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RESEARCH ARTICLE

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# Bystander intervention to prevent firearm injury: A qualitative study of 4-H shooting sports participants

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## Abstract

This qualitative study examines how youth and adult members of 4-H Shooting Sports clubs perceive firearm injury risk and risk reduction, and the applicability of a bystander intervention (BI) risk reduction framework in this community. Semistructured interviews were conducted with 11 youth and 13 adult members of 4-H Shooting Sports clubs across nine US states from March to December of 2021 until thematic saturation was reached. Deductive and inductive thematic qualitative analyses were performed. Six overarching themes

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emerged: (1) The tendency to view firearm injury as predominantly unintentional in nature; (2) Acknowledgment of a wide array of risks for firearm injury; (3) Perceived barriers to bystander action to prevent firearm injury including knowledge, confidence, and consequences of action; (4) Facilitators of bystander action including a sense of civic responsibility; (5) Direct and indirect strategies to address potential risks for firearm injury; and (6) Belief that BI skills training would be useful for 4-H Shooting Sports. Findings lay the groundwork for applying BI skills training as an approach to firearm injury prevention in 4-H Shooting Sports, similar to how BI has been applied to other types of injury (i.e., sexual assault). 4-H Shooting Sports club members' sense of civic responsibility is a key facilitator. Prevention efforts should attend to the broad array of ways in which firearm injury occurs, including suicide, mass shootings, homicide, and intimate partner violence, as well as unintentional injury.

**KEYWORDS**

adolescent, bystander intervention, firearm injury, firearms, gun safety, shooting sports, violence prevention

## 1 | INTRODUCTION

Firearm injury is the leading cause of death for American youth ages 1–19 Centers for Disease Control and Prevention (CDC, 2020). Identifiable and modifiable risk factors for youth firearm injury of all types (unintentional, community violence, partner violence, suicide, mass shootings) include easy firearm access, substance use, history of violent victimization or aggression, depressive symptoms and suicidal thoughts, and poor conflict resolution skills (Pallin et al., 2019; Paris, 2002). More than 30% of youth live in a house with a firearm (Salhi et al., 2021; Simonetti et al., 2015) and storage practices are often inconsistent (Azrael et al., 2018). Many youth firearm injury prevention programs focus on reducing firearm access through policy (e.g., safe storage laws) or through gatekeepers (e.g., clinical screening and counseling, such as Counseling on Access to Lethal Means training) (Sale et al., 2018). However, these approaches have limitations. For example, safe storage laws may decrease risk of unintended firearm access by at-risk youth, but enforcement of these laws is minimal and, in some jurisdictions, contested by law enforcement (Ranney et al., 2020). Few interventions provide education about how to identify and modify risk factors for youth firearm injury, and those that do tend to focus on a single type of youth firearm injury (e.g., firearm suicide, firearm homicide) despite cross-cutting risk factors (Barber et al., 2017; Benjamin Wolk et al., 2018; Lee et al., 2022). Additionally, many youth firearm injury prevention strategies (e.g., lethal means safety intervention) are unlikely to succeed without parental and peer buy-in and involvement, particularly in communities with high rates of firearm ownership and youth (Chambers and Azrin, 2013; Henn et al., 2019). Lastly, although there are some promising community-based firearm injury collaborations, such as the Gun

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Shop Project that originated in New Hampshire (Vriniotis et al., 2015), to our knowledge, these have not been rigorously applied to youth firearm injury prevention.

Bystander Intervention (BI) skills training is an evidence-based community-centered approach rooted in social psychological theories of helping behavior including the Theory of Planned Behavior (Penner et al., 2005). Its core precept is the active engagement of community members to notice health risks and then proactively intervene (Fischer et al., 2011). The BI model (Latane, 1970) posits that to engage in helping behavior an individual must: (1) notice a risk; (2) label the situation as a problem; (3) take personal responsibility for acting; (4) have the skills to help; and (5) take action. BI has been successfully used to increase individuals' awareness of risks for bullying and interpersonal violence in their community and increase individuals' willingness to act to reduce risks for harm (Mujal et al., 2021). Unlike interventions focused on individual behavior change, BI training programs promote safer communities by increasing a sense of community (adult and youth) responsibility while also building skills for helping others (Ranney et al., 2020). The BI framework has been successfully applied to increasing community awareness of—and reducing the incidence of—other types of injury, such as sexual assault and drunk driving (Banyard et al., 2007; Moynihan & Banyard, 2008; Orchowski et al., 2018). Despite the potential applicability of the BI model to community-based youth firearm injury prevention, to our knowledge, no studies have explored the applicability of BI, as well as its framework (Burn, 2009; Latane, 1970), to this topic (Butterworth and Anestis, 2019; Cook-Craig et al., 2014; Marino et al., 2018; Stewart et al., 2018).

