Training Students to Respond to Shootings on Campus: Is It Worth It?

Jillian Peterson
Hamline University

Ellen Sackrison
Metropolitan State University

Angela Polland
Loyola University

Public safety departments have been tasked with training staff, faculty, and students to respond to an active shooting event if it were to occur on campus. There has been an increase in student training videos and drills on college campuses, even though the impact of these programs has not been evaluated. This study takes an initial look at a training video designed to prepare students to respond to a shooter on campus, comparing it with a control video about school shootings. Students who watched either video felt more afraid that a shooting would occur on campus, in addition to feeling more prepared to respond. The training video increased feelings of preparedness over the control video, but also increased feelings of fear among female students. The implications of active shooter training on student mental health and school culture are discussed.

Keywords: program evaluation, school shooting, school violence, violence prevention

School shootings have gained a lot of attention in North America in the last decade, and school public safety departments face increasing pressure to prepare staff, faculty, and students to respond if an active shooting were to occur. Although the risk of dying during a school shooting is quite minimal, students are run through drills and training programs at school on a regular basis. There is a dearth of research on what impact these training programs are having on student mental health, and overall school culture. This experimental study takes an initial look at college students' reactions to watching an active shooter training video.

School Shootings as a Public Safety Concern

When school shootings happen, they make headlines. Especially in the United States,

Jillian Peterson, Criminology and Criminal Justice Department, Hamline University; Ellen Sackrison, Department of Criminal Justice, Metropolitan State University; Angela Polland, Department of Psychology, Loyola University.

Correspondence concerning this article should be addressed to Jillian Peterson, Criminology and Criminal Justice Department, Hamline University, 1536 Hewitt Avenue, St. Paul, MN 55104. E-mail: jpeterson68@hamline.edu

Adam Lanza, Seung-Hui Cho, and Harrison and Kleebold have become household names. When two students were wounded in a school shooting in Frederick, Maryland earlier this year, it made national headlines for days and generated hundreds of national news stories. The extensive coverage of school shootings in the media makes it seem as though these events are increasing in frequency in the United States. However, it is difficult to know whether or not this is actually the case.

A number of scholars posit that school shootings are, in fact, *not* increasing in frequency over time. According to Rocque (2012), school violence in the United States has been declining since the 1990s overall, and deaths attributable to school violence have decreased from the 1990s until 2006. Fox and Savage (2009) assert that there were 51 students murdered on college campuses in the United States between 2001 and 2005, and most of those were killed by someone that they knew. In their review of the prevalence rates of school shootings, Wike and Fraser (2009) conclude that school shootings in the United States are "no more prevalent today than ten years ago" (p. 163). Brooks, Schiraldi and Ziedenberg (1999) report that the chance of being killed in school was one in two million in

1999, however 71% of respondents in a poll thought there was a likely chance of a school shooting occurring in their community. Snell, Bailey, Carona, and Membane (2002) blame media coverage for the false sense among the public that schools are unsafe, when the reality is that there is a better chance of dying in a violent crime outside of school.

In contrast, a recent publication by the FBI reports an increase in mass shootings in the United States over the years 2000 to 2012. Researchers conducted a search of local news stories, identifying 110 mass shootings over this 12-year period (Blair, Martindale, & Nichols, 2014). They determined that mass shootings in the United States have been steadily increasing over time, with a dramatic increase since 2008. However, only around 30% of the mass shootings in this study took place at schools or college campuses. An additional study from the Harvard School of Public Health and Northeastern University found that the rate of mass shootings tripled from the years 2011 to 2014, going from a rate of one shooting every 200 days on average since 1982, up to a rate of one shooting every 64 days the past three years (Cohen, Azrael, & Miller, 2014). Again, this study analyzes all mass shootings in the United States, not school shootings specifically.

Regardless of whether the number of school shootings has been increasing, decreasing, or remaining steady, the public outcry and concern about these deadly events is understandable. There has been increased attention over the past decade on how to prevent these events from taking place, and how to prepare students, faculty, and staff to be prepared if they do. However, the amount of attention and resources schools are putting into preventing school shootings may not match the reality of the risk. For example, the number of people killed in mass shootings in the United States in 2010 was just under 40 (Blair et al., 2014), and only 10 of those people were killed specifically in school shootings (Klein, 2013). As a comparison, the U. S. Center for Disease Control and Prevention (2010) reports that 12,341 young people (ages 15–24) were killed in 2010 by an unintentional injury, and 4,600 young people committed suicide.

