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VIOLENCE IN AMERICAN SCHOOLS: THE IMPACT OF THE NEWTOWN SCHOOL SHOOTING ON SCHOOL PRACTICES AND PROGRAMS, SCHOOL SECURITY STAFF, STAFF TRAINING, AND SECURITY BUDGETS

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Abstract

The purpose of this study was to examine changes implemented by public school district personnel in response to the Newtown school shooting that occurred on December 14, 2012. The researcher used the U.S. Department of Education's National Center for Educational Statistics (NCES) School Survey on Crime and Safety (SSOCS) to gather quantitative data from district and school leaders at the elementary, middle, and high school levels in rural, urban, and suburban school districts in Connecticut. The survey was used to research school practices and programs, school security staff, and staff training implemented prior to and after December 14, 2012. In addition, the researcher examined the impact on school and district budgets before and after December 14, 2012.

This study represented the first time that the SSOCS was specifically used to gather data from school leaders as they assessed their practices before and after a major elementary school shooting. The research study sample included 36 districts and 117 schools. The researcher conducted paired samples *t*-tests, McNemar tests, and multiple linear regression analyses to measure the impact of the incident. The predictor variables included school grade level, school type (rural, urban, suburban), student enrollment, diversity percentage, and free or reduced lunch percentage.

Quantitative results indicated that districts made significant increases in the number of school practices and programs, school security staff, and staff trainings as a result of the Newtown school shooting. The vast majority of districts (92%) increased their security budgets as a direct result of the Newtown school shooting. In fact, 56% of the districts increased their budget by more than $100,000. The incident was a catalyst to educational leaders at all levels to evaluate their security measures and ensure student and staff safety.

The researcher concluded that district and school leaders must assess the needs of their individual schools and design a security plan for the district and a specific safety plan for each school. This plan must include the appropriate balance of school practices and programs, school security staff, staff training, and budgetary support to maximize staff and student safety.

APPROVAL PAGE

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CHAPTER ONE: INTRODUCTION TO THE STUDY

American schools are not impregnable fortresses in spite of increasingly cutting- edge security measures and extensive staff training to protect students. Data on school violence in the United States are alarming. Specifically, between 1994 and 1999, 172 students were victims of school-associated homicides in the United States. In these incidents, 69% of the victims died as a result of being shot with a firearm and 18% were stabbing victims. More recently, between 1999 and 2006, 116 students were killed in a school setting and 65% of these deaths were a result of school shootings (Jennings, Khey, Maskaly, & Donner, 2011).

In 1999, the school shooting in Columbine, CO shocked the nation and the world. During this incident, two high school students armed with guns and bombs killed 12 students, one teacher, and injured other students. Previously, there had been an assumption that students and staff were relatively immune from the outside violence that plagued other aspects of United States society. This highly publicized incident prompted politicians, law enforcement officials, and educational leaders to reflect on and evaluate the safety of American schools. Since Columbine, the use of school security to prevent school violence has expanded into suburban and rural schools and has evolved to incorporate cutting-edge technologies (Addington, 2009).

In December 2012, a former student of the Sandy Hook Elementary School in Newtown, CT entered the school and killed 20 students and six staff members. Similar to the Columbine incident, this Newtown school shooting refocused the nation on the issue of school security. The Newtown incident, however, caused national, state, and local agencies to reevaluate the landscape of school security and safety because this brutal attack was executed in an elementary school. In fact, this was the largest scale elementary school shooting on record in the United

States. This incident has broadened the scope of school security and prompted school officials to cast a laser-like focus on security in all district schools.

The aim of this study was to evaluate the impact of the Newtown school shooting on school practices and programs, school security staff, staff training, and security budgets in Connecticut schools. Using the School Survey on Crime and Safety (SSOCS), (U.S. Department of Education, 2010B), the researcher gathered data directly from Connecticut principals on changes in school security measures that were implemented as a result of the shooting. The School Survey on Crime and Safety is included in Appendix A.

Analyzing the data, the researcher calculated the change factor based on a single survey about school practices and programs, school security staff, and staff training before and after December 14, 2012, the date of the incident, to determine whether educational leaders made significant changes in these areas. To gather data on district security budgets, the researcher surveyed superintendents on the extent to which they made changes in their security budget as a result of the Newtown school shooting. The researcher conducted analysis of descriptive statistics of this budget survey data. The procedures used to analyze the data included multiple linear regression procedures, paired samples *t*-tests, and McNemar x^2 tests.

Statement of the Problem

Although there is research on the topic of school security, research focusing on school practices and programs, school security staff, staff training, and budgets pertaining to this issue is relatively limited. Recent advanced searches in Academic Search Premier, ERIC, and Education Research Complete yielded the following data: school security and school practices and programs-65 results; school security and school security staff-65 results; school security and staff training-68 results; and school security and budget-178 results. Currently, much of the

educational research on school safety is focused on improvement of school climate and bullying prevention programs. An advanced search on these two constructs yielded 1,029 results which by far exceeds the number of results achieved in the searches of the four topics included in this research study. Therefore the researcher also reviewed literature on bullying and school climate as part of the research study.

Most school districts invest in security measures, yet budgets are currently limited due to the lingering economic recession, shrinking resources, and significantly increased costs for federally mandated special education services. Hull (2011) emphasized that all educational settings are vulnerable to threats that can disrupt school operations and cascade into a full-blown crisis, but not all schools are uniformly equipped to respond to these emergencies. Connecticut superintendents and boards of education are currently faced with the challenge to determine what is effective, yet financially reasonable and practical, regarding school security expenditures. Currently, in the aftermath of the Newtown incident, superintendents, district business directors, and principals are working in partnership with town officials, police departments, and community stakeholders to determine their security needs and the budgetary expenditures that are appropriate for their own school communities.

It is important to emphasize that each district and school must design its security program according to the needs identified through a research-based security assessment. There is no specific template to prepare all schools for all threatening events. In spite of this reality, educational and community leaders share the mutual goal to ensure that every student will feel safe and secure and will achieve social emotional well-being in school. Only after feeling this level of security, can students meet 21st century learning expectations.

Rationale for Selecting the Topic

The purpose of this study was to assess how the Newtown school shooting impacted school security in Connecticut schools. This incident created a unique circumstance for the researcher to study the regional effects of an elementary school shooting on school practices and programs, school security staff, staff training, and budgets in Connecticut schools with relative proximity to Newtown. This study was unique as evidenced by the researcher's search for other studies on the broader impact of an elementary school shooting on entire school districts which yielded no results.

The SSOCS has been used by the National Center for Educational Statistics since the 1999-2000 school year to gather data regarding school safety on a national scale. This study represents the first time that this instrument is specifically used to gather data from school leaders as they assess their practices before and after a major school shooting. It was intended that the SSOCS feedback would provide an opportunity to assess data on the direct changes that were implemented as a result of the Newtown school shooting. The researcher would analyze the SSOCS data to assess whether or not the incident led to significant changes in school security.

Significance and Benefits of the Research

This research was beneficial in determining the extent to which districts increased school security practices and programs and security personnel in schools. In addition, the study provided useful information about revised and enhanced school personnel training and staff development designed to thwart another attack or minimize the human and collateral damage of an attack that the perpetrator is able to initiate. The study also evaluated the extent to which districts reallocated funds to address security concerns.

The data collected indicated whether there were significant changes in school security staff in elementary, middle, and high schools in rural, urban and suburban school districts. Limited research has been conducted on the efficacy of School Resource Officers in schools and even less empirical analysis has examined non-sworn security guards in schools (Maskaly, Donner, Lanterman, & Jennings, 2011). In a climate in which some politicians and the National Rifle Association are advocating for armed security personnel in every American school, this research provided hard data on increased school security staff and school resource officers in K-12 Connecticut schools.

Definition of Key Terms

The following terms and definitions apply to this study:

1. ***Bullying*** is defined as (a) the repeated use by one or more students of a written, oral or electronic communication, such as cyberbullying, directed at or referring to another student attending school in the same school district, or (b) a physical act or gesture by one or more students repeatedly directed at another student attending school in the same school district, that: (i) Causes physical or emotional harm to such student or damage to such student's property, (ii) places such student in reasonable fear of harm to himself or herself, or of damage to his or her property, (iii) creates a hostile environment at school for such student, (iv) infringes on the rights of such student at school, or (v) substantially disrupts the education process or the orderly operation of a school." Retrieved from www.sde.ct.gov/sde.
2. ***Cyberbullying*** is defined as any act of bullying through the use of the Internet, interactive and digital technologies, cellular mobile telephone or other mobile

electronic devices or any electronic communications. Retrieved from www.sde.ct.gov/sde.

3. ***School resource officers (SROs)*** are specially trained, active duty law enforcement officers who are assigned by their employing police agencies to work in schools. In addition to providing law enforcement and police services, SROs provide law related counseling and education for students and faculty/staff in schools (DeAngelis, Brent, & Ianni, 2011, p. 325).

4. ***School security and monitoring services*** are activities to keep student and staff surroundings safe, whether in transit to or from school, on a campus or participating at school-sponsored events at another location (DeAngelis, Brent, & Ianni, 2011, p. 318).

5. ***School security measures*** are additive indexes that represent mechanisms schools can use to prevent or deter violence on school grounds (Jennings, Khey, Maskaly, & Donner, 2011, p. 116).

6. **S*taff training and development*** is training that goes beyond individual teacher improvement to benefit the entire school as a professional community. Professional development instills not only a common base of knowledge but also shared values and an atmosphere of collaboration that leads to school improvement (Grodsky & Gamoran, 2003).

Chapter Summary

Since the Newtown school shooting, the issue of school security has been cast into the national limelight. Educators and politicians have mobilized to address the issue of school safety at all levels. Clearly, the primary charge of educators is to ensure the safety and health of the

students entrusted to their care. In order for students to be optimally prepared to learn, they must feel secure and focused on the learning process and on achieving important local, state, and federal learning expectations.

This study on school violence was of paramount importance because it provided hard data gathered directly from educational leaders charged with ensuring student and staff safety. Among the most important measures these leaders implement are school practices and programs, school security staff, staff training, and adequate budgets to meet security needs. This charge is quite challenging for leaders to clearly prioritize security needs when they are forced to meet other requirements including Common Core State Standards (National Governors Association Center for Best Practices & Council of Chief State School Officers. (2010), state and national testing requirements, teacher and administrator evaluation programs, and federally mandated special education services. In spite of the challenges, superintendents and principals must prioritize student safety in an effort to prevent future incidents of school violence.

CHAPTER TWO: REVIEW OF THE LITERATURE

This literature review examined research on school violence, crime, safety, and security in the United States. In an effort to provide a broad, yet thorough understanding of school crime, safety, violence, and security and provide a context for detailed responses to the research questions, the researcher reviewed literature related to each topic and construct in a comprehensive and in-depth manner. This approach was designed to ensure that educators, and readers who are engaged outside the craft of education, can understand how each topic and construct contributes to safer schools in which our students can excel in the academic, social, and emotional realms. The researcher included a table of the literature searches in Appendix B.

The topics included in this literature review are the School Survey on Crime and Safety (SSOCS), 2009-2010 (U.S Department of Education, Institute of Education Sciences, National Center for Educational Statistics), Indicators of School Crime and Safety 2012 (Robers, Kemp, & Truman, 2013), Indicators of School Crime and Safety: 2012 (NCES 2013-036/. NCJ 241446), Theoretical Constructs for Maslow's Hierarchy of Needs (Maslow, 1943) and Bandura's Social Learning Theory (Bandura, 1971**).** Also included were three subsections of the SSOCS: School Practices and Programs, School Security Staff, and Staff Training. The researcher also focused on security budgets, threat assessment, and bullying and school climate in the literature review.

It was critical for the purposes of this study to include the most recent data on school crime and safety and school violence in the United States. These data were gleaned from two government reports that served as the ideal sources to accomplish this objective. The School Survey on Crime and Safety (U.S. Department of Education, Institute of Education Sciences, National Center for Educational Statistics) is the main source of government data on school

violence in the U.S. The Indicators of School Crime and Safety 2012, (NCES 2013-036/. NCJ 241446) report is the fifteenth in a series of reports produced since 1998 by the National Center for Educational Statistics (NCES) and the Bureau of Justice Statistics (BJS) that presents the most recent data available on school crime and safety.

The researcher conducted an in-depth review of the literature on the three main topics that were included in the version of the SSOCS administered for the purposes of this study: School Practices and Programs, School Security Staff, and Staff Training. The original School Survey on Crime and Safety included five other topics: Parent and Community Involvement, Limitations on Crime Prevention, Frequency of Crime and Violence at School, Number of Incidents, and Disciplinary Problems and Actions , but the researcher felt that School Practices and Programs, School Security Staff, and Staff Training were central to the purposes of this study, which was to evaluate the impact of the specific school shooting incident that occurred in Newtown, Connecticut on December 14, 2012. In addition, research was conducted on school security budgets since this was also a central topic of focus for this study. These topics can be broadly characterized as school violence prevention efforts. In order to protect their students and staff, educational leaders must implement an appropriate mix of these four measures depending on the characteristics, culture, and needs of their unique school system.

Threat assessment is a research-based school practice that helps identify individuals who could pose a threat to school communities, including school shooters (O'Toole, 1999). Researchers including O'Toole, (1999) and Vossekuil, Reddy, and Fein (2000) concluded that there is no accurate or useful profile of the school shooter. Therefore, the threat assessment, which helps identify specific behaviors of individuals who could pose a threat to the school community is a valuable violence prevention method. Furthermore, the Interdisciplinary Group

on Preventing School and Community Violence issued the Connecticut School Shooting Position Statement (2012). In this position statement written in response to the shootings at Sandy Hook Elementary School, the researchers emphasized that prevention efforts must include adequate mental health supports and threat assessment teams in every school and community. Consequently, threat assessment became a major area of focus and training for many Connecticut school districts in the aftermath of the Newtown school shooting.

There is also research that links bullying to many previous school shootings (Vossekuil, Reddy, & Fein, 2000). Educational leaders strive to educate their students about the negative influence that bullying behaviors can have on a school's climate. The State of Connecticut requires all school districts to plan professional development so that staff members are trained to recognize and address bullying and follow specific protocols for reporting it to administrators and to the state.

The researcher conducted this review of the literature using the EBSCO combined databases. Specifically, the researcher searched Academic Search Premier, Education Research Complete, and ERIC. First, the researcher searched the term School Violence (13,641 results) to gain a broad sense of the amount of literature available on this important topic that was directly related to the Newtown School shooting. The researcher searched School Survey on Crime and Safety (331 results) since this was the instrument used in the study. Next, the researcher narrowed the search to the three subscales included in the SSOCS instrument used for the purpose of this study and that also were the specific focus of the research questions examined in this study. The researcher added the terms "School Security" to School Practices and Programs and Staff Training to narrow the search to articles and research focused specifically on the topic of the research study. This process yielded the following results: School Practices and Programs

School Security (73 results), School Security Staff (64 results), and School Security Staff Training (5 results).

School security budgets are critical to ensuring that adequate security measures are in place in schools. This was a focus topic in the study and the researcher created a security budget addendum for the superintendents to complete. In order to find research and information regarding this topic, the researcher searched School Security Budgets (29 results).

Knowing that deploying school resource officers in schools to deter crime and violence is one of the primary school security staffing strategies that educational leaders implement, the researcher also searched the term School Resource Officer (433 results). Subsequent searches on the topics of threat assessment and bullying yielded the following search results: Threat Assessment and School Security (4 results), Bullying and School Violence USA (511 results).

The School Survey on Crime and Safety was the main instrument used in the study so the researcher narrowed the literature search by seeking studies and research that used this instrument. In an effort to expand this literature review beyond research found in the EBSCO Combined Databases and review previous research studies and dissertations that used the SSOCS as a data source or instrument, the researcher searched Proquest with the search term SSOCS. This search yielded 93 results.

Ultimately, the researcher narrowed the search by analyzing the results of the most recent administration of the School Survey on Crime and Safety that was conducted during the 2009-2010 school year and reviewing five dissertations in which the SSOCS was used as an instrument. The researcher also focused on Indicators of School Crime and Safety 2012 (Robers, Kemp, & Truman, J., 2013) which is the fifteenth in a series of reports produced since 1998 by

the National Center for Educational Statistics (NCES) and the Bureau of Justice Statistics (BJS) that present the most recent data available on school crime and student safety.

School Survey on Crime and Safety 2009-2010

The School Survey on Crime and Safety (SSOCS) has been used by the National Center for Educational Statistics (NCES) since the 1999-2000 school year to gather data regarding school safety on a national scale (U.S. Department of Education, 2010B). The survey has been administered in alternate years to track longitudinal data on school violence. The SSOCS is used to ask public school principals to report on the frequency of incidents of school violence including physical attacks, weapons use, and robberies in their schools, thus presenting an internal view of school safety. The most recent administration of the survey was conducted during the 2009-2010 school year. The NCES published a report entitled *Crime, Violence, Discipline, and Safety in U.S. Public Schools, Findings from the School Survey on Crime and Safety (SSOCS): 2009-2010.*

In the 2009-2010 study, the data gathered from the SSOCS was based on a nationally representative stratified random sample of 3,476 U.S. public schools. A total of 2,648 elementary, middle, and high schools returned usable questionnaires yielding a 77% unweighted response rate. There were 640 elementary, 895 middle, 915 high schools in the study. In addition, there were 100 combined schools in the study which were a combination of grade levels. The research team tested for statistical significance using student's *t* statistic at the .05 significance level in the study. (U.S. Department of Education, 2010B)

In an effort to present a data-based perspective for the reader in this review of the literature, the researcher presented the following selected findings from the 2009-2010 SSOCS study: The rate of violent incidents per 1,000 students per year was higher in middle schools (40

incidents) than in elementary schools (21 incidents) or high schools (21 incidents). Some 46% of all schools reported at least one student threat of physical attack without a weapon, compared to 8% of schools reporting such a threat with a weapon (U.S. Department of Education, 2010B).

In the critical area of staff training and preparedness, a higher percentage of suburban schools drilled students on a written plan describing procedures to be performed during a shooting (58%) than did urban schools or rural schools (49% and 48%, respectively). School security budgets are a specific area of focus for this study so it was relevant that among the factors that were reported to limit schools' efforts to reduce or prevent crime "in a major way," the most likely reason was inadequate funds (25%).

