Run, Hide, and Fight to Save Your Life

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Abstract

The purpose of this study is to investigate students' gain in self-protection efficacy after participating in face-to-face active shooter training. Research was conducted at a state level university to determine if face-to-face active shooter training for undergraduates was more effective than online training. Face-to-face training was administered to 170 undergraduates in five different classrooms over a 10-day period. Pre- and post-surveys were administered to the participants to determine differences in their understanding of active shooter protocol and confidence in their abilities to execute protocol if needed. Paired sample *t* tests revealed there were significant differences in the pre- and post-training surveys. ANOVA tests were conducted to determine how much online active shooter training enriched students' feelings of safety on campus and the degree to which face-to-face active shooter training influenced students' knowledge of protocol and feelings of being able to protect themselves in an active shooter situation.

Keywords: campus safety workshop, active shooter training, online safety training, evaluation

Introduction

As of February 14, 2020, according to the Gun Violence Archive (2020), an independent data collection and research group with no affiliation with any advocacy organization, there have been 234 incidences of gun violence in connection with university and college campuses in the United States since June 2013. Therefore, to uphold campus safety, university administration continuously invests many resources into instilling campus-wide safety measures like creating safe spaces, imparting a strong security presence, providing lighted parking areas, and sending email alerts to students to notify them of potential threats (Kyle et al., 2017; Sutton, 2016). Another of these safety measures is online training for an active shooter situation (Gunter & Gunter, 2017). However, despite great efforts by university and college administration to engage students, researchers have found that many university students have low motivation and remain apathetic toward an online platform for active shooter training (Baker & Boland, 2011; Reaves, 2015; Zugazaga et al., 2016).

This study investigates why students have low motivation and remain apathetic toward online safety through the lens of protection motivation theory (PMT; Rogers, 1975). By identifying student motivation toward the training, university and college administrators can adapt training that is more engaging. Furthermore, we seek to improve university and college safety training for an active shooter situation through the use of place-based training facilitated by law enforcement who are trained in active shooter situations. We posit that place-based safety training would engage students and make them feel a greater sense of confidence for self-protection if they had to protect themselves against the unthinkable horror of a campus shooting.

Literature Review

Universities and colleges provide a variety of campus security measures including online safety training for students (Allen, 2016; Gunter & Gunter, 2017; Reaves, 2015). However, despite the considerable need to train students, few studies have examined the effectiveness of organized training efforts (Ford & Frei, 2016). This review will focus on student apathy toward online safety training through the lens of PMT. First formulated to explain an individual's health promotion and disease prevention (Rogers, 1975), PMT has been extended to help understand students' self-protection of online threats (Boehmer et al., 2015) and students' engagement of self-protection in response to campus informational emergency Tweets (Ford & Frei, 2016). According to PMT, individuals, in this case students, will simultaneously assess a threat's magnitude and the probability that the threat will occur if no preventative action is taken (Rogers, 1975). Next, students will make the decision to protect themselves based on the belief in their own response efficacy (Rogers, 1975). Simply stated, the motivation to engage in self-protection behavior starts with a simultaneous gauge of the size of a prospective threat coupled with the probability of that threat actually occurring; then the individual makes the decision if they can fight the threat.

Student Apathy Toward Safety Training

The first component of PMT, as it relates to student apathy toward safety training, is the simultaneous assessment of both environmental and interpersonal factors related to the threat (Rogers, 1975). Past researchers document that students claim fear on campus (Schildkraut et al., 2015). However, with the diligent push for universities and colleges to adhere to best practices for safety protocols to mitigate environmental safety risks, the interpersonal threat of fear of crime may be somewhat muted among students. Therefore, under PMT when a student makes that initial assessment of threat and probability, apathy toward their own protection motivation sets in because the student sees a multitude of safety measures in place for protection including campus police. Moreover, the visible campus police presence requires no further action from the student to protect themself.

