

JOURNAL CLUB: INSTRUCTOR GUIDE

Article: Butterworth, S. E., Daruwala, S. E., & Anestis, M. D. (2020). The role of reason for firearm ownership in beliefs about firearms and suicide, openness to means safety, and current firearm storage. *Suicide and Life-Threatening Behavior, 50*(3), 617-630. doi: 10.1111/sltb.12619

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Summary: An online survey of 300 American firearm owners examining the relationship between reasons for gun ownership (for protection vs another reason) and (1) beliefs about firearm ownership/storage and suicide risk, (2) openness to means safety interventions, and (3) firearm storage practices.

Discussion Questions

Background

1. What are the authors' research objectives and hypotheses? Why is such research important?

The objectives of this study were to examine the relationship between gun owners' reasons for ownership and (1) their beliefs about whether owning a firearm and the manner in which it is stored are related to suicide risk, (2) their openness to using safe storage practices and temporary removal from the home to prevent suicide, and (3) their current firearm storage practices.

The authors hypothesized that, compared to owning a firearm for other reasons, participants who own a firearm primarily for protection at or away from home would:

H1: Endorse decreased belief in the relationship between firearm ownership (and firearm storage) and suicide risk.

H2: Be less open to storing firearms safely and allowing a trusted individual to temporarily remove firearms from the home.

H3: Currently store their firearms less safely (i.e., loaded and/or without a locking device).

This research furthers the field's understanding of the factors that may prevent firearm owners from following means safety recommendations, such as safe firearm storage and temporary removal of firearms when someone is experiencing a crisis. It can inform the development and implementation of appropriate, targeted, and efficacious psychoeducation and means safety messaging that may encourage firearm owners to engage in means safety strategies. Disseminating effective messaging about firearms and suicide is important given that suicide risk is not always apparent nor acute, and many suicidal firearm owners may not present to mental health treatment.



2. What is the relationship between firearms and suicide risk?

At least half of suicide deaths in the US are by firearm. Firearms are the most lethal means of suicide. Although firearm ownership is not correlated with higher rates of suicidal thoughts, it is correlated with higher rates of completed suicide, because any attempt with a gun is likely to be fatal. A national study found that about 90% of suicide attempts with a firearm result in death, compared to approximately 2% by drug overdose (Connor, Azrael, & Miller, 2019). Many suicide attempts are impulsive—one study found that 24% of people who made a near lethal suicide attempt made the decision in less than five minutes (Simon et al., 2001)—and having access to a firearm limits opportunities for reconsideration and can mean the difference between survival and death.

3. What are means safety interventions? What are some examples of means safety measures specific to firearms?

Means safety interventions, also called lethal means safety or means restriction, involve limiting access to lethal methods used for suicide during periods of heightened risk. These interventions put time and space between the person at risk and lethal means. This includes making firearms, prescription medications, toxic chemicals, and structural hazards such as ropes and bridges less accessible for suicide attempts. For firearms, means safety measures include safe storage methods that make firearms inaccessible to the person at risk and temporarily storing firearms with a trusted person outside the home during times of elevated risk.

The safest way to store a firearm is unloaded, locked up with a locking device, and separate from ammunition. When the suicidal person is the owner of the firearm(s) in the home, temporary storage of firearm(s) outside of the home for the duration of the crisis may be necessary in order to successfully reduce risk. Research suggests that lethal means safety may be an effective method for preventing suicide, and clinicians should be prepared to discuss reducing access to lethal means with the person at risk and their loved ones when clinically indicated.

4. What do we know from previous research about the relationship between firearm owners' perceptions regarding firearms and suicide, their reasons for ownership, and their storage practices?