The National 4-H Program is a diverse community of six million young people in more than 3000 counties across the United States. The 4-H program teaches youth leadership, citizenship, and life skills. The National 4-H Shooting Sports Program, one of 4-H's many programs, operates with more than 20,000 volunteers across 47 states, and before the COVID pandemic taught more than 450,000 youth aged 8–18 across the US each year. 4-H Shooting Sports provides training to youth in safe and responsible firearm handling and practices, environmental conservation, interpersonal development and leadership skills training. Instructors are trained in a curriculum that emphasizes unintentional injury prevention and safety. It has not previously developed or implemented programs discussing prevention of intentional firearm injury but has interest in expanding on its existing programming to reduce risk of all types of firearm injury. Given the focus of 4-H Shooting Sports on promoting safe firearm use as well as their large national reach, we believed that youth and adults from this organization would be ideal for describing ways in which BI could apply to the context of firearm injury prevention. Knowledge and attitudes of 4-H Shooting Sports members regarding firearm injury risk reduction, and the applicability of the BI framework to youth firearm injury prevention in 4-H Shooting Sports, is unknown.

### 1.1 | Purpose of the current study

This goal of this qualitative study was to explore perceptions of firearm injury risk and risk reduction among 4-H Shooting Sports volunteers and participants, and to specifically evaluate the barriers and facilitators of a BI-informed approach within this setting.

## 2 | METHODS

### 2.1 | Recruitment

Project investigators affiliated with 4-H Shooting Sports worked with the research team to identify a purposive sample of 4-H Shooting Sports adult and teen leaders representing a variety of Shooting Sports Clubs, ages, and training levels across the United States. A convenience sample of instructors and/or youth (age 13–18) was identified in 31 states representing the full spectrum of 4-H density (e.g., number of clubs in a state) and community levels of firearm ownership (e.g., states with higher-than-average vs. lower-than-average rates of firearm

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ownership). Research staff sent an electronic informational sheet to the email of prospective participants (and parents of youth participants) using RedCap, a HIPAA-compliant web-based data collection tool (Harris et al., 2009). Participants were consented/assented via RedCap after reviewing the information sheet. Interviews were then scheduled and conducted via phone or video call, depending on participant preference. Participants received a $50 electronic gift card. The study was approved by the Rhode Island Hospital/Lifespan Institutional Review Board.

## 2.2 | Interview protocol

A brief demographic survey, using questions drawn from the Center for Disease Control and Prevention Behavioral Risk Factor Surveillance System Survey Questionnaire (CDC, 2020) and Kruis et al.'s 10-item firearm exposure scale (Kruis et al., 2020), was administered using RedCap.

Semistructured interviews were conducted by both male and female bachelor's and master's level research staff (A. S. and M. V.) with no prior relationship to participants, who were previously trained and supervised by the Principal Investigator who has extensive experience in conducting qualitative research and analyses. Interview design was informed by principles of BI (Burn, 2009), the Theory of Planned Behavior (Ajzen, 1991), and the Consolidated Framework for Implementation Research (Keith et al., 2017). Interviews explored participants' current knowledge, attitudes and beliefs about firearm injury as well as their own exposures to firearm injury. The interviews were divided into 5 sections: Section 1 was an icebreaker, gathering information about participants' involvement in 4-H; Section 2 discussed situations where participants may have spontaneously intervened to address firearm safety and the strategies they used; Section 3 touched on participants' views of facilitators and barriers to interventions; Section 4 asked participants to reflect on issues that might arise after someone intervenes; and Section 5 aimed to obtain an overall understanding of the 4-H Curriculum on reducing firearm injury risk (see Supporting Information: Appendix for full interview protocol). Although the concept of BI was the main topic of the interviews, the term itself was not used during the interviews. Rather, consistent with prior qualitative interviews for BI development, in Sections 2–4, we explored BI perceptions using frameworks from the BI model (e.g., peer influences, situational variables). Interviews were recorded and transcribed verbatim. A written debrief was completed after each interview and results were presented back to the study team including 4-H staff.