Students view campus police as being there to keep them safe (Allen, 2016), so why be extra vigilant? A majority of participants in Allen (2016) agreed that campus police should be empowered to use Stop and Question Campus Policing (police are able to randomly stop and question students) in an attempt to identify potential campus risks (Allen, 2016). Looking through the lens of PMT, it would appear the size of a threat and probability of a threat occurring are low because it may seem as if campuses are replete with police officers. Between the 2004–2005 and 2011–2012 school years, the increase in full-time campus law enforcement employees was 16%. This increase outpaced the increase in student enrollment of only 11% (Reaves, 2015). The more students feel they have to worry about safety, the less time they have for their studies, and their studies are why they are on campus (Baker & Boland, 2011).

To that end, there is much evidence for student apathy toward campus safety initiatives, including safety training (Gunter & Gunter, 2017; Zugazaga et al., 2016). In a 2016 study, Zugazaga et al. reported that students did not participate in a campus-wide personal security system pilot study, because the program was too time consuming. Furthermore, the researchers reported that students claimed the security reporting system did not make them feel any safer because there were already existing safety measures in place (Zugazaga et al., 2016). This evidence is congruent with Reaves (2015), where the author found that nearly two-thirds of the campuses surveyed had a system where students were required to opt-in for student safety alerts via email and text messaging. However, the system also allowed students to discontinue their enrollment after one year on campus (Reaves, 2015).

Online Platform for Safety Training

The second phase of PMT in the case of student apathy toward online safety training relies on the student to make the decision to evaluate whether their response efficacy will be successful (Rogers, 1975). Response efficacy is the belief that the protective response will be effective, and that subsequent action of that response will be effective for protection (Floyd et al., 2000; Rogers, 1975). To view student apathy toward safety training through the second phase of PMT, it can be imagined the student has made the decision that the magnitude and probability of a threat on campus is low; therefore, training does not benefit their response efficacy. Little research has been conducted on the delivery of campus safety and training (Ford & Frei, 2016), and campus security is expensive (Reaves, 2015). Reaves (2015) reported that nationwide, campus law enforcement reported operating expenditures at public institutions averaged $109 per student per year, while private institutions spent nearly twice as much at $181, on average, per student per year. Naturally, the lower cost of an online platform for student safety training is attractively affordable (Denis, 2010).

Cost savings for a university are beneficial, but the overall cost may be higher. Using an online platform to deliver safety training may contribute to apathetic attitudes toward training (Floyd et al., 2000). During safety training vital skills are being taught that require physical motion, which does not necessarily lend itself well to an online platform (Denis, 2010; Gunter & Gunter, 2017). Students want experiences that require engagement with small challenges that provide the opportunity to show a newly learned skill. Conversely, activities where these traits are absent motivate students toward withdrawal (DeLay & Swan, 2014). In a study conducted by DeLay and Swan (2014) on student apathy, the researchers concluded that a theme relevant to student apathy is, “student inability to learn or demonstrate learning in a way they prefer or are successful” (p. 114). Safety training online does not require a learner to demonstrate movement in a way that can be evaluated for success (Denis, 2010).

In contrast to a traditional classroom setting for training, the online environment places the entire responsibility of learning essential protocol for proper emergency response on students (Ford & Frei, 2016). In terms of PMT, the motivation to learn the protocol rests on the student’s previous assessment of the magnitude and probability of a threat, then to subsequently engage in the training. In the online environment, there is no instructor to guide students or have control over the learning environment. Students are left by the college or university to learn the vital safety protocols at their own pace (Čonková, 2013).

Additionally, even if the students are willing to engage with online safety training, they are denied opportunity to ask real-time questions (Ford & Frei, 2016) to solidify their understanding of the vital messages being conveyed. Denying engagement with small challenges can contribute to low response efficacy (Rogers, 1975) and breed low motivation (DeLay & Swan, 2014) toward online safety training. An online model for student safety training relies on a greater sense of maturity and self-discipline from students than is expected in a traditional classroom training session (Čonková, 2013).