The data gathered from the SSOCS 2009-2010 on communication with the community in the event of an emergency suggests improvement from the report released two years earlier. In the 2007-2008 school year, a lower percentage of public schools reported the use of an electronic notification system for a school wide emergency (43%) and a structured anonymous threat reporting system (31%) than in the 2009-2010 school year (63% and 36%, respectively) (U.S. Department of Education, 2010B).

The 2009-2010 SSOCS study also reported important data on school security measures with a trend toward increased measures to protect student and staff safety. Between the 1999-2000 and 2009-2010 school years, there was an increase in the percentage of public schools reporting the use of the following safety and security measures; controlled access to the school building during school hours (from 75% to 92%); controlled access to the school grounds during school hours (from 34% to 46%); the use of one or more security cameras to monitor the school (from 19% to 61%); and the provision of telephones in most classrooms (from 45% to 74%) (U.S. Department of Education, 2010B).

The researcher conducted a review of previous dissertations that used the SSOCS as an instrument in the study. Some used the results of the SSOCS as a primary, some as a secondary data source. However, no previous researchers used the SSOCS in the manner it was used in the current study. In this study, the researcher modified the instrument to measure administrators' perceptions of the impact of a major elementary school shooting on school security in their schools and districts. These data were collected at a single point in time after the school shooting and the researcher directed the administrators to provide data from prior to the event and after the event.

Olmstead (2005) used the SSOCS: 2000 as a data source in an ex post facto study on the effectiveness of zero tolerance policies and violence prevention programs on school safety. Using a multiple linear regression, Olmstead (2005) sought to find the strongest model of the 14 violence prevention programs in the survey based on the number of violent incidents reported by principals in the survey. Further, Olmstead (2005) used the SSOCS data to research demographic trends for schools that used zero tolerance policies, violence prevention programs, or a combination of both. Finally, Olmstead (2005) researched whether there were significant differences in the number of violence prevention programs offered, based on demographics and whether there were demographic trends in whether or not schools strictly enforced their zero tolerance policies.

Olmstead (2005) found that all of the independent variables in the study including enrollment, serious discipline problems, and crime level of the area were significantly related to the number of violent incidents, except for zero tolerance policies and the percentage of students receiving free lunch. Violence prevention and percent minority were very low relationships. Enrollment, the number of serious discipline problems, the number of students transferring to

school, the number of school-wide disruptions, and crime level of the area were all moderately related to the number of violent incidents. The R-square for the model was .39 meaning that the combination of variables accounted for 39% of the variance in the number of incidents.

In the study, Olmstead (2005) further noted that violence prevention programs, while significant, had a near zero relationship with violent incidents. The strongest relationships were found with the percent of students receiving free lunch, percent minority, and crime level of the area. Most importantly, Olmstead (2005) found that zero tolerance and most violence prevention programs were not statistically effective at preventing school violence.

In addition, Olmstead (2005) researched whether any of the particular violence prevention programs in the instrument were effective predictors of school violence. The research suggested that only two violence prevention programs accounted for significant amounts of variance in the number of incidents; student hotline or tip line to report problems and reorganizing of school, grades, or schedules. Both of these violence prevention programs were significantly positively correlated with the number of violent incidents, which means that schools that have these programs are more likely to have higher numbers of incidents, though the relationships are low.

Continuing the research, Olmstead (2005) analyzed the demographic trends for schools that use zero tolerance policies, violence prevention programs, neither, or a combination of both. Olmstead (2005) selected the demographic variables school level, school size, percentage of students receiving free lunch, percentage of minority students, and percentage of male students to describe the school enforcing or not enforcing zero tolerance. Using a Chi-square test, Olmstead found that elementary schools had a higher percentage of schools using zero tolerance only than violence prevention only. The number of high schools in the study using zero

tolerance was relatively equal to the number of high schools using violence prevention programs. The percentage of middle schools using violence prevention only was much higher than the percentage using zero tolerance only. There was a very weak relationship between the type of security measures and enrollment or students receiving free lunch. Regarding the percentage of minorities, the major trend that Olmstead (2005) found in the study was that as schools decreased in their percentage of minority students, they increased in the amount using violence prevention only. Conversely, as schools increased in the percentage of minority students, the amount using a combination of violence prevention and zero tolerance increases. Finally, Olmstead's (2005) research revealed that as the percentage of minority students decreased, the number of schools using no security measures increased.

Olmstead (2005) researched whether there were significant differences in the number of violence prevention programs offered, based on demographics. Using a regression model with the dependent variable, number of violence prevention programs total in use at the school, and a series of demographic independent variables including percentage of students receiving free lunch, urbanicity, and crime level in the area, Olmstead (2005) found that only total school enrollment accounted for a significant amount of variance in the number of violence prevention approaches offered $F(4, 47) = 12.34$, $p < .001$, R^2 square = .09.

Finally, Olmstead (2005) researched the demographic trends of schools that enforced their zero tolerance policies. The findings of a Chi-square test were that high schools have a much greater percentage of schools not enforcing zero tolerance than middle and elementary schools.

Bauer (2006) used data from the SSOCS: 2006 to examine the relationship between school and neighborhood structural characteristics and crime and disorder at school, as well as

disciplinary actions that schools implemented given the nature of these characteristics. Using the SSOCS data, Bauer (2006) considered the variables school size, crime level where the school is located, school instructional level, school locale, and the percentages of students eligible for free and reduced lunch, minority students, and male students. In addition, Bauer (2006) used the SSOCS to examine eight dependent variables on violence: violent incidents, theft incidents, disorder incidents, disciplinary actions, disciplinary problems, gang and cult activities, gang related incidents, and hate related incidents. Specifically, the study sought to determine how school size and other exogenous school- and neighborhood-level variables related to crime and disorder at school. For all of these variables, Bauer (2006) detailed the SSOCS question, response options, the variable metric, and the descriptive statistics.

In this research study, Bauer (2006) used linear regression to perform the analyses. The results of the study indicated that school size was negatively associated with the rate of violent incidents. In fact, for every 100 additional students, the rate of violent incidents per 100 students decreased by .1 incidents (coefficient = -.001) holding all other variables in the model constant. As school enrollment increased, the rate of violent incidents decreased. The variable crime level where the school was located was positively associated with the rate of these incidents. As the crime level in the area where the school was located increased from low to moderate to high, the rate of incidents increased by .942 per 100 students.

The study also revealed that specific elements of social capital in schools are consistently related to the occurrence of criminal and non-criminal incidents, as well as to disciplinary actions. Bauer (2006) provides examples noting that the index indicators of absence of guardianship was positively associated with violent incidents, theft incidents, gang related incidents, hate-related incidents, and disorder at school. This means that as the absence of

guardianship increases, violent, theft, gang-related and hate-related incidents increase. Student commitment was negatively associated with violent incidents, disorder, disciplinary actions and gang and cult activities. Parent involvement at school was negatively associated with violent incidents and theft incidents.

Worthington (2014) used the SSOCS: 2006 to conduct a study investigating parental involvement as it relates to decreasing school violence at the middle school level. The instrument was used to conduct a causal-comparative study that compared differences in violent incidents in middle schools that provided specific types of parental involvement and schools that did not provide such parental involvement. Worthington (2014) sought to determine why some middle schools experienced a high prevalence of school violence while others showed a low prevalence of school violence activity.

The theoretical framework of Dr. Joyce Epstein's parental involvement typologies was used in Worthington's (2014) study. Four research questions related to parental involvement and student aggression were formulated based on four typologies of parental involvement selected by the researcher. These typologies served as the independent variables in the study: (a) parenting, (b) communicating, (c) volunteering, and (d) decision making. The dependent variable was student aggression.

As part of the study, Worthington (2014) extracted a stratified sample of 948 middle schools from the SSOCS: 2006. The second independent variable, communicating, was analyzed using a chi-square assessment by comparing observed responses with expected responses regarding student aggression. The first, third, and fourth independent variables, parenting, volunteering, and decision-making were assessed using Analysis of Variance

(ANOVA) by comparing each to the dependent variables of student aggression. The $p \leq .05$ level of significance (alpha level) was used in this study.

In this study, Worthington (2014) noted that 62.4% of the schools surveyed reported that more than half of their parents participated in parent-teacher conferences, whereas 37.6% said that less than half of their parents participated in parent-teacher conferences. Using the chi-square analysis, Worthington (2014) calculated that schools with the 0%-50% parental participation rate had an observed frequency of 10 and an expected frequency of 18 in the "no violent incidents" category. Schools with 51%-100% parental participation rate had an observed frequency of 38 and an expected frequency of 30. The Pearson chi-square value was 6.027, with the result of a p value of 0.014 at the $p < .05$ level and one degree of freedom. Based on these results, Worthington (2014) determined that the parenting typology of communicating had a significant impact on the decrease of school violence at the middle school level. Middle schools that offered regularly scheduled parent-teacher conferences and had parents who participated in such a parenting program had fewer incidents of student aggression. The parenting typologies of parenting, volunteering, and decision-making were not statistically significant and were deemed ineffective at decreasing the incidents of school violence at the middle school level.

Lynch (2013) used the SSOCS in a correlational study on crisis preparedness from a principal's perspective. Using the SSOCS: 2006 (ex post facto), Lynch (2013) identified school violence as the criterion variable and used principal feedback from the SSOCS data on four criterion variables: written crisis plan, staff training in intervention, classroom management, and parent involvement to determine their relationship with school violence. The study included a sample of 2,274 public school principals. Lynch (2013) used descriptive and inferential

statistics, a Kendall's tau correlation, and logistic regression in the research study. In the study, Lynch (2013) used the two-tailed test with an alpha level of .05.

The results of the study indicated that a statistically significant relationship existed between having a written crisis plan for hostages and incidence of school violence at the $p < .05$ level. There were no other statistically significant associations between the predictor variables, classroom management, training in interventions, or parent involvement and the criterion variable, school violence.

Noonan (2011) used the SSOCS: 2008 to study administrative methods for reducing crime in U.S. primary and secondary schools. The purpose of the study was to determine which administrative policies have statistically significant relationships with crime in schools. The SSOCS has 91 independent variables that were considered for factor loadings in the study to predict the effect of administrator policy on school crime.

Noonan (2011) identified five social policy factors through an exploratory factor analysis of the SSOCS. These five factors that Noonan (2011) identified were security, policy hindrance, crisis planning, drug controls, and student behavior controls. These independent variable factors were used in a linear regression to examine the relationship between school administrative policies and school violent crime to test the null hypotheses for each factor. In this study, the log of violent crime was used and the interpretation of statistically significant beta coefficients corresponded to a percentage change in the dependent variable for each unit increase in the independent factor.

Noonan (2011) found that the seven variable regression explained approximately 23 percent of the variance in school crime ($R^2 = .233$). In addition, the goodness of fit statistic showed that the regression had a high level of validity and reliability (F (7, 2242) = 97.741, $p <$

.001). Specifically, the findings of Noonan's (2011) study were that security, policy hindrances, and student behavior controls all yielded statistically significant relationships to schools with higher levels of crime, as did increases in the control variables, urbanicity, and school size. Crisis planning and drug controls were not found to be statistically significant with the level of crime in schools.

In summary, the researcher noted that many previous researchers used the SSOCS as an instrument in their study, but no researcher previously modified the instrument to measure the impact of a major elementary school shooting on these three specific SSOCS subscales, School Practices and Programs, School Security Staff, and Staff Training.

Indicators of School Crime and Safety 2012

Indicators of School Crime and Safety 2012 (Robers, Kemp, & Truman, 2013), is the fifteenth in a series of reports produced since 1998 by the National Center for Educational Statistics (NCES) and the Bureau of Justice Statistics (BJS) that presents the most recent data available on school crime and student safety. The report is organized into sections that delineate specific concerns related to school violence including violent deaths; nonfatal student and teacher victimization; school environment; fights, weapons and illegal substances; fear and avoidance; and discipline, safety, and security measures. Each section contains indicators, data, and tables that describe a distinct aspect of school crime and safety (Robers, Kemp, & Truman, 2013).

Indicators of School Crime and Safety 2012 (Robers, Kemp, & Truman, 2013), presents a data based perspective on school crime and safety. These data are useful for policy makers and educators as they make decisions regarding areas of concentration in school crime and safety. The data are drawn from a variety of independent sources including national surveys of students,

teachers, principals, and universe data from the Bureau of Justice Statistics (BJS), National Center for Educational Statistics (NCES), Federal Bureau of Investigation (FBI), and the Centers for Disease Control and Prevention (CDC). This combination of multiple, independent sources of data, provides a broad perspective on school crime and safety. The comparisons cited in the report are, with a few exceptions, statistically significant at the $p < .05$ level. The primary test procedure used in the report was Student's *t* statistic, which tests the difference between two sample estimates (Robers et al., 2013).

Violent Deaths at School

Data on school associated violent deaths were collected using the School-Associated Violent Deaths Study (Anderson et al., 1994-1999). This report is prepared by the Centers for Disease Control and Prevention in collaboration with the Departments of Education and Justice to monitor violent deaths at the national level. These data were collected from police, school officials, and media databases.

From July 1, 2010 through June 30, 2011, there were 31 school associated violent deaths at U.S. elementary and secondary schools. In the report, a school associated violent death is defined as "a homicide, suicide, or legal intervention (involving a law enforcement officer), in which the fatal injury occurred on the campus of a functioning elementary or secondary school in the United States" (Indicators of School Crime and Safety, 2012, p. 6). These deaths included those that occurred while the victim was on the way to or returning from school or was attending or traveling to or from an official school sponsored event. Of these 31 schools associated violent deaths, there were 25 homicides and 6 suicides. From a historical perspective over all the available survey years since 1998, the percentage of youth homicides occurring at school

remained at less than 2% of the total number of youth homicides in all settings, at and away from school (Robers et al., 2013).

Incidence of Victimization at School and Away from School

This indicator compares data on victimization at school with the data away from school. These data were collected using the National Crime Victimization Survey (United States Department of Justice, 2011), which is an annual data collection on crime. Although schools are generally considered among the safest locations for students, data from the 2011 National Crime Victimization Survey suggested that more victimizations were committed against students aged 12-18 at school than away from school, which has been a consistent pattern since 2001. In 2011, students aged 12-18 experienced 1,246,000 nonfatal victimizations (theft and violent crime) at school compared to 965,200 nonfatal victimizations away from school. These figures represent total crime victimization rates of 49 crimes per 1,000 students at school and 38 victimizations per 1,000 students away from school (United States Department of Justice, 2011).

Rates of serious violent victimization (rape, sexual assault, robbery and aggravated assault) against students aged 12-18 at school were generally lower than those occurring away from school in the survey years between 1992 and 2008. There were no significant differences in these rates between 2009 and 2011. Students residing in urban areas had higher rates of violent victimizations at school than those residing in suburban areas. Violent victimization rates were 32 per 1,000 students in urban areas compared to 20 per 1,000 in suburban areas (United States Department of Justice, 2011).

In summary, these studies were conducted by national organizations and present the most recent data available on school crime and student safety in the US, including homicides committed at school. They provide a research-based context for the current study.

Threats and Injuries with Weapons on School Property

School officials seek to ensure that the school environment is void of weapons in efforts to maintain safe school environments in which students can reach their true academic potential. In spite of these efforts, every year some students are injured or threatened with a weapon while they are at school. The percentage of students threatened or injured with a weapon provides data on how safe our schools truly are.

The Centers for Disease Control and Prevention administers the Youth Risk Behavior Survey each year as part of the Youth Risk Behavior Surveillance System (YRBSS). The CDC uses this system to monitor six types of health-risk behaviors that contribute to the leading causes of death and disability among youth and adults, including behaviors that contribute to unintentional injuries and violence. In the survey, students in grades 9-12 were asked whether and how often they were threatened or injured with a weapon on school property. Over time, these data have remained relatively consistent. In 2011, seven percent of students reported that they were threatened or injured with a weapon such as a gun, knife, or club on school property. This rate was similar to the rates in 2009 (8%) and 1993 (7%) (Robers et al., 2013).

Theoretical Constructs—Abraham Maslow's Hierarchy of Needs and Albert Bandura's Social Learning Theory

Maslow's Hierarchy of Needs

Abraham Maslow, an American psychologist, was one of the founders of Humanistic Psychology. As a humanistic psychologist, Maslow believed that every person has a strong desire to realize his or her full potential, to reach a level of "self-actualization." He proposed an important psychological theory in his 1943 paper entitled *A Theory of Human Motivation*. In 1954, he fully explained the theory in his book, *Motivation and Personality*. This theory,

commonly referred to as Maslow's Hierarchy of Needs, will serve as the theoretical basis for this research study.

Maslow's Hierarchy of Needs had an immense influence on the field of psychology, including the subfields of personality, social psychology, psychopathology, and developmental psychology. According to Maslow, human needs form a hierarchy in which the earlier needs, when not satisfied, supersede the later needs in the hierarchy. In essence, Maslow questioned previous attempts to simply list needs or drives of the human organism and proposed the hierarchy. Maslow's clarifying analogy of this belief was that these needs are not sticks lying side by side but rather a nest of boxes that contained other boxes.

Having grappled with the level of specificity upon which he would base his own theory, Maslow ultimately described five categories of human needs: physiological, safety, belongingness and love, esteem, and self-actualization. Maslow explained that once the physiological needs are met, the higher needs emerge and these, rather than physiological hungers, dominate the organism. Maslow hypothesized that psychological health is possible only when these needs are satisfied. The more these essential needs are not met, the more psychologically disturbed the individual will be (Lester, Hvezda, Sullivan, & Plouride, 1983).

Maslow's theory is highly relevant to the safety needs of the school community and the impact that school violence can have on its members, especially its students. Students must feel safe and secure in school to perform optimally and reach their maximum academic, social, and emotional potential. Maslow specifically described the safety needs of the hierarchy, clarifying:

> If the physiological needs are relatively well gratified, there then emerges a new set of needs, which we may categorize roughly as the safety needs (security, stability,

> dependency, protection, freedom from fear, freedom from anxiety and chaos, need for structure, order, law, limits, strength in the protector, and so on. (Maslow, 1954, p. 39)

In this quote, Maslow describes some of the safety needs that educational leaders must ensure to establish a school climate in which students feel comfortable to learn and grow.