Training Students to Respond to Active Shooters

Despite the minimal risk, the flavor of public safety departments on college campuses changed significantly after the Virginia Tech shooting in 2007 (Schafer, Heiple, Giblin, & Burruss, 2010). College campuses were tasked with preparing themselves for active shootings on campus, and the recommendations to public safety departments mirrored those made to high schools after Columbine and potential targets after the September 11th attacks. Public safety departments developed a number of techniques for communicating and responding to critical incidents on campus including mass notifications systems, firearm bands, and developing working relationships with local law enforcement (Schafer et al., 2010).

One controversial intervention strategy is to go beyond training and preparing public safety personnel, and actually train students to respond to a shooting on campus. This can be accomplished through live action trainings with campus security and local law enforcement agencies that involve students responding to "shooters." Some trainings use students as actors, even using pretend gun shots and fake blood (Fox & Savage, 2009). A less invasive strategy is to have students watch a training video to prepare them for an active shooting event, such as *Shots Fired: When Lightening Strikes* (Center for Personal Protection & Safety, 2007). *Shots Fired: When Lightening Strikes* is a 20-min training video developed by a security consulting company that retails for $700, or $1,500 for a university license.

There has been little research on exactly what techniques college campuses are using to prepare themselves for a potential shooting on campus, or on how much money is being spent on such measures. In the only study of this issue to date, Schafer and colleagues (2010) conducted a survey of 600 randomly selected colleges and universities one year after the Virginia Tech shooting. Surveys were mailed to the heads of campuses public safety departments, which produced a response rate of 34%. The number of public safety departments that reported responding to an active shooting event in the past five years was 1.5% (as opposed to 34% that had responded to weather related incidents and 40% that had responded to a bomb threat).

The majority of public safety departments reported training "non-safety personnel" such as professors, staff, and students (70% of campuses that had had a previous critical incident, 52% of campus that had not had a critical incident in five years).

There is remarkably little research on the impact of training students to respond to a shooting on campus. It is difficult, if not impossible, to know whether this training is effective. To scientifically test the impact of training students, one would need two similar schools in which one student body had undergone active shooter training and one did not. Then a shooting would need to occur on both campuses to see whether the training mitigated the impact of the shooting in terms of deaths and injuries. Obviously this line of research is impossible and unethical. And campus shootings occur so infrequently that even correlation research is not a possibility.

It is understandable why public safety departments are buying training videos for their students and conducting simulations. Colleges and universities want to prepare students in the best ways that they can, and are grasping for resources and direction in this endeavor (Hoover, 2008). However, in the age of evidence-based practices, public safety departments are left with a complete vacuum of scientific research. Meanwhile, hundreds of thousands of students are watching training videos and being run through active shooter drills on college campus and in primary and secondary schools in the United States.

The Impact of Active Shooter Training

Students are accustomed to being run through drills for natural disasters like tornados and earthquakes to avoid chaos and panic if an emergency occurs. There is a lack of empirical research about whether or not these emergency response drills can cause anxiety in children. However, one study of 74 children suggests that emergency response drills in elementary school may not have any impact on anxiety if carried out according to best practices (Zhe & Nickerson, 2007). It is reasonable for college public safety departments to treat active shootings on campus in a similar manner.

The goal of training students is to minimize harm if a shooting were to occur. However, it is possible that training students could be actually causing harm. Kaminski, Koons-Witt, Thompson, and Weiss (2010) surveyed nearly 2,000 students before and after the Virginia Tech and Northern Illinois University school shootings and found that these incidents significantly increased fear of being victimized on campus and fear of crime in general. Despite knowing that coverage of these incidents in the news increases student anxiety, the impact of school shooting simulation and training videos on student mental health has never been tested. Fox and Savage (2009) argue that the video *Shots Fired: When Lightening Strikes* may be increasing student fear and anxiety about a shooting occurring, which is likely unnecessary considering the minimal risk. Training students to respond to shootings also has an impact on the culture of the campus environment. Kaminski et al. (2010) posit that "instead of making students feel safer about their surroundings, these new policies may, in fact, make students more fearful and less engaged in their college campuses" (p. 88).

As Fox (2008) explains, there is a reason that airlines do not routinely run passengers through simulations of a plane crash, or have them watch videos of screaming passengers putting on oxygen masks as their plane goes down. The risk of a plane crash is so minimal that it doesn't warrant that level of emotional trauma. It invokes feelings of terror that would make no one want to ride on a plane again. The question is whether school shootings have more in common with a tornado or a plane crash. Is the trauma and anxiety produced by going through an active shooter training worth it in the chance that the training might save lives if an event were to occur? These are very difficult questions to answer, but they need to be scientifically explored.

