

grants, the shallow base of research where we are starting suggests the need for more innovative funding mechanisms that allow rapid funding of innovative ideas. Foundations are filling some of this need; for example, the Joyce Foundation and the Robert Wood Johnson Foundation have funded some firearms-related research.

Ultimately, however, any one foundation alone will not move us ahead. Innovative funding mechanisms could overcome the limited preliminary data that many investigators have and allow rapid turnaround for grants for studying prominent events in near real time. This will involve a concerted effort via a host of foundations, perhaps evolving into a consortium of researchers and foundations that work together to move this research forward. We should also not rule out the possibility of private and industry donors who would champion the cause of science and unbiased inquiry in helping reduce the vast US firearm violence problem.

NATIONAL REGISTRY OF FIREARM VIOLENCE

Third, we need a national registry of firearm violence, and it should include fatal and nonfatal firearm injuries and then create a robust database that investigators can publicly access. The World Trade Center Health Registry stands as an exemplar of this, having generated the most consequential data on the long-term consequences of the September 11, 2001, terrorist attacks. This has served as an opportunity for a range of investigators to publish on the basis of these data. New investigators are well served by having publicly available data that allow them to overcome barriers to entry in any particular field; this is as much, if not more, the case for firearms research as it is for other fields. Efforts such as the recently announced States for Gun Safety coalition (currently involving Connecticut, New Jersey, New York, and Rhode Island) will create a Regional Gun Violence Research

Consortium that can provide the formative foundation for such a registry.

NEW GENERATION OF JUNIOR SCHOLARS

In 2016, we participated in a meeting of deans and directors of schools and programs of public health that resulted in an agenda for action in response to the firearms crisis.⁵ The first item on the agenda was strengthening research and scholarship. The increase in firearms-related publications in the past year is an encouraging sign of movement in the right direction. Creating opportunities for a new generation of junior scholars would be a major investment in a future when our firearm violence crisis is a concern of the past. *AJPH*

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Arming Schoolteachers: What Do We Know? Where Do We Go From Here?

 See also Galea and Vaughan, p. 856; and the Gun Violence Prevention Section, pp. 858–888.

The recent mass school shooting in Parkland, Florida, has reignited a national conversation about arming teachers. Although gun violence prevention research has been historically underfunded,¹ there has been strong support for studying the prevalence of violent behaviors more broadly in schools and the role of preventive efforts (via curricula, increased social support services, and parent

engagement) in reducing these behaviors. However, we know little, if anything, about the effectiveness of arming teachers in deterring gun violence in schools. Furthermore, uncertainty about how schools should operationalize this kind of proposal perpetuates concerns.

As teachers, school administrators, parents, and policymakers seek to build safer school communities, we need a far better

understanding of the implications of arming teachers on the school environment, on a child's development, on student learning outcomes, on existing school safety policies, and on the full

costs of such interventions, including the added responsibilities that it would impose on teachers and school administrators. We arm uniformed police officers with the expectation that they have been appropriately trained to protect us with their firearms in times of crisis. Although teachers are conceivably capable of appropriately using firearms, no

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evidence-based guidelines are available to help us develop the necessary training for teachers and continued instruction needed to maintain their preparedness so that they would be ready when crisis strikes. We also have no means for identifying teachers who would be willing to take on this significant responsibility. Nor do we have enough information on whether nonuniformed, armed civilian teachers would reduce or increase risks for themselves and their students when uniformed law enforcement arrives during a crisis. In other words, we are debating whether a new profession that combines the responsibilities of a law enforcement officer and a teacher is even feasible, given all these caveats.

EXISTING RESEARCH

The question about whether to arm teachers has seen very limited scholarly discussion and scientific inquiry. In a 2011 article, researchers explored the relation between school characteristics and school violent crime.² The findings suggested that school resource officers with nonlethal force capabilities might be helpful in deterring violent crime rates in schools. However, that same positive relationship was not found with school resource officers armed with a firearm.² In a 2002 article, Beger³ argued that heightened policing and intrusive security efforts within public school spaces decrease a student's sense of safety; this finding has been reinforced by recent work. Indeed, research has since confirmed that punitive efforts in schools (such as zero tolerance policies intended to reduce illicit drug use and weapon possession among students) do not effectively deter crime and cause more harm than good to students and schools.⁴

From a financial perspective, a 2013 report assessed the cost of placing an armed school resource officer in every elementary and secondary school across the United States ($n = 132\,183$).⁵ The report accounted for estimated variations in salary, student population size, and number of hours worked per academic year. Drawing on these estimates, the cost would range from \$19.1 to \$22.6 billion annually,⁵ which accounts for nearly 30% of the current federal education budget (reported by the National Center for Education Statistics to be \$78.9 billion). The United States currently has an estimated 3.1 million full-time teachers. Arming even 20% of them, as recently suggested by the White House, would result in similarly significant increases in the federal budget.

OPERATIONALIZING SCHOOL SECURITY

Note that school security encompasses a broad spectrum of behaviors and situations, including planning for the possibility of natural disasters, implementing antibullying interventions, recognizing and responding to students with suicidal behaviors, implementing protocols for working with police and local law enforcement, and overseeing medical emergency response protocols for a broad range of possible health situations. Also, let us not forget the many additional services that schools—and teachers in particular—provide while they attend to the education, development, and well-being of our children. The extraordinary number of responsibilities that teachers and schools bear has been pointed out frequently in research related to teacher stress and burnout. Therefore, we need to be mindful

of the additional burden that such an intervention could have on schools and their staff.