As contemporary educational leaders, we recognize through research on Maslow's theory and experience that students require security, protection, and freedom from fear to have the required comfort level in the educational environment. Maslow was prescient when he wrote in 1954 that one of the main functions of education for our students was to neutralize apparent dangers through knowledge and learning.

School security measures and staff development in emergency operation procedures are specifically designed to ensure student safety, thus meeting the safety need on the hierarchy. Once the safety need is met, students can begin to attain the next levels; love and belonging to the school community, esteem that facilitates learning, and self-actualization in the learning process.

Maslow presented the contrasting view of what students may experience in an unsafe school when he wrote:

> When students experience acts of violence and crime in school, learning is more difficult, if not impossible for some. The average child, and less obviously, the average adult in our society, generally prefers a safe, orderly, predictable, lawful, organized world which he can count on and in which unexpected, unmanageable, chaotic, or other dangerous things do not happen, and in which, in any case, he has powerful parents or protectors who shield him from harm. (Maslow, 1954, p. 41)

This viewpoint profoundly describes the threatening, dangerous events that educational leaders seek to prevent through well-developed school security plans.

Recently, other researchers and behavioral scientists have proposed a revised, more contemporary version of Maslow's Hierarchy of Needs. Kenrick, Griskevicius, Neuberg and Schaller (2010) referred to their retooled theory in an article entitled *Renovating the Pyramid of Needs: Contemporary Extensions Built Upon Ancient Foundations.* These researchers proposed that Maslow's hierarchy can take on new significance when combined with later theoretical developments. Essentially, their revision retains many critical facets of Maslow's theory, including the hierarchical structure of the original model. They retained some of the original needs including physiological, safety (self-protection), and esteem (status), but they proposed removing self-actualization as a discrete level at the pinnacle of the hierarchy. Kenrick et al. (2010) concluded that, although self-actualization is of psychological importance, it is not likely to be a functionally distinct human need.

Kenrick et al. (2010) submitted that one of the issues with Maslow's theory was that cognitive and developmental priority were blurred together on the presumption that the two types of priorities move in synchrony with one another. They agreed that hunger and thirst were physiological needs that arise early in development, but that other physiologically driven needs, including the hormonally driven desire for sexual satisfaction, do not become active until adolescence. Their critique of Maslow, and other psychologists studying human nature and development at the time, was that they did not give strong consideration to functional adaptation in humans, including survival and reproductive goals. In contrast, Kenrick et al. (2010) suggested that sexual motivation should be considered discretely from the other basic

physiological needs and moved to its own level on the hierarchy. Based on their research, they added three levels to the hierarchy: mate acquisition, mate retention, and parenting.

In this literature review on school violence and safety, it is important to emphasize that new research and the proposed revision to Maslow's hierarchy retains safety and self-protection as a distinct level on the hierarchy. In fact, current research supports the idea that human beings have unique motivational systems for dealing with threats.

These systems include rapid learning of associations for stimuli that would likely have threatened our ancestors, as well as attention systems attuned to angry expressions, particularly on the face of unfamiliar males who would have posed an especially great threat (Ackerman et al., 2006; Becker, Kenrick, Neuberg, Blackwell, & Smith, 2007; Oehman & Mineka, 2001).

Bandura's Social Learning Theory

Albert Bandura refuted the theoretical perspective that behavior is impelled by inner forces in the form of needs, drives, and impulses that operate below the level of consciousness. He criticized the simplified and broad psychodynamic theory that inner determinants drove behaviors. Bandura (1971) emphasized that "the inner determinants were typically inferred from the behavior that they supposedly caused, resulting in pseudo explanations" (p. 1). Bandura also criticized these theories on the basis that they ignored the true complexity of human responsiveness. He felt that diverse social influences produce correspondingly diverse behaviors and that the inner cause implicated in the relationship cannot be less complex than its effects. Finally, Bandura (1971) clearly stated that these previous psychodynamic theories provided intriguing interpretations of events that had already happened, but they lacked the power to predict future human behavior in varied situations.

In writing his social learning theory, Bandura (1971) emphasized that theories must demonstrate predictive power and identify causal factors, as shown by the fact that varying the postulated determinants produces related changes in behavior. Bandura wrote that developments in learning theory shifted the focus of causal analysis from hypothesized inner determinants to detailed examination of external influences on responsiveness. When considering that which motivates individuals to perpetrate acts of school violence, Bandura's view that man is a thinking organism that possesses tremendous capability for the power of self-direction is relevant.

Bandura's social theory of aggression, later termed social cognitive theory, serves as a theoretical underpinning for analyses of what factors contribute to a school shooter's propensity to carry out an act of violence. Contrary to what may constitute popular belief and perception, research on school shooters suggests that these are not impulsive actions and that school shooters' actions are premeditated.

Based on their analysis of 37 school shooting cases, Vossekuil, Reddy, & Fein (2001) published a report entitled *An Interim Report on the Prevention of Targeted Violence in School in 2000.* One of their major findings was that school shootings are rarely impulsive, rather they generally result from an often discernible thought process. In most of these 37 incidents they studied, the attacker developed the idea and plan in advance, at least two weeks in advance in over 50% of the incidents.

School Practices and Programs

School practices and programs refer to security measures that schools implement to address and prevent school violence. School practices and programs in security include requiring visitors to check in, controlled access to buildings, security cameras, visitor management systems, and electronic notification systems that automatically alert parents and the

community in case of a school-wide emergency. Educational leaders must evaluate the specific needs of their schools, including the physical plants, to devise an effective security plan for most plausible emergency situations, while being realistic that all events are not foreseeable.

Since the Newtown school shooting, many Connecticut school districts have launched an evaluation of their efforts to ensure student and staff security through target hardening. Target hardening, also referred to simply as hardening when made clear by the context, is a term used by police officers, those working in security, and the military referring to the strengthening of the security of a building or installation in order to protect it in the event of attack or reduce the risk of theft. Target hardening is based on the premise that a strong, visible defense will deter or delay an attack. Examples of target hardening that fall under the topic of school practices and programs include visitor management systems, controlled access systems, security cameras, metal detectors, and installation of ballistic glass.

Nickerson and Spears (2007) conducted a study to research the use of two different philosophical approaches to violence prevention using data from the School Survey on Crime and Safety (SSOCS). The first approach was characterized as authoritarian (i.e., restrict student autonomy through punitive discipline and assuming a policing function). The second approach was educational/therapeutic and was characterized by involving students, parents, and teachers in improving behavior and school climate. Nickerson and Spears (2007) designed the study to document the extent to which schools use selected practices that can be conceptualized as authoritarian or educational therapeutic and assess the extent to which school size, SES, neighborhood crime, location, grade level, and number of full time equivalent (FTE) mental professionals predicted schools' implementation of selected authoritarian and educational/therapeutic practices.

Conducting an analysis of the data gleaned from 2,270 school principals' responses on the 2002-2003 administration of the SSOCS, Nickerson and Spears (2007) cited the following data: In the 2002-2003 school year, there were 15 homicides and 8 suicides at school, and victimization rates occurred at a rate of 45 thefts and 28 violent crimes per 1,000 students (DeVoe et al., 2005). Also, 12% of high school males and 6% of high school females reported being threatened or injured with a weapon on school property. In the 1999-2000 school year, 71% of public school principals reported experiencing one or more violent incidents in their schools including rape, sexual battery, physical assault and fights, threats of physical attack, and battery.

In this study, Nickerson and Spears (2007) preserved the anonymity of the schools by converting data to categorical variables. The variables of interest in this study were neighborhood crime (high, moderate, low, mixed), location (city, urban fringe, town, rural) and school level (elementary, middle secondary, combined). To conduct the data analysis for this study Nickerson and Spears (2007) selected a reference group for each variable and dummy coded them. They selected specific violence prevention and intervention factors from the following sections of the survey: characteristics of school policies, violence prevention programs and practices, and actions taken for disciplinary reasons.

Nickerson and Spears (2007) selected five experts in school crisis prevention and intervention who classified 41 school policies and violence prevention programs and practices and 17 actions taken for disciplinary reason as either authoritarian, neutral, or therapeutic. The practices that were rated by all five experts as authoritarian or educational/therapeutic were included in the study for subsequent analysis.

The results of the study indicated that the use of authoritarian practices varied. Nearly half of the schools regularly used law enforcement or security services. Punitive discipline strategies such as keeping students off the bus for misbehavior, detention, Saturday school, and loss of student privileges were used by over 80% of the schools. Only 14% of schools used corporal punishment and 62% of schools used out-of-school suspension. With regard to educational/therapeutic practices, approximately 74% of schools had a formal program to prevent or reduce violence such as prevention training in social skills, student counseling, behavior modification, and mentoring/tutoring. Sixty-eight percent of schools provided training and technical assistance to teachers on classroom management.

The researchers used logistic regression analyses to examine the variables that predicted schools' use of selected violence prevention and intervention practices. Regression analyses were used because the criterion variable was categorical (use of practice or no use of practice). All of the predictor variables were also categorical, except for number of FTE of mental health professionals. In order to balance the likelihood of Type I errors, Nickerson and Spears (2007) set the alpha level at 0.01.

The results of the regression analyses indicated that all models for authoritarian approaches were significant indicating that the school characteristics predicted the use of security measures during school hours. Each logistic regression model for educational/therapeutic approaches was also significant, indicating that the school characteristics predicted the use of violence prevention programs. The number of FTE of mental health professionals significantly predicted the use of all the selected educational/therapeutic practices.

Limitations to the Nickerson and Spears (2007) study included the categorical responses to the survey questions. Although the SSOCS included a representative national sample and

adhered to best practices in survey development, the SSOCS used largely categorical (yes and no) items and principals tended to endorse the use of many of the listed strategies. Further measures would need to assess the extent to which principals rely on various strategies to prevent violence and the frequency with which they are used. Another limitation is that the study was based solely on the responses of the school administrators, which could be different from reports from other respondents such as students, teachers, and parents.

The Columbine, Colorado school shooting occurred on April 20, 1999. This incident was, at the time, the most highly publicized and visible school shooting in history because of the pervasive and graphic nature of the media coverage (Mifflin, 1999). In fact, the national television networks devoted more air time to Columbine than to any other previous school shooting (Mifflin, 1999). Sixty-eight percent of Americans reported that they followed the coverage of Columbine "very closely" (Pew Research Center, 2007). This prolific incident of school violence caused students, parents, and educators to question the adequacy of current school safety measures. In addition, they looked toward school leaders and policy makers to examine school security measures and make recommendations to improve them.

Addington (2009) conducted a study to review the policy response to the widely publicized Columbine incident and the security measures that districts implemented in its aftermath. In the study, Addington (2009) examined three main topics: the fear that prompted changes in school security, the types of visible security measures implemented by schools, and the positive and negative consequences of these measures.

In the study, Addington (2009) described the historic development of school security measures. In the 1970s, the purpose of school security was to deter property crimes and problems related to graffiti and vandalism. In the 1980s, educational leaders shifted their school

security measures to address school violence, primarily in "problematic" urban schools in larger cities (Addington, 2009). Finally, Addington (2009) emphasized that since Columbine in 1999, the use of school security to prevent violence expanded into suburban and rural schools and changed to incorporate more cutting-edge technologies.

Regarding the instrument used in the study, Addington (2009) examined data from the administration of the U.S. Department of Education's School Survey on Crime and Safety (SSOCS). In summary, Addington (2009) found that the primary security changes after Columbine were the use of security guards and security cameras. Other changes focused on limiting access to schools by policies including locking doors, requiring visitors to check in, and using identification badges. Addington (2009) cited the following data from the SSOCS (2007): Eighty-five percent of principals reported locking and monitoring doors during the school day, 48% required identification badges for staff, 45% of the principals reported using school security officers, and 43% reported using security cameras.

In an effort to clarify why security officers and cameras were such a popular response to Columbine, Addington (2009) emphasized the fear that Americans expressed for their children's safety and the pressure on school administrators to increase security measures. School resource officers serve as a visual of security measures that can assuage parental fear for their children's safety. One year after Columbine, President Clinton pledged $60 million to hire School Resource Officers (SRO). The U.S. Department of Justice has awarded $747.5 million to fund and train SROs (COPS, 2004). In 2008, the U.S. Department of Justice budgeted $13 million in grants to assist law enforcement with security measures including metal detectors and security training for staff (COPS, 2008).

There is little empirical data on the effectiveness of school security officers and cameras, according to Addington (2009). Most information on the effectiveness of school security is based on student, staff, and administrator perception rather than being based on experimental designs or other comparable forms of evaluative research. It is important to recognize this lack of evaluative evidence because the perception that these measures are effective can produce a false sense of security. In conclusion, Addington (2009) emphasized that, in order to implement effective policy, officials need to truly know which options work. Addington's (2009) review of policies and literature on school security emphasizes the need for more empirical and evaluative studies on school security measures to determine their effectiveness.

School Security Staff

School security staff includes security guards, school resource officers, other sworn law enforcement officers, campus supervisors, and hall monitors. School administrators must devise a comprehensive plan that includes some mix of the aforementioned personnel that will meet the safety needs of the school community. Once the established security personnel are in place, the challenge for school administrators is to deploy them strategically and proactively to focus on prevention, as opposed to reaction, and seek to minimize potential threats to the school community.

A large body of the literature on school security staff was written about school resource officers (SROs). SROs are "specially trained, active duty law enforcement officers who are assigned by their employing police agencies to work in schools. In addition to providing law enforcement and police services, SROs provide law-related counseling and education for students and faculty/staff in schools" (DeAngelis, Brent, & Ianni, 2011, p. 325). School resource

officers are expected to serve as a deterrent to crime and violence as well as to contribute to safe and secure learning environments.

Jennings, Khey, Maskaly, and Donner (2011) conducted a study on the association between law enforcement and school security measures and the incidence of violence and serious violence in a large, nationally representative sample of high schools using a multivariate framework. The researchers used data from the 2006 administration of the School Survey on Crime and Safety (SSOCS) by the National Center for Educational Statistics (NCES) which solicited feedback from school administrators on the contextual conditions, the safety measures used, and the number of crimes occurring at their school. In 2006, 77% of the schools returned usable surveys. This study focused exclusively on the 954 high schools in the original sample (Jennings, Khey, Maskaly, & Donner, 2011).

In this study, the dependent variables were violence and serious violence. The independent variables in the study were law enforcement security measures, school security measures, coordinate efforts with outside agencies, school demographic characteristics, and additional school characteristics likely associated with violence in schools. The researchers employed a negative binomial regression model. The first negative binomial regression model estimated the effect of law enforcement and school security measures on the incidence of school violence. The second negative binomial regression model estimated the effect of law enforcement and school security measures on the incidence of serious school violence. Both models were estimated after adjustment for the appropriate weights in Stata 11.0 in order to compensate for any potential nonresponse bias and make the sample more representative of schools nationwide.

The results of the study by Jennings et al. (2011) demonstrated that the number of school resource officers and security guards were both positively associated with school violence, although only the number of security guards was statistically significant ($b = 0.050$, $SE = 0.013$, $p < .001$). The researchers clarify that this makes sense because the schools that truly needed security personnel were implementing them. School violence was significantly lower in schools where the security officers, SROs, and security guards wore uniforms ($b = -0.292$, $SE = 0.112$, $p < .01$) whereas school violence was significantly higher in schools where the security officers carried firearms ($b = 0.456$, $SE = 0.108$, $p < .001$).

In addition, school violence was significantly higher in schools where there was a greater frequency of bullying ($b = 0.131$, $SE = 0.036$, $p < .001$) and racial tensions ($b = 0.076$, $SE = 0.041$, $p < .10$). One of the most important findings was that the number of SROs was negatively and significantly associated with serious school violence ($b = 0.139$, $SE = 0.071$, $p < .001$). The researchers acknowledged that the results of the study were mixed but emphasized that the presence of SROs may serve as a deterrent to serious school violence and that there is inherent value in having SROs on high school campuses (Jennings et al., 2011).

Maskaly, Donner, Lanterman and Jennings (2011) conducted a study on the association between school resource officers, private security guards, use of force capabilities, and violent crimes in schools. Using data from the 2006 administration of the School Survey on Crime and Safety (SSOCS) by the National Center for Educational Statistics (NCES), the study was used to investigate the relationships among school characteristics and school crime with a particular focus on their differential effects across schools that use varying types of security personnel (no security personnel, SROs only, or private security guards only). Maskaly et al. (2011) noted that

there has been limited empirical research conducted on SROs, and there is even less empirical analysis of the effect of non-sworn security guards in schools.

In the Maskaly et al. (2011) study, the sample consisted of 1,853 elementary, middle, and high schools as well as combined schools. The dependent variable used in the analysis was the number of serious violent incidents (assaults, aggravated assaults with a weapon, robberies strong armed and armed, rapes, sexual batteries, threats of assault, and fights between students) reported by the school administrators. The independent variables related to school security personnel and the data counts were dichotomized to represent the three types of security personnel (schools with no SRO or security guard, schools with SROs only, and schools with private security guards only). The researchers used negative binomial regression models as their analytic method.

The results of the Maskaly et al. (2011) study indicated that in schools where no security personnel were present, school crime was positively associated with school size: large ($b = 1.07$, $SE = 0.19$, $p < .001$), medium ($b = 0.76$, $SE = 0.16$, $p < .001$), and small ($b = 0.83$, $SE = 0.18$, $p < .001$). School crime was also higher in middle schools relative to elementary schools ($b = 0.51$, $SE = 0.14$, $p < .001$), school crime was higher in schools where there was greater frequency of bullying ($b = 0.35$, $SE = 0.17$, $p < .001$) and school safety-based security measures employed ($b = 0.07$, $SE = 0.13$, $p < .05$).

In schools where only school resource officers were used, middle schools ($b = 0.83$, $SE = 0.14$, $p < .001$), high schools ($b = 0.37$, $SE = 0.17$, $p < .05$), and combined schools ($b = 0.85$, $SE = 0.32$, $p < .01$) with SROs had more crime relative to elementary schools with SROs. Also, SRO-only schools with a greater frequency of bullying ($b = 0.30$, $SE = 0.07$, $p < .001$) and school

safety measures (b = 0.08, SE = 0.03, p < .01) had a higher incidence of school crime (Maskaly, Donner, Lanterman & Jennings, 2011).