## 2.3 | Data analytic plan

Thematic analysis was used to create an initial coding schema (Braun & Clarke, 2012). Deductive codes were developed from the theoretical frameworks used for interview design. Using analytic triangulation, two research assistants independently coded the data and inductive codes were created to capture emerging themes. Research assistants compared their findings in weekly coding meetings. Any disagreements between coders were brought to the meetings, thoroughly discussed, and (if needed) resolved by a third investigator. The coding structure was iteratively developed by adding inductive codes until the team found no other themes for the purposes of the study goals. The final coding scheme was applied to the full set of transcripts and contained 10 codes with 51 subcodes. Codes were entered into NVivo 1.5 (QSR International Pty Ltd.). Agreement between coders was strong ($k = 0.809$). Codes that appeared fewer than 10 times across all transcripts were excluded from analysis.

# 3 | RESULTS

Of 19 adults and 17 youth who connected with us, we consented/assented 14 adults and 11 youth. Reasons for nonparticipation are unknown. Thematic saturation was reached after thirteen adult and eleven adolescent interviews. Participants (ages 15–78) were from nine different states across all regions of the United States, with

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**TABLE 1** Study demographics.

| | Teen *N* (%) | Adult *N* (%) | Total *N* (%) |
|---|---|---|---|
| Number of participants | 11 (46%) | 13 (54%) | 24 (100%) |
| Age [Mean, SD] | 17 (1.2)[a] | 57 (9.4) | 40 (20.3) |
| Gender: Female | 5 (45%) | 5 (38%) | 10 (42%) |
| Ethnicity: Hispanic | 0 (0%) | 0 (0%) | 0 (0%) |
| Race: White | 10 (91%) | 10 (77%) | 20 (83%) |
| Marital status: Married | Not asked | 10 (77%) | |
| Veteran: Yes | Not asked | 1 (8%) | |
| Education: College Graduate | Not asked | 7 (54%) | |
| Parental status: Yes, parent | Not asked | 11 (85%) | |
| Region | | | |
| New England | 2 (18%) | 2 (15%) | 4 (17%) |
| Mid-Atlantic | 1 (9%) | 2 (15%) | 3 (8%) |
| South | 2 (18%) | 5 (38%) | 7 (33%) |
| West | 6 (55%) | 4 (31%) | 10 (42%) |
| Firearm exposure: (1 adult did not answer any of these questions and is excluded from the denominator[a]) | | | |
| I was frequently exposed to guns in my youth | 9 (82%) | 10 (83%) | 19 (79%) |
| I participated in shooting guns on many occasions as a child | 8 (73%) | 10 (83%) | 18 (78%) |
| I regularly use guns for recreational purposes | 7 (64%) | 10 (83%) | 17 (23%) |
| Most of my friends own a gun | 7 (64%) | 10 (83%) | 17 (74%) |
| My friends frequently use guns for recreational purposes | 9 (82%) | 9 (75%) | 18 (78%) |
| I am around guns frequently | 8 (73%) | 11 (92%) | 19 (79%) |
| On many occasions I have been around someone using a firearm | 9 (82%) | 12 (100%) | 21 (93%) |
| I grew up in an environment where guns were readily available | 8 (73%) | 10 (83%) | 18 (78%) |
| I am familiar with how to operate different types of guns | 11 (100%) | 12 (100%) | 23 (100%) |
| I have been in multiple gun stores or shops | 10 (91%) | 11 (92%) | 21 (93%) |
| I have taken a gun safety course (general knowledge of gun safety and use) | 11 (100%) | 12 (100%) | 23 (100%) |
| I have taken a gun training course (self-defense and firearm tactics) | 6 (55%) | 6 (50%) | 12 (52%) |
| I know a victim of a gun crime | 3 (27%) | 6 (50%) | 9 (39%) |

[a]Excludes missing responses ($n = 1$).

varying population levels of firearm ownership, firearm injury rates, and firearm legislation (see Table 1). All adults were 4-H Shooting Sports volunteer instructors. Most youth (82%) were involved in 4-H Shooting Sports in a leadership capacity. The majority were frequently exposed to firearms growing up (79%), said most of their friends own firearms (74%), and use firearms recreationally (78%). Three youth (27%) and six adults (50%) reported knowing a victim of a firearm crime.