School shootings are also different than other natural disasters because the potential shooter is likely a student at the school. The copycat effect refers to the phenomenon that school shooters tend to copy previous shooters. It is not the case that psychologically healthy teenagers suddenly decide to commit a school shooting because they saw one on the news. But students who are already troubled may "see a model for a solution to their problems in previous school shootings" (Newman, Fox, Harding, Mehta, & Roth, 2004, p. 72). The copycat effect is thought to be

partially responsible for the peak of shootings in the nineties, as school shootings received increased coverage by the media (Rocque, 2012). Therefore, in addition to causing emotional trauma, it is plausible that running impressionable or unstable students through shooting simulation and training may inadvertently trigger a fascination with such events.

The Present Study

This study takes an initial look at the impact of a school shooting training video on community college students using an online survey by examining three aims. Each of the three aims explores four dependent variables: fear of a school shooting taking place, preparedness to respond to a school shooting, endorsement of security prevention strategies, and endorsement of psychosocial prevention strategies. The first aim is to assess how concerned students are about a shooting taking place on their campus. We predict that students will feel moderately concerned about school violence, and hypothesize that general feelings of anxiety and depression may correlate with specifically worrying about school shootings. The second aim is to examine the impact of watching a video about school shootings on students' overall feelings of fear and preparedness. This aim will also examine what impact watching a school shooting video has on students' support of prevention policies taking place on their campus. We hypothesize that focusing on school shootings for a half hour will increase students' fear about a shooting occurring on campus, as well as increase their support of school shooting prevention policies.

Finally, the third aim of this study is to compare the frequently used training video *Shots Fired: When Lightening Strikes* with a control video to assess the degree to which the training video helps students feel prepared to respond to a shooting, as well as the degree to which it influences fear of a shooting occurring. Because thinking about school shootings likely increases student anxiety generally (Kaminski et al., 2010), we chose a control video that also addresses school shootings. Aim three examines whether the training video has a unique impact on student anxiety and fear, beyond generally thinking about these events. We predict that students who watch the training video will feel

more prepared if a shooting occurred, but will also feel more afraid of one taking place on their campus.

Method

Participants

A total of 220 community college students completed this study. Participants who left six or more questions blank (i.e., 10% of the total questions) were dropped from the study due to missing data. This left 197 participants remaining with complete data. The resulting study sample was majority female (69.9%) and Caucasian (68.2%; 15.9% African American, 6.7% Asian, 9.2% other). The majority of participants were 18 to 20 years old (42.1%) or 21 to 29 years old (38.1%). Most study participants were majoring in the health sciences (28.4%) or psychology (17.8%).

Procedures

Recruitment. Undergraduate students enrolled in a large community college in a suburban Midwest setting were recruited for this study. Any student enrolled in a psychology course who was 18 years of age or older was eligible to participate. Psychology professors distributed flyers about the study in their classrooms, and some professors chose to offer their class a small amount of extra credit for study participation. Students interested in participating sent an e-mail directly to the study team to obtain an electronic consent form and to be enrolled in the study online. All study procedures were approved by the Human Subjects committee on campus.

Group assignment. Before completing the study, participants were e-mailed a link to complete the study consent form online via Survey Monkey (a secure online research tool). Participants checked a box indicating that they had read the informed consent form and agreed to participate in the study. Participants were also e-mailed a hard copy of the consent for their records. Students were then randomly assigned to either the experimental or control group. The only difference in procedure between the two groups was which 20- to 30-min school violence video the participant watched. The experimental group watched the campus training

video *Shots Fired: When Lightening Strikes* ($n = 97$), and the control group watched the PBS Frontline documentary *Raising Adam Lanza* ($n = 100$).

Online survey. Participants completed the study online from their home computer or a public computer on the campus. The study involved answering a series of questions about their demographics, completing an anxiety/depression screen, and completing questions about their fear and knowledge about shootings on campus. Participants then watched one of two 20- to 30-min videos online related to school shootings, and answered a series of postquestions assessing their fear and knowledge about campus shootings. The study took one to two hours to complete. Participants were assigned a numeric code for identification purposes, and no identifying data about study participants were saved after study completion.

Measures

Demographics. Participants answered a series of questions about their demographic background including gender, race, major area of study, age, and marital and employment status.

Depression and anxiety. Participants completed the Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983) to assess whether anxiety about a potential school shooting was related to experiencing clinical levels of anxiety and depression in general. The Hospital Anxiety and Depression scale is a commonly used, brief screen that is self-administered. It includes 14 items that are scored from 0 to 3 for a maximum score of 42. Both the anxiety and depression scales have been found to be internally reliable and reliable at detecting clinical disorders (Zigmond & Snaith, 1983). The recommended cutoff score for follow-up on the screen is a score of greater than or equal to 22. Participants in this study had scores ranging from 10 to 30, with a mean of 21.0 ($SD = 3.6$). One third of the sample (33.5%) scored above the cut off of 22.

