multiple Regression Analyses on Justification to Shoot (Study 2, $N = 875$)

Variable	B	t	95% CI
Disempowerment in society	.06	1.53	[−.02, .14]
Threat of mass shootings (threat)	.05	1.35	[−.03, .13]
Temporal proximity to next mass shooting (proximity)	.09	2.13*	[.01, .17]
Disempowerment × Threat	.02	.58	[−.05, .09]
Disempowerment × Proximity	.01	.14	[−.07, .09]
Threat × Proximity	.02	.63	[−.05, .10]
Disempowerment × Threat × Proximity	.10	2.84**	[.03, .16]

Note. CI = confidence interval.
* $p < .05$. ** $p < .01$. *** $p < .001$.

imity to the next mass shooting (standardized), and all possible interactions.

Effects on justification to shoot. Full regression results are reported in Table 2. There was a positive direct effect of temporal proximity, $B = 0.09, 95\% \text{ CI } [0.01, 0.17, t(867) = 2.13, p = .034$, but not the hypothesized two-way interaction of disempowerment and mass shooting threat, $B = 0.02, 95\% \text{ CI } [−0.05, 0.09], t(867) = 0.58, p = .564$. Instead, there was a three-way interaction of disempowerment, mass shooting threat, and temporal proximity to the next mass shooting, $B = 0.10, 95\% \text{ CI } [0.03, 0.16], t(867) = 2.84, p = .005$. As illustrated in Figure 3 (top panels), our predicted two-way interaction of mass shooting threat and disempowerment was only observed among those who strongly believed another mass shooting would occur in the next month. This interpretation was supported by probes of the three-way interaction, which indicated a positive simple interaction of disempowerment and mass shooting threat at 1 *SD* perceived proximity to the next mass shooting, $B = 0.12, 95\% \text{ CI } [0.03, 0.21], t(867) = 2.51, p = .012$, but not at $−1 \text{ SD}$ perceived proximity, $B = −0.07, 95\% \text{ CI } [−0.18, 0.03], t(867) = −1.40, p = .162$.

Effects on vigilantism. Full regression results are in Table 3. There was a positive direct effect of disempowerment in society, $B = 0.11, 95\% \text{ CI } [0.05, 0.17], t(867) = 3.51, p = .001$, which was qualified by the predicted two-way interaction of disempowerment and mass shooting threat, $B = 0.06, 95\% \text{ CI } [0.003, 0.12], t(867) = 2.06, p = .040$. The two-way interaction was further qualified by a three-way interaction with perceived temporal proximity to the next mass shooting, $B = 0.08, 95\% \text{ CI } [0.02, 0.13], t(867) = 2.86, p = .004$. As illustrated in Figure 3 (bottom panels), the overall pattern of the data for vigilantism resembled the pattern for justification to shoot. A probe of the three-way interaction again indicated a positive simple interaction of disempowerment and mass shooting threat only at 1 *SD* perceived proximity to the next mass shooting, $B = 0.13, 95\% \text{ CI } [0.06, 0.21], t(867) = 3.70, p < .001$, and not at $−1 \text{ SD}$ perceived proximity, $B = −0.02, 95\% \text{ CI } [−0.10, 0.07], t(867) = −0.39, p = .700$. Disempowerment mainly only

Table 1
Correlations of Independent and Dependent Variables (Study 2, $N = 875$)

Variable	1	2	3	4
1. Perceived disempowerment in society				
2. Perceived mass shooting threat	.35***			
3. Perceived temporal proximity of mass shootings	.16***	.35***		
4. Vigilantism	.19***	.10**	.09**	
5. Justification to shoot a home intruder	.13***	.13***	.15***	.19***

* $p < .05$. ** $p < .01$. *** $p < .001$.

⁸ Scale validation was conducted using the data collected for Study 3 (Las Vegas); in that study, we also only recruited handgun owners and, thus, the vigilantism items would be self-relevant.

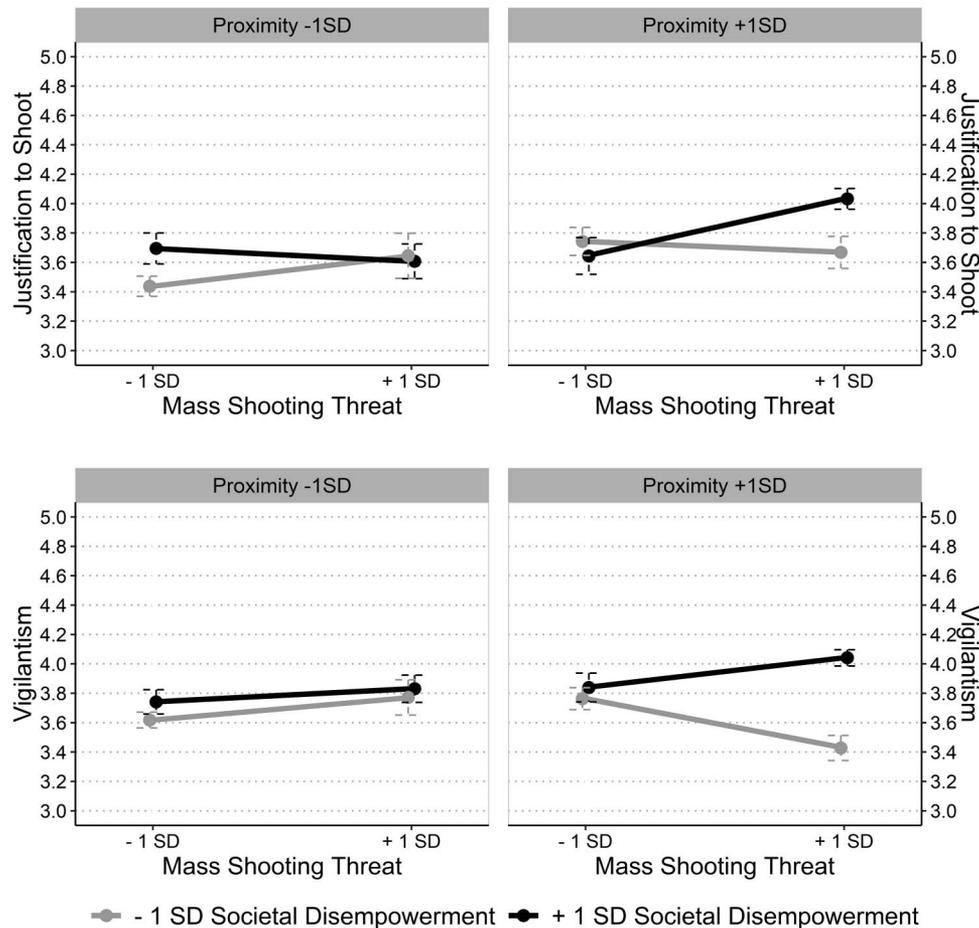


Figure 3. Study 2: Effects of disempowerment in society, mass shooting threat, and temporal proximity to the next mass shooting, on justification to shoot a home intruder (top panel) and ideas about vigilantism (bottom panel). Proximity (1 *SD*/–1 *SD*) is the extent to which participants believed another mass shooting would occur in the United States in the next month. Black bars represent higher societal disempowerment (1 *SD*), gray bars represent lower societal disempowerment (–1 *SD*). Error bars are *SEs* of the regression. The Y-axis starts at the scale midpoint.

predicted vigilantism at higher levels of perceived mass shooting threat and proximity.