In conclusion, universities and colleges provide a variety of security measures that also include online safety training for students (Allen, 2016; Gunter & Gunter, 2017; Reaves, 2015). Ironically, very little has been researched with regard to the effectiveness of organized safety training efforts for students (Ford & Frei, 2016). This research focuses on students’ apathy toward online safety training within the framework of PMT. According to PMT, in this case a student, will simultaneously assess the magnitude of a perceived threat and the probability that threat will happen (Rogers, 1975). Next, the student makes an assessment of their response efficacy, the ability to successfully fight the threat. Under PMT, a student makes the assessment that there is low-risk of an active threat and decides they have low response efficacy to thwart the threat via

completing an online training session (Floyd et al., 2000). PMT is comparable to other manners of motivation in that it directs an individual's activity (Floyd et al., 2000). Consideration of students' attitudes and opinions in regard to how they receive safety training is crucial, as lack of support from students, the people that such policies and training are intended to protect, might ultimately impact plan execution if their attitudes influence apathy toward the training (Kyle et al., 2017).

Research Methods and Data Analysis

It is hypothesized that face-to-face safety training for an active shooter situation vs. an online platform makes a difference in the way students perceive their safety through their knowledge of active shooter protocols, and the way they view their own abilities to carry out those protocols to defend themselves effectively against an active shooter. Research questions guiding this study are:

1. How do face-to-face campus safety training pre- and post-surveys differ?
2. Does completing online training influence students' perceptions of self-protection efficacy?
3. How much did participants' gain in understanding of active shooter protocols and feelings of self-protection efficacy depend on having completed the online training before attending the face-to-face training?

Workshop of Campus Safety Training

The research team identified five classrooms of undergraduates to conduct face-to-face safety training. One classroom of participants was within the college of business and the other four classrooms of participants were in the college of education. The training was conducted by the same police officer, who is employed with the university police department, and trained in active shooter situations on university campuses. The training took place over a 10-day period at the beginning of the fall 2019 semester at a state level university in the southeast United States.

IRB approval was needed for this study and was granted as an addendum to an earlier study conducted by the same principal investigator on student perceptions and motivations of online safety training for an active shooter situation.

Instrument Design

To test the research questions, the team developed a survey instrument to use as a pre- and post-instrument to determine differences before and after face-to-face active shooter training. A review of the literature revealed self-protection efficacy to be a driving construct for protection motivation (Floyd et al., 2000; Rogers, 1975). Self-response efficacy is defined as the belief that the protective response that was learned will be effective protection once put into use (Floyd et al., 2000; Rogers, 1975).

In addition, research conducted by Yang and Wyckoff (2010) on item order with relation to perceptions of safety was used as a guide to create and order the survey items. The researchers found that specifying questions with sufficient reference led to being able to more closely examine how the level of specific and succinct questions lead to different responses. To ensure bias did not enter item design, items were peer reviewed and feedback was given to ensure wording was not biased toward reporting low engagement with the online platform for active shooter training.

Next, the peer review team agreed on the final 17 items. Those final items were grouped together by construct, placing items focused on knowledge of campus protocol for an active shooter, motivation to engage in the online training, and self-protection efficacy. We predicted that the participant who had already engaged in the online training for an active shooter would recall

knowledge of protocol, be motivated to respond as knowledgeable of the procedures learned through the online platform, feel positively about their own ability for self-protection in an active shooter situation, and help the research team answer the research questions. It was determined that items would be rated on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) to provide greater variation within the item responses.

Sampling

Overall, the research team conducted face-to-face active shooter training for 170 undergraduates over a 10-day period. Upon entering their classrooms, students were given a consent form and asked if any student had been in a school-shooting situation. If the students had been in a school-shooting situation, they were given the option not to participate in the study. Interestingly enough, there was a student in each classroom, except for the students from the college of business, who had been in a school-shooting situation. Once all the students completed the pre-survey, the police officer started the face-to-face training.