Previous research suggests that firearm owners' reasons for owning a firearm are associated with their firearm storage practices, and both of these factors may contribute to differences in beliefs about firearms and suicide and have the potential to impede openness to means safety. Findings include:

- On average, firearm owners were generally not open to engaging in firearm means safety (Anestis, Butterworth, & Houtsma, 2018)
- Firearm owners were open to storing firearms safely when suicide risk is identified (Betz et al., 2016; Kruesi et al., 1999; McManus et al., 1997; Pallin et al., 2019; Runyan et al., 2016; Sherman et al., 2001; Walters et al., 2012)



- Most firearm owners believed firearm ownership and storage are either not at all or only slightly related to suicide risk; such beliefs were even more rare among firearm owners who did not practice safe firearm storage (i.e., stored in nonsecure location, no locking device) (Anestis et al., 2017)
- Current beliefs regarding firearm storage and suicide risk explained a significant portion of the association between current storage practices and willingness to change such practices to reduce suicide risk (Anestis et al., 2019)
- US veteran firearm owners were more likely to practice unsafe firearm storage (i.e., loaded and unlocked) if they reported their primary reason for owning a firearm was for personal protection, or if they disagreed that firearms should be stored unloaded and locked up (Simonetti et al., 2018)

Methods

5. Who were the participants and how were they selected? How might the sampling procedure affect the generalizability of results?

The participants were 300 American firearm owners: 53% male, 82.3% White, 92% heterosexual, mean age of 36.1, 46.7% live in Midwest (Table 1). Participants were recruited through Amazon’s Mechanical Turk (mTurk) program, an online service which matches people to a variety of tasks to earn compensation.

Because this was a convenience sample (i.e., the participants were not randomly selected from all American firearm owners, and so were not representative of American firearm owners), the mTurk participants could differ in meaningful ways from other firearm owners. For example, according to the 2015 National Firearms Survey, 72% of US firearm owners are men, 81% are white, 71% are married/partnered, and 43% live in the South (Miller, Hepburn, & Azrael, 2017). However, according to Table 1, this sample of firearm owners was 53% male, 82% white, 51% married, and 20% from the South. Thus, the results of this study may not entirely generalize to the US population of firearm owners.

6. Do you think the survey questions (which appear in Appendix 1) measure what the authors intended to measure?

Answers may vary. The authors noted that the survey items have not been formally validated and could have been confusing to participants. For example:

Beliefs about Suicide Risk

- The term “suicide risk” is vague and subject to interpretation. Participants might interpret “suicide risk” as suicidal thoughts, rather than suicidal acts. The terms “suicide attempt,” “death by suicide,” and “completed suicide” are more explicit than “risk.”
- It is also unclear whether these questions are asking participants to assess their own suicide risk or risk in general (i.e., among firearm owners in the US).

Openness to Firearm Means Safety



- Participants might not interpret “highly distressed” as being associated with suicide risk.
- The question about storing a gun more securely to prevent *one’s own suicide* may be particularly confusing for gun owners. Typically, when we talk about safe or secure storage, we’re talking about methods for keeping firearms inaccessible to unauthorized users (e.g., child, thief) and others in the home who are at risk (e.g., due to suicidal ideation), not inaccessible to the owner of the gun. If the owner of the gun is at risk of suicide, locking up guns may be insufficient to prevent suicide.

Current Firearm Storage Practices

- Participants may have different ideas of what is considered a “secure” location, despite the examples provided. Allowing participants to use their own definition of “secure” makes it difficult to determine if their storage practices are safe or unsafe.
- The questions about using a locking device and storing a firearm loaded are specific and easy to understand.

7. What statistical analyses were performed? For each type of analysis, identify the independent variables, dependent variables, and covariates, and how they were measured.

The authors performed ANCOVAs (analyses of covariance) and logistic regressions. For all analyses, the independent variable was reason for firearm ownership, measured dichotomously as owning firearms primarily for protection or for other reasons. Gender was included as a covariate in all analyses.

ANCOVAs are used to compare the mean values of a dependent variable between 2+ groups while controlling for potential confounding variables.

- For ANCOVAs, the dependent variables were (1) beliefs about firearm ownership and suicide, (2) beliefs about firearm storage and suicide, (3) openness to storing firearm more securely for self, (4) openness to storing firearm more securely for other, (5) openness to temporary firearm removal for self, and (6) openness to temporary firearm removal for other.
- These dependent variables were measured on a five-point Likert scale ranging from “Not at all” (0) to “Extremely” (4).

Logistic regressions are used to estimate the proportion of participants with an outcome, when the dependent variable is binary, and can adjust for confounders.