The effects on vigilantism also mediated the effects on justification to shoot: A mediation analysis using PROCESS (Model 12, 5000 resamples, bias-corrected, Hayes, 2012), tested the indirect effect (disempowerment → vigilantism → justification to shoot) at different levels of mass shooting threat and temporal proximity. Results indicated that the indirect effect of disempowerment was reliable at higher levels of threat and temporal proximity: There were no reliable indirect effects at –1 *SD* mass shooting threat, irrespective of temporal proximity (all confidence intervals crossed zero). Even at 1 *SD* mass shooting threat, the indirect effect was unreliable at –1 *SD* temporal proximity $B = .01$, 95% CI [–0.02, 0.04]. However, the indirect effect was reliable at 1 *SD* mass shooting threat and 1 *SD* temporal proximity, $B = .06$, 95% CI [0.03, 0.09].⁹ The overall index of moderated-moderated mediation was marginally reliable, $B = .01$, 95% CI [0.00, 0.03]. The increased justification to shoot was at least partly explained by increased ideas about vigilantism.

Discussion

The hypothesized interaction of disempowerment and the salient threat of mass shootings on justification to shoot was only fully supported when including perceived temporal proximity to the next mass shooting as an additional moderator. Apparently, the perceived threat of mass shootings had to be seen as a proximal or imminent threat to prompt a reaction. This is consistent with findings of Study 1, wherein the threat was proximal (i.e., measures were taken immediately after a high-profile mass shooting), as well as with other previous research suggesting that perceived proximity to a threat magnifies responses to the threat (White et al., 2014). Therefore, in line with our theorizing, disempowerment increases justification to shoot only to the extent that mass shootings are highly salient. Furthermore, the effects on justification to

⁹ The indirect effect remained reliable as long as both moderators were at least ~0 *SD* or greater. The full pattern of mediation is in Figure S2 (supplemental analyses).

Table 3
Summary of Multiple Regression Analyses on Willingness to Engage in Vigilantism (Study 2, $N = 875$)

Variable	B	<i>t</i>	95% CI
Disempowerment in society	.11	3.51***	[.05, .17]
Threat of mass shootings (threat)	.01	.43	[-.05, .08]
Temporal proximity to next mass shooting (proximity)	.01	.43	[-.05, .08]
Disempowerment × Threat	.06	2.06*	[.003, .12]
Disempowerment × Proximity	.06	2.00*	[.001, .13]
Threat × Proximity	-.05	-1.56	[-.11, .01]
Disempowerment × Threat × Proximity	.08	2.86**	[.02, .13]

Note. CI = confidence interval.

* $p < .05$. ** $p < .01$. *** $p < .001$.

shoot corresponded with ideas about vigilantism, which is consistent with work showing that people who experience inefficacy or failure become attracted to violent narratives and notions of heroism, presumably because they depict efficacy and success (Kinsella et al., 2015; Kruglanski et al., 2013).

Altogether, Studies 1 and 2 suggest that a byproduct of mass shootings looming large in the mind is to facilitate more assertive and expansive ideas about using guns to protect oneself and one's community. This was especially the case among those who reported disempowerment in society—those whom we theorize to be goal thwarted and, thus, motivationally ready to empower themselves via (heroic) violent action. With the basic pattern established, we proceeded to test our model in response to another high-profile mass shooting, wherein we sought to replicate the moderating effects of mass shooting threat and temporal proximity.

Study 3: Las Vegas Strip Shooting

On October 1, 2017, a few months after Study 2 was conducted, a gunman in Las Vegas opened fire into a crowd of up to 22,000 attendees of a country music festival, killing 58 people and wounding/injuring 851. It surpassed the Orlando nightclub shooting as the deadliest mass shooting by a lone gunman in U.S. history. Thus, we sought to conduct our survey again to assess the predicted interaction of mass shooting threat and thwarted goals, which were operationalized via the same variables used in Study 2.

We also sought to examine the effects of temporal proximity more closely in the present study. Thus, we hypothesized that any two-way interaction between disempowerment in society and mass shooting threat would be further qualified by participants' proximity to the Las Vegas shooting, operationalized as the number of days that had transpired between the shooting and their date of participation in the study. We collected the data within 9–23 days of the Las Vegas shooting to ensure that the event was still being covered by national media outlets throughout the entire data collection period.¹⁰ However, research on mass shooting contagion (i.e., an initial surge in similar violence in the community) suggests that it typically only lasts an average of 13 days before decaying (Towers et al., 2015). To test for such a decay over time, we assumed the two-way interaction pattern of thwarted goals and the salient threat of mass shootings would initially be stronger and then weaken over time. Altogether, our first aim was to replicate

the two-way interaction between societal disempowerment and mass shooting threat. Our second aim was to test how temporal proximity to the shooting further moderates the predicted effect.

Method

Participants. There were 858 American handgun owners who were recruited online via the market research firm Qualtrics Panels (509 men and 349 women). Participants were recruited by region of country, age, education, and income to get a broad sample across the United States. An additional one hundred twelve respondents were excluded for providing unusable data (straight lining, duplicate IP addresses, or nonsensical text entry responses). Note that, whereas all the data for the Orlando shooting were collected within 3–10 days, data collection for the Las Vegas strip shooting was spread between 9 and 23 days, giving more room to test decay over time.¹¹

Procedure. The questionnaire was based on that used in Study 2 and, thus, had the same key independent and dependent variables. However, similar to Study 1 (following the Orlando nightclub shooting), the survey included initial questions speculating on the gunman's motivations and what might have prevented the shooting. The first independent variable was disempowerment in society ($M = 2.91$, $SD = 0.90$, $\alpha = .62$); the second independent variable was mass shooting threat ($M = 2.36$, $SD = 1.07$, $\alpha = .78$). These variables represent our core model with regards to our hypothesized interaction. To test whether proximity to the Las Vegas shooting had a stronger initial effect that decayed over time, we assessed the number of days that transpired between the shooting and each participant's date of participation (range: 9–23 days, $M = 14.87$, $SD = 3.80$). The dependent variables were justification to shoot a home intruder ($M = 3.72$, $SD = 1.00$, $\alpha = .74$) and willingness to engage in vigilantism ($M = 3.75$, $SD = 0.84$, $\alpha = .69$). Correlations between variables are in Table 4.