After the officer was finished with the formal training, he answered individual student questions. After all questions were answered, the students were given the post face-to-face training survey. The pre- and post-surveys were identical. All surveys were collected by the principal investigator and placed in a confidential envelope for input into SPSS v. 25.

The variables were coded and assigned values within SPSS. Missing data were given a designation of 99. After all data were entered into SPSS, cleaned, and coded, the research team first conducted a reliability test to determine a reliability coefficient. Cronbach's Alpha coefficient on the 17 pre-survey items is .751. Cronbach's Alpha coefficient on the 17 post-survey items is .773. Both coefficients fall in the acceptable range for reliability, $.07 \leq .08$.

The data set included 170 participants of which 98 had already completed the online active shooter training and 50 had not completed the online active shooter training; 22 responses for this item were missing. The other between-subject variables in the study included college affiliation, with 18 participants from the college of business and 151 participants from the college of education. The Gender distribution consisted of 41 male, 127 female, 2 other, and 1 missing.

Basic Information in the Item Responses

To determine central tendency, tests were conducted for mean and standard deviation; the results are reported in Table 1 for the face-to-face training pre-survey and Table 2 displays the face-to-face training post-survey results. Overall, the two lowest means for the entire dataset were for the item that asked pre- and post-survey if the participant had ever "been a victim of a violent crime on campus." Responses were respectively 1.41 ($SD = 0.939$, $n = 167$), and 1.62 ($SD = 1.259$, $n = 167$). The highest overall mean was the training post-survey item, "I understand the protocol for an active shooter," 5.89 ($SD = 1.084$, $n = 168$). The corresponding pre-survey face-to-face training mean for this same item was 4.18, ($SD = 1.731$, $n = 169$).

Data Analysis Approaches

To answer the first research question, "How do face-to-face training pre- and post-surveys differ?" the team conducted two paired-sample *t* tests. The first paired-sample *t* test helped determine if there was an overall difference between the pre- and post-surveys for the entire sample. The second paired-sample *t* test helped determine if there were differences in the pre- and post-surveys for only the participants in the sample who had already completed the online safety training for an active shooter.

Table 1. *Descriptive Statistics for Face-to-Face Training Pre-Survey*

	M	*SD*	*N*
Paid close attention to online	4.81	1.692	162
Online training does not do enough	4.20	1.550	166
I feel safer on campus because of the online training	4.00	1.410	165
Attitude of response	4.90	1.398	167
Protect myself from shooter	4.37	1.606	169
I understand the protocol for active shooter	4.18	1.731	169
Nobody takes the online training as serious	3.61	1.589	168
In case of an emergency it is up to me	5.25	1.455	166
I have been a victim of a violent crime on campus	1.41	.939	167
Hide	4.52	1.456	168
Run	4.56	1.471	169
Fight	4.26	1.560	168
It won't happen here	4.16	1.541	168
Online is effective delivery	4.18	1.545	168
My friends know how to respond	4.23	1.362	168
I have confidence in UPD to protect me	5.38	1.391	167
I feel safer up until this point with the training I have received	4.71	1.437	167

Table 2. *Descriptive Statistics for Face-to-Face Training Post-Survey*

	M	*SD*	*N*
POST Paid close attention to online	5.14	1.554	165
POST Online training does not do enough	3.76	1.675	168
POST I feel safer on campus because of the online training	4.85	1.492	165
POST Attitude of response	5.75	1.139	169
POST Protect myself from shooter	5.58	1.239	170
POST I understand the protocol for active shooter	5.89	1.84	168
POST Nobody takes the online training as serious	3.40	1.590	167
POST In case of an emergency it is up to me	5.88	1.045	168
POST I have been a victim of a violent crime on campus	1.62	1.259	167
POST Hide	5.72	1.058	169
POST Run	5.84	.996	169
POST Fight	5.66	1.246	167
POST It won't happen here	3.91	1.488	167
POST Online is effective delivery	4.63	1.700	169
POST My friends know how to respond	4.98	1.315	168
POST I have confidence in UPD to protect me	5.78	1.172	169
POST I feel safer up until this point with the training I have	5.86	1.126	168