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**TABLE 2** Sample quotes from participants, by theme and age group.

| Theme | Teen Quotes | Adult Quotes |
|---|---|---|
| **1.** Unintentional Injury Feels More Salient | *My best friend told us he knew how to safely handle firearms, but we quickly realized that wasn't the case. He was spinning around with the gun in his hand. He wasn't shooting right, and he certainly wasn't handling it right. We were all pretty nervous.* (13T) | *We're all human, and we all make mistakes. We all have 400 things goin' on in our lives, and they might have mental—I don't know if mental lapse would be the right word, but just a loss of focus for a few minutes [puts you at risk].* (4A) |
| **2.** Participants Easily Recognize Some Risks | *If they're being hostile or aggressive towards them in smaller ways, that can mean that they're going to do something bigger sometimes.* (15T)<br><br>*I think when you start talking about actual firearms, you should definitely calculate and talk about mental health in that equation.* (13T)<br><br>*I think probably just talking very depressed and saying bad things against themselves like, "Oh, I hate myself so much," and, "I wish I wasn't alive," or something along those lines… if you know that person does own a firearm, then that would bring more bells and whistles would start ringing. That would definitely be a red flag there.* (5T) | *The other example is we—when we teach hunter safety, we talk a lot—when we're talking about safety, one of the examples that we give about not hunting with anyone who's impaired. Impaired could be, they're so tired. They're on cold medicine. They've been drinking. They may have taken something illicit.* (14A) |
| **5.** Barriers to Bystander Intervention | *I think they wouldn't because either they feel that the gun would be turned on them and they have that fear of, "Well, I don't wanna lose my life, so I'm not gonna try and stop it."* (5T) | *What if I'm completely off base, here? What comes back to me is maybe I'm not right. Maybe I'm wrong, here. I think that's one of the things. That they're gonna be rejected. Person's gonna be, "Oh, no. No." Especially with younger kids, is, "Well, they're not gonna be my friend anymore." That feeling of rejection is that—is probably the biggest thing.* (13A) |
| **6.** Facilitators of intervention | *I think my dad probably would give me a high five. He's pretty yeah, he's chilled about it. My mom might've been a little bit more, not necessarily against what I did, but probably what—she's oh my gosh, this happened are you okay? Very much on edge. She actually she might've been upset that I didn't call the police or something.* (7T) | *Yeah, sometimes somebody might get upset if you call them out on the carpet. You know what? I'd rather have somebody mad at me about doing that than me walking away 'cause I've lived long enough to know that, "Hey, regrets suck."* (13A)<br><br>*Somebody has to—I don't wanna be in charge. That's not the point. Somebody has to stand for something, right? It just makes perfect sense to me. I wouldn't hesitate. Yeah, I wouldn't even hesitate.* (16A) |

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**TABLE 2** (Continued)