Results

Effects on justification to shoot. Full regression results are presented in Table 5. The significant results were a positive direct effect of disempowerment in society, $B = 0.14$, 95% CI [0.07, 0.21], $t(850) = 3.82$, $p < .001$, and a three-way interaction of disempowerment, mass shooting threat, and days since the Las Vegas shooting, $B = 0.08$, 95% CI [0.02, 0.15], $t(850) = 2.43$, $p = .016$. The direct effect of disempowerment was not specifically predicted, nor did the overall pattern of the data conform to our a priori expectations: As illustrated in Figure 4 (top panels), the expected two-way interaction of disempowerment and mass shooting threat was not initially stronger; in fact, the two-way interac-

¹⁰ The Las Vegas strip shooting remained in the national media headlines throughout the data collection period. A LexisNexis analysis of media stories about the shooting in top national news outlets (such as CNN, Fox News, etc.), ranged from 108 on the first day of data collection to 11 on the last day of data collection (see Figure S4 in the supplemental material for details).

¹¹ There were two large spikes in data collection on October 12 ($n = 302$) and October 18 ($n = 267$) that led to high kurtosis. Results were virtually unchanged when we re-coded the data into the three periods marked by the spikes (period ending October 12 [coded -1]; period ending October 18 [coded 0]; and afterwards [coded 1]).

tion only emerged later, during the second half of our measurement period. Before that, in the days immediately after the Las Vegas tragedy, disempowerment alone sufficed to increase ideas about gun use: that is, disempowered gun owners reported higher justification to shoot regardless of individual differences in mass shooting threat.

In other words, close temporal proximity to the Las Vegas shooting did not exacerbate the predicted two-way interaction per se, it subsumed any effects of threat. This interpretation was supported by probes of the simple two-way interactions and simple slopes: At -1 *SD* days since the Las Vegas shooting (higher proximity), there was a positive simple effect of disempowerment, $B = 0.21$, 95% CI [0.11, 0.32], $t(850) = 3.89$, $p < .001$, and no simple interaction of disempowerment and threat, $B = -0.05$, 95% CI [-0.15, 0.05], $t(850) = -0.99$, $p = .325$. This again suggests that in the days immediately following the shooting, disempowerment directly predicted justification to shoot regardless of individual differences in mass shooting threat. However, at 1 *SD* days since the Las Vegas shooting (lower proximity), there was no simple effect of disempowerment per se, $B = 0.07$, 95% CI [-0.03, 0.17], $t(850) = 1.41$, $p = .158$, but rather a positive simple interaction of disempowerment and threat, $B = 0.11$, 95% CI [0.03, 0.19], $t(850) = 2.61$, $p = .009$. Altogether, the direct effect of disempowerment only occurred at especially high proximity to the shooting; it eventually gave way to the predicted interaction pattern between threat and thwarted goals.

Effects on vigilantism. Full regression results are presented in Table 6. Again, the significant results were a positive direct effect of disempowerment in society, $B = 0.09$, 95% CI [0.03, 0.15], $t(850) = 2.95$, $p = .003$, and a three-way interaction of disempowerment, mass shooting threat, and days since the Las Vegas shooting, $B = 0.07$, 95% CI [0.01, 0.12], $t(850) = 2.38$, $p = .018$. As illustrated in Figure 4, the overall pattern was similar to that for justification to shoot.¹² Probes of the simple two-way interactions and simple slopes indicated that, at fewer days since the Las Vegas shooting (-1 *SD*), there was a positive simple slope of disempowerment, $B = 0.11$, 95% CI [0.02, 0.20], $t(850) = 2.35$, $p = .019$, and no simple interaction of disempowerment and threat, $B = -0.05$, 95% CI [-0.13, 0.03], $t(850) = -1.17$, $p = .242$. By 1 *SD* days since the Las Vegas shooting, the simple slope of disempowerment was no longer significant, $B = 0.08$, 95% CI [-0.01, 0.16], $t(850) = 1.82$, $p = .069$; instead, there emerged a positive simple interaction of disempowerment and threat consistent with what we observed in the previous studies, $B = 0.08$, 95% CI [0.01, 0.15], $t(850) = 2.39$, $p = .021$.

We observed slight evidence of mediation between vigilantism and justification to shoot, in a pattern befitting the aforementioned

Table 4
Correlations of Independent and Dependent Variables (Study 3, $N = 858$)

Variable	1	2	3	4
1. Perceived disempowerment in society				
2. Perceived mass shooting threat	.34***			
3. Days since Las Vegas shooting	-.01	-.12***		
4. Vigilantism	.11***	.07*	.07*	
5. Justification to shoot a home intruder	.12***	.02	.01	.31***

* $p < .05$. ** $p < .01$. *** $p \leq .001$.

Table 5
Summary of Multiple Regression Analyses on Justification to Shoot (Study 3, $N = 858$)

Variable	B	<i>t</i>	95% CI
Disempowerment in society	.14	3.82***	[.07, .22]
Perceived mass shooting threat (threat)	-.04	-1.04	[-.11, .03]
Days since Las Vegas shooting (days since LV)	-.02	-.44	[-.09, .05]
Disempowerment \times Threat	.03	.94	[-.05, .10]
Disempowerment \times Days since LV	-.07	-1.95	[-.14, .001]
Threat \times Days since LV	.03	.94	[-0.03, .10]
Disempowerment \times Threat \times Days since LV	.08	2.43*	[.02, .15]

* $p < .05$. ** $p < .01$. *** $p \leq .001$.

analyses. The mediation analysis was conducted using PROCESS (Model 12, 5000 resamples, bias-corrected; Hayes, 2012), testing the indirect effect (disempowerment \rightarrow vigilantism \rightarrow justification to shoot) at different levels of mass shooting threat and temporal proximity. At 1 *SD* days since the shooting, wherein we observed a simple two-way interaction of disempowerment and threat, there was a reliable indirect effect at 1 *SD* threat, $B = .05$, 95% CI [0.02, 0.10], but not at -1 *SD* threat, $B = .00$, 95% CI [-0.05, 0.04]. At -1 *SD* days since the shooting, wherein there was only a direct effect of disempowerment (and no interaction), the indirect effect was reliable when averaging across threat, $B = 0.17$, 95% CI [0.05, 0.30]; however, the stability of the mediation varied overall.¹³ The overall index of moderated-moderated mediation was marginally reliable, $B = 0.02$, 95% CI [0.00, 0.05]. The increased justification to shoot was at least partly explained by increased ideas about vigilantism.

Discussion

We originally predicted a two-way interaction of disempowerment and the salient threat of mass shootings, and further predicted that this interaction would be exacerbated by close temporal proximity to the Las Vegas strip shooting and then weaken over time. That is not what we found: For a brief period after the Las Vegas strip shooting, disempowered gun owners reported higher levels of both vigilantism and justification to shoot, regardless of individual differences in mass shooting threat. Only later did the pattern of the data conform to the predicted two-way interaction observed in the previous studies.