Fear of school shootings. Participants answered three questions assessing fear of a shooting happening on campus (How afraid are you that a shooting might take place on campus? How safe do you feel on campus? What is the risk of a shooting taking place on campus?). These questions were developed based on previous research assessing student fears after campus shootings (Kaminski et al., 2010). Participants answered each question on a 4-point scale ranging from 0 to 3 (one question was reverse scored). Composite 'fear' scores were calculated from the three questions, assessed both prevideo and postvideo.

Preparedness for school shootings. Participants answered two questions assessing the degree to which they felt prepared to respond to a shooting if it were to happen on campus (Would you know what to do if a shooting happened on campus? How prepared do you feel if a shooting happened on campus?). These questions were developed based on previous research assessing student fears after campus shootings (Kaminski et al., 2010). Participants answered both questions on a 4-point scale ranging from 0 to 3 (one question was reverse scored). Composite 'prepared' scores were calculated from the two questions, assessed both prevideo and postvideo.

Preventing school shootings. Participants were asked a series of questions about which prevention strategies they felt would be most effective at preventing campus shootings in the future. Participants assessed the importance of each prevention strategy on a 4-point scale ranging from 0 to 3. Composite scores were calculated for the three questions that assessed 'security prevention strategies' (i.e., increased security on campus, staff carrying guns, student profiling), assessed both prevideo and postvideo. Composite scores were also calculated for the three questions that assessed 'psychosocial prevention strategies' (i.e., bullying prevention programs, increased mental health services, peer support groups), assessed both prevideo and postvideo.

Training video. *Shots Fired: When Lightening Strikes* is a 20-min video that streams for free online through the community college system (they own a license). The video uses actors to reenact a school shooting to demonstrate what students should do if a shooting takes place on campus. This video was developed by the Center for Personal Protection and Safety, a private company based in Washington state. The video is currently being utilized by more than 500 colleges nationwide to train students for active shooting events (Perez, 2008).

Control video. *Raising Adam Lanza* is a 30-min documentary produced by PBS that de-

tails the life history of Adam Lanza, the shooter of 27 people in Newton, Connecticut (Koughan & Beshenkovsky, 2013). The video also streams for free online. This video was chosen as a control condition to get students thinking about school shootings, but there is nothing in the documentary that is meant to prepare students to respond to a shooting on their own campus.

Results

Of the 197 participants with complete data, 97 watched the school shooter training video and 100 watched the control video. There were no differences between the two groups on gender, race, or any of the baseline variables assessed.

Aim 1: How Do Students Feel About a Shooting Taking Place on Campus?

The first aim of this study was to assess how students felt about a potential school shooting occurring on their campus. Four measures were used to assess this aim at baseline (prior to viewing either study video): participants' fear about shootings on campus, how prepared participants felt to respond to a shooting on campus, the degree to which participants thought security prevention measures were important, and the degree to which participants felt psychosocial prevention measures were important.

Fear. Composite baseline-fear scores ranged from 0 to 2.67 with a mean of 0.81 ($SD = 0.53$), indicating participants feel minimally afraid of a shooting happening on campus ($0 = $ *not at all afraid*, $1 = $ *mostly not afraid*). Internal reliability on the baseline-fear score was acceptable (Cronbach's alpha = .60). There was a gender difference on baseline composite fear scores, $t(194) = 2.52$, $p < .05$ with female participants ($M = 0.87$, $SD = 0.55$) reporting higher levels of fear than male participants ($M = 0.66$, $SD = 0.48$). The effect size of the gender difference, however, was small ($d = 0.41$; Cohen, 1988). Contrary to our hypothesis, anxiety and depression scores did not correlate with fear scores, $r = .07$, $p = .32$. There were no differences between racial groups.

Preparedness. Composite baseline-prepared scores ranged from 0 to 3.00 with a mean of 1.45 ($SD = 0.67$), indicating that participants felt somewhat prepared to respond if a shooting were to take place on campus ($1 = $ *somewhat unprepared*, $2 = $ *somewhat prepared*). Internal reliability on the baseline-prepared score was good (Cronbach's alpha = .81). There was a gender difference on baseline composite fear scores, $t(194) = -3.95$, $p < .001$ with male participants ($M = 1.81$, $SD = 0.81$) reporting feeling more prepared for a school shooting than female participants ($M = 1.29$, $SD = 0.84$). The effect size of the gender difference was medium ($d = 0.63$; Cohen, 1988). Anxiety and depression scores did not correlate with prepared scores, $r = .03$, $p = .72$. There were no differences between racial groups. There was no statistically significant correlation between participant fear score and prepared scores at baseline, $r = .13$, $p = .07$.