| Theme | Teen Quotes | Adult Quotes |
|---|---|---|
| | *I guess it could make it easier for me than a random person to stop someone with a gun when out unsafe because I'm so comfortable with guns. 'Cause a random person that's afraid of guns or things are bad, probably gonna see that and just not really do anything.* (2T) | |
| **9.** Some interventions are easier than others | *If somebody is doing somethin' that is not safe and all that, it is my responsibility to go up and say, "Hey, you need to stop swingin' the gun around," or, "Hey, you need to keep it unloaded because that is dangerous when we are conducting our business here." That's the responsibility that we have when handling a gun or being around guns, for all gun owners.* (8T)<br><br>*I definitely think the relationship I have with the person is important on how I would intervene. 'Cause if I'm really good friends with someone, I'd have an easy time to just sit down with them and talk to them. If it were someone that I didn't know very well, I'd probably try finding a mutual friend, or even just someone who they might listen to in a way.* (14T)<br><br>*Probably on my position, I'd probably go to an adult 'cause I wouldn't really know how to handle that. I'd probably go to a trusted adult and ask them.* (4T) | *If we have a kid who would be depressed, I think we would work more toward trying to maybe talking to the parent about, "Hey. I've noticed this about your kid", rather than try to do something specifically about it.* (14A) |
| **12.** Implementing Injury Prevention Interventions in 4-H | *I think really the biggest thing would be making sure that those bystanders know that it's not gonna hurt you to say something. Like if you say something, that person might hate you for the moment. In the long run, the pros outweigh the cons.* (4T)<br><br>*I don't know every 4H member, but I don't think every 4H member would know the connection between mental health and firearm abuse. Yeah. I definitely think that's something that would be beneficial to the program, in my opinion.* (14T)<br><br>*I think one of the bigger problems is we have really young kids, especially, that come through our program BB who are still in elementary school. Talking to a fifth-grader about preventing firearm suicide or firearm homicide is not a topic that I think they're gonna really understand.* (13T) | *I would actually push for a training session in schools of some sort. I mean, familiarization or just a lot of things–a lot of things happen due to ignorance and lack of knowledge.* (15A) |

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Six major themes were identified, informed by the prespecified theoretical frameworks; few differences were observed between teens and adults. (See Table 2 for illustrative quotes). Themes centered around participants' identification of risk and awareness of what can be done (knowledge and attitudes), expectations to act (subjective norms), perceived capability of acting (perceived behavioral control) and intention. Additionally, themes address perceptions of the BI framework, the feasibility of implementing a BI within 4-H, and the perceived impact it might have on community knowledge and safety behaviors.

## 3.1 | Theme 1. unintentional firearm injury feels more salient than intentional firearm injury

Interviews contained 21 separate anecdotes about intentional firearm injury, spanning suicide, domestic disputes, homicide, school shooting (threat only), gang-related, police-related, and war. In the majority of anecdotes a firearm discharged ($n = 15$), while the remaining involved the identification of a threat or risk ($n = 6$).

When asked about exposure to any type of firearm injury, participants readily described examples of unintentional ("accidental") firearm injuries over their lifetimes:

> "There's always gonna be accidents. It's gonna some poor guy who shoots his brother in the woods 'cause he thinks he's a deer. Did he make a mistake? Absolutely. He didn't identify his target before he pulled the trigger, which is what we teach the kids." (#14A, 67yo, F).

Participants were less likely to talk about intentional firearm injuries as something relevant to their lives. Some explicitly said that such injuries did not occur in their community. Only a few initially described experiences with intentional firearm injury when asked, although anecdotes of intentional firearm injury often emerged later in the interview process.

## 3.2 | Theme 2. participants easily recognize some risks for firearm injury

Participants readily identified multiple risks for firearm injury. "Lack of seriousness" when using a firearm (e.g., goofing off and not recognizing the responsibility of firearm ownership) and lack of safety training were commonly identified as risk factors for unintentional firearm injury. Participants mentioned that these factors were addressed during 4-H Shooting Sports training. Almost all participants mentioned mental health difficulties as a risk factor for all types of firearm injury. They described these "mental health" warning signs as including depression and discussions of self-harm/suicide in the context of known firearm ownership.

Most participants mentioned situations involving heightened or intensified emotion and conflict as potentially "risky," particularly for firearm homicide and suicide: "When you get guns involved and tempers involved, oh, it could go bad fast" (#20A, 68yo, F). Other commonly identified risk factors for intentional firearm injury included recent behavior change, and one's own experience/intuition about risk.

Less frequently identified risk factors were recent personal crises (such as bullying, death of a friend, abuse or receiving bad news), lack of parental involvement in a child's firearm use, and illegal firearm access. No one mentioned dementia or partner violence as a potential risk.

## 3.3 | Theme 3. barriers to BI: Knowledge, confidence, and consequences

Most participants - both youth and adult - identified multiple barriers to intervening once they identify a risk.