The regression model based on schools utilizing private security guards only was substantially different from the previous two models, especially from the model based on SRO-only schools. Specifically only large (b = 1.66, SE = 0.40, p < .001) and medium sized (b = 1.32, SE = 0.39, p < .01) schools were positively associated with school crime relative to small schools. There was only a marginally higher incidence of school crime in middle schools relative to elementary schools (b = 0.54, SE = 0.28, p < .10). Additionally, this model employing school safety measures (b = 0.12, SE = 0.06, p < .05) was positively and significantly associated with school crime (Maskaly et al. 2011).

Important conclusions can be drawn from the Maskaly et al. (2011) study. Regarding the association between school characteristics and school crime by security personnel type, school crime was higher in larger sized schools and in middle schools relative to elementary schools regardless of whether SROs or security guards were utilized. The effect of medium sized and large sized schools on school crime was nearly one and a half times greater in schools with school security guards compared to schools with SROs only. This may be an indication that the presence of SROs might minimize some of the effect of school size on school crime (Maskaly et al., 2011).

In our nation's schools, it is important for staff to develop positive, supportive relationships with students. These positive relationships are partially based on effective two-way communication. Educational leaders seek to create school communities in which students will feel comfortable reporting issues of concern that may potentially impact the safety of members of the school community. This is also true of school resource officers who seek to be accessible

and helpful to students in school, in specific programs, and in the classroom. McDevitt and Paniello (2005), at Northeastern University, conducted a research study for the U.S Department of Justice as part of the National Assessment of School Resource Officer Programs. In their study, McDevitt and Paniello (2005) designed seven research questions that can be summarized into two basic concerns: (a) what factors in an SRO program affect students' comfort level for reporting crimes?, and (b) what factors in an SRO program affect students' perception of safety?

In their research, McDevitt and Paniello (2005) examined SRO programs in four school districts chosen by Northeastern University by administering a survey to 907 middle and high school students. The survey was developed as part of the National Evaluation of School Resource Officer Programs and consisted of 38 items. The items essentially examined students' interactions with SROs, students' opinion of the SROs, students' comfort level reporting crimes to SROs, students' perception of safety at school, past victimization, and neighborhood crime.

Using univariate, bivariate, and multivariate analysis, McDevitt and Paniello (2005) concluded that several factors are associated with students' comfort level in reporting crimes to SROs and their perceptions of safety at school. They found a statistically significant positive relationship between the number of student and SRO conversations and students' comfort level reporting crimes. McDevitt and Paniello (2005) found a statistically significant positive relationship between a positive opinion of the SRO and feeling comfortable reporting crime. Using a regression model, McDevitt and Paniello (2005) found that, compared with other students, students who have a positive opinion of the SRO were more than two and one half times more likely than other students to feel comfortable reporting crime. Students' perception of safety also had a significant relationship in feeling comfortable reporting crime. Students who reported that they felt safe at school were more than two and one half times more likely than

other students to feel comfortable reporting crime. This finding suggests that it is important for SROs to promote safety both as a goal in itself and as a method of increasing student reporting of crime.

The second area of focus in the McDevitt and Paniello (2005) study was students' perception of safety at school. They found that a majority (92%) of students who had a positive opinion of the SRO also reported feeling safe at school, compared with 76% of students who do not have as positive opinion of the SRO. Neighborhood crime and feeling safe at school had an inverse relationship, meaning that the lower the level of perceived crime in one's neighborhood, the safer the students felt at school. Also, students who have experienced some type of previous victimization felt less safe than students who had not had this experience. McDevitt and Paniello (2005) also reported the important finding that, even when victimization and environmental factors were factored into the regression model, having a positive opinion of the SRO and being comfortable reporting a crime remained statistically significant.

In summary, the results of McDevitt and Paniello's (2005) study suggest that perhaps the most important and easily modifiable variable in both regression models is creating a positive opinion of the SRO among the student body. Educational leaders understand that it is important for students to report crime occurring on campus. SROs who are seen in a positive light by the student body may be more capable of obtaining information pertaining to crimes occurring on school grounds. Therefore, educational leaders and police should try to determine the best methods for SROs to create a positive image in their respective school community.

Staff Training

Staff training in school security is very important to the goal of protecting the health and safety of the school community. Grodsky and Gamoran (2003) explained that staff training and

development is training that goes beyond individual teacher improvement to benefit the entire school as a professional community. In terms of its impact on the school community, Grodsky and Gamoran (2003) accurately explained that professional development instills not only a common base of knowledge, but also shared values and an atmosphere of collaboration that leads to school improvement. Examples of staff training in school security include training on emergency procedures including lockdowns, training in crisis prevention and intervention, and training in threat assessment. Threat assessment training is based on a specific protocol that helps staff identify students who exhibit specific behaviors that may pose a threat to the school community. In this model, a trained threat assessment team evaluates the level of risk and designs an intervention plan to help the identified student (O'Toole, 1999).

School leaders must implement staff development to ensure that staff members are optimally trained to prevent, recognize, and, in worse case scenarios, react to threats to school security. One of the major challenges in staff training is the limited amount of time available because of other competing mandated training sessions including OSHA, drug and substance abuse awareness, teacher evaluation and support training, advanced educational technology, and advisory program staff development. All of these needs and training requirements are challenging in educational environments where principals and teachers must focus on student achievement, well-articulated curricula, cutting-edge instruction, and summative and formative assessment practices.

Although there is limited research on the effect of staff training and development on school violence prevention, Allen, Cornell, Lorek and Sheras (2008) conducted a study entitled *Response of School Personnel to Student Threat Assessment Training*. In the study, they examined the effects of school training as a means of improving school-based responses to

student threats of violence. The sample in the study was a multidisciplinary sample of 351 staff members from two school districts in the State of Virginia. These educators spent one day training on the Guidelines for Responding to Student Threats of Violence (Cornell & Sheras, 2006). This is a model that shifts the focus on school violence prevention from one centered on zero tolerance policies to one centered on a targeted threat assessment approach. It is designed to allay staff fears of violence and persuade them to adopt a more prevention-oriented focus (Allen, Cornell, Lorek, & Sheras, 2008). This approach, in part, stemmed from the Federal Bureau of Investigation's finding that profiling potential school shooters was ineffective, if not fully impossible, and that strategic threat assessment was a more proactive research-based approach to identifying those who could potentially pose a threat to members of the school community (O'Toole, 1999).

Some of the important findings of the Allen et al. (2008) study were that, prior to training, only 18% of the school personnel knew that school violence nationwide had actually decreased in the last 10 years, whereas, after the training, 90% recognized this fact. Prior to the training, 21.1% of the participants had concerns that a homicide could occur in their school, and 23% were uncertain. After the training, only 5.4% were concerned, 9% were uncertain, and a full 84.9% were not concerned at all. The views of the staff on zero-tolerance policies and prevention shifted dramatically. Over one half of the participants (58.7%) agreed with the perceived need for zero-tolerance policies before the training compared to just 12.2 % after the training. Staff recognition that violence prevention programs could reduce school violence increased from 41% to 90.1%. In fact, 94% of the participants agreed that the training would help them respond to student threats of violence (Allen et al., 2008).

Security Budgets

School districts generally allocate funding to ensure student and staff safety and security in their annual budgets. These budgets are usually built through a collaborative effort between school finance officers, superintendents, and school principals. Municipalities have been increasingly involved in budgeting for school security in all ways since the Newtown school shooting thus demonstrating a collaborative approach and seriousness of purpose in protecting school communities.

DeAngelis, Brent, and Ianni (2011) conducted one of the few studies on the topic of school security finance. They used financial data from Texas because Texas is one of the few states that require districts to use a dedicated code to report security expenditures. In their research, DeAngelis et al. (2011) studied how much districts spend on security, how these districts use these financial resources, and the extent to which spending differs between districts. The researchers used data from 2008-2009 on all 1,030 regular public school districts. The data were sourced from the Texas Education Agency's (TEA) Public Education Information Management System (PEIMS). This data set provided detailed district and school-based expenditure information. To gain a better understanding of the actual security measures and efforts employed by schools, DeAngelis et al. (2011) used a second data source, the National Center for Educational Statistics (NCES) 2007-08 School Survey on Crime and Safety (SSOCS).

The researchers found that across all Texas districts, an average of $312,030 was spent on security in 2008-09. Urban districts, on average, spent $2.57 million whereas rural districts registered the lowest average, $33,000. Overall, Texas districts spent an average of $28.49 per pupil on security measures with urban districts spending the most and rural districts spending the least. Texas districts spent .23% of total expenditures and .31% of operating expenditures on

security efforts. Interestingly, in relation to other educational activities such as social work services (.11%), expenditures on school security were certainly not inconsequential and may have diverted resources from educational programs that are arguably equally as important (DeAngelis, Brent, & Ianni, 2011).

In terms of security personnel, the most costly security measure in Texas schools was that one full-time security person was employed for every 700 students. United States schools employed, on average, one full-time security person for every 1,000 students. The research study by DeAngelis et al. (2011) revealed that security spending is negatively correlated with wealth. Wealthy Texas districts spend a smaller percentage of their budget on school security. The correlation between wealth and security spending was relatively weak ($r = -0.152$, $p < .001$) indicating that approximately 2% of the variation in security spending can be accounted for by differences in district wealth (DeAngelis et al. 2011).

Hull (2011) recently wrote about the changing realities in school safety and preparedness due to the pervasively negative financial climate. He investigated new realities in emergency preparedness and safety for schools in a budgetary climate where the sector is being asked to do more with less budgetary support. In June, 2010, the United States Department of Education Office of Safe and Drug Free Schools solicited feedback from schools on school safety. The shared results indicated that there have been significant reductions or eliminations of programs and personnel that provide the framework for schools' safety and preparedness (Hull, 2011).

Hull (2011) conducted research on school security funding and the impact that outside funding sources can have on school systems. He addressed the disparity that exists between school districts' level of preparedness to protect student and staff safety. He emphasized that all educational settings are vulnerable to threats that can disrupt school operations and cascade into

a full-blown crisis, but not all schools are uniformly equipped to respond to these emergencies. Hull (2011) recommended that school districts must be more creative in seeking funding for school security by seeking grants, private and business partnerships, and researching which non-government organizations (NGOs) can provide supplementary funding for school security. As an example, Hull (2011) cited the American Red Cross Ready Rating Program for Schools that was piloted in the St. Louis, Missouri area. This program involved five steps: program membership, conducting a vulnerability assessment, developing an emergency response plan, implementing the plan, and ensuring community preparation.

In his review, Hull (2011) also addressed the impact of the economic downturn that occurred from 2008 into 2013 on security personnel including security guards and school resource officers. He emphasized that school superintendents find themselves in the tenuous budgetary landscape where they must protect classroom teacher positions and core programs at the cost of cutting security positions. In these circumstances, administrators are being asked to do more in the realm of school security and to implement cross training of staff to fill security gaps. Hull (2011) notes that even classroom teachers, who feel poorly trained for security tasks that they did not sign up for, are being required to assume increased security assignments. As a possible solution to these budgetary challenges, Hull (2011) recommended combining the resources and wisdom of school and community leaders to find more cost-efficient solutions. Hull (2011) emphasized the importance of community collaboration between emergency management staff, public mental health professionals, first responders, and policy makers.

Trump (2010) wrote a special report on the state of school security entitled, *Keeping schools safe during tight budget times*. In the report he emphasized the role of district

administration in keeping students and staff safe. Superintendents must be proactive, creative, and responsible school safety leaders according to Trump (2010).

Addressing some of the economic challenges districts encounter in ensuring a robust school safety program, Trump (2010) also described the impact of the economic downturn of 2008-2013. The basic reality from the school district perspective, according to Trump (2010), is that federal cuts are being made when local education agencies (LEAs) are making dramatic budget cuts due to declining local and state revenues. School safety and security administrators cannot look to their superintendents and boards of education to replace lost federal school safety funding with money from other budget line items. Superintendents are forced to make "bean counting" driven decisions that can overlook the importance of school safety. Trump (2010) wrote that the inherent risk of making purely financial school safety decisions is that eliminating violence prevention programs or security staff will save dollars in the short term, but can result in increased insurance and legal costs down the road. In short, he posed that elimination of these measures shifts the focus from a proactive to a reactive posture within the district and reduces the quantity and quality of security services.

In addition to the economic downturn, Trump (2010) cited cuts made to the Title IV state grant component of the federal Safe and Drug Free Schools Program as a development that compromises school security. The new school safety program that the U.S. Department of Education implemented in fiscal year 2011 shifted the focus of the previous program from one on school safety to a more laser like focus on school climate. While positive school climate is a major prong in any school safety program, school security must remain a legitimate area of focus. Trump (2010) also noted that funds under the new program are disbursed through a highly competitive national grant process that limits its application to fewer districts.

In this special report, Trump (2010) does make some formative suggestions that districts can pursue in challenging economic times. Superintendents must continue to focus on what they can do rather than what they cannot accomplish by shifting conversations to what is being done in the area of school safety. Superintendents must engage affected parties in cost-cutting decisions because those running the programs are best equipped to provide input on potential areas for savings without cutting entire programs. District administrators must engage community agencies as partners, while not expecting them to assume the whole load for school security. An internal strengths and needs assessment can help ensure that limited financial resources are being used in a cost effective strategy. Superintendents and boards of education must remain politically astute while communicating school safety funding needs to state and federal legislators through their respective associations. Finally, Trump (2010) notes that it is sometimes cost effective to have a strategic school safety plan that compliments the internal strengths and needs assessment, developed by an independent, external professional school safety firm.

Threat Assessment

The Newtown school shooting has served as a catalyst for increased focus on school security and the preventive measures that school districts and schools can take to protect students and staff. As previously described in this literature review, school security measures include security personnel, cameras, visitor management systems, and other measures to harden the school environment. Threat assessment is different in the sense that it is a specific approach or model designed to identify members of the current school community who may pose a threat. In the Connecticut School Shooting Position Statement (2012), written in response to the shootings at Sandy Hook Elementary School, Astor et al. (2012) emphasize that school violence prevention

efforts must include adequate mental health supports and threat assessment teams in every school and community.

The Federal Bureau of Investigation, under the leadership of Mary Ellen O'Toole, Ph.D., Supervisory Special Agent, conducted one of the seminal studies on school shootings entitled *The School Shooter: A Threat Assessment Perspective* (1999). The FBI's National Center for the Analysis of Violent Crime (NCAVC) initiated the study in May 1998 to research and understand school shooting incidents from a behavioral perspective; the shooter, his or her background, the school setting, and other behavioral factors that influenced the crime. They intended to analyze specific cases of school shootings or shootings that were thwarted before they occurred. The NCAVC identified 18 cases that were included in the study.

The school shooting at Columbine High School in Littleton, Colorado in April 1999 was a further catalyst and instilled new urgency into the FBI's research effort. Supported by Attorney General, Janet Reno, and FBI Director Louis Freeh, the FBI's National Center for the Analysis of Violent Crime (NCAVC) gathered educators, administrators, mental health professionals, law enforcement officers, and prosecutors at a symposium on school violence. The symposium was conducted in Leesburg, Virginia in July 1999. It is important to note that teachers and administrators from all of the 18 schools where school shootings had occurred participated in the symposium, including somebody from each school who personally knew the shooter, or would-be shooter. The participants analyzed these occurrences from a behavioral perspective.

This FBI research yielded some important findings and recommendations. One major finding was that it is impossible to accurately profile school shooters because they have different motivators and do not lend themselves to profiling. The next important finding was the concept

of "leakage," meaning that school shooters usually leak information regarding their plan to somebody before they act on it.

O'Toole (1999) recommended that schools form threat assessment teams to ensure a clear, consistent, rational, and well-structured system for dealing with threats. This system would empower the teams to analyze potential threatening behavior according to a four-pronged protocol that examines student personality, family dynamics, student role in school dynamics, and social dynamics. The teams would assess the threats according to type (direct, indirect, veiled, and conditional) and subsequently evaluate the level of the threat as low, medium, or high (O'Toole, 1999).

According to O'Toole (1999), this threat management system would also include a standardized method for evaluating threats and consistent policies for responding to them. Standardization would allow schools to construct an accurate database that could be analyzed by frequency and types of threats, thus evaluating the effectiveness of school policies. O'Toole (1999) emphasized that when school administrators consistently respond to threats, they can deter future threats because students will perceive that any threat will be reported, investigated, and dealt with firmly.

The United States Secret Service (USSS) conducted the second seminal study on school violence in the United States. Under the leadership of Vossekuil, Reddy, and Fein (2004) serving as Executive Director, Research Psychologist, and Psychologist, respectively, of the USSS Safe School Initiative, the USSS National Threat Assessment Center (NTAC) studied 37 school shootings, involving 41 attackers who were current or recent students in the schools. Vossekuil et al. (2004) focused their research on cases in which the school was targeted for a

particular purpose and ruled out cases related to gang or drug violence or interpersonal relationship disputes that happened to occur at school.

Vossekuil et al. (2004) studied each of the 37 school shootings by reviewing primary source materials including school, mental health, investigative, and court materials. Subsequently, the researchers conducted interviews with 10 of the shooters to glean their perspectives on their decision and the antecedents to their targeted attack. Vossekuil et al. (2004) reported some clear commonalities in these cases. In over 50% of the school shootings, the attackers chose a school administrator, faculty, or staff member as their target. In more than 67% of the incidents, the attacker killed one or more students, faculty, or staff at the school. Handguns and rifles were the primary weapons used in the attacks and over 50% of the attacks occurred in the middle of the school day.

Vossekuil, Reddy, and Fein (2001) published a report entitled, *An Interim Report on the Prevention of Targeted Violence in School.* The report contained many important findings and implications based on the study of the 37 cases. School shootings are rarely impulsive; rather, they generally result from an often discernable thought process. Shooters do not just snap. In almost all of these 37 incidents, the attacker developed the idea and plan in advance, at least two weeks in advance in over 50% of the incidents. Revenge was a motive in over 50% of the incidents.