Security prevention. Composite baseline-security prevention scores ranged from 0 to 3.00 with a mean of 1.45 ($SD = 0.60$), indicating participants felt that security measures are somewhat important for preventing school shootings ($1 = $ *of little importance*, $2 = $ *moderately important*). There was a gender difference on baseline composite fear scores, $t(193) = 3.27$, $p < .01$, with female participants ($M = 1.54$, $SD = 0.59$) more likely to find security prevention measures important than male participants ($M = 1.24$, $SD = 0.58$). The effect size of the gender difference was medium ($d = 0.51$; Cohen, 1988). There were no differences between racial groups. The degree to which participants endorsed security measures at baseline was not correlated with how prepared they felt, $r = .02$, $p = .77$, however security scores were significantly correlated with fear scores at baseline, $r = .22$, $p < .01$.

Psychosocial prevention. Composite baseline-psychosocial prevention scores ranged from 0 to 3.00 with a mean of 2.25 ($SD = 0.65$), indicating participants felt that psychosocial prevention measures are important to prevent campus shootings ($2 = $ *moderately important*, $3 = $ *very important*). There was a gender difference on baseline composite fear scores, $t(191) = 3.45$, $p < .01$, with female participants ($M = 2.35$, $SD = 0.58$) more likely to find psychosocial prevention measures important than male participants ($M = 2.01$, $SD = 0.74$). The effect size of the gender difference was medium ($d = 0.51$; Cohen, 1988). There were

no differences between racial groups. The degree to which participants endorsed psychosocial prevention measures was not correlated with how prepared they felt at baseline, $r = .11$, $p = .14$, although psychosocial scores were significantly correlated with fear scores, $r = .16$, $p < .05$. There was a significant correlation between how important participants found security prevention strategies and psychosocial prevention strategies, $r = .41$, $p < .001$.

Aim 1 conclusion. Participants reported being minimally afraid of a shooting taking place on campus, which was not correlated with general feelings of anxiety. Students also reported feeling somewhat prepared if a shooting were to occur on their campus. Interestingly, there was a significant gender difference on both composite variables—with female participants feeling more afraid and less prepared than male participants. Students endorsed both security and psychosocial prevention strategies overall. The degree to which students felt these programs were important was significantly correlated with how afraid they were that a shooting would actually occur.

Aim 2: What Is the Impact of Thinking About School Shootings?

The second aim of this study was to examine what impact thinking about school shootings for 20 to 30 min (by watching either the experimental or control video) had on the four composite variables of interest. This aim was assessed by calculating change scores on the fear, preparedness, security prevention, and psychosocial prevention composite variables—at baseline and after watching either study video.

Fear. Composite postfear scores ranged from 0 to 3.00 with a mean of 1.04 ($SD = 0.63$). Internal reliability on the postfear scale was acceptable (Cronbach's alpha = .73, respectively). Change scores were calculated by subtracting composite baseline fear scores from composite postvideo fear scores for each participant. Mean fear change scores ranged from -1.00 to 2.33 with a mean of 0.23 ($SD = 0.49$), indicating participants felt more afraid after watching either video (see Figure 1). A repeated measures t test of fear scores pre and post video was significant, $t(195) = -6.60$, $p < .001$, which was a large effect ($d = 0.95$; Cohen, 1988).

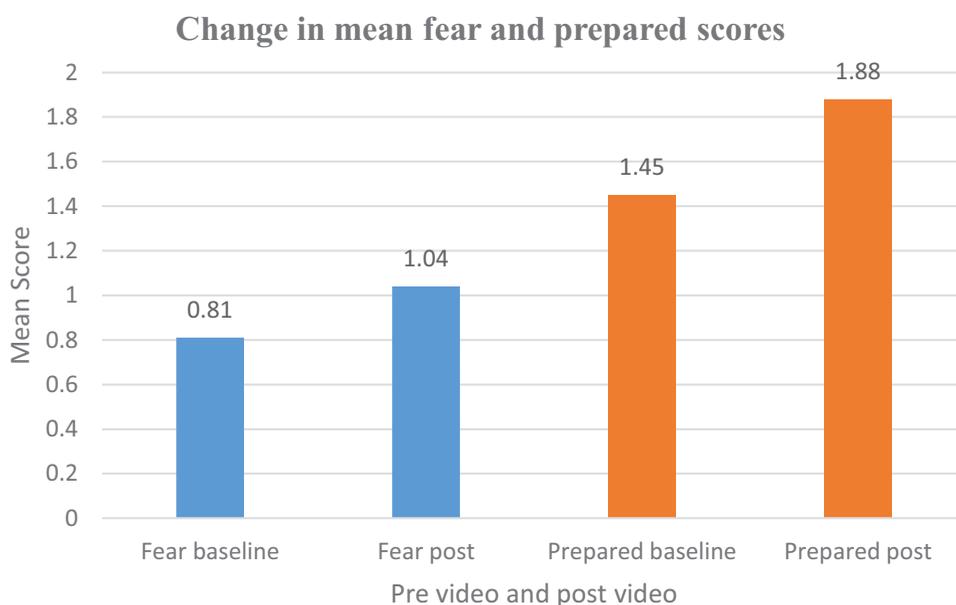**Change in mean fear and prepared scores**