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*Knowledge and Confidence*. The most common barrier was lack of knowledge about - and confidence in their interpretation of—risk factors. For example, one youth said: "Also the fact of what if I'm wrong, second-guessing yourself. What if they're doing it right, and I'm trying to be above and beyond with my firearm handling?" (#3T, 17yo M). Limited knowledge of what to do when perceiving a potential firearm risk was perceived as a further barrier to action: "You can't really help when you don't know what type of assistance to provide." (#21A, 46yo, M). A couple of participants specifically mentioned lack of familiarity with laws around what they could or couldn't do. A subset also expressed ambivalence about the effectiveness of intervening as a strategy to reduce firearm injury.

*Consequences*. Fears of the consequences of action were also commonly mentioned. Most participants identified anticipated negative social consequences (i.e., loss of social status, loss of a relationship, poor reactions from those involved) as a barrier to intervention. Some adult interviewees thought this fear would be especially salient for younger people:

> "I think that's one of the things. [They fear] That they're going to be rejected… Especially with younger kids, is, 'Well, they're not gonna be my friend anymore.' That feeling of rejection is that—is probably the biggest thing" (#13A, 54yo, M).

Age differentials could enhance this fear of consequences. For example:

> "You go hunting and your grandfather does unsafe practices. The way he carries his shotgun across a fence. He leans a loaded gun against a truck, right? That's awful hard for a 14-year-old kid in that setting to say, 'Grandpa, you're not supposed to do that'. (#17A, 55yo, M)"

Personal safety was mentioned by more than half of participants as an obstacle to intervening in any type of firearm injury: "I'm not tryin' to get a gun drawn on me" (#21A, 46yo, M).

## 3.4 | Theme 4. facilitators of intervention: "Somebody has to stand for something, right?"

Interviewees identified multiple reasons that they or their community members would be inclined to intervene, should they notice a risk. Almost all interviewees discussed a civic and personal responsibility to intervene in situations involving risk of firearm injury. Some mentioned approval from parents, friends, or the community as a motivator of intervening. For many, the importance of keeping a friend or family member safe superseded any risk of potential harm to a relationship. One interviewee explicitly weighed the competing demands and priorities of stepping into prevent firearm-related injury, concluding:

> *I guess you could upset someone, right, but if I would rather see the person live and not be friends with them, than be friends and have not taken the appropriate measures to keep them safe. (#22A, 45yo, F)*

Finally, several participants mentioned perceived potential personal or societal benefits from intervening, such as demonstrating care and concern for someone struggling, a feeling of pride about having done the right thing, and being a good example for others: "I think other people that witness it would think that this person's doing the right thing by saying something." (#14A, 67yo, F) Some mentioned that this type of community leadership was part of their 4-H training. Adults and teens alike also pointed to their extensive firearm training (within and outside of 4-H) as making it appropriate for them to intervene.

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### 3.5 | Theme 5. some interventions are easier than others

Participants spontaneously described multiple potential actions they could take in the face of risky firearm behavior. They described how their decision-making about which type of action to take depended on both the type of risk identified, and their personal knowledge and relationships.

Direct action to prevent firearm injury was the most common type of intervention participants said they would use if they identified someone at risk. Participants were particularly willing to tell a friend to "stop messing around" if friends were acting carelessly or recklessly with or around firearms. Direct intervention was applied more frequently to unintentional than intentional injury scenarios but was felt to be an important strategy for both injury types.

Participants often mentioned the term "ceasefire," a word used within 4-H Shooting Sports to indicate the immediate need to stop all use of a firearm when an unintentional injury risk is identified at a range. Many interviewees explicitly mentioned that 4-H empowers teens to directly intervene in these cases. For example, one instructor told us:

> "The thing that our senior founding instructor stressed was don't be afraid to yell to get attention. Don't let 'em start to get away with anything. If you see something, anything, developing, take care of it right there and then" (#10A, 78yo, M).

Delegation—asking someone else to help—also emerged as a commonly used strategy across all interviews. Participants reported they would be particularly likely to seek help in situations involving risk of suicide. They also identified delegation as more appropriate strategy for intervention when a personal relationship was more distant or non-existent.