To answer the second research question, "Does completing online training influence students' perceptions of self-protection efficacy?" the team conducted a one-way ANOVA to compare the means of the two groups of participants: those who had completed the online training and those who had not completed the online training, to determine how they vary on a single within-subject variable (Cronk, 2018). In this question, the within-subjects' factor for the pre-survey was, "I feel safer because of the online training," and the between-subjects factor was "Have/have not

completed online training." The research team hypothesized that students who had completed the online safety training would not feel differently from the students who had not previously completed the online safety training about their ability for self-protection.

The third research question, "How much did participants' gain in understanding of active shooter protocols and feelings of self-protection efficacy depend on having completed the online training before attending the face-to-face training?" was answered using a mixed two-factor between-subjects design under the general linear model.

The underlying statistical model for a two-factor within-subjects design represents a linear combination of grand mean (μ_T), fixed effect of the i^{th} level for factor A (α_i), fixed effect of the j^{th} level for factor B (β_j), and π_k reflects the average "performance" of each subject, and an error term (ε_{ijk}),

$$Y = \mu_T + \alpha_i + \beta_j + \pi_k + (\alpha\beta)_{ij} + (\alpha\pi)_{ik} + (\beta\pi)_{jk} + (\alpha\beta\pi)_{ijk} + \varepsilon_{ijk}. \quad (1)$$

This test examines the effects of more than one within-subjects variable against the effects of the between-subjects variable.

Data Analysis and Results

Research Question 1

Paired Samples Test I

To answer the first research question, "How do face-to-face training pre- and post-surveys differ?" the research team conducted a paired samples *t* test. The variables of interest in the *t* test are the variables that asked about participants before and after face-to-face training of their understanding of active shooter protocol and their feelings of self-protection efficacy if ever to execute learned protocols. This research question was guided by the following null hypothesis:

$H_0 = \mu_1 = \mu_2$
The face-to-face pre-survey items will be equal to the face-to-face post-survey items.

The results of the Paired Samples Test I are displayed in Table 3. Results are significant for all the paired items. This indicates the researchers reject the null hypothesis to conclude the differences between the face-to-face pre-survey items are statistically different from the face-to-face post-survey items and these differences are not due to chance.

Table 3. *Paired Samples Test I*

			95% CI				
	Paired Comparisons	*SD*	*LL*	*UL*	*t*	*df*	*p**
Pair 1	I understand the protocol for active shooter - Post - I understand the protocol for active shooter	1.701	-1.996	-1.477	-13.191	166	.000
Pair 2	Protect Myself from Shooter - Post - Protect Myself from Shooter	1.528	-1.445	-.981	-10.319	168	.000
Pair 3	Attitude of response - Post - Attitude of response	1.487	-1.065	-.610	-7.258	165	.000
Pair 4	Hide - Post - Hide	1.657	-1.463	-.956	-9.435	166	.000
Pair 5	Run - Post - Run	1.648	-1.555	-1.053	-10.253	167	.000
Pair 6	Fight - Post - Fight	1.736	-1.685	-1.151	-10.495	164	.000

*2-tailed

Paired Samples Test II

The participants in Paired Samples Test II are those students who had already completed online safety training for an active shooter situation as required by the university. Again, the research team tested the variables that asked about participants before and after face-to-face training and their understanding of active shooter protocol and their feelings of self-protection efficacy as related to executing those learned protocols. The null hypothesis guiding this test was:

> H_o: $\mu_1 = \mu_2$
>
> The face-to-face pre-survey items will be equal to the face-to-face post-survey items for those participants who had already completed online training.