The researchers found that in over 75% of the cases, the attacker told someone about his intentions. In virtually all of the 37 cases, the person told was a friend, schoolmate, or sibling. This finding is akin to the leakage cited by O'Toole (1999). Similar to O'Toole, Vossekuil et al. (2004) advocated for a threat assessment model to prevent school violence. They specified that it is important for adults and young people to discern between making a threat and posing a

threat. Those who pose a threat engage in behaviors that indicate an intent, planning, or preparation for an attack. In very few of the cases did a student report the posed threat to an adult. Consequently, educators must try to remove the barriers, real or perceived, that prevent students from reporting concerning behavior to a school official or trusted adult.

Based on their research, Vossekuil et al. (2004), like O'Toole (2009), concluded that there is no accurate or useful profile of the school shooter, although all were males. In the 37 cases, the attackers ranged from 11 to 21 years of age. The 41 attackers ranged in socioeconomic background, academic performance, and race. Some were popular with their peers whereas others were socially isolated and victims of bullying. Some of the attackers had a history of disciplinary infractions, for others the school-based attack was their first infraction. An important finding of the case studies was that few of the attackers had been diagnosed with a mental disorder and fewer than 33% of the attackers had histories of drug or alcohol abuse. The main implication of the research indicating that profiles are ineffective is that profiling would identify students who will never pose a threat and may miss those who may pose a threat of future school violence.

Other findings of the case study analysis that Vossekuil et al. (2004) conducted revealed that over 50% of the attackers had previously used guns and in nearly 66% of the incidents, the attackers got the guns used in the attacks in their own homes or in the home of a relative. Vossekuil et al. (2004) made the logical finding that if the idea of an attack exists, any attempt by the potential shooter to access or acquire a weapon, may be a significant move in the attacker's progression from the idea phase to the action phase. In addition, they emphasized that adults must seek to ensure that guns are safely secured from unsupervised minors.

Bullying prevention is currently a major focus in educational environments. In examining the effect of bullying in their case study, Vossekuil et al. (2004) found that in over 66% of the cases the attacker felt bullied, persecuted, threatened, attacked, or injured by other members of the school community prior to the incident. In some of the cases, the bullying was long-term and appeared to play a major role in the decision to carry out an attack at school. Therefore, educational leaders should continue their intense focus on bullying awareness and prevention that may lead to more positive school cultures.

In summary, a research-based threat assessment model will focus on student behaviors and communications to determine whether the student may appear to be planning an attack. It is more important to take an approach based on specific behaviors exhibited as opposed to profiling to identify potential attackers. In short, some of these attacks may be preventable if educators and fellow students intervene based on the behavioral information available.

Bullying and School Climate

One of the most widely discussed, reviewed, and researched topics in current educational circles is bullying. Bullying is recognized as a widespread and sometimes neglected problem in American schools. Educators recognize that bullying can have very adverse effects on its victims and can impact learning, mental health, and social emotional well-being. Educational leaders consistently strive to promote positive school climates where bullying is mitigated.

In the State of Connecticut, the legislature issued Public Act No. 11-232, An Act Concerning the Strengthening of School Bullying Laws and made it effective on July 1, 2011. In this act, bullying is defined as "(a) the repeated use by one or more students of a written, oral or electronic communication, such as cyberbullying, directed at or referring to another student attending school in the same school district, or (b) a physical act or gesture by one or more

students repeatedly directed at another student attending school in the same school district, that: (i) Causes physical or emotional harm to such student or damage to such student's property, (ii) places such student in reasonable fear of harm to himself or herself, or of damage to his or her property, (iii) creates a hostile environment at school for such student, (iv) infringes on the rights of such student at school, or (v) substantially disrupts the education process or the orderly operation of a school." Retrieved from www.sde.ct.gov/sde.

In Public Act No. 11-232, the State further emphasizes that bullying "includes, but is not limited to, a written, oral or electronic communication or physical act or gesture based on any actual or perceived differentiating characteristic, such as race, color, religion, ancestry, national origin, gender, sexual orientation, gender identity or expression, socioeconomic status, academic status, physical appearance, or mental, physical, developmental or sensory disability, or by association with an individual or group who has or is perceived to have one or more of such characteristics." Retrieved from www.sde.ct.gov/sde.

In the State of Connecticut, cyberbullying is defined as "any act of bullying through the use of the Internet, interactive and digital technologies, cellular mobile telephone or other mobile electronic devices or any electronic communications." Retrieved from www.sde.ct.gov/sde.

The State has prescribed protocols for identifying, intervening in, and documenting verified acts of bullying. Educational leaders take numerous approaches to curtail and eliminate bullying in their schools including education, prevention programs, and firm disciplinary consequences. Leaders in our schools provide annual staff development on the topic so that staff are educated and prepared to recognize bullying behaviors and intervene on behalf of victims.

In *Indicators of School Crime and Safety 2012* (Robers, S., Kemp, J., & Truman, J., 2013), Indicators of School Crime and Safety: 2012 (NCES 2013-036/. NCJ 241446), the U.S.

Government reports on bullying and cyberbullying data that were gathered using the School Crime Supplement to the National Crime Victimization Survey. Students who are ages 12-18 completed the survey reporting on whether they were bullied at school or cyber-bullied at any time during the school year. In the survey, bullying included students who reported that another student had made fun of them, called them names, insulted them, spread rumors about them, threatened them with harm, tried to make them do something that they did not want to do, excluded them from activities on purpose, destroyed their property on purpose, or pushed, shoved, tripped, or spit on them. In 2011, 28% of students from ages 12 to 18 reported being bullied at school during the school year. These data varied by student and school characteristics. In 2011, a higher percentage of females than males ages 12-18 reported that they were made fun of, called names, or insulted (19% versus 16%), were the subject of rumors (24% versus 13%), and were excluded from activities on purpose (6% versus 5%). The percentage of males (9%) reporting being tripped, shoved, or spit on was higher than the percentage of females (7%) who reported being subjected to this type of bullying (National Center for Educational Statistics, US Dept. of Justice, BS, 2013).

There were also differences noted by race and grade level in the data. In terms of reported bullying and differences by race, the percentage of students who reported being bullied at school was highest among White students (31%) and lowest for Asian students (15%). Twenty-seven percent of Black students and 22% of Hispanic students reported being bullied at school in 2011. A higher percentage of students in the 6th grade than of students in grades 7 through 12 reported being bullied at school during the school year. In 2011, about 37% of 6th graders reported being bullied at school, compared with 30% of 7th graders, 31% of 8th graders,

26% of 9th graders, 28% of 10th graders, 24% of 11th graders, and 22% of 12th graders (National Center for Educational Statistics, US Dept. of Justice, B.S., 2013).

For the purpose of the National Crime Victimization Survey, cyberbullying included students who responded that another student had posted hurtful information about them on the Internet, purposefully shared private information about them on the Internet, harassed them via instant messaging, harassed them via Short Message Service (SMS) text messaging, harassed them via e-mail, harassed them while gaming, or excluded them online. In 2011, approximately 9% of students from ages 12 to18 reported being cyber-bullied anywhere during the school year. Four percent of students responded that another student had posted hurtful information about them on the Internet and 4% reported being the subject of harassing text messages. Three percent of students reported being subjected to harassing instant messages and 2% reported being subject to harassing e-mails and 1% reported having their private information purposefully shared on the Internet, being harassed while gaming, and being excluded online (National Center for Educational Statistics, US Dept. of Justice, BS, 2013).

There were differences in the reported data based on gender, grade level, and race. With the exception of being subjected to harassment while gaming and being excluded online, female students in the sample reported being subjected to cyber-bullying at higher percentages than males in 2011. The percentage of students who reported being cyber-bullied was higher for White students (11%), than for Hispanic (8%), and Black (7%) students. A higher percentage of students in grade 10 (12%) reported being cyber bullied than of students in grades 6, 7, 8, 9, and 12 (between 6% and 9% each). In addition, the percentage of students in urban areas reporting cyber-bullying overall was lower than students in suburban areas, 7% and 10%, respectively (National Center for Educational Statistics, US Dept. of Justice, BS, 2013).

Educational leaders seek to establish a supportive school climate in which acts of bullying and cyber-bullying are rare to nonexistent. When bullying incidents do occur, it is important that students know how and to whom (teachers, staff, school counselors, administrators) they should report incidents of bullying based on clearly defined state protocols and school guidelines. Data from the National Crime Victimization Survey indicated that a higher percentage of students reported notifying an adult after being bullied at school than after being a victim of cyberbullying anywhere (40% vs. 26%). While there were no measurable differences in the percentage of males and females who reported being bullied to an adult, a higher percentage of females (32%) than of males (16%) reported notifying an adult after being cyberbullied. Higher percentages of students in grades 6-9 reported notifying an adult after being bullied at school than students in grades 10-12. Higher percentages of students in grades 6-9 than students in grades 11 and 12 notified an adult after being cyberbullied (National Center for Educational Statistics, US Dept. of Justice, BS, 2013).

In a research study among high school students on how students develop a philosophy and cognitive coping strategies to deal with bullying, deLara (2008) described students' strategies in reacting to incidents of bullying. DeLara (2008) conducted 5 focus groups with 122 high school students from three rural high schools. The students cited the strategy of reporting bullying to an adult as a last resort. Many students in the study felt that they should be able to handle the bullying on their own. Additionally, several students reported that when they reported it to their favorite teachers, the teachers expected them to "work it out ourselves" and that when they did report it to teachers, they did not achieve the desired result. Findings from this research inform supporters of violence prevention programs by providing the students' perspective on

dealing with this pervasive issue. These student reactions may account for what can be regarded as low incidence of bullying reports to adults.

Chapter Summary

Realizing the importance of a data-based review of the literature on school violence and safety, the researcher reviewed two government sources, data from the School Survey on Crime and Safety (U.S Department of Education, Institute of Education Sciences, National Center for Educational Statistics) and the Indicators of School Crime and Safety 2012 (Robers, Kemp, & Truman, 2013), Indicators of School Crime and Safety: 2012 (NCES 2013-036/. NCJ 241446) report. Selected findings from the 2009-2010 SSOCS study indicate that the rate of violent incidents per 1,000 students was higher in middle schools (40 incidents) than in elementary or high schools (21 incidents each). Some 46% of schools reported at least one student threat of physical attack without a weapon, compared to 8% of schools reporting such a threat with a weapon (U.S. Department of Education, 2010B). Staff training and preparedness are critical to the goal of protecting student and staff safety. It was noteworthy that a higher percentage of suburban schools drilled students on a written plan describing procedures to be performed during a shooting (58%) than did urban schools or rural schools (49% and 48%, respectively). School security budgets were a specific area of focus for this study, so it was relevant that among the factors that were reported to limit school personnel's efforts to reduce or prevent crime "in a major way," the most likely reason was inadequate funds (25%).

Indicators of School Crime and Safety 2012 (Robers, Kemp, & Truman, 2013), are is organized into sections that delineate specific concerns related to school violence including violent deaths, nonfatal student and teacher victimization, school environment, fights, weapons and illegal substances, fear and avoidance, and discipline, safety, and security measures. The

data were drawn from a variety of independent sources including national surveys of students, teachers, and principals and universe data from the Bureau of Justice Statistics, National Center for Educational Statistics, Federal Bureau of Investigation, and the Centers for Disease Control and Prevention (Robers, Kemp, & Truman, 2013). A few of the more notable findings in the study were that, from July 1, 2010 through June 30, 2011, there were 31 school associated violent deaths at U.S. elementary and secondary schools. Of these 31 school-associated violent deaths, there were 25 homicides and six suicides. However, from an historical perspective over all the available survey years since 1998, the percentage of youth homicides occurring at school remained at less than 2% of the total number of youth homicides in all settings, at and away from school. Although schools are generally considered among the safest locations for students, data from the 2011 National Crime and Victimization Survey suggested that more victimizations were committed against students from ages 12 to 18 at school than away from school, which has been a consistent pattern since 2001 (Robers et al., 2013).

The researcher grounded this study in the theories of Abraham Maslow and Albert Bandura. Maslow's (1954) now renowned Hierarchy of Needs supports the importance of student and staff safety and security in the school community. Only when safety needs are met, can students clearly focus on their academic performance. Albert Bandura (1971) refuted the theoretical perspective that behavior is impelled by inner forces in the form of needs, drives, and impulses that operate below the level of consciousness. Bandura (1971) emphasized that developments in learning theory shifted the focus of causal analysis from hypothesized inner determinants to detailed examination of external influences on responsiveness. When considering that which motivates individuals to perpetrate acts of school violence, Bandura's view that man is a thinking organism that possesses tremendous capability for the power of self-

direction is relevant. Contrary to what may constitute popular belief and perception, research on school shooters suggests that these are not impulsive actions and that school shooters do not "just snap."

Collectively, the research on School Practices and Programs, School Security Staff, Staff Training suggests that all three of these constructs are critical to a comprehensive school security plan. Educational leaders must evaluate the benefits and cost of school resource officers versus security staff and seek the appropriate balance and level of security in their districts and schools. Threat assessment is currently an approach being supported in the State of Connecticut in the aftermath of the Newtown school shooting. O'Toole (2009) and Vossekuil et al. (2004) conducted seminal studies on the threat assessment approach. These researchers concluded that one of the main implications of the research was that profiling students was ineffective and that the approach would falsely identify students who will never pose a threat and may miss those who may pose a threat of future school violence. To avert this potentially socially unacceptable or tragic pitfall, they proposed a research-based threat assessment protocol for schools.

Bullying prevention is currently a major focus in educational environments. In examining the effect of bullying in their case study, Vossekuil et al. (2004) found that in over 66% of the cases, the attacker felt bullied, persecuted, threatened, attacked, or injured by other members of the school community prior to the incident. In some of the cases, the bullying was long-term and appeared to play a major role in the decision to carry out an attack at school.

These studies all provide a research-based context for this important study on the impact of the Newtown school shooting on school security in the state of Connecticut. Much of the literature represents the most current research and data on school violence in the United States that was conducted by respected researchers, authorities, and national organizations.

CHAPTER THREE: METHODOLOGY

The purpose of this study was to evaluate the impact of the Newtown school shooting on school practices and programs, school security staff, staff training, and security budgets in Connecticut schools. This chapter provides details of the methodology used to examine this topic and is comprised of nine sections. The first section outlines the research questions. The second section clarifies the hypotheses that guided the study. The researcher describes the research design of the study in the third section. In the fourth section, a thorough explanation of the setting, the accessible population, and the sample in the study are described.

In the fifth section, the researcher provides an overview of the instrumentation including the School Survey on Crime and Safety 2009-2010 and the rationale for using the SSOCS as the instrument in the present study. A description of the population, sample size, reliability, and validity of the SSOCS is provided. The researcher also describes the manner in which the SSOCS was adapted for the purposes of this study. The researcher describes the administration of the SSOCS and provides examples of the survey questions designed to analyze security practices pre- and post- the Newtown School shooting. The researcher explains the superintendent survey used in the study. In section six, the researcher describes the data collection procedures so that the study can be replicated. In section seven, the researcher describes the data screening process. In the eighth section, the researcher explains the data analyses conducted for the purposes of the study in detail.

Research Questions

In an effort to determine the impact of the Newtown school shooting on school practices and programs, staff training, security staff, and security budgets, this study examined the following research questions:

Research Question 1: How have school administrators addressed School Practices and Programs before and after the Newtown school shooting on December 14, 2012?

1a. Is there a significant difference in school administrator responses on the School Survey on Crime and Safety regarding School Practices and Programs (SPP) that were in effect prior to and after the Newtown school shooting?

1b. Is there a significant difference on individual items of the School Survey on Crime and Safety regarding School Practices and Programs that were in effect prior to and after the Newtown school shooting?

1c. To what extent and in what manner do school level (elementary, middle, high school), school type (rural, urban, suburban), student diversity percentage, free or reduced lunch percentage, and number of students predict the change factor in School Practices and Programs?

Research Question 2: How have school administrators addressed School Security Staff before and after the Newtown school shooting on December 14, 2012?

2a. Is there a significant difference in school administrator responses on the School Survey on Crime and Safety regarding School Security Staff that were in place prior to and after the Newtown school shooting?

2b. Is there a significant difference on individual items of the School Survey on Crime and Safety regarding School Security Staff that were in place prior to and after the Newtown school shooting?

2c. To what extent and in what manner do school level (elementary, middle, high school), school type (rural, urban, suburban), student diversity percentage, free or reduced lunch percentage, and number of students predict the change factor in School Security Staff?

Research Question 3: How have school administrators addressed Staff Training before and after the Newtown school shooting on December 14, 2012?

3a. Is there a significant difference in school administrator responses on the School Survey on Crime and Safety regarding Staff Training that was in place prior to and after the Newtown school shooting?

3b. Is there a significant difference on individual items of the School Survey on Crime and Safety regarding Staff Training that was in place prior to and after the Newtown school shooting?

3c. To what extent and in what manner do school level (elementary, middle, high school), school type (rural, urban, suburban), student diversity percentage, free or reduced lunch percentage, and number of students predict the change factor in Staff Training?

Research Question 4: Did school districts change their security budget as a result of the Newtown school shooting and to what extent?

Hypotheses

In the study, all four of the hypotheses are non-directional, one relating to each research question.

Hypothesis 1: School administrators will increase School Practices and Programs after the Newtown school shooting on December 14, 2012.

1a. There will be a significant difference in school administrator responses on the School Survey on Crime and Safety regarding School Practices and Programs that were in effect prior to and after the Newtown school shooting.

1b. There will be a significant difference on individual items of the School Survey on Crime and Safety regarding School Practices and Programs that were in effect prior to and after the Newtown school shooting.

1c. School level (elementary, middle, high school), school type (rural, urban, suburban), student diversity percentage, free or reduced lunch percentage, and number of students will significantly predict the change factor in School Practices and Programs.

Hypothesis 2: School administrators will increase School Security Staff after the Newtown school shooting on December 14, 2012.

2a. There will be a significant difference in school administrator responses on the School Survey on Crime and Safety regarding School Security Staff that were in place prior to and after the Newtown school shooting.

2b. There will be a significant difference on individual items of the School Survey on Crime and Safety regarding School Security Staff that were in place prior to and after the Newtown school shooting.

2c. School level (elementary, middle, high school), school type (rural, urban, suburban), student diversity percentage, free or reduced lunch percentage, and number of students will significantly predict the change factor in School Security Staff.

Hypothesis 3: School administrators will increase Staff Training after the Newtown school shooting on December 14, 2012.