Figure 1. Change in mean fear and prepared scores pre- and postvideo intervention. See the online article for the color version of this figure.

Prepared. Composite post-prepared scores ranged from 0 to 3.00 with a mean of 1.67 (SD = 0.64). Internal reliability on the post-prepared score was good (Cronbach's alpha = .86). Change in prepared scores was calculated by subtracting composite prepared baseline scores from composite prepared postvideo scores for each participant. Mean prepared change scores ranged from −2.00 to 2.50, with a mean of 0.42 (SD = 0.80), indicating participants felt more prepared after watching either video (see Figure 1). A repeated measures t test of prepared scores pre- and postvideo was significant, $t(195)$ = −7.34, p < .001, which was a large effect (d = 1.05; Cohen, 1988).

Security prevention. Composite postsecurity scores ranged from 0 to 3.00 with a mean of 1.67 (SD = 0.64). Security prevention change scores were calculated by subtracting composite security prevention baseline scores from composite security prevention postvideo scores for each participant. Mean security prevention change scores ranged from −1.67 to 1.67, with a mean of 0.21 (SD = 0.46), indicating participants were more likely to endorse security prevention strategies after watching either video. A repeated measures t test of security prevention scores pre- and postvideo was significant, $t(196)$ = −6.53, p < .001, which was a large effect (d = 0.93; Cohen, 1988).

Psychosocial prevention. Composite post-psychosocial scores ranged from 0 to 3.00 with a mean of 2.45 (SD = 0.63). Psychosocial prevention change scores were calculated by subtracting composite psychosocial prevention baseline scores from composite psychosocial prevention postvideo scores for each participant. Mean psychosocial prevention change scores ranged from −1.33 to 1.67, with a mean of 0.20 (SD = 0.42), indicating participants were more likely to endorse security prevention strategies after watching either video. A repeated measures t test of psychosocial prevention scores pre- and postvideo was significant, $t(191)$ = −6.65, p < .001, which was large effect (d = 0.96; Cohen, 1988).

Aim 2 conclusion. Watching either video had a significant impact on participants' feelings of fear, preparedness, and the degree to which they supported both types of prevention strategies. Students felt significantly more afraid that a shooting would occur, more prepared to respond if a shooting occurred, and

were more likely to think both security and psychosocial prevention strategies were important.

Aim 3: Assessing the Impact of the Training Versus Control Video

The goal of aim three was to determine whether the training video had a greater impact on feelings of fear and preparedness than the control video. This aim was examined by looking at differences in change scores—pre- and postvideo—between the two groups on the four variables of interest.

Fear. The change in fear composite scores were compared between the experimental group (training video) and control group from baseline to postvideo. There were no significant differences between the two groups, $t(194)$ = −1.56, p = .12. There was, however, a significant difference in the fear change scores between men (N = 30) and women (N = 66) who watched the training video, $t(94)$ = 2.42, p < .05. Women felt significantly more afraid after watching the training video (M = 0.25, SD = 0.50) than men (M = 0.01, SD = 0.33). This was a medium effect (d = 0.57; Cohen, 1988). There was not a significant difference in fear change scores between men and women who watched the control video, $t(98)$ = 1.27, p = .21. (see Figure 2).

Prepared. The change in prepared composite scores were compared between the experimental group (training video) and control group from baseline to postvideo. There was significant difference between the two groups on their change in prepared scores, $t(194)$ = 9.18, p < .001. Participants who watched the training video had larger increases in how prepared they felt afterward (*Mean change score* = 0.86, SD = 0.81) than participants who watched the control video (*Mean change score* = −0.01, SD = 0.50). This was a large effect (d = 1.29; Cohen, 1988).