The initial direct effect of disempowerment was surprising and inconsistent with what we observed after Orlando (Study 1). It suggests that high proximity to the Las Vegas shooting subsumed any chronic individual differences in mass shooting threat, making

¹² The simple slopes of disempowerment in society were not as consistently reliable for vigilantism as for justification to shoot. Specifically, at -1 *SD* days since the shooting, the simple slope of disempowerment was unexpectedly nonsignificant at 1 *SD* threat ($p = .30$). However, all other relevant simple slopes were reliable and the overall pattern of the data was consistent.

¹³ At -1 *SD* days since the shooting, the reliability of the indirect effect corresponded with the mixed reliability of the simple slopes (see previous footnote). The full pattern of mediation is in Figure S3 (supplemental analyses).

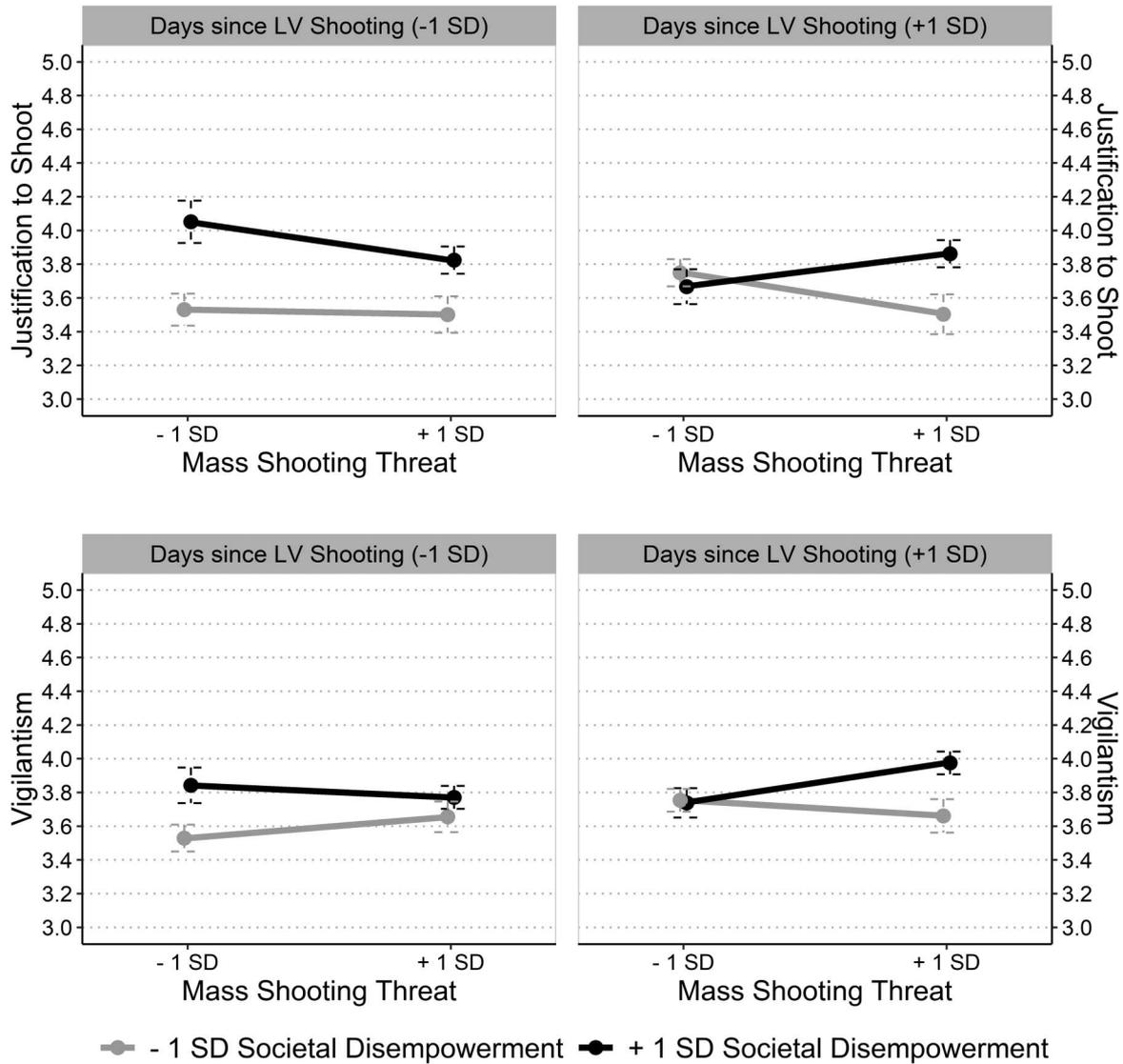


Figure 4. Study 3: Effects of disempowerment in society, mass shooting threat and days since the Las Vegas (LV) shooting, on justification to shoot a home intruder (top panel) and ideas about vigilantism (bottom panel). Days since LV shooting separates the immediate effect (−1 SD) from the eventual pattern (1 SD), which differed among low-threat individuals. Black bars represent higher societal disempowerment (1 SD), gray bars represent lower societal disempowerment (−1 SD). Error bars are SEs of the regression. The Y-axis starts at the scale midpoint.

it salient even to those who typically perceive a low threat of mass shootings. Was the Las Vegas shooting simply more influential? If so, it was not because of higher levels of temporal proximity or threat: First, the Las Vegas study was *less* temporally proximal to the shooting than the Orlando study (i.e., 70% of the Orlando data were collected just 3 days after the shooting); second, the Las Vegas study participants did not report higher threat of mass shootings than the Orlando study participants.¹⁴ If Las Vegas was more influential, it was for reasons other than temporal proximity or individual differences in perceived threat of mass shootings.

Perhaps there was another dimension of psychological proximity we had not yet considered—namely, a greater sense of *social*

proximity to the Las Vegas shooting than the Orlando shooting. U.S. gun owners tend to be older and relatively conservative (Pew, 2017); the Las Vegas strip shooting accordingly targeted a country music festival wherein the victims ranged from 20–67 years in age; in contrast, the Orlando shooting targeted a gay nightclub and the victims were mostly in their 20s and early 30s. Social prox-

¹⁴ After harmonizing the Orlando 7-point scale to match the Las Vegas 5-point scale, a *t* test yielded no differences: $M_{Orlando} = 2.13, SD = 1.11, M_{Las\ Vegas} = 2.21, SD = 1.08, t(1306) = -1.32, p = .187, 95\% CI [-0.21, 0.04]$.