3a. There will be a significant difference in school administrator responses on the School Survey on Crime and Safety regarding Staff Training that was in place prior to and after the Newtown school shooting.

3b. There will be a significant difference on individual items of the School Survey on Crime and Safety regarding Staff Training that was in place prior to and after the Newtown school shooting.

3c. School level (elementary, middle, high school), school type (rural, urban, suburban), student diversity percentage, free or reduced lunch percentage, and number of students will significantly predict the change factor in Staff Training.

Hypothesis 4: School districts will change their security budget as a result of the Newtown school shooting.

Research Design

This research study was quantitative in nature. The researcher used survey methodology to gather data from educational leaders at the district and building levels on the impact of the Newtown school shooting on school practices and programs, school security staff, staff training, and budgets. The survey data were collected at one point in time based on the administrators' responses about what occurred before the Newtown event and what services are in place as a direct result of the event.

Setting, Accessible Population, and Sample

The setting for this study was the state of Connecticut. The accessible population was the 169 (n = 169) public school districts that comprise the population of school districts in the state of Connecticut. The sample in this study included 36 school districts (n = 36) in the State of Connecticut. This sample represents a 21% response rate from the 169 Connecticut school districts. Fraenkel and Wallin (2009) found that low response rates in survey research are not necessarily a problem. Fraenkel and Wallin (2009) reference two survey research studies in

which comparison of response rates of 60 to 70 percent to rates substantially lower (i.e., 20 to 40 percent) showed minimal differences in substantive answers.

Each of the 36 districts in the study was self-governing with oversight provided by a Board of Education. Included in the sample of 36 districts were 11 rural districts, 6 urban districts, and 19 suburban districts. The administrators who were surveyed self-selected their school and district type designation by circling rural, urban, or suburban on the School Characteristics page of the SSOCS.

In the population of schools in Connecticut there are 663 public elementary schools, 192 public middle schools and 202 high schools. In this study, 117 principals consented to participate in the study. The principal letter is located in Appendix C. The study sample consisted of 73 elementary, 22 middle, and 22 high schools. These data, depicted in Table 1, show that this sample percentage was representative of the population percentage of schools in Connecticut.

Table 1

Accessible Population and Sample by School Level

Schools	Population (Percentage)	Sample (Percentage)
Elementary	663 (63)	71 (62)
Middle	192 (18)	22 (19)
High School	202 (19)	22 (19)
Total	1057 (100)	115 (100)

The researcher displays data on student enrollment, diversity percentage and free or reduced lunch percentage in Table 2. These were all predictor variables in the study. The reader will again note that the sample mirrors the population of schools.

Table 2

Sample and Population by Predictor Variables: Student Enrollment, Diversity Percentage, Free or Reduced Lunch Percentage

	Enrollment Range	Diversity Range	Free or Reduced Lunch Range
Sample	47-2020	0-78.0%	0-80.0%
Population	47-2898	*	0-99.5%

Note. * = data currently unavailable

Although data classifying Connecticut schools by type (rural, urban, suburban) is not available and the U.S Census Bureau does not classify towns as suburban, only as rural or urban, the researcher was able to calculate the data for the sample that are depicted in Table 3.

Table 3

Sample by level (elementary, middle, high school) and type (rural, urban suburban)

Sample	Total by Level	Rural	Urban	Suburban
Elementary	73	13	15	45
Middle	22	5	3	14
High School	22	6	4	12

The majority of schools in the sample were suburban, as designated by the administrators who completed the SSOCS, as can be seen in Table 3.

Instrumentation—School Survey on Crime and Safety

In this study, the researcher used an instrument called the School Survey on Crime and Safety (SSOCS) 2009-2010 Administrator Questionnaire that was created by the National Center for Educational Statistics (NCES) in Washington, D.C.

The researcher chose this instrument because it had validity, a track record of reliability in measuring school data on school crime and safety, and it was adaptable for the purposes of this study. The researcher obtained written permission from the NCES to use and adapt the SSOCS for the specific purposes of this study. The adapted survey is located in Appendix D.

The School Survey on Crime and Safety is a valid questionnaire used to gather national data on crime and safety from the schools' perspective. To test the validity of the instrument, researchers at the National Center for Educational Statistics conducted two pretests of the 2000 survey to ascertain that the questions were properly understood, that the data were available, and to measure the level of burden on administrators completing the survey. The first pretest consisted of five schools. Based on these responses from the five schools, the Technical Review

Panel, consisting of some of the nation's top experts on school crime and school programs relating to crime and safety, made extensive changes to the instrument. During the second pretest involving eight schools, administrators completed the entire survey and then filled out a commentary guide indicating completion time, problem questions, undefined terms, and other questions about the content, format, and appearance of the instrument. The Technical Review Panel made follow-up calls to the administrators to obtain further information about the validity of the instrument. Administrators from varying schools, levels, and districts were elicited to participate in cognitive interviews about the survey and the timing of how long it took to complete the survey. Based on the pretests, the modifications, and the cognitive interviews, the Technical Review Panel ultimately concluded that the survey was comprehensive and would be a good instrument to measure school crime and safety in U.S. schools.

For the purposes of this study, the researcher administered three specific subsections (School Practices and Programs, School Security Staff, and Staff Training) of the 8 total subsections contained in the instrument. The purpose was to research the impact of the Newtown school shooting on School Practices and Programs, School Security Staff, and Staff Training in Connecticut schools. This study represented the first time that the SSOCS was specifically used to gather data from school leaders asking them to assess the school security practices that were in place before, and those that were added or removed after a major elementary school shooting. The questions in the aforementioned subsections were administered without revisions to maintain the validity of the instrument.

The only modification to the SSOCS were added columns labeled pre and post to determine if the Newtown, CT school shooting had a significant impact in the selected research areas. The researcher piloted the modified survey with six administrators who were not in the

sample districts to ensure the validity of the survey and assess the level of burden and time required to complete it. The administrator feedback was evaluated, particularly feedback regarding administrators' understanding and facility with the added column delineating the pre and post December 14, 2012 response data. Feedback on the length of time required to complete the survey was also considered and used in the letter of informed consent for principals. The instrument took approximately 15-30 minutes to complete.

Administration of the School Survey on Crime and Safety

The researcher collected data on the five predictor variables (demographic information) and three criterion variables (SSOCS subscales) in this study. The SSOCS has items related to the five predictor variables in the School Characteristics section at the beginning of the survey. These data were supplied by the administrators who completed the SSOCS. The administrators identified their school's total October 1, 2012 enrollment as the number of students in the school, the percentage of students eligible for free and reduced lunch, and the percentage of diversity at their school. The administrators circled the correct grade range for their school. The researcher identified grades PK-5 as elementary, grades 6-8 as middle, and grades 9-12 as high school for the purposes of the study. Finally, the administrators self-selected and identified their school type designation as rural, urban, or suburban, the three choices listed on School Characteristics page of the survey (Refer to Appendix A).

Research Question 1 was addressed by respondents' completion of questions 1-4 on section 1 of the SSOCS on School Practices and Programs. School Practices and Programs questions contained items such as requiring visitors to sign in, controlling access to school buildings during school hours, using metal detectors, and providing written plans to address various school crisis scenarios. The respondents checked boxes indicating their school practices

that were in place before and after the December 14, 2012 Newtown school shooting. Survey respondents were instructed to check "Post Yes" for any school practices and programs that are planned for the future as a result of the Newtown school shooting, even if they had not yet been implemented. Data used for Research Question 1 are contained in the SPP subscale, which includes questions 1 - 4 on the SSOCS.

Survey respondents answered research question two by responding to questions five through nine on subsection two of the SSOCS related to School Security Staff. School Security Staff questions examined whether school resource officers, security guards, or other sworn law enforcement officers were present at the school during and after school hours. This section further examined whether these security staff were involved in training teachers and staff in school safety or crime prevention. The respondents checked boxes indicating the level of security staff their school had before and after the December 14, 2012 Newtown school shooting. In question seven, the respondents indicated the number of full-time and part-time security staff in their schools pre and post December 14, 2012.

Survey respondents answered research question three by responding to question 10 on subsection three of the SSOCS on Staff Training. The Staff Training section addressed items about training in staff procedures to handle emergencies and training in recognizing early warning signs of students likely to exhibit violent behavior. They checked boxes indicating their training protocols before and after the Newtown school shooting. Survey respondents were instructed to check "Post Yes" for any additional staff training that is planned for the future as a result of the Newtown school shooting, even if it had not yet been implemented.

Superintendent Survey

Thirty-six district superintendents consented to the study and the consent form can be found in Appendix E. These superintendents answered research question four by completing a brief superintendent's survey. The researcher created this instrument and pilot tested it with a current superintendent and assistant superintendent to determine the clarity, ease of implementation, and usability of the instrument. These central office administrators indicated that the survey was clear and took very little time to complete. The superintendent survey on school security budgets is located in Appendix F.

Superintendents indicated any increases in security budgets due to increased School Practices and Programs, School Security Staff, and Staff Training that were added or implemented since the school shooting in Newtown on December 14, 2012. The superintendents were asked to describe the budgetary impact in their district by checking a range of expenditure increases.

Data Collection Procedures

The researcher secured the e-mail addresses of all Connecticut district superintendents for the 2012-2013 school year from the Connecticut Association of Public School Superintendents (CAPSS) website. Next, the researcher e-mailed all of these Connecticut public school superintendents inviting them and the principals in their district to participate in the study. The researcher did not invite the Newtown Public School personnel to participate out of respect for the lingering impact of the school shooting on Newtown educators. It was necessary to research the names and accurate e-mail addresses of the 11 superintendents whose messages were returned as undeliverable and those districts that had changed superintendents since the CAPSS list was comprised. Having ascertained the correct names and e-mail addresses, the

researcher sent individual e-mails to these superintendents. Superintendents who voluntarily chose to participate responded with their initial consent through e-mail. In an effort to involve more districts in the study, the researcher sent a second e-mail to the superintendents who did not respond to the initial e-mail. Next, the researcher sent individual and personal e-mails to the superintendents who had not yet responded. Ultimately, the district response rate was 21% with 36 of the 169 districts consenting to participate in the study.

Using the Education Bug website, www.educationbug.org, as a resource, the researcher determined the number of schools in each of the 36 consenting districts. Education Bug contains an education web directory of public schools, private schools, districts, libraries, and college/university profiles.

The researcher sent a packet with the written consent form, the required number of SSOCS surveys and principal letters explaining the study, the superintendent letter explaining the study, the questions on school security budgets, and the required number of self-addressed stamped envelopes to the superintendent. The researcher clarified in the letter that the results of the study would not be used for any participant evaluation or performance judgment at the school or district level. The researcher also clarified that the information and data that the administrators provided would be kept confidential and that the districts and schools would be coded to protect their confidentiality. The researcher promised to provide participating districts and schools with the results of the research upon completion of the study. The researcher asked the superintendents to distribute the surveys to the building principals.

The researcher e-mailed and called the consenting superintendents individually to inform them of the number of surveys that had been returned and asked them to encourage the principals to return them. The administrators returned the surveys in the self-addressed, stamped

envelopes. Many of the principals contacted the researcher directly informing him that they had lost the survey and would complete it, if the researcher sent them another copy. In these instances, the researcher sent electronic PDF files of the survey and principal letter and these principals returned them in paper or electronic (scanned and e-mailed) format.

The researcher mailed 223 surveys, letters, and envelopes to the superintendents, who distributed them to the principals. The principals returned 117 surveys achieving a 52.47% response rate. The principals (N=117) who were surveyed ranged in longevity in their positions from first year principals to principals with more than 30 years of leadership experience.

Data Screening Process

The researcher mailed 223 surveys to school administrators in the consenting school districts. These administrators returned 117 (52.47%) of the surveys and 115 (51.57%) surveys were ultimately determined to be usable for the first three research questions in the study, as will be described below.

As the surveys were returned, the researcher began to screen the surveys for accuracy, and missing data. On some of the surveys, there were a few missing data points. The researcher contacted these administrators by e-mail and by phone to glean accurate responses and fill in the missing data. The researcher corrected the data and initialed it to record where data had been changed based on the follow up e-mails and calls. The main example of missing data on the survey was question 3h. which asked, "Did your school conduct a drill for students and staff to prepare them for the following emergency situations before (pre) and/or after (post) the December 14, Newtown school shooting? Pandemic Flu." This question was ultimately deleted from the data set because too many administrators missed the question due to its location at the very top of one of the survey pages and the fact that it was not relevant to the research questions

and the study. Meyers, Gamst, and Guarino (2006) note that deleting variables with a high proportion of missing data can be desirable if those variables are not crucial to your study. Pandemic flu preparedness is not a crucial factor in school safety and would not be a factor that is influenced by a school shooting.

While screening the returned surveys, the researcher noticed that eight surveys had been returned without a check for both pre and post data. The researcher contacted these administrators by phone and e-mail and explained the directions clearly, emphasizing the importance of checking a pre and post on each of the survey questions. These administrators agreed to complete them accurately and the researcher scanned the previously completed copy to them by e-mail. Six of the administrators corrected and returned usable surveys, two other administrators did not. These two surveys were deleted from the study because they were no longer usable. Meyers et al. (2006) describe this procedure as listwise deletion, which involves deleting from the statistical analysis all cases that contain missing data. Although Meyers et al. (2006) caution that this approach may increase the estimate of measurement error, the researcher had no alternative because the administrators neglected to check a pre and post column in the surveys. These were the only two deleted cases of the 117 in the study after concerted efforts had been made to follow-up with these administrators to render the surveys usable.

In the case of one school district, all of the administrators completed question 7 on school security staff incorrectly. This section required the administrators to quantify the number of school security staff who were added and these respondents merely checked the boxes, which was the pattern on the other survey questions. The researcher called the superintendent directly to obtain accurate data on the number of school security staff that were added after the Newtown

school shooting and the superintendent provided accurate information for each of the schools in the district.

There were two small towns that had combined elementary and middle schools with no high school in the district. Initially, the researcher coded these schools 1&2 on the spreadsheet to indicate that they were combined elementary, middle schools. This data coding showed up as string data in SPSS, as opposed to numeric data. A decision was reached to count each of these schools twice in the data set, once for elementary and once for middle school to accurately reflect the data included in the study. The researcher found the exact student enrollment numbers by grade level by examining enrollment reports on the school websites and speaking with a representative in the principal's office. In the case of school #16, the researcher entered 302 elementary students and 120 middle school students, equaling the total enrollment of 422 students reported by the principal on the SSOCS. In the case of school #17, the researcher entered 283 elementary students and 98 middle school students, equaling the total enrollment of 381 students reported by the principal on the SSOCS.

The researcher conducted the initial computer-based data screening using a spreadsheet. It was important to ensure that all the schools classified their school district consistently as rural, urban, or suburban. A few administrators in the same district classified their school as either rural or suburban. The researcher made these entries consistent across the district for the purpose of the study based on the majority of the administrator responses.

Simultaneous to the efforts to ensure that the SSOCS responses were complete and accurate, the researcher screened the superintendent consent forms and budget surveys for completion and accuracy. Seven superintendents had not returned the consent form and budget survey. The researcher sent follow-up letters with another copy of the survey and consent form

enclosed on May 2, 2014. All seven of these superintendents ultimately returned the forms upon the researcher's second request.

Data Analyses

Most of the data reported on the School Survey on Crime and Safety were categorical, with some limited continuous data. The data were dichotomous based on yes/no responses to the survey questions. Dichotomous describes a categorical or nominal variable with two categories (Urban, 2005). The exception to this was question seven which asked the respondents for continuous data, the number of security staff that the school used pre and post the Newtown school shooting. The researcher converted these data to dichotomous data for the purpose of computing the change factor and answering the question whether or not the school added or removed school security staff.

As one of the first steps in the data analyses, the researcher converted the original data and coded it 1 to show that the security measure was in place and 0 to indicate that the security measure was not in place. The researcher calculated the pre and post mean and standard deviation for each question. The means were calculated by totaling the number of School Practices and Programs, School Security Staff and Staff Trainings that were in place before and after the incident. The item-level data were summed and used as interval data for the *t*-test calculations.

Subsequently, for research questions 1a, 2a, and 3a, the researcher conducted paired samples *t*-tests to determine whether there was a statically significant difference between the mean numbers of these variables pre and post the Newtown school shooting. Recognizing the importance of researching the specific changes that resulted from the Newtown incident and to examine research questions 1b, 2b, and 3b, the researcher conducted McNemar tests on all of the

survey questions for each of the three subscales: School Practices and Programs, School Security Staff and Staff Training to determine whether there were significant changes in these specific elements of school security. The McNemar test is a type of chi-square statistic. The researcher used SPSS to conduct the calculations of the means and standard deviations, the paired samples *t*-tests and the McNemar tests on the entire data set of 117 schools.

To investigate research questions 1c, 2c, and 3c, the researcher calculated the change factors for each research question based on data reported by the administrators on the security measures that they had in place pre and post December 14, 2012. Responses of pre yes-post yes and pre no-post no represented no change and equaled zero in the change factor column on the spreadsheet. Responses of pre no-post yes represented measures that were added and equaled +1 in the change factor column. Responses of pre yes-post no represented measures that had been removed and equaled -1 in the change factor column. The data in the change factor columns for each of the survey questions per subscale were added to calculate the cumulative change factor. The change factors for the respective criterion variables (SPP, SSS, ST) were conducted on the final data set after univariate and multivariate outliers were removed.

For research questions 1c, 2c, and 3c, the researcher then conducted a multiple linear regression using the Enter method with all the predictor variables entered as a group to determine the extent to which the predictor variables school level (categorical data, 3 levels), school type (categorical data, 3 levels), diversity percentage (continuous data), and free or reduced lunch percentage (continuous data), and number of students (continuous data) predict the criterion variable which is the change factor for each of the three variables; School Practices and Programs, School Security Staff, and Staff Training. These five variables were the exact variables used on the School Characteristics section of the SSOCS and are typical demographic

variables used to describe schools. Field (2009) describes the Enter method as one in which the researcher has good theoretical reasoning for including the predictors in the analysis; however, the researcher makes no decision about the order in which the variables are entered into the regression and they are entered simultaneously. Field (2009), in support of the Enter method, writes that Stepwise methods are best avoided except for exploratory model building.