### 3.6 | Theme 6: Firearm injury prevention training in 4-H shooting sports: Necessary, but with caveats

In general, interview participants were enthusiastic about incorporating expanded firearm injury prevention awareness and BI strategies into 4-H Shooting Sports. Teens and adults alike expressed interest in teaching students how to be more effective at preventing firearm injury in their community. Most believed a BI curriculum would be easily compatible with the existing 4-H structure and feasible to implement. Multiple adults mentioned that although some firearm injury prevention is discussed in 4-H, there is a need for dedicated time for a deeper dive into this topic:

> "I do think you could probably more formally put it into the 4-H curriculum for the different instructors 'cause we do talk about it right now on every range at the beginning of the year…You could more formally build it in not as just suicide prevention but just being a vigilant bystander for any kind of bad outcome." (#17A, 55yo, M).

Instructors and teens did express concern about the availability of 4-H resources (e.g., time, comfort, access to physical resources, liability) to support BI training.

Participants overwhelmingly stated that training in recognizing, and acting on, firearm injury risks was also needed outside of 4-H, including in schools. Participants said that education must include non-firearm owners, given what seemed to be a significant probability that non-owners would also encounter risk situations.

Finally, the age of many of the 4-H Shooting Sports students was an implementation barrier identified by both instructors and teens. Participants mentioned the importance of training older youth and coaches to intervene to

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prevent firearm injury but expressed hesitancy about involving younger 4-H students, who might not be familiar with the concept of suicide.

## 4 | DISCUSSION

Although many firearm injury prevention research agendas urge community and stakeholder engagement, achieving partnership with the firearm owning community, particularly regarding youth firearm injury prevention, has often been elusive in practice (Beidas et al., 2020). The current research bridges the researcher-practitioner gap by being, to our knowledge, one of first studies in which firearm injury prevention researchers partner with a national youth organization in communities with high rates of firearm ownership. Results broadly validate the viability of partnership, the firearm safety community's interest and intention in engaging in youth firearm injury risk reduction, and the appropriateness of the BI model as a framework for youth training.

One of the greatest takeaways from this study is the appropriateness of engagement with the 4-H Shooting Sports Program—a federally-supported organization that engages thousands of youth in firearm safety training annually—for a BI-based model of firearm injury prevention. Interview themes related to "civic responsibility," and descriptions of existing elements of BI training in 4-H Shooting Sports (e.g., "calling ceasefire"), reinforce that trusted community organizations already see some elements of BI as part of their mission. Moreover, interviewees were mostly firearms owners themselves and live exclusively in communities with high rates of firearm ownership. Training youth in BI through an organization like 4-H Shooting Sports could, therefore, improve awareness and safety not just for the youth trained within the organization, but also for the adult instructors and for these communities with high rates of firearm ownership, thereby enabling capability, opportunity, and motivation for difficult discussions related to firearm injury risk across the lifespan (Betz et al., 2021).

Validating the appropriateness of the BI model for community-based youth firearm injury prevention (Latane, 1970), emergent themes from our interviews mapped onto the four steps of this model: recognizing the situation, accepting responsibility to act, knowing which action to take to provide help, and identifying (and overcoming) obstacles to intervention.

In terms of recognizing risk, stakeholders identified and discussed risks for unintentional firearm injury far more readily than risk for intentional firearm injuries. This finding likely reflects 4-H Shooting Sports' extensive focus on unintentional firearm injury prevention, but also mirrors national survey results, in which unintentional firearm injury is over-represented as a threat to youth (Bleyer et al., 2021). This disproportionate focus on both likelihood of, and risk factors for, unintentional firearm injury is particularly noteworthy given that unintentional injury accounted for just 3.4% of firearm fatalities among American youth age 1–19 in 2020 (and 4.4% of rural youth's firearm deaths), while 64.3% of youth firearm deaths nationally (and 39.7% of rural youth firearm deaths) were homicides and 29.7% nationally (52.7% of rural youth firearm deaths) were suicides (CDC). In our study, interviewees did acknowledge some familiarity with firearm homicide and suicide, but—whether out of lack of awareness, normative expectations, or lack of belief in its preventability—rarely identified these types of intentional injury as a salient concern for their friends and neighbors. They were able to identify some common risks for firearm suicide and homicide, but just as notable were the firearm injury risk markers that 4-H Shooting Sports Clubs youth and adults *did not* spontaneously mention. For example, very few participants identified that a recent crisis could be a risk factor for firearm injury (Fowler et al., 2015). Other markers of risk such as dementia, domestic violence, and social media posts went unmentioned (Betz et al., 2018; Hink et al., 2019). No participants identified the potential for cumulative, converging, and interactive effects of multiple risk factors for gun-related injury and harm (Rosenberg, 2021). Although knowledge is never sufficient for action, it is a necessary first step. Addressing prevalence of intentional firearm injury in rural and firearm-owning communities (Hink et al., 2019; Kaufman et al., 2021; Wintemute, 2015), as well as common risk factors, is an easily addressed knowledge gap.