There was a significant difference in the prepared change scores between men (N = 30) and women (N = 66) who watched the training video, $t(94)$ = 2.86, p < .01. Women felt significantly more prepared to respond to a school shooting after watching the training video (M = 1.01, SD = 0.75) than men (M = 0.53, SD = 0.83). This was a medium effect (d = 0.61; Cohen, 1988). There was not a significant dif-
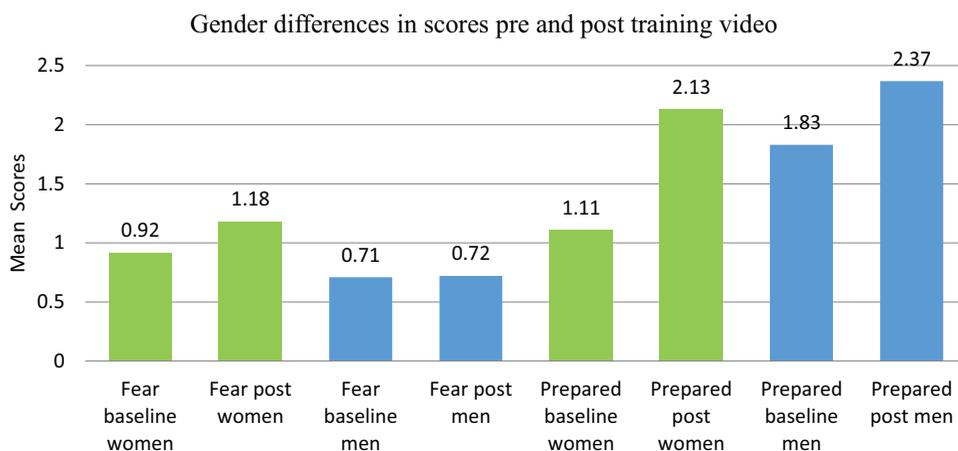
Figure 2. Gender differences in fear and prepared scores after watching the training video. See the online article for the color version of this figure.

ference in prepared change scores between men and women who watched the control video, $t(97) = -0.19$, $p = .85$; Figure 2.

Security prevention. The change in security prevention composite scores were compared between the experimental group (training video) and control group from baseline to postvideo. There was a significant difference between the two groups on their change in security prevention scores, $t(193) = 2.27$, $p < .05$. Participants who watched the training video found security prevention strategies significantly more important afterward (*Mean change score* = 0.29, $SD = 0.44$) than students who watched the control video (*Mean change score* = 0.14, $SD = 0.47$). This was a small effect ($d = 0.31$; Cohen, 1988). There were no gender differences on security prevention change scores on either the experimental, $t(93) = 0.97$, $p = .33$ or control, $t(97) = 1.37$, $p = .37$ video.

Psychosocial prevention. The changes in psychosocial prevention composite scores were compared between the experimental group (training video) and control group from baseline to postvideo. There were no significant differences between the two groups, $t(190) = -0.78$, $p = .44$. There was, however, a significant difference in the psychosocial prevention change scores between men ($N = 30$) and women ($N = 64$) who watched the training video, $t(92) = 2.94$, $p < .01$. Women were significantly more likely to endorse psychosocial prevention strategies after watching the

training video ($M = 0.26$, $SD = 0.30$) than men ($M = 0.0$, $SD = 0.45$). This was a medium effect ($d = 0.68$; Cohen, 1988). There was not a significant difference in psychosocial prevention change scores between men and women who watched the control video, $t(95) = -0.38$, $p = .70$.

Aim 3 conclusion. Overall, there were significant differences between participants who watched the training video and those who watched the control video on two of the four variables of interest. Participants who watched the training video felt significantly more prepared to respond if a school shooting were to occur on campus, and were significantly more likely to think that security prevention strategies were important. There were no differences between the experimental and control groups on feelings of fear or endorsement of psychosocial prevention strategies. Interestingly, there was a gender difference on three of the variables of interest specifically among participants who watched the training video. Compared with men, women felt more afraid after watching the training video, and were more likely to think that all prevention strategies were important.

Discussion

This study had a number of key findings. First, at baseline, women felt more afraid of school shootings and less prepared to respond to them than men. Second, as hypothesized,

watching either the experimental or control video made students feel more prepared for a school shooting, but also more afraid that one would occur. Third, as hypothesized, students who watched the training video felt significantly more prepared to respond if a school shooting were to occur on campus, and were significantly more likely to think that security prevention strategies were important. Interestingly, there was a gender difference. Watching the training video increased the level of fear women had of a school shooting occurring, but the training video did not have the same impact on men in the study. These study findings have important implications for public safety departments and school shooting prevention policy.