Results of the Paired Samples Test II are shown in Table 4. Results indicate a statistically significant difference between the pre- and post-survey items of the participants who had already completed online active shooter training; all paired samples are significant at $p = .000$. Overall, this indicates to the researchers that even among those with prior education about an active shooter, the face-to-face training influenced those participants' knowledge of protocol and sense of self-protection efficacy.

Therefore, in answer to Research Question 1, "How do face-to-face training pre- and post-surveys differ?" the *t* tests indicate that pre- and post-survey items for face-to-face training differ significantly. Therefore, it can be inferred that face-to-face training influenced the participants' knowledge of protocol and feelings of self-protection abilities, even among the participants who had already completed online training.

Table 4. *Paired Samples Test II*

Paired differences		*M*	*SD*	95% CI *LL*	95% CI *UL*	*t*	*df*	*p**
Pair 1	I understand the protocol for active shooter - Post - I understand the protocol for active shooter	-1.381	1.496	-1.683	-1.080	-9.094	96	.000
Pair 2	Protect Myself from Shooter - Post - Protect Myself from Shooter	-.959	1.331	-1.226	-.692	-7.134	97	.000
Pair 3	Attitude of response - Post - Attitude of response	-.653	1.429	-.940	-.366	-4.523	97	.000
Pair 4	Hide - Post - Hide	-.959	1.581	-1.277	-.640	-5.974	96	.000
Pair 5	Run - Post - Run	-1.113	1.560	-1.428	-.799	-7.027	96	.000
Pair 6	Fight - Post - Fight	-1.085	1.721	-1.438	-.733	-6.114	93	.000

a=.01; *2-tailed

Research Question 2

To answer Research Question 2, "Does completing online training influence students' perceptions of self-protection efficacy?" the research team conducted a one-way ANOVA to determine if the participants who had already completed the online training felt significantly safer on campus than the students who had not previously completed the online training. The within-subjects variable

for the pre-survey was "I feel safer because of the online training," and the between-subjects factor was "Have/have not completed online training." The null hypotheses for this experiment were:

$H_0 = \mu_1 = \mu_2 = \ldots = \mu_k$
H_1 = At least two means differ

Results for the one-way ANOVA are presented in Table 5.

Table 5. *ANOVA: Pre-Survey, I feel safer on campus because of the online training*

	SS	*df*	*MS*	*F*	*p*
Between-Groups	.453	1	.453	.245	.621
Within-Groups	262.207	142	1.847		
Total	262.660	143			

DV: *Have/have not completed online training*

Results of the one-way ANOVA to test the within-subjects variable "I feel safer because of the online training" to determine if participants who completed the online training felt safer on campus than those who did not complete the online training prior to attending the face-to-face training indicated no significant difference ($F[1,142] = .245$, $p > .05$). Therefore, it can be inferred that on average, the two groups of students did not feel differently about their own safety on campus, whether or not they had completed the online active shooter training. In conclusion, on average, completing online training for an active shooter situation does not influence students' perceptions of self-protection efficacy.

Research Question 3 via Mixed Two-Factor Between-Subjects Design

To answer Research Question 3, "How much did participants' gain in understanding of active shooter protocols and feelings of self-protection efficacy depend on having completed the online training before attending the face-to-face training?" the team chose to use a mixed within-subjects design under the general linear model. This research question is asking about the main effects and the interaction effects of the between-subjects variable, "Have/have not completed online training."

First, to be able to determine learning gains for participants, the research team created "gain scores" variables. To create the gain scores variables, the research team took the item scores on the post-survey for the face-to-face training and subtracted the pre-survey for the face-to-face training item scores: post-score – pre-score = gain score. Gain scores were created for the same six variables that were included in the previous *t* tests to determine the increase or decrease in learning after the participants attended face-to-face training. Variables are presented in Table 6.