Table 6
Summary of Multiple Regression Analyses on Willingness to Engage in Vigilantism (Study 3, $N = 858$)

Variable	B	<i>t</i>	95% CI
Disempowerment in society	.09	2.95**	[.03, .15]
Mass shooting threat (threat)	.03	.80	[-.04, .09]
Days since Las Vegas shooting (days since LV)	.04	1.37	[-.02, .10]
Disempowerment × Threat	.02	.60	[-.04, .07]
Disempowerment × Days since LV	-.02	-.53	[-.08, .04]
Threat × Days since LV	.01	.36	[-.05, .07]
Disempowerment × Threat × Days since LV	.07	2.38*	[.01, .12]

* $p < .05$. ** $p < .01$. *** $p \leq .001$.

imity to the Las Vegas shooting could have made it more salient to our respondents than the Orlando shooting. If this were the case, then the salience of any high-profile mass shooting may be heightened not just by temporal proximity or perceived threat, but also by social proximity to the target victims or specific location of the attack. Thus, we sought to conduct a final study to test whether social proximity to a given mass shooting moderates the effects of societal disempowerment.

Study 4: Texas Church Shooting

On November 5, 2017, barely a month after the Las Vegas strip shooting, a gunman opened fire in a church in Sutherland Springs, Texas, killing 26 people and wounding 20. It was the fifth deadliest mass shooting in U.S. history by a lone gunman. The Texas church shooting received far less media coverage than Las Vegas,¹⁵ but given that the tragedy occurred at a church during its Sunday service, we proceeded to test whether social proximity to the victims or location of the attack moderated the predicted effects. Frequent church attendees may experience a church shooting to be especially self-relevant and vivid, at least when compared with gun owners who rarely or never attend church. We, therefore, tested whether participants' frequency of church attendance moderated their reactions to the Texas shooting. We hypothesized a two-way interaction, theorizing that gun owners who experience disempowerment in society and who also attend church relatively frequently (vs. less frequently) would be most willing to engage in vigilantism.

One advantage of testing whether church attendance frequency moderates the effects of disempowerment is that church attendance is not a likely predictor of the pursuit of empowerment via guns (e.g., Mencken & Froese, 2017); we accordingly assume that church attendance frequency is not a typical predictor of mass shooting salience. Church attendance frequency should only be a relevant moderator in the specific context of a church shooting. Given that the Texas church shooting occurred only 12 days after we had stopped data collection of the Las Vegas mass shooting, we decided to recontact the same participants for a brief survey. Recontacting the Las Vegas participants afforded the opportunity to conduct a discriminant validity test to ensure that church attendance frequency only moderates responses to the Texas church shooting and not the Las Vegas strip shooting.

Method

Participants. There were 259 handgun owners (176 men, 83 women), who had originally participated in the Las Vegas shooting survey, who were successfully recontacted via Qualtrics Panels between 10 and 20 days after the Texas church shooting. An additional 17 participants were excluded for providing unusable data (straight lining, duplicate IPs).

Procedure. The informed consent was updated to indicate that participants were "contacted for this study as a follow up to a previous study you participated in."¹⁶ For our first independent variable, disempowerment in society, we used participants' responses from the Las Vegas survey ($M = 2.85$, $SD = 0.91$, $\alpha = .63$). For the proposed moderator, church attendance frequency, participants were asked, "About how often do you attend church (or other organized religious service)?" (rated 1 = *never*, 2 = *rarely/Almost never*, 3 = *at least once a year*, 4 = *at least once a month*, and 5 = *at least once a week*, $M = 3.10$, $SD = 1.53$).

Our dependent variable, willingness to engage in vigilantism, was reassessed in the Texas survey ($M = 3.87$, $SD = 0.85$, $\alpha = .68$). We did not reassess justification for gun use because of time constraints, making vigilantism our sole dependent measure in this study. Altogether, each participant had one score for disempowerment in society, one score for frequency of church attendance, and then a repeated measure of vigilantism (auto $r = .40$, $p < .001$).¹⁷ Correlations between variables are displayed in Table 7.

Results and Discussion

An initial regression analysis predicted vigilantism after the Texas church shooting from disempowerment in society (standardized), church attendance frequency (standardized), and their two-way interaction. Results indicated no direct effects of disempowerment, $B = 0.02$, 95% CI [-0.09, 0.13], $t(255) = 0.31$, $p = .757$, or church attendance frequency, $B = 0.05$, 95% CI [-0.06, 0.15], $t(255) = 0.85$, $p = .397$; rather, there was a significant two-way interaction, $B = 0.12$, 95% CI [0.01, 0.23], $t(255) = 2.23$, $p = .026$. As illustrated in Figure 5 (left panel), frequency of church attendance moderated the effects of disempowerment after the Texas church shooting. Simple slopes analyses indicated a positive effect of societal disempowerment only at 1 SD church attendance frequency, $B = 0.14$, 95% CI [0.01, 0.27], $t(255) = 2.07$, $p = .040$, and not at -1 SD church attendance frequency, $B = -0.10$, 95% CI [-0.27, 0.07], $t = -1.21$, $p = .227$. This suggests that social proximity to the Texas church shooting moderated the association between societal disempowerment and endorsement of gun-related vigilantism.

It remains possible that the moderation by church attendance frequency reflects some other process, unrelated to social proxim-

¹⁵ Details of the reduced media coverage are in Figure S4 in the supplemental analyses.

¹⁶ Similar to the Orlando and Las Vegas studies, this survey also included initial questions about the gunman's motivations and what might have prevented the shooting. The full survey is available in the online supplemental materials.

¹⁷ Did vigilantism scores generally increase between Las Vegas and Texas? Although a repeated measures t test suggested an increase, $t(258) = 2.02$, $p = .045$, $\eta_p^2 = .016$, this effect was only marginally significant in all our regression analyses.

Table 7
Correlations of Independent and Dependent Variables (Study 4,
N = 259)

Variable	1	2	3
1. Disempowerment in society			
2. Frequency of church attendance	.08		
3. Vigilantism after Las Vegas shooting (1 of 2)	.16**	.01	
4. Vigilantism after Texas shooting (2 of 2)	.06	.04	.40***

** $p < .01$. *** $p < .001$.

ity to the church shooting. For example, individual differences in Christian nationalism predicts opposition to gun laws, presumably as part of a progun sociopolitical narrative (Whitehead, Schnabel, & Perry, 2018). However, if church attendance frequency reflects such a progun narrative, then it should moderate the effects outside the specific context of a church shooting. Given that we had recontacted participants from the Las Vegas shooting survey, we were afforded the opportunity to test whether church attendance frequency only moderated reactions to the Texas church shooting and not the Las Vegas strip shooting. We first confirmed in a separate regression analysis that the aforementioned two-way interaction of disempowerment and church attendance remained significant when controlling for vigilantism scores from the Las Vegas shooting, $B = 0.12$, 95% CI [0.03, 0.22], $t(254) = 2.47$, $p = .014$. We then conducted an analysis based on a mixed model, entering vigilantism scores from Las Vegas and Texas as a repeated measure (vigilantism-RM), and entering perceived disempowerment (standardized) and church attendance frequency (standardized) as between-subjects factors. Results indicated a two-way interaction between vigilantism-RM and disempowerment, $F(1, 255) = 4.36$, $p = .038$, and importantly, a three-way interaction of vigilantism-RM, disempowerment, and frequency of church attendance, $F(1, 255) = 4.46$, $p = .036$. All other effects were nonsignificant (see Table 8). As illustrated in Figure 5, church attendance frequency only moderated reactions to the Texas church shooting.