The existing research base also highlights that school security is an important component of a school's climate, which has more broadly been shown to inform youth engagement in violent behaviors. Specifically, school climate includes a range of characteristics that help define the quality of a child's learning environment, including disciplinary practices, social-emotional security, respect and acceptance of diversity within the school community, efforts that nurture positive peer relationships and social support for all students, and teaching practices that provide opportunity for thoughtful discourse and constructive conflict resolution. Therefore, the nature of school security measures and their ramifications for school climate quality must be accounted for when developing strategies for reducing gun violence in schools.

COULD ARMING TEACHERS WORK?

Although no empirical evidence is currently available regarding whether arming teachers would deter gun violence in elementary and secondary school settings, we can extrapolate from existing research on the possible outcomes of such efforts. Research has shown that increased gun access and gun possession are not associated with protection from violence,⁶ which suggests that increasing the presence of guns in the hands of civilians in schools, no matter how well intentioned, may backfire. Furthermore, exposure to gun violence across a broader spectrum—hearing gunshots, witnessing gunfire, and knowing

someone who has been injured with a firearm—can adversely affect a child's health and development. Whether arming teachers would decrease these types of negative exposures is unclear.

We also know that the anticipation of violence can lead to increased anxiety, fear, and depression. Given the sensationalized and speculative nature of many mass school shootings that has reinforced the misperception that schools in general are unsafe,⁴ arming teachers, in all likelihood, would heighten levels of anxiety and negatively affect a school's climate. These concerns are echoed by families as well; a recent study that used a national sample found that more than half of the parents of school-aged children oppose school personnel carrying firearms.⁷

CONCLUSIONS AND NEXT STEPS

The existing literature indicates a lack of clarity on the efficacy of the different proposals that have been put forth by various politicians and lobbying groups with regard to firearms in schools. A multitude of questions remain regarding the nuances and logistics of arming teachers. In addition, the efficiency and return-on-investment for this kind of costly effort, with little if any existing evidence, are unclear.

The existing research base does, however, suggest that multifaceted, preventive methods are effective in preventing and mitigating incidents of violence. Examples of such approaches include legislation and public education efforts that help reduce youth access to guns; increased support services within schools and community settings so that the early antecedents of

violent behavior can be quickly detected and immediately addressed; and efforts that promote a positive and nurturing school climate that attends to every child's well-being.

Coordinated research and practice efforts that effectively address and prevent violence among youths and in school spaces are urgently needed. Keeping schools safe must be a national educational and public health priority. *AJPH*

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Is Arming Teachers Our Nation's Best Response to Gun Violence? The Perspective of Public Health Students

 See also Galea and Vaughan, p. 856; and the Gun Violence Prevention Section, pp. 858–888.

The year 2018 has seen 18 instances of gun-related injuries and fatalities at American schools in fewer than 100 days.¹ We thought the outrage following the murder of 20 children in the Sandy Hook Elementary School was enough to force a national dialogue on gun violence 6 years ago, but it was not. Nevertheless, 2018 has been different. This year, the students affected by the Marjory Stoneman Douglas High School shooting in Parkland, Florida, have started a national student-led campaign against gun violence, culminating in the March for Our Lives movement. As graduate public health students who have the honor of serving in the 2018 *AJPH* Student Think Tank, we wish to use our platform to uplift and join the voices of the brave high-school students who have been thrust into the national spotlight to call for better solutions to gun violence in schools.

INTRICACIES

In the wake of the Marjory Stoneman Douglas High School shooting, political discourse has shifted to the proposition of arming school teachers with guns as a means of reducing the mortality rate of school-related shootings. We wonder if policymakers have considered the intricacies of implementing a plan to arm teachers. Funding of any program is imperative—quality firearms are expensive, and we question how this would be paid for when schools already struggle with funding for basic educational resources. Teachers cannot be asked to purchase a firearm in addition to pencils and paper. When would teachers undergo firearms qualification training, and who would be responsible for training them? Unless educators undergo training comparable to law enforcement officers, their ability to stop or prevent a mass shooting is questionable. Furthermore, educators

may not wish to work in such conditions—multiple professors resigned from the University of Texas after firearms were permitted on campus.² It is unethical to place this burden on those who do not wish to participate in such a program that could result in inflicting injury or death upon other people.

Firearms in a classroom setting present enormous risk to life, limb, and mental well-being. Improper firearm storage, a common problem for American gun owners, could result in student access or theft.³ The potential psychological trauma of forcing educators to fire a weapon at a shooter who could be their student and injuring or killing students other than the shooter are all possibilities that must be

considered. If a teacher fails to stop a school shooting in progress or hurts a party other than the shooter, the school or the teacher could be held liable and open to lawsuits. We cannot imagine that many school districts would eagerly sign up for such a litigation risk. Is this our nation's best solution? We must consider other ways to address gun violence—placing more guns into an environment from which we wish to exclude them is, in our opinion, not the right answer.

As public health students, we believe the proposal to arm teachers is fundamentally unsound. Even if the practicalities were meted out, we have already seen that the presence of armed personnel in schools does not improve matters. The school resource officer in the Marjory Stoneman Douglas High School shooting was armed, and the presence of this qualified firearm-carrying individual did not make a difference in the outcome.⁴ Having firearms in schools increases the risk of injury

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