The researcher then loaded the collected non-converted data into SPSS and used SPSS to find evidence in support for or against the stated hypotheses. The researcher removed univariate and multivariate outliers from the multiple linear regression analyses as appropriate. Multiple linear regression can be used to determine statistical relationships between independent and dependent variables in order to use the former to predict the latter. However, this relationship should not be directly interpreted as causation.

To answer Research Question 4, the researcher composed a survey for the 36 district superintendents. The researcher asked the superintendents the following question: "Has your school district experienced increased demands on your budget due to increased security measures: school practices and programs, school security staff, and staff training that have been added or will be added since the Newtown school shooting on December 14, 2012?" The superintendents were asked to circle "yes" or "no." If the response was "yes," the superintendents were asked to quantify the increase by checking the budget impact range.

The researcher used descriptive statistics for Research Question 4 to analyze the amount of budgetary increases. The researcher analyzed these descriptive statistics further by calculating the District Security Budget Ranges with Analysis of School Data by Level, District Security Budget Ranges with Analysis of School Data by Type, and the District Security Budget Ranges

with Analysis of Number of Students, Free or Reduced Lunch Percentage, and Diversity Percentage.

Ethics Statement

Approval for this study was sought from the Institutional Review Board (IRB) of Western Connecticut State University. Permission to participate in this research was obtained from each district's superintendent and the school principals. To assure confidentiality, each district and school were coded with identification numbers. All data and information were collected by the researcher and stored at a secure location to protect district and school privacy. All participants were informed that their participation was voluntary and they could withdraw at any time. Aggregated data results were made available to all interested parties upon request.

CHAPTER FOUR: ANALYSIS OF THE DATA AND AN EXPLANATION OF THE FINDINGS

There are four research questions in this study that address the impact of the December 14, 2012 Newtown school shooting on school practices and programs, school security staff, staff training, and security budgets in the state of Connecticut. The researcher used the School Survey on Crime and Safety 2009-2010 (SSOCS), Administrator Questionnaire that was created by the National Center for Educational Statistics (NCES) in Washington, D.C. to answer the research questions. The researcher chose this instrument because it had validity, a track record of reliability in measuring school data on school crime and safety, and it was adaptable for the purposes of this study.

The study included 36 school districts (n = 36) in the State of Connecticut. This sample represents a 21% response rate from the 169 Connecticut school districts. Fraenkel and Wallin (2009) found that a low response rate in survey research is not necessarily a problem. They reference two survey research studies in which comparison of response rates of 60 to 70 percent to rates substantially lower (i.e., 20 to 40 percent) showed minimal differences in substantive answers (Fraenkel & Wallin, 2009).

Each district in the study was self-governing with oversight provided by a Board of Education. The school districts varied in enrollment size and type including rural, suburban, and urban districts. These districts represented a range of socioeconomic levels and cultural backgrounds. The researcher mailed 223 surveys, letters, and envelopes to the superintendents who distributed the SSOCS to the principals. The principals returned 117 surveys achieving a 53% return rate of the sample.

Conducting matched paired *t*-tests, the researcher analyzed whether educational leaders significantly increased school security measures in response to the Newtown school shooting. The researcher also conducted McNemar tests to determine which measure school security measures were changed. Finally, using multiple linear regression analyses, the researcher analyzed the extent and manner to which level (elementary, middle, high school), type (rural, urban, suburban), diversity percentage, free or reduced lunch percentage, and number of students predict the change factor in school practices and programs, school security staff, and staff training, as a result of the December 14, 2012 Newtown school shooting.

The researcher analyzed descriptive statistics on the impact of the Newtown school shooting on school district budgets. Specifically, the researcher examined whether the district security budget was increased due to the incident and to what extent, as indicated by the superintendent on the survey. In addition, the researcher analyzed descriptive statistics of the schools in the individual budget ranges.

Research Questions

In an effort to determine the impact of the Newtown school shooting on school practices and programs, staff training, security staff, and security budgets, this study examined the following research questions:

Research Question 1: How have school administrators addressed School Practices and Programs before and after the Newtown school shooting on December 14, 2012?

1a. Is there a significant difference in school administrator responses on the School Survey on Crime and Safety regarding School Practices and Programs (SPP) that were in effect prior to and after the Newtown school shooting?

1b. Is there a significant difference on individual items of the School Survey on Crime and Safety regarding School Practices and Programs that were in effect prior to and after the Newtown school shooting?

1c. To what extent and in what manner do school level (elementary, middle, high school), school type (rural, urban, suburban), student diversity percentage, free or reduced lunch percentage, and number of students predict the change factor in School Practices and Programs?

Research Question 2: How have school administrators addressed School Security Staff before and after the Newtown school shooting on December 14, 2012?

2a. Is there a significant difference in school administrator responses on the School Survey on Crime and Safety regarding School Security Staff that were in place prior to and after the Newtown school shooting?

2b. Is there a significant difference on individual items of the School Survey on Crime and Safety regarding School Security Staff that were in place prior to and after the Newtown school shooting?

2c. To what extent and in what manner do school level (elementary, middle, high school), school type (rural, urban, suburban), student diversity percentage, free or reduced lunch percentage, and number of students predict the change factor in School Security Staff?

Research Question 3: How have school administrators addressed Staff Training before and after the Newtown school shooting on December 14, 2012?

3a. Is there a significant difference in school administrator responses on the School Survey on Crime and Safety regarding Staff Training that was in place prior to and after the Newtown school shooting?

3b. Is there a significant difference on individual items of the School Survey on Crime and Safety regarding Staff Training that was in place prior to and after the Newtown school shooting?

3c. To what extent and in what manner do school level (elementary, middle, high school), school type (rural, urban, suburban), student diversity percentage, free or reduced lunch percentage, and number of students predict the change factor in Staff Training?

Research Question 4: Did school districts change their security budget as a result of the Newtown school shooting and to what extent?

Hypotheses

In the study, all four of the hypotheses are nondirectional, one relating to each research question.

Hypothesis 1: School administrators will increase School Practices and Programs after the Newtown school shooting on December 14, 2012.

1a. There will be a significant difference in school administrator responses on the School Survey on Crime and Safety regarding School Practices and Programs that were in effect prior to and after the Newtown school shooting.

1b. There will be a significant difference on individual items of the School Survey on Crime and Safety regarding School Practices and Programs that were in effect prior to and after the Newtown school shooting.

1c. School level (elementary, middle, high school), school type (rural, urban, suburban), student diversity percentage, free or reduced lunch percentage, and number of students will significantly predict the change factor in School Practices and Programs.

Hypothesis 2: School administrators will increase School Security Staff after the Newtown school shooting on December 14, 2012.

2a. There will be a significant difference in school administrator responses on the School Survey on Crime and Safety regarding School Security Staff that were in place prior to and after the Newtown school shooting.

2b. There will be a significant difference on individual items of the School Survey on Crime and Safety regarding School Security Staff that were in place prior to and after the Newtown school shooting.

2c. School level (elementary, middle, high school), school type (rural, urban, suburban), student diversity percentage, free or reduced lunch percentage, and number of students will significantly predict the change factor in School Security Staff.

Hypothesis 3: School administrators will increase Staff Training after the Newtown school shooting on December 14, 2012.

3a. There will be a significant difference in school administrator responses on the School Survey on Crime and Safety regarding Staff Training that was in place prior to and after the Newtown school shooting.

3b. There will be a significant difference on individual items of the School Survey on Crime and Safety regarding Staff Training that was in place prior to and after the Newtown school shooting.

3c. School level (elementary, middle, high school), school type (rural, urban, suburban), student diversity percentage, free or reduced lunch percentage, and number of students will significantly predict the change factor in Staff Training.

Hypothesis 4: School districts will change their security budget as a result of the Newtown school shooting.

Results

The variable of Students is a continuous variable and represents the enrollment or number of students at the school as reported by the administrator on the SSOCS. Level is a nominal variable with three categories (elementary, middle, high school). There were 69 elementary schools, 22 middle schools, 22 high schools, and 2 combined elementary/middle schools in the original study sample. Type is a categorical variable with three levels (rural, urban, suburban). There were 22 rural, 22 urban, and 71 suburban schools in the original study sample. Diversity Percentage is a continuous variable that is calculated by each school in the State of Connecticut based on enrollment data. Diversity includes the following categories: American Indian, Asian American, Black, Hispanic, Pacific Islander, and Two or more Races. Educational leaders report these data annually per school on the ED 165 state report. The researcher used the 2013 data set in this study and retrieved them from the Connecticut State Department of Education website, www.sde.ct.gov/sde.

Free or reduced lunch percentage is a continuous variable that is calculated for each school and is commonly used in the field of education to indicate the poverty level at the school. To qualify for free and reduced lunch, a family must apply with the State of Connecticut and qualify on a sliding scale that is based on household size (number of people) and household income. For example, a household with five residents must have a household income below $51,005 to qualify for free and reduced meals. This information was retrieved from the state of Connecticut government benefits website http://www.benefits.gov/benefits/benefit-details/1955.

At the end of the data collection process, the sample in this study included 36 school districts (n = 36) in the state of Connecticut. Each district was self-governing with oversight provided by a Board of Education. Included in the sample of 36 districts were 11 rural districts,

6 urban districts, and 19 suburban districts. The administrators who were surveyed self-selected their school and district type designation by circling rural, urban, or suburban on the School Characteristics page of the SSOCS. These districts ranged in free and reduced lunch percentage from 0% to 80%. The diversity percentage of the districts ranged from 0% to 78%.

There are 169 public school districts that comprise the population of school districts in the state of Connecticut. These districts contain 663 elementary, 192 middle, and 202 high schools. The US Census Bureau classifies towns as rural or urban. The census does not include suburban as a classification category. The enrollment of students in the sampled schools ranged from 47 to 2020 students. The districts in Connecticut range in free and reduced lunch percentage from 0% to 99.50%.

The researcher entered the data into a spreadsheet and calculated the dependent variables: change factor in School Practices and Programs (SPP), School Security Staff (SSS), and Staff Training (ST). These data were calculated from the administrator responses to questions about whether these measures were present at their schools pre and post the Newtown school shooting. A positive change factor represents administrators adding a SPP, SSS, or ST as a result of the Newtown school shooting and a negative change factor indicates that an administrator made a decision to remove a SPP, SSS, or ST. The change factor calculations were used for the multiple linear regression analyses. A summary of the change factor calculations is depicted in Table 4.

Table 4

Change Factor Calculations Based on the Inclusion of Specific Elements in a School's Security Plan

Pre Newtown Shooting	Post Newtown Shooting	Change Factor Calculations
Yes	Yes	0
No	No	0
No	Yes	1
Yes	No	-1

There were two categorical variables of interest in this research study. Level is a nominal variable with three categories (elementary, middle, high school). Type is a categorical variable with three levels (rural, urban, suburban). Tabachnick and Fidell (2007) emphasize that regression analyses can be used with either continuous or dichotomous predictor variables. A variable that is initially discrete can only be used if it is first converted into a set of dichotomous variables. This was the case with the predictor variables Level and Type.

Regarding Level, the researcher combined the middle and high schools in the study because of the disparate number of elementary, middle, and high schools. There were 69 elementary schools, 22 middle schools, 22 high schools and 2 combined elementary/middle schools in the original study sample. Thus, the elementary schools were coded as 1, $n = 69$, and the middle and high schools were coded as 2, $n = 44$.

In the case of the two combined elementary/middle schools, the researcher found the exact student enrollment numbers by examining enrollment reports on the school websites and speaking with a representative in the principal's office. In the case of the school

with identification number 16, the researcher entered 302 elementary students and 120 middle school students, equaling the total enrollment of 422 students reported by the principal on the SSOCS. In the case of the school with identification number 17, the researcher entered 283 elementary students and 98 middle school students, equaling the total enrollment of 381 students reported by the principal on the SSOCS.

In the case of Type, it was necessary to use dummy coding to convert this categorical variable to a dichotomous variable. Tabachnick and Fidell (2007) wrote that a variable that is initially discrete can be used if it is first converted into a set of dichotomous variables (numbering one fewer than the number of discrete categories) by dummy coding with 1s and 0s (p. 119). Meyers, Gamst, and Guarino (2006) note that, in order to include a dichotomously coded variable as a predictor, the researcher must assign arbitrary numerical codes for categories. Each dummy variable will be a dichotomous (0, 1) coding on the subcategory (level) of the main variable. In the case of this study, the researcher converted the variable into three new variables (Rural = 1 vs. Non-Rural = 0, Urban = 1 vs. Non-Urban = 0, Suburban = 1 vs. Non-Suburban = 0), one variable for each degree of freedom (Meyers, Gamst & Guarino, 2006).

The researcher entered the collected data into Statistical Package for the Social Sciences (IBM, 2010) and used it to find evidence in support for or against the stated hypotheses. For research questions 1c, 2c, and 3c, the researcher conducted a series of multiple linear regressions to determine the extent to which the predictor variables: Level, Type, Diversity Percentage, Free or Reduced Lunch Percentage, and Students predict the criterion variables: School Practices and Programs, School Security Staff, and Staff Training. In Table 5, the researcher provides a codebook of the SSOCS predictor variables.

Table 5

SPSS Codebook of SSOCS Predictor Variables

Code Name	Type of SPSS Field	Assigned Values
Student Enrollment	Numeric	47-2020
School Level	Numeric	1 = Elementary 2 = Middle/High School
School Type	Numeric	1 = Rural 2 = Urban 3 = Suburban
Diversity Percentage	Numeric	1%-78%
Free or Reduced Lunch Percentage	Numeric	1%-80%

In Table 6, the researcher added a codebook for the questions on the School Survey on Crime and Safety. This codebook is useful since it outlines the SSOCS item description and indicates how the change factors were calculated.

Table 6

Code Book for School Survey on Crime and Safety Questions

Survey Question Number	Item Description	Value	Entered As
1	School Practice and Program	Pre Yes, Post Yes	0
		Pre No, Post No	0
		Pre No, Post Yes	1
		Pre Yes, Post No	-1
2	Written Plan for Crises	Pre Yes, Post Yes	0
		Pre No, Post No	0
		Pre No, Post Yes	1
		Pre Yes, Post No	-1

(continued)

Table 6

Code Book for School Survey on Crime and Safety Questions

Survey Question Number	Item Description	Value	Entered As
3	Emergency Situation Drills Conducted	Pre Yes, Post Yes	0
		Pre No, Post No	0
		Pre No, Post Yes	1
		Pre Yes, Post No	-1
4	Formal Programs to Prevent or Reduce Violence	Pre Yes, Post Yes	0
		Pre No, Post No	0
		Pre No, Post Yes	1
		Pre Yes, Post No	-1
5	School Security Staff at School at Least Once Per Week	Pre Yes, Post Yes	0
		Pre No, Post No	0
		Pre No, Post Yes	1
		Pre Yes, Post No	-1
6	School Security Staff Present at Certain Times	Pre Yes, Post Yes	0
		Pre No, Post No	0
		Pre No, Post Yes	1
		Pre Yes, Post No	-1
7	Type of School Security Staff Present at School	Pre Yes, Post Yes	0
		Pre No, Post No	0
		Pre No, Post Yes	1
		Pre Yes, Post No	-1
8	School Security Staff Weapon Types	Pre Yes, Post Yes	0
		Pre No, Post No	0
		Pre No, Post Yes	1
		Pre Yes, Post No	-1
9	School Security Staff Role	Pre Yes, Post Yes	0
		Pre No, Post No	0
		Pre No, Post Yes	1
		Pre Yes, Post No	-1
10	Staff Training Provided	Pre Yes, Post Yes	0
		Pre No, Post No	0
		Pre No, Post Yes	1
		Pre Yes, Post No	-1

Research Question 1a. Results

The researcher conducted multiple data analyses to determine the impact of the Newtown school shooting on School Practices and Programs. The first step was to calculate the means and standard deviations of the data for each subscale with respect to school security procedures pre- and post- the Newtown school shooting. These data are displayed in Table 7.

Table 7

Mean and Standard Deviation for School Practices and Programs Pre and Post

Subscale	Mean Pre (SD)	Mean Post (SD)
SPP	24.21 (5.19)	27.66 (5.42)

Note. $n = 117$; School Practices and Programs (SPP)

These data show that there was an overall increase in the number of School Practices and Programs per school as a result of the Newtown school shooting as indicated by the increase in the mean from 24.21 pre to 27.66 post. The researcher accepted Hypothesis 1.

Subsequently, the researcher conducted a paired samples *t*-test between the pre and post means for School Practices and Programs for all 117 schools to investigate whether or not there were statistical differences and determine the level of significance of any changes. Green and Salkind (2008) explain that for a paired samples *t*-test, each case must have scores on two variables. The test essentially evaluates whether the mean of the difference between these two variables is significantly different from zero. In this study, the researcher ran a repeated measures design in which case the response is assessed on two occasions or under two conditions on one measure (Green & Salkind, 2008.)

There are three assumptions underlying a paired samples *t*-test. The first assumption is that the difference scores are normally distributed in the population (Green & Salkind, 2008.)

Using statistical and graphical methods, the researcher analyzed the skewness and kurtosis of the data. Tabachnick and Fidell (2007) note that skewness has to do with the symmetry of the distribution and that a skewed variable is a variable whose mean is not in the center of the distribution. Tabachnick and Fidell (2007) describe kurtosis as the peakedness of the distribution and discern between a distribution that is too peaked with short thick tails and data that are too flat with long thin tails. A normal distribution will have skewness and kurtosis values of zero. The cutoff levels are -1 to +1 as values falling outside of this range are skewed or too peaked (Tabachnick & Fidell, 2007).

In the case of School Practices and Programs, the skewness value for the pre data was -.303. The skewness value was .057 for the post data. Both of these values were within plus and minus 1, indicating an acceptably normal distribution of the data. The kurtosis values were .092 for the pre data, and -.136 for the post data. These kurtosis values were also within plus and minus 1, indicating that the data were normally distributed.

The second assumption is that the cases represent a random sample from the population, and the difference scores are independent of each other (Green & Salkind, 2008.) The difference scores in the data are independent from each other as they are all from different schools.

The third assumption is that the data must be interval or ratio level responses. This assumption for the paired samples *t*-test was met since the data in the study were interval level responses.

Having ascertained that the sample and data met the assumptions, the researcher conducted the *t*-tests to evaluate whether there were significantly more School Practices and Programs in place after the Newtown school shooting. The descriptive statistics are displayed in Table 8.