Subsequent analyses indicated no additional moderating effects of temporal proximity or general mass shooting threat, the latter of which had not changed between Las Vegas and Texas ($M_{LasVegas} = 2.26$, $SD = 1.04$, $M_{Texas} = 2.34$, $SD = 1.12$), $t(258) = 1.27$, $p = .203$, 95% CI [-0.05, 0.20]. The lack of additional effects could be because the Texas shooting was of a lower profile in the media (e.g., it was overshadowed by the recent Las Vegas shooting), but the lack of additional effects could also be because of the smaller sample size we recruited in this study.¹⁸

Altogether, in the wake of the 2017 Texas church shooting, only frequent church attendees demonstrated the predicted effect. The results suggest that even a less high-profile shooting, such as the Texas church shooting, could still increase ideas about vigilantism among those for whom such a shooting is socially proximal to the self—and hence more salient.

General Discussion

Guns are instruments of empowerment that have been used by heroes and villains throughout U.S. history and in popular media, dating at least as far back as the American frontier and the

American Revolutionary War. In recent decades, the United States has witnessed a new type of villain in the form of mass shooters, with the last few years seeing some of the deadliest mass shootings in modern American history, including Newtown (2012), San Bernardino (2015); Orlando (2016), Las Vegas (2017), Sutherland Springs (2017); and during the initial writing of this article, the high school shooting in Parkland (2018); then, during editorial revisions of this article, there was the high school shooting in Santa Fe (2018), and later the synagogue shooting in Pittsburgh (2018) and the bar shooting in Thousand Oaks (2018). Yet, little is known about the psychological influence of mass shootings on a society that owns hundreds of millions of guns; in fact, there is relatively little psychological research on gun owners in general. The present research offers a rare glimpse into the psychology of gun ownership, especially with regards to how the salience of mass shootings subtly alters people's ideas about guns.

We conducted studies in the wakes of the Orlando, Las Vegas, and Sutherland Springs shootings. To our knowledge, the present research is the first attempt to follow multiple high-profile mass shootings in an effort to develop a model that explains the psychological process through which people turn to guns and seek power. We specifically focused on how, when, and why mass shootings are likely to increase ideas about assertive gun use among those whose goals are thwarted. By testing over two thousand gun owners, at different points in time, and after multiple mass shooting events, we were able to test three candidate moderators of mass shooting salience: perceived threat, temporal proximity, and social proximity. Each of these factors theoretically increase the psychological proximity of mass shootings and, thus, the extent to which they loom large in the mind.

For the thwarted goal, we either manipulated failure on an achievement task (Study 1) or measured perceived disempowerment in society (Studies 2–4). The dependent measures included perceptions of guns as means of empowerment (Study 1), justification to shoot a home intruder (Studies 1–3), and willingness to engage in heroic vigilantism (Studies 2, 3, and 4). A relatively consistent finding was that thwarted goals and a sense of threat interactively increased self-reported justification and willingness to use a gun to protect oneself and others (Studies 1, 2, and 3). When the salient threat of mass shootings was high, goal thwarted (disempowered) individuals showed stronger effects than those who were not goal thwarted.

Results were less consistent with our specific indicators of psychological proximity. Whereas the general measure of mass shooting threat moderated the effects in Studies 1–3, this was not the case in Study 4 (the less high-profile Sutherland Springs shooting), wherein only social proximity (church attendance frequency) moderated the results. Temporal proximity to a mass shooting yielded mixed results: Each study varied in terms of its exact temporal distance from a mass shooting event, and whereas imagined temporal proximity appeared to qualify the predicted

¹⁸ Another question is whether participants were influenced by news that an armed civilian confronted and shot the perpetrator as he left the church. Perhaps participants may have identified with him (i.e., they were looking for a hero), or perhaps the effects were moderated by their perceptions of this hero rather than by the threat of the gunman. We did not observe evidence of such identification processes (see supplemental analyses).

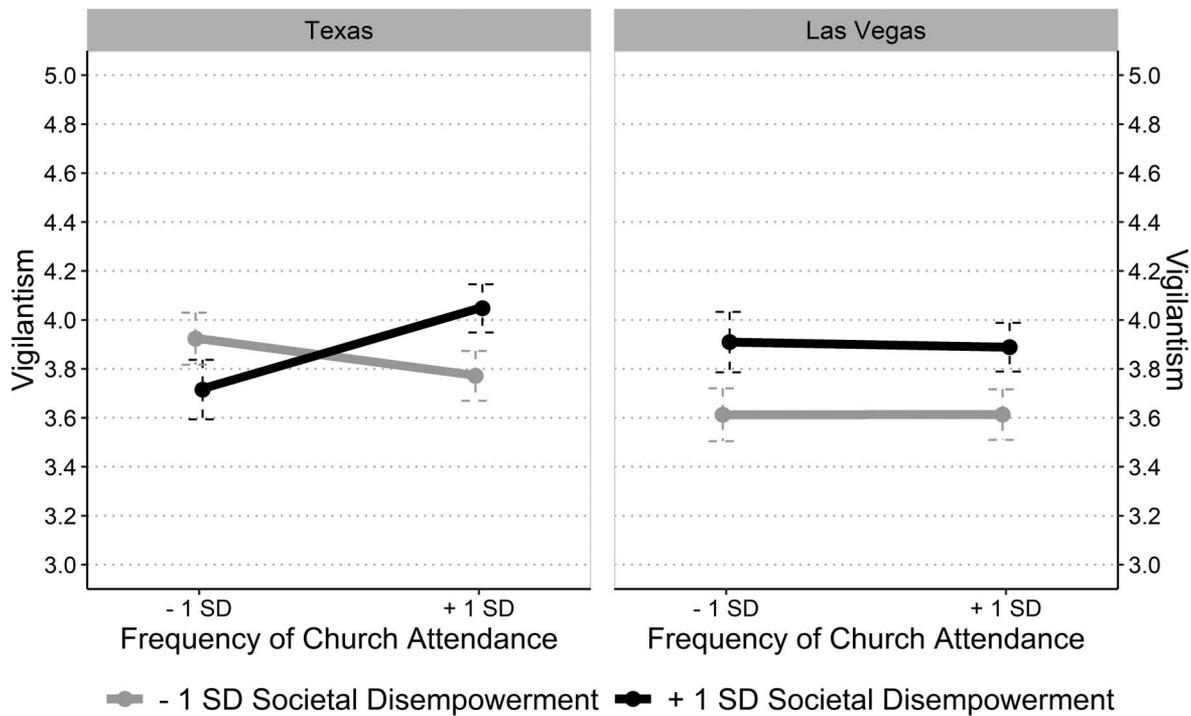


Figure 5. Study 4 (Texas church shooting vs. Las Vegas strip shooting): Effects of perceived disempowerment in society and frequency of church attendance on the repeated measure of vigilantism. Error bars are *SEs* of the regression. The Y-axis starts at the scale midpoint.