Table 6. *Gain Scores Variables*

Post-survey variable	− Pre-survey variable	= Gain score variable
POST Hide	− Hide	= Gain score Hide
POST Run	− Run	= Gain score Run
POST Fight	− Fight	= Gain score Fight
POST Protect myself from shooter	− Protect myself from shooter	= Gain score Protect myself from shooter
POST Attitude for response	− Attitude for response	= Gain score Attitude for response
POST I understand protocol	− I understand protocol	= Gain score I understand protocol

To determine if the gain scores indicate similar growth across the between-subjects variables, the research team employed a mixed between-subjects design. In this test, the within-subjects variable is gain scores and the between subjects variable is "Have/have not completed online training."

There are six related measures in the gain scores and two levels in the between-subjects variable to create the design A × (B × S) and the model design is shown in Table 7 where S = participants, A = between-subjects variable and B = the within-subjects variable (Keppel, 1991). This model indicates that each subject participated in every level of the within-subjects variable but differ on whether or not the participant had completed online safety training prior to attending the face-to-face training.

Table 7. *Factorial Design Mixed Two Factor Within Subjects*

	Factor $A_{1havecomponline}$						Factor $A_{2havenotcomponline}$					
$B_{1gainhide}$	S_1	S_2	S_3	…	…	S_{94}	S_{95}	S_{96}	S_{97}	…	…	S_{139}
$B_{2gainrun}$	S_1	S_2	S_3	…	…	S_{94}	S_{95}	S_{96}	S_{97}	…	…	S_{139}
$B_{3gainfight}$	S_1	S_2	S_3	…	…	S_{94}	S_{95}	S_{96}	S_{97}	…	…	S_{139}
$B_{4gainprotect}$	S_1	S_2	S_3	…	…	S_{94}	S_{95}	S_{96}	S_{97}	…	…	S_{139}
$B_{5gainattitude}$	S_1	S_2	S_3	…	…	S_{94}	S_{95}	S_{96}	S_{97}	…	…	S_{139}
$B_{6gainprotocol}$	S_1	S_2	S_3	…	…	S_{94}	S_{95}	S_{96}	S_{97}	…	…	S_{139}

The null hypothesis for this experiment is as follows:

H_0: = There is no difference between the levels of Factor B.

The research team checked for normality assumptions related to the design. Muchly's test of sphericity produced 260 (p = .000) to indicate the researchers reject the null hypothesis to determine that sphericity is violated, therefore, when examining results, the values to determine significance will be under the Huynh-Feldt test; this test is a correction for violations of sphericity (Coolidge, 2013). Table 8 displays the results of the within-subjects test.

Table 8. *Within-Subjects Test for Gain Scores*

Source		Type III *SS*	*df*	*MS*	*F*	*p*	Partial η^2
Gain scores	Huynh-Feldt	54.594	3.433	15.903	6.403	.000	.045
Gain scores *	Huynh-Feldt	4.638	3.433	1.351	.544	.676	.004

Computed using alpha =.05

DV: Have/have not completed online training

First the researchers examined main effect of the gain scores to determine if there is a difference between the scores. Again, the H_0: = There is no difference between the levels of Factor B. This test was significant (F[5,139] = 6.403, p = .000) so the researchers reject the null hypothesis and determine there is a statistically significant difference between the six gain scores.

Next the researchers examined the interaction of the factors. The H_0: = Interaction effect of A×B are equal. Again, Table 8 displays the results of the test. The interaction effect of gain scores and "Have/have not completed online training" was not significant (F[5,139] = .544, p = .676). Therefore, the researchers can determine that there is not a statistically significant difference between the on average gain scores between the participants who had already completed online training for an active shooter situation. From this result it can be determined that on average, after face-to-face training, both sets of students experienced similar learning gains in protocol and feelings of self-protection efficacy.