- For logistic regressions, the dependent variables were current firearm storage practices, which included storing at least one firearm (1) loaded, (2) in a nonsecure location, and (3) without a locking device, respectively.
- Each of these variables was measured dichotomously (yes/no).

8. What covariates were considered, and why is this important?



In observational studies such as this one, when the independent variable (e.g., reason for ownership) cannot be randomly assigned, there may be differences between groups or “third” variables that obscure the true relationship between the researchers’ variables of interest: the independent variable and dependent variable(s). Results of a study can be made more accurate by controlling for such covariates.

The authors considered the following demographic variables as potential covariates: race, age, sex, military membership status, type of living area (rural/urban), marital status, sexual orientation, employment status, and living alone or with others. These variables are commonly used as covariates in studies examining similar concepts. Gender was the only covariate with significant associations with independent/dependent variables and thus included in all analyses.

Table 1 shows that reasons for ownership varied by gender: for example, the total sample was 47% female, but females made up 51% of firearm owners who own for protection and 40% of those who own for other reasons. Gender was also significantly associated with openness to means safety (Table 4) and storing a firearm without a cable or trigger lock (Table 5).

By including gender as a covariate in their analyses, the authors could adjust for differences in reasons for ownership by gender and control for the effects of gender on the dependent variables (i.e., beliefs about suicide risk, openness to means safety, firearm storage practices). If not controlled for, the relationship between the independent and dependent variables may, at least in part, be explained by gender, potentially leading to incorrect conclusions.

Findings

9. What were the main findings? Did the findings support the authors’ hypotheses?

Results generally supported the authors’ hypotheses. All analyses controlled for gender to adjust for differences in reasons for ownership by gender (Table 1) and for the effects of gender on the dependent variables. Main findings included:

- Participants who own for protection endorsed a significant lower level of belief that owning firearms is related to suicide risk ($M=0.56$) versus those who own for another reason ($M=0.83$), even when controlling for gender.
- Those who own a firearm for protection endorsed a significant lower level of belief that the manner in which firearms are stored is related to suicide risk ($M=0.73$) versus those who own for another reason ($M=1.02$), even when controlling for gender.
- No significant differences in mean levels of willingness to store firearms safely to prevent one’s own suicide were found between participants who own a firearm for protection ($M=1.65$) versus another reason ($M=1.83$), even when controlling for gender.



- Participants who own for protection were significantly less open to store firearms safely to prevent another's suicide attempt ($M=2.52$) versus those who own for another reason ($M=2.84$), even when controlling for gender.
- Participants who own for protection were significantly less open to allowing a trusted person to temporarily hold onto their firearm to prevent their own suicide ($M=2.04$ versus $M=2.46$ among those who own for another reason) and to prevent a loved one's suicide ($M=2.39$ versus $M=2.88$ among those who own for another reason), even when controlling for gender.
- Participants who own for protection were nearly five times as likely to store their firearms loaded (46.4%) versus those who own for another reason (15.4%), even when controlling for gender. No significant differences were found for storing firearms in a nonsecure location or without a cable or trigger lock.

Limitations

10. Discuss some limitations of the study.

- As with most self-report surveys, the findings of this study are subject to social desirability bias. Instead of being truthful, participants may answer questions in a socially desirable manner, for instance what they think is the "right" thing to do rather than what they do in practice.
- As with most cross-sectional studies, these results do not imply causation.
- The authors note that survey items were not formally validated and may have been confusing to participants or not elicited the intended interpretation.
- The generalizability of findings is limited by use of a convenience sample (i.e., volunteer participants who were not randomly selected), which likely did not represent all American firearm owners.
- The scope of the study is also limited by the use of dichotomous variables for reason for firearm ownership (i.e., for protection vs not for protection/for another reason) and for each firearm storage practice (i.e., if at least one gun is stored loaded, participants were instructed to select "yes"). This approach may fail to capture the nuance in firearm owners' reasons for ownership and storage practices, especially among those who may own multiple firearms for different reasons. A more detailed examination of the types of firearms owned, reasons for ownership, and storage practices may yield additional insights.