interaction of thwarted goals and mass shooting threat in Study 2, immediate proximity to the Las Vegas shooting (Study 3) apparently subsumed any individual differences in general mass shooting threat. Temporal proximity had no effect in Study 4 (Texas).¹⁹ Different dimensions of proximity interacted with thwarted goals, but not consistently. This highlights a problem with research on real life events, as compared with experiments conducted in a laboratory. Whereas a skilled experimenter might be able to precisely manipulate theoretical variables in the laboratory, events in the real world often vary in uncontrolled ways. However, despite inconsistencies across studies, we infer two broad themes stemming from these data: First, it is mainly goal-thwarted (disempowered) gun-owners who are likely to be drawn toward violent ideas, as indicated by their endorsement of more assertive and expansive

gun use to protect against violent criminals. Second, such ideas were strongest when mass shootings were salient.

Theoretical Implications

We theorized that people would be most likely to assimilate ideas from mass shootings in the context of thwarted goals—that is, when they are highly motivated to seek substitute means of empowerment and significance. Our model is rooted in the idea that human beings have a basic psychological need for effective interactions with their environments, that thwarted goals exacerbate this need, and that people then search for another, potentially more violent, means to address the need. We drew from past research that thwarted goals motivate a search for a more aggressive means to increase one's efficacy or personal control over the environment (Leander & Chartrand, 2017), and guns could represent such a means (Mencken & Froese, 2017; Shepherd & Kay, 2018). High-profile shootings seemed likely to increase the sa-

Table 8

Study 4: Full Results of the Mixed Model, Testing the Interaction of Societal Disempowerment and Frequency of Church Attendance on Vigilantism After the Texas Church Shooting and the Las Vegas Strip Shooting

Variable	<i>F</i>	<i>p</i>	η_p^2
Disempowerment in society (disempowerment)	3.02	.083	.012
Frequency of church attendance (frequency)	.20	.654	.001
Repeated measure of vigilantism (vigilantism-RM)	3.45	.064	.013
Disempowerment × Frequency	1.61	.206	.006
Disempowerment × Vigilantism-RM	4.36	.038*	.017
Frequency × Vigilantism-RM	.73	.395	.003
Disempowerment × Frequency × Vigilantism-RM	4.46	.036*	.017

¹⁹ We do not necessarily limit our model to the specific moderators we tested, as they are merely meant to reflect salience. Future studies could focus on the media sources that inform people about mass shootings, with the idea that some sources may be more influential than others. Similarly, there may be other types of proximity—such as physical proximity, that moderate salience. Our use of a national sample only allowed us to assess physical proximity coarsely—by participants' *state of residence*, so our margin of error in distance from the attack were enormous (i.e., each state representing hundreds/thousands of miles) and, thus, it did not moderate the results. Effects of proximity probably need to be assessed more narrowly, such as by surveying people within the same city of a mass shooting, or by access to local news coverage.

lience of guns as means to power and significance for three reasons: first, they inflict mass casualties that effectively turn numerous human targets into helpless victims; second, media sensationalizing imbues the perpetrators of the deadliest mass shootings with great fame and significance; third, mass shootings might heighten inferences that there is a need for armed protagonists to fight against criminal elements in society.

We argue that psychological proximity to mass shootings mainly serves to increase the salience or accessibility of guns as means to address a threatened psychological need. This conclusion is supported by the interaction effects between thwarted goals (i.e., stimulating a *need* for empowerment/significance) and mass shooting salience (i.e., that prompts the idea to use guns as *means* of power/significance restoration). The interaction is consistent with a Proximity \times Value model of motivation (Liberman & Trope, 2014). It is also consistent with social-cognitive theories on the interface of motivation and mental accessibility, in that the extent to which any given stimulus (such as salience of a mass shooting) will influence a person's thought processes and behavior depends on its motivational self-relevance (Eitam & Higgins, 2010). We do not specify that it is the stimulus *content* of the mass shootings that facilitates ideas that guns are means to power/significance. Perhaps goal-thwarted individuals come up with these ideas themselves—that is, they infer from the *context* an opportunity to act in a manner consistent with their underlying motivations.

The present research also suggests that “assimilation” can be an umbrella term for different processes: there can be assimilation via *imitation* (i.e., copycat behavior) or assimilation via *appropriation* (i.e., incorporating the means into one's own preexisting tendencies). We further argue that the average law-abiding gun owner is likely to appropriate the idea that guns afford symbolic power in a manner that fits into their own preferred narratives. However, it remains unclear whether the observed process corresponds with any specific narrative—such as to engage in frontier justice, protect the community, fight fire with fire, or just prove to society that guns are a force for good. Not only might such narratives mask or sterilize a motivation to engage in violence, but it could be that these narratives are the true source of empowerment and mass shootings merely afford the opportunity to enact them. For example, significance quest theory suggests that a person's social network or ingroup only rewards the enactment of certain narratives (Kruglanski et al., 2013, 2014; Webber & Kruglanski, 2017), so people who seek effectiveness and significance may favor the narratives likely to be valued by their group.

Other Theoretical Considerations

We had also considered an alternative interpretation: that mass shootings simply add to an already-threatened sense of efficacy or significance; thus, increasing a general aggressive response. However, if various threats (disempowerment, mass shootings) merely pool together into a global sense of threat, then we should have observed *additive* effects of thwarted goals and mass shooting salience, rather than interactive effects. Indeed, our theoretical explanation—that thwarted goals increase the search for alternative means of power (and hence significance)—explains why the effects primarily just occurred among the disempowered. Any alternative explanation would accordingly need to explain why there is practically no effect among those who are *not* disempow-

ered. Furthermore, if this were purely about global threat, then any other threat variable in our dataset could have produced the same results, which was not the case. For example, fear of crime can threaten one's sense of control and agency (Tulloch, 2003), and our surveys included such measures—namely, Perceived Lifetime Risk of Assault (Stroebe et al., 2017a) and Belief in a Dangerous World (Duckitt et al., 2002), but these variables mainly only yielded direct effects. An unpublished study conducted immediately before the Orlando shooting also indicated little support for a fear of crime moderation hypothesis ($N = 404$ gun owners, see [supplementary analyses](#)). The effects were specific to our mass shooting salience variables and perhaps more precisely, real or imagined closeness to a high-profile mass shooting. This also is theoretically consistent: the salience of mass shootings evokes specific ideas about guns that other types of threat do not.