To answer Research Question 3, "How much did participants' gain in understanding of active shooter protocols and feelings of self-protection efficacy depend on having completed the online training before attending the face-to-face training?" it can be inferred that on average, participants gained a significant understanding of active shooter protocols and feelings of self-protection efficacy after the face-to-face training, with no significant contribution effects if the participant had previously completed online active shooter training. Both groups had significant gain scores across the measures, regardless of prior online training.

Conclusion/Discussion

The research problem that students do not feel online safety training for an active shooter situation is enough to teach them how to stay safe if the situation occurs is a problem because many university and college campuses only require students to participate in the online training. With an online platform, students are not able to participate actively in discussions on why certain protocols are in place. For example, silencing cell phones, or understanding why first responder SWAT teams are not on the scene to give aid to the wounded but are there to locate the shooter.

With a greater understanding of reasons behind the protocols, students are able to process the learning. By participating in place-based training inside classrooms that show students where to hide, how to get out of the building to run, how to fight if necessary, with the added explanation of reasoning behind certain protocols, students feel safer. Furthermore, students have increased knowledge of active shooter protocol and increased feelings of confidence in being able to execute escape actions that may save their lives.

The research team was not surprised to discover that the face-to-face pre- and post-surveys were statistically different to indicate an increase in students understanding of protocol and confidence in their ability to execute those protocols. During training the police officer indicated to students where the best hiding spot was in the particular classroom, where the fire exits were located in that particular building, and how to lock the classroom doors. The officer also showed students examples of objects that were already inside the classroom to use as a weapon to fight, if necessary. The officer also explained in depth what the emergency alarm sounded like, and how all computer screens on campus will post notice of a shooter. Additionally, the officer explained to students the duties of each wave of response teams. He explained that the first response team is SWAT and their mission is to locate the assailant, and that it is imperative to students' safety to continue to hide and remain silent during that time. The next wave of responders' mission is to evacuate remaining students and attend to any wounded.

The second research question was to establish that there was no difference between the students who had previously completed the online training and the students who had not previously completed the online training. The findings to this research question are congruent with findings to a prior study conducted by the principal investigator that students readily admit they do not pay attention to the online training for an active shooter situation. This study concluded that completing the online training for an active shooter situation did not make students feel safer on campus than students who had not completed the required online training. However, most universities require students to complete online safety training for an active shooter. The

university in which this study was conducted requires students to complete the online safety training before a certain date, or the students are locked out of their ability to view final grades or register for subsequent semesters.

Finally, the research team wanted to make sure that significant learning gains were made by both groups of students: those who had already completed online training, and those who had not already completed online training. The findings to this last question indicate that overall, both sets of students made learning gains in protocol and in their own feelings of being able to execute that protocol if needed. The face-to-face training created a space where students were able to ask questions with regard to protocol. In addition, they were shown where to hide in their classrooms, and what kind of spots to look for in other classrooms. Students were able to move their bodies to understand how to effectively hide and how to use everyday objects as weapons, if needed.

The research team feels further research lies in the learning gains from a combination of online and face-to-face trainings for an active shooter situation. Overall, gain scores were higher for the participants who had not previously completed online active shooter training. However, the participants who had completed online training follow similar increases and decreases across the measures. It was interesting that the gain score for "Attitude" for both sets of participants had the lowest overall gain. Looking back at the pre- and post-survey means for "Attitude for response" indicates the mean was among the higher means for both sets of students. It could be inferred that there was a smaller learning gain because the mean was already high, or it could indicate that the training needs to be more closely examined in that area to increase attitude toward responding to an active shooter.

Lastly, in order to gain further understanding of how to protect students the authors suggest contacting area law enforcement and/or the campus police department. We are not law enforcement personnel and cannot give advice on how to conduct effective training. We provided research data that place-based safety training for an active shooter situation on university and college campuses significantly increases students' feelings of self-protection efficacy for an active shooter situation—even if those students had previously completed the online training as required by the school.

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Appendix (Survey is available on request)