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Participants were nonetheless able to identify potential intervention strategies across a range of both intentional and unintentional firearm injury mechanisms. Without prompting, participants spontaneously described a range of BI strategies that could be used to prevent firearm-related injuries, as well as subtle ways of deciding which type of intervention to use, for whom. However, consistent with literature on BI for sexual assault and intimate partner violence, participants often worried about potential negative reactions of peers to a BI (Bennett et al., 2014; Brown & Messman-Moore, 2010). These findings suggest a need for firearm injury prevention programs to both acknowledge the importance of personal relationships, and correct misperceptions around results of BI for firearm injury prevention (Berkowitz, 2003). We note that in studies of sexual assault prevention, different BI strategies (e.g., "direct" vs. "delegate") result in different consequences and interpersonal responses from those involved (Moschella et al., 2018). Explicitly providing training to youth on the variety of interviewee-identified direct and indirect strategies for firearm injury prevention intervention, as well as additional strategies which arose less or not at all throughout the interviews (ex. distracting from or documenting a risk), could potentially enhance bystanders' sense of safety and control on this topic (Banyard et al., 2007).

The BI model employs a "call in" rather than "call out" strategy, whereby community members are addressed as potential interveners rather than potential perpetrators of risky behavior. This model is compatible with our interviewees' experiences and recommendations. Unlike curricula focused on individual behavior change, the sense of accountability encouraged by the BI framework promotes safer communities by increasing sense of community responsibility while also building skills for helping others (Burn, 2009). This sense of accountability also accords with 4H's culture of civic responsibility and "calling ceasefire," as described by participants.

The Consolidated Framework for Intervention Research (CFIR) is a widely used implementation science framework organized into five domains: intervention characteristics, individuals involved, implementation process, inner setting and outer setting. The interviews suggest important considerations across the entire CFIR framework (Keith et al., 2017)—for example, age, training capabilities, local resources, and external champions. Systematic analysis across the five domains may elucidate factors that influence intervention implementation and effectiveness and ultimately strengthen prevention efforts. Future research should more specifically examine these situational facilitators and barriers to youth BI firearm injury prevention.

## 4.1 | Implications for practice

Although some aspects of a community-based youth BI firearm injury prevention training can be found in others' adult—or healthcare-focused work, the results of this study indicated readiness for and appropriateness of incorporating BI training into respected and widespread community youth networks, such as 4-H Shooting Sports. Adult and youth leaders within the organization are willing and able to discuss prevalence and prevention of all types of firearm injury. Gaps in recognition of risks for common types of firearm injury, and ability to confidently use BI strategies, are addressable. 4-H Shooting Sports and its members emphasize responsibility to one's community, which accords closely with the BI framework.

## 4.2 | Limitations and future directions

Whereas the sample size was sufficient for thematic saturation, further research including a larger, more ethnically and racially diverse sample is warranted. It is also possible that non- 4-H Shooting Sports members or study non-participants would have different perspectives than interviewees. Additionally, this study was hypothesis-generating for the purpose of creating an intervention; it neither demonstrates causation, nor does it demonstrate feasibility and efficacy of a BI training program.

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## 5 | CONCLUSION

This study lays the groundwork for developing expanded bystander-based firearm injury prevention training for 4-H Shooting Sports clubs, with applicability to numerous other settings and groups. Engaging community partners and practitioners, like 4-H Shooting Sports, represents an important first step toward normalizing the discussion of firearm injury prevention. Our findings also underscore the need to raise awareness about the multiple ways in which firearm injury and death can occur and empower individuals with the ability to notice risks in their community and intervene.

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### CONFLICTS OF INTEREST STATEMENT

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### DATA AVAILABILITY STATEMENT

The authors confirm that the data supporting the findings of this study are available within the article [and/or] its Supporting Information Materials.

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### PEER REVIEW

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