That said, we do not rule out similar appropriation effects if media outlets were to sensationalize other forms of violent crime, or even other public displays of weapons as symbols of power (e.g., a military parade). The basic model should generalize beyond the specific context of guns and mass shootings because it is ultimately about how people use weapons to address their basic psychological needs. The model could also provide a basis for explaining other antagonistic forms of imitation, such as tit-for-tat retaliation or adopting an enemy's tactics.

Practical Considerations

With regards to predicting who may be impacted by a given shooting, we observed that frequency of church attendance moderated responses to the Sutherlands Springs church tragedy. This may suggest that a mass shooting could transform just about any social affiliation a gun-owner has—including one that is otherwise nonviolent (e.g., being a churchgoer) into a risk factor for increased ideas about assertive gun use. With regards to explaining responses to mass shootings, we only looked at ideas about assertive gun use and research is needed to assess how such ideas might manifest behaviorally. For example, after nearly every high-profile mass shooting there is a predictable surge in gun sales—especially for guns that were used in the shooting (e.g., AR-15 pattern rifles; “bump stock” accessories after Las Vegas). It is typically assumed that the surge in consumer activity stems from concerns about self-defense or that such products will soon be outlawed. However, these claims have been difficult to demonstrate empirically (see, e.g., Stroebe, Leander, & Kruglanski, 2017b). Our theoretical model introduces an alternative possibility: Mass shootings illustrate how specific gun products are means to power and significance; thus, imbuing those products with psychological value. This could explain a temporary surge in gun sales after mass shootings and perhaps certain surges in support for expanding 2nd Amendment rights in the wake of a shooting.

Our dependent measures may already hint at where the effects would manifest: The scenarios provided for our *justification to shoot* and *vigilantism* measures are analogous to recent “Castle Doctrine” or stand-your-ground laws. Passed by numerous states, these laws significantly expanded the legal justification to use lethal force based on a gun owner's subjective determination of imminent threat of harm to themselves or others. Critics claim such “shoot first” laws incentivize the escalation of violence and some studies link the passage of such laws to subsequent rises in homi-

cides within the respective states (Cheng & Hoekstra, 2013; Humphreys, Gasparrini, & Wiebe, 2017). The present research further suggests that people's ideas about justified homicide may be influenced by incidental psychological factors, such as thwarted goals and the salience of recent mass shootings, which may be unrelated to the specific threat situation being assessed. Such factors may complicate legal frameworks designed around the presumption of reasonable fear.

Limitations, Boundary Conditions, and Conclusion

There were limitations of this research. First, we focused on whether mass shootings increase *ideas* about assertive gun use, but other factors are likely required for violent ideas to translate into violent action (see, e.g., Bushman et al., 2016; Levin & Madfis, 2009). The mere possibility that average gun owners, in response to mass shootings, show shifts toward assertive gun use is certainly noteworthy—and that the pattern is consistent with significance quest theory may be considered alarming from the scholarly perspective that many violent extremists are, themselves, motivated by a quest for significance (Kruglanski et al., 2013, 2014, 2017). However, significance quest theory, as well as other social psychological theories, also outlines numerous other critical antecedents, such as narratives, norms, social networks, identities, oughts, and ideals, which may be useful for distinguishing those who will be drawn to violence from those who will not.

The effects were also limited to certain individuals. We focused on U.S. gun owners because they possess the relevant means (guns) and presumably also the requisite firearms experience and progun ideology (Pew, 2017; Stroebe et al., 2017a). However, many gun owners did not show any particular reaction, so one cannot assume these effects generalize to all—or even most—gun owners. Furthermore, similar effects might be observed among specific gun *non*owners who are familiar with the sense of potency that having a gun instills and/or are ideologically supportive of guns (per Footnote 3, we did not observe effects among nonowners generally). For example, conservatives often perceive guns as means to establish control and order (Shepherd & Kay, 2018), so there may be certain nonowners who are similarly influenced.

Another boundary condition is that the observed effects only seem to apply when there is real or imagined proximity to a mass shooting. That our hypotheses about thwarted goals were only supported in the context of a mass shooting fits past work suggesting that certain tempting influences are highly context-dependent (Leander et al., 2009); it is also consistent with the present theory, whereby the efficacy or significance-bestowing properties of gun use requires the appropriate circumstances.

With the limitations in mind, it is useful to consider how the present research contributes to psychological theorizing on how violence begets violence—namely, that people can adopt or appropriate the *means* of threatening figures, even if they intend to use those means differently. Our findings add to a long history of psychological research showing how the mere presence of guns can subtly escalate the potential for violence. For example, in a famous demonstration of a “weapons effect,” Berkowitz and LePage (1967) observed that Midwestern male undergraduates, who sat in a room with a shotgun and a revolver on the table (vs. some

other object), delivered stronger electric shocks to a confederate who had previously shocked them. Of interest to the authors, a recent meta-analysis suggests that the weapons effect is mainly a cognitive influence (Benjamin, Kepes, & Bushman, 2018), which is consistent with the present model to the extent that mass shootings mainly spread ideas, scripts, or goal-means associations about guns, which in turn could appeal to certain gun owners' personal wants, needs, and tendencies. Furthermore, it may not just be mass shooters that spread such ideas: a recent study by Bushman (2017) shows that regardless of whether the person holding the gun is a “good guy” (e.g., police officer) or a “bad guy” (criminal), simply seeing images of others holding guns automatically increases the cognitive accessibility of aggressive concepts.

Ultimately, the present research speaks to a potential danger of allowing a threatening figure to occupy the mind, in that people may begin to mirror the threat and assimilate its ways. We assume that most individuals who appropriate the symbolic power of guns will do so through normative channels. However, one cannot assume that everyone who has access to a gun shares the same commitment to law and order, capacity for restraint, and respect for human life. This raises a final consideration: whether exposure to mass shootings produces contagion effects (Bushman et al., 2016; Perrin, 2016). Concerns about people imitating others' violence go at least as far back as London's, 1888 media-driven “Jack the Ripper” murders. So-called copycat crimes are the imitation of violence, presumably because media sensationalizing leads troubled individuals to see such behavior as a means to achieve similar outcomes for themselves (Helfgott, 2015). When a mass shooting becomes salient to millions of people, it is easy to speculate on how some may be tempted by the power a gun affords, even if they intend to use the power for a good cause. However, the present research suggests that mass shootings need not plant the seed of an idea for violent crime *per se*; they can be dangerous simply by facilitating ideas that guns are means to address a threatened sense of efficacy or significance and, thus, tempt the disempowered to consider more expansive ideas about when and how to use their guns.

To conclude, gun ownership may involve its own set of self-regulatory challenges. Although people self-report that *protection* is the main reason they own a gun (Pew, 2017), there may be other motives for gun ownership that are implicit or not normative to admit—and a societal danger of mass shootings may be that mere salience of them adds fuel to these hidden motivations.

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