Table 8

Paired Samples Statistics - School Practices and Programs

	M	*SD*	Std. Error
SPP Pre	24.21	5.19	.480
SPP Post	27.66	5.42	.501

Note. $n = 117$

The paired samples correlations are shown in Table 9.

Table 9

Paired Samples Correlations-School Practices and Programs

N	Correlation	Sig.
117	.744	.000

The *t*-test results, $t(116) = 9.79$, $p = .000$ are shown in Table 10. The 95% confidence interval for the mean difference between pre and post was 2.75 to 4.14. The researcher accepted Hypothesis 1a.

Table 10

Paired Samples Test-School Practices and Programs

Mean	*SD*	Std. Error Mean	Lower	Upper	*t*	*Df*	Sig.
3.44	3.80	.351	2.75	4.14	9.79	116	.000

Research Question 1b. Results

At this point in the scope of the study, the researcher conducted a series of McNemar (1947) tests to determine which School Practices and Programs increased significantly, and those

that did not. McNemar's test can be used to analyze categorical data in survey research. The researcher tested the assumptions for the McNemar's test to ensure that it was appropriate for the purposes of this study. The first assumption was that the sample data consisted of matched pairs. This assumption was met since the data in this study were dependent and the responses were from the same subjects (principals) as they indicated the security measures that they had in their schools before and after the Newtown school shooting. The second assumption was that the frequency count could be organized into a 2 x 2 Table with 2 variables (Before and After), each having two categories (Security in Place, Security Not in Place). This assumption was also met as the McNemar test was appropriately computed on the sample data to produce 2 x 2 contingency Tables (McNemar, 1947). When conducting the McNemar exact tests, the researcher used different Bonferroni adjustments for each subscale because each contained a different number of questions. The results of the McNemar tests for research question 1 are displayed in Table 11.

Table 11

McNemar Analysis regarding School Practices and Programs

Question 1. During the 2012-2013 school year was it a practice at your school to do the following before (pre) and/or after (post) the December 14, 2012 Newtown school shooting?

1a. Require visitors to sign or check in

	No	Yes	x^2	*p*
No	0	2	.33	1.000
Yes	1	114		

1b. Control access to school buildings during school hours

	No	Yes	x^2	*p*
No	0	13	13	0.000**
Yes	0	104		

(continued)

Table 11

McNemar Analysis regarding School Practices and Programs

1c. Control access to school grounds during school hours

	No	Yes	x^2	*p*
No	84	8	5.44	.039
Yes	1	24		

1d. Require students to pass through metal detectors each day

	No	Yes	x^2	*p*
No	117	0	0	1.000
Yes	0	0		

1e. Perform one or more random metal detector checks on students

	No	Yes	x^2	*p*
No	117	0		
Yes	0	7	0	1.000

1f. Close the campus for most or all of the students during lunch

	No	Yes	x^2	*p*
No	83	0	0	1.000
Yes	0	34		

1g. Use one or more random dog sniffs to check for drugs

	No	Yes	x^2	*p*
No	110	0	0	1.000
Yes	0	7		

1h. Perform one or more random sweeps for contraband

	No	Yes	x^2	*p*
No	115	0	0	1.000
Yes	0	2		

1i. Require drug testing for athletes

	No	Yes	x^2	*p*
No	117	0	0	1.000
Yes	0	0		

1j. Require drug testing for students in extra-curricular activities other than athletics

	No	Yes	x^2	*p*
No	117	0	0	1.000
Yes	0	0		

(continued)

Table 11

McNemar Analysis regarding School Practices and Programs

1k. Require drug testing for any other students

	No	Yes	x^2	*p*
No	112	1	1	1.000
Yes	0	4		

1l. Require students to wear uniforms

	No	Yes	x^2	*p*
No	117	0	0	1.000
Yes	0	0		

1m. Enforce a strict dress code

	No	Yes	x^2	*p*
No	79	0	1	1.000
Yes	1	37		

1n. Provide school lockers to students

	No	Yes	x^2	*p*
No	48	0	1	1.000
Yes	1	68		

1o. Require clear book bags or ban book bags on school grounds

	No	Yes	x^2	*p*
No	113	0	1	1.000
Yes	1	3		

1p. Provide an electronic notification system that automatically notifies parents in case of a school-wide emergency

	No	Yes	x^2	*p*
No	13	6	6	.031
Yes	0	98		

1q. Provide a structured anonymous threat reporting system

	No	Yes	x^2	*p*
No	80	6	6	.031
Yes	0	31		

1r. Require students to wear badges or picture IDs

	No	Yes	x^2	*p*
No	107	4	4	.125
Yes	0	6		

(continued)

Table 11

McNemar Analysis regarding School Practices and Programs

1s. Require faculty and staff to wear badges or picture IDs

	No	Yes	x^2	*p*
No	10	32	29	0.000**
Yes	1	74		

1t. Use one or more security cameras to monitor the school

	No	Yes	x^2	*p*
No	4	13	10.29	.002*
Yes	1	99		

1u. Provide telephones in most classrooms

	No	Yes	x^2	*p*
No	17	2	2	.500
Yes	0	98		

1v. Provide two-way radios to any staff

	No	Yes	x^2	*p*
No	17	9	9	.004
Yes	0	91		

1w. Limit access to social networking websites from school computers

	No	Yes	x^2	*p*
No	23	2	0	1.000
Yes	2	90		

1x. Prohibit use of cell phones and text messaging devices during school

	No	Yes	x^2	*p*
No	28	5	1.29	.453
Yes	2	82		

Note. Using a Bonferroni adjustment for 24 items. $p = .002$ (.05/24) *, $p \leq .001$**

Question 2. Did your school have a written plan that describes procedures to be performed in the following crises before (pre) and/or after (post) the December 14, 2012 Newtown school shooting?

2a. Shootings

	No	Yes	x^2	*p*
No	21	14	14	0.000**
Yes	0	82		

(continued)

Table 11

McNemar Analysis regarding School Practices and Programs

2b. Armed Intruders

	No	Yes	x^2	*p*
No	11	13	13	0.000**
Yes	0	93		

2c. Hostages

	No	Yes	x^2	*p*
No	48	12	12	0.000**
Yes	0	57		

2d. Bomb threats or incidents

	No	Yes	x^2	*p*
No	8	7	7	.016
Yes	0	102		

2e. Chemical, biological or radiological threats or incidents

	No	Yes	x^2	*p*
No	35	10	10	.002*
Yes	0	72		

2f. Suicide

	No	Yes	x^2	*p*
No	14	3	3	.250
Yes	0	100		

2g. The U.S. National threat level is changed to Red

	No	Yes	x^2	*p*
No	81	7	7	.016
Yes	0	29		

2h. Pandemic Flu

	No	Yes	x^2	*p*
No	65	4	4	.125
Yes	0	47		

Note. Using a Bonferroni adjustment for 8 items. $p = .006$ (.05/8) *, $p \leq .001$**

(continued)

Table 11

McNemar Analysis regarding School Practices and Programs

Question 3. Did your school conduct a drill for students and staff to prepare them for the following emergency situations before (pre) and/or after (post) the December 14, 2012 Newtown school shooting?

3a. Shootings

	No	Yes	x^2	*p*
No	25	16	16	0.000**
Yes	0	76		

3b. Armed Intruders

	No	Yes	x^2	*p*
No	12	9	9	.004*
Yes	0	96		

3c. Hostages

	No	Yes	x^2	*p*
No	62	11	11	.001**
Yes	0	44		

3d. Bomb threats or incidents

	No	Yes	x^2	*p*
No	32	10	10	.002*
Yes	0	75		

3e. Chemical, biological or radiological threats or incidents

	No	Yes	x^2	*p*
No	69	7	7	.016
Yes	0	41		

3f. Suicide

	No	Yes	x^2	*p*
No	64	5	5	.063
Yes	0	48		

3g. The U.S. National threat level is changed to Red

	No	Yes	x^2	*p*
No	90	5	5	.063
Yes	0	22		

Note. Using a Bonferroni adjustment for 7 items. $p = .007$ (.05/7) *, $p \leq .001$**

(continued)

Table 11

McNemar Analysis regarding School Practices and Programs

Question 4. Did your school have any formal programs intended to prevent or reduce **violence*** that included the following components for students before (pre) and/or after (post) the December 14, 2012 Newtown school shooting?

4a. Prevention curriculum, instruction or training for students

	No	Yes	x^2	*p*
No	10	3	1	.625
Yes	1	103		

4b. Behavioral or behavior modification intervention for students

	No	Yes	x^2	*p*
No	4	2	2	.500
Yes	0	111		

4c. Counseling, social work, psychological or therapeutic activity for students

	No	Yes	x^2	*p*
No	2	0	0	1.000
Yes	0	115		

4d. Individual attention/mentoring/tutoring/coaching of students by students

	No	Yes	x^2	*p*
No	53	3	3	0.250
Yes	0	61		

4e. Individual attention/mentoring/tutoring/coaching of students by adults

	No	Yes	x^2	*p*
No	9	1	1	1.000
Yes	0	107		

4f. Recreation, enrichment or leisure activities for students

	No	Yes	x^2	*p*
No	10	2	2	0.500
Yes	0	105		

4g. Student involvement in resolving student conduct problems

	No	Yes	x^2	*p*
No	66	5	5	.063
Yes	0	46		

(continued)

Table 11

McNemar Analysis regarding School Practices and Programs

4h. Programs to promote sense of community/social integration among students

	No	Yes	x^2	*p*
No	6	1	1	1.000
Yes	0	110		

Note. Using a Bonferroni adjustment for 8 items. $p = .006$ (.05/8) *, $p \leq .001$**

In Table 11, the reader should note that the McNemar test results show that there were significant changes in some critical security measures including controlled access to the school during school hours and use of security cameras to monitor the school. Educational leaders also emphasized the requirement that staff members wear identification badges so that staff were easily identifiable and an intruder would be more easily recognized as not wearing an ID badge. The data also show that educational leaders ensured that schools had written plans for shootings and armed intruders and that they were drilling these plans to increase staff preparedness. The researcher accepted Hypothesis 1b.

Research Question 1c. Results

Having confirmed significant changes in School Practices and Programs through analyses of the means and standard deviations, the paired *t*-tests, and the McNemar tests, the researcher conducted a multiple linear regression procedure on School Practices and Programs to determine the extent and manner to which school level (elementary, middle/ high school), school type (rural, urban, suburban), student diversity percentage, free or reduced lunch percentage, and number of students predicted the change factor in school practices and programs after the Newtown school shooting on December 14, 2012.

Multivariate Assumptions. All assumptions were investigated as recommended by Tabachnick and Fidell (2007).

Outliers. The data in the sample were prepared by finding and eliminating univariate and multivariate outliers in preparation for the multiple linear regression analyses. Tabachnick and Fidell (2007) suggest removing these outliers before a multiple linear regression analysis of the data occurs.

Univariate Outliers. Tabachnick and Fidell (2007) describe univariate outliers as cases with an extreme value on one variable and explain that, among dichotomous variables, the cases on the wrong side of an uneven split are likely univariate outliers. Tabachnick and Fidell (2007) emphasize the importance of screening continuous variables as an important step in the data process and that the solutions found in research are better when the data are normally distributed and that non normal distributions lead to degraded solutions. Using statistical and graphical methods, the researcher analyzed the skewness and kurtosis of the data for each of the following variables. Tabachnick and Fidell (2007) note that skewness has to do with the symmetry of the distribution and that a skewed variable is a variable whose mean is not in the center of the distribution. Tabachnick and Fidell (2007) describe kurtosis as the peakedness of the distribution and discern between a distribution that is too peaked with short thick tails and data that are too flat with long thin tails. A normal distribution will have skewness and kurtosis values of zero. The cutoff levels are -1 to +1 as values falling outside of this range are skewed or too peaked (Tabachnick & Fidell, 2007).

In the case of this study, the data suggested that the three continuous variables Students, Free and Reduced Lunch Percentage, and Diversity Percentage were not normally distributed. In the case of Students, the skewness was 1.766 and the kurtosis was 3.935. The skewness for Free and Reduced Lunch Percentage was 1.366 and the kurtosis was 1.029. Finally, regarding Diversity Percentage, the skewness was 1.472 and the kurtosis was 1.282. To correct the issues

with skewness and kurtosis, transformations of the three variables were undertaken. Tabachnick and Fidell (2007) state that it is often required to attempt one transformation then another until the researcher finds the transformation that produces the skewness and kurtosis values nearest zero, the prettiest picture, and/or the fewest outliers (p. 86). Tabachnick and Fidell (2007) describe the recommended order of attempted transformations from square root to logarithmic to inverse. If the distribution differs moderately from normal, a square root transformation is tried first. If the distribution differs substantially, a logarithmic transformation is tried. If the distribution differs severely, the inverse is tried (Tabachnick & Fidell, 2007).

The researcher attempted a square root transformation for Students, Free and Reduced Lunch Percentage, and Diversity Percentage. The square root transformation was successful in the case of Free or Reduced Lunch Percentage and Diversity Percentage. The skewness of Square Root of the Free or Reduced Lunch (SqrRtFreeRed) was .439 and the kurtosis was -.364. The skewness of Square Root of Diversity (SqrRtDiv) was .662 and the kurtosis was -.083. The square root transformation was not successful with the variable Square Root of Students (SqrRtStudents) as the kurtosis was 1.235. The researcher attempted subsequent transformations with the variable Students. After the logarithmic transformation, the kurtosis value remained high at 2.055. This was also the case after the inverse transformation with the kurtosis value remaining high at 51.82. In Table 12, the researcher displays the coded predictor variables. The variables will be referred to in their newly transformed codes in the remainder of the document.

Table 12

Table of Transformed Predictor Variables in the Study

Label	Code Name	Type of SPSS Field
Diversity Percentage	SqrRtDiversity	Numeric

Free or Reduced Lunch Percentage	SqrRtFreeRed	Numeric
Number of Students	SqrRtStudents	Numeric

At this point in the SqrRtFreeRed, SqrRtStudents, and SqrRtDiversity data analyses, the researcher examined the box plots for the SqrRtStudents variable to identify potential outliers. Tabachnick and Fidell (2007) describe a univariate outlier as a case with an extreme value on one variable. In the case of continuous variables, Tabachnick & Fidell (2007) note that univariate outliers are cases with very large standardized scores, *z* scores, on one or more variables that are disconnected from the other *z* scores.

Analyzing the box plots of the square root of the predictor variables, the researcher identified univariate outliers in the variables SqrRtFreeRed, SqrRtDiversity, and SqrRtStudents. In the case of SqrRtFreeRed, there was 1 potential outlier (case 32, school 9-3). In the case of SqrRtDiversity, there were 5 potential outliers (case 22, school 9-3, case 32, school 9-3, case 27, school 23-10, case 50, school 27-18, and case 99, school 31-9.). In the case of SqrRtStudents, there was 1 potential outlier (case 32, school 18-7).

The researcher used SPSS to calculate the *z* scores for each of the predictor variables. Tabachnick and Fidell (2007) note that outliers having z scores within +3*SD* or -3*SD* should be included in the study. The *z* scores for SqrRtFreeRed ranged from -1.802 to 2.455, all within 3*SD* of the mean. The z scores for SqrtDiversity ranged from 1.990 to 2.542, all within 3*SD* of the mean. In the case of SqrRtStudents, the researcher removed the aforementioned outlier (case 32, school 18-7) which had a *z* score of 3.49. After removal of this outlier, the z scores for SqrtStudents ranged from -2.492 to 2.755, all within 3*SD* of the mean.

After removal of this outlier, the skewness and kurtosis values for SqrRtStudents and SqrRtFreeRed are all at the acceptable value of ±1. Table 13 depicts the skewness and kurtosis levels of the transformed variables.

Table 13

Predictor Variables - Skewness and Kurtosis for Research Question 1c.

Variable	Skewness	Kurtosis
SqrRtFreeRed	.432	-.388
SqrRtDiversity	.651	-.110
SqrRtStudents	.701	.682

Note. n = 114.

Multivariate Outliers. The researcher checked for multivariate outliers using SPSS by running multiple regression analyses with the predictor variables SqrRtFreeRed, SqrRtDiversity, and SqrRtStudents and the criterion variable SPP and checking the casewise diagnostics table for multivariate outliers. Meyers et al. (2006) explain that the casewise diagnostics Table will display residual outliers that depict cases with standardized residuals greater than 3. An examination of Table 14, the Casewise Diagnostics Table for Research Question 1c., First Analysis, suggested that there were three multivariate outliers, cases 9, 14, and 87, with standardized residuals greater than 3 standard deviations above the mean.

Table 14

Casewise Diagnostics for Research Question 1c., First Analysis

Case Number	Std. Residual	SPP	Predicted value	Residual
9	4.006	17	3.35	13.649
14	4.179	17	2.76	14.236
87	4.408	19	3.98	15.017

Note. $n = 111$.

Based on this outcome, the researcher eliminated these three cases from the sample and repeated the statistical procedure in an iterative fashion. This analysis again indicated that there were three cases: cases 34, 94, and 104, with standard deviations that exceeded three standard deviations above the mean. These outliers and their Standard Residuals are depicted in Table 15.

Table 15

Casewise Diagnostics for Research Question 1c., Second Analysis

Case Number	Std. Residual	SPP	Predicted value	Residual
34	3.210	9	1.47	7.534
94	4.558	14	3.30	10.698
104	3.695	11	2.33	8.671

Note. $n = 108$.

The researcher eliminated these three cases from the sample and repeated the statistical procedure. This third analysis suggested that there was one case, case 64, which exceeded 3 standard deviations above the mean and is depicted in Table 16.

Table 16

Casewise Diagnostics for Research Question 1c., Third Analysis

Case Number	Std. Residual	SPP	Predicted value	Residual
64	3.708	9	2.45	16.545

Note. $n = 107$.

The researcher eliminated this final case from the sample and repeated the procedure. SPSS did not produce any additional Casewise Diagnostics output, indicating that there were no more residual outliers meeting the 3 standard deviations metric (Meyers, et. al, 2006). After the univariate and multivariate outliers were removed from Research Question One, the sample size was $n = 107$.

Descriptive Statistics for Research Question 1c. This portion of the results contains descriptive statistics for the