Limitations

Before discussing the implications of this study, it is important to acknowledge this study's limitations. First, this was an online, self-report study. It is possible that the gender difference in fear responses were due to participants' willingness to report their fear, rather than a true gender difference. And although students reported feeling more prepared after watching the training video, there was no way to know whether they actually are prepared. Future studies may want to utilize other ways to examine preparedness beyond self-report, such as measuring response times during drill scenarios.

This study was also short-term, assessing responses immediately after watching the videos. We do not know whether the videos have any long-term impact on anxiety. We also do not know how closely students watched the video, because they were unsupervised. In the future, it would be interesting to examine the impact of further training, such as lock down drills, rather than just a training video. It would also be helpful to collect qualitative, narrative responses about the students' experiences, and to vary the ordering of questioning to assess for the possibility of order effects. Finally, the participants in this study were community college students taking a psychology class on a suburban campus in the Midwest region of the United States. Community college students tend to be older than traditional college students, with a higher proportion of veterans and first-generation college students. We do not know whether

these findings generalize to more traditional college campus or to other countries, which could be examined in the future.

Study Implications

This study provides some initial evidence that students do feel significantly more prepared to respond to a school shooting after watching a training video, which is important. However, it is also critical to examine the potential costs of these training strategies. Students, specifically female students, report feeling more afraid of a shooting occurring after watching the video. School shootings are extraordinarily rare events; the chance of dying in a school shooting is hundreds of times lower than dying in other ways (such as a car accident). Training students to respond to shootings may be skewing their perception of the likelihood that one will occur.

Before the education system puts further resources into security and training, it is important to continue to study the impact this programming is having on students and the culture of schools. In his book *Why Kids Kill*, Langman (2009) stresses the importance of a positive school culture. In order to prevent violence from occurring in schools, kids need to feel safe. Active shooter training is taking place at younger and younger ages, even occurring in elementary schools. For example, a middle school principle in Alabama recently asked parents to send their students to school with cans of food that could be used as weapons in a shooting event on campus (Fox News, January 13, 2015). Our current strategies for preventing school shootings are reactive, rather than preventative, and may be having a negative impact on overall school culture.

Theory-Based Prevention Programs

As Lewin wrote in 1952, "There is nothing more practical than a good theory" (Lewin, 1952, p. 169). In terms of school shooting prevention programs, the field is largely operating a-theoretically. As a result, public safety departments are left strategizing how to minimize the loss of life when a shooting occurs, rather than prevent them from happening. Some of the traditional theories of criminal behavior can be applied to school shooters. Shootings tend to take place in suburban communities, rather than in poorer, urban areas where adolescent vio-

lence typically occurs. Strain theory (Agnew, 1992) posits that violence usually occurs in poorer environments because traditional avenues to success are less available. Levin and Madfis (2009) proposed an alternative strain theory for school shootings that encompasses chronic strain in a shooter's past coupled with acute strain occurring right before the incident. Prevention according to this theory may involve alleviating strain early on with attentive teachers, smaller class sizes, and increased funding for social workers in school (Levin & Madfis, 2009).

Social learning theory could be applied as well. Many school shooters have troubled family lives, but a background of violence in the home is not universal for all shooters (Newman et al., 2004). Social learning can also occur through the media, and case studies of many shooters demonstrate a common interest in violent video games and media (Rocque, 2012). Prevention according to this theory would have to tackle exposure to media violence. Bullying is also a known contributor to school shootings (Newman et al., 2004; Langman, 2009; Vossekuil, Fein, Reddy, Borum, & Modzeleski, 2002), mapping onto social bond theory (Hirschi, 1969). Bullying prevention programs, starting as early as possible, may prevent active shootings in schools. Additionally, there is some evidence that mental illness is prevalent among school shooters. Scholars have proposed a potential typology, which includes psychopathic shooters and psychotic shooters (Langman, 2009). According to this psychological theory, school shootings could be prevented with increased mental health resources for parents and students in schools. Violence for any individual has multiple causes, so it is unlikely that any single intervention will be sufficient for preventing school violence. Effective prevention programs will need to be multifaceted and individualized.

Moving Forward

We do not know whether our current, security-style approach to school violence is effective at preventing shootings. This study provides some initial evidence that it may be increasing fear in addition to increasing preparedness. Theory-based psychosocial prevention programs may be more promising, as they would benefit all students and help foster a positive school environment. Every dollar spent on active shooter training is a dollar not spent on school counselors and bullying prevention programs. In general, more research is needed in this area to generate sound evidence-based practices that will truly prevent violence without having a negative impact on student mental health and school culture.

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