Practice and Application

11. What does this study add to the literature?

- Evidence suggests that means safety interventions are effective for suicide prevention but are not widely implemented by firearm owners in the United States.



- This study increases understanding of the factors that may influence firearm owners' willingness to engage in means safety strategies or the perceived credibility of messaging on firearm suicide prevention.
- In particular, this study elucidates the role of *the reason for firearm ownership* on a variety of factors relevant to firearm suicide prevention, including beliefs about firearms and suicide risk, openness to means safety practices, and current firearm storage methods.
- The study found that people who own firearms primarily for protection rather than another reason exhibited lower levels of belief in the relationship between firearm ownership/storage and suicide risk, were more likely to store firearms loaded, and were generally less willing to engage in safer storage and temporary removal of firearms as means safety strategies.

12. What are the implications for clinical practice?

This study found significant differences in firearm owners' beliefs about suicide risk, willingness to engage in means safety, and current firearm storage practices associated with their primary reason for owning firearms. These findings suggest that appropriate psychoeducation and means safety messaging should be targeted and tailored to people's reasons for owning firearms. More specifically,

- Conversations about the importance of reducing access to firearms when someone is suicidal should be collaborative. Clinicians should work with each patient to come up with tailored recommendations and a plan that will help keep everyone in the home safe.
- For firearm owners who own for protection, messaging should directly address their concerns regarding easy access to their firearms.
- The most acceptable safe storage strategies may be those that allow for quick access, such as a biometric gun safe, or storing ammunition separate from the locked-up firearm yet close by.
- Clinicians should consider that when a firearm owner is personally at risk for suicide, safe storage (i.e., making sure firearms are locked up and unloaded) is not sufficient for means reduction if the owner still can access the firearm(s) with keys or combinations. In these cases, temporarily storing firearms with a trusted person outside the home is recommended. State laws that govern temporary transfers for preventing suicide vary—for example, whether these types of transfers require a background check or not—so clinicians should check for relevant statutes in their area.
- By acknowledging the firearm owner's self-protection goals and discussing realistic options for lethal means safety when someone is at elevated risk of self-harm, clinicians can build rapport and credibility, and patients may be more willing to collaborate to mitigate potential suicide risk.

This study also found that, regardless of reason for firearm ownership, firearm owners generally endorsed low levels of belief in the associations between suicide risk and firearm ownership/storage and low willingness to engage in means safety interventions. This may



be because firearm owners view their own or another's suicide as unlikely and thus less salient than using a firearm to protect themselves or others. Thus,

- Messaging campaigns, materials, and conversations with patients should aim to increase the salience of suicide risk and the specific risks that firearms may confer.
- Increasing understanding and relevance of these risks may encourage individuals to practice means safety.

13. How would you build on or strengthen this study in future research?

Answers may vary. The authors suggest that future research might:

- Continue to examine the relationship between reason for firearm ownership and beliefs about firearms and suicide, and the exact manner in which reason for ownership affects beliefs and vice versa.
- Consider potential third variables (i.e., confounders), such as current firearm storage, rationale for firearm storage practices, and belief in the notion of means substitution. (Means substitution refers to the practice of using an alternative means for suicide if the preferred method (e.g., firearm) isn't accessible. Research suggests that means substitution is rare, meaning that restricting common and accessible methods of suicide reduces overall suicide rates, not just rates by that method (Daigle, 2005).)
- Include additional firearm storage options and ask participants about the rationale for their current storage methods; such research might help explain why, in this sample, participants who own a firearm for protection (versus another reason) were significantly more likely to store their firearms loaded, but there were no significant differences for storing firearms without a locking device or in a nonsecure location.
- Examine which types of firearms are commonly stored unsafely and whether differences in storage practices based on type of firearms owned are present among individuals who own firearms primarily for protection.
- Examine the factors that make individuals more likely to own firearms for protection, such as occupation (e.g., law enforcement, military), perceived safety or danger in one's environment, and suspiciousness or persecutory beliefs. The authors note that better understanding the aspects underlying the decision to own a firearm for protection versus another reason would allow for more specific, tailored means safety intervention targets.

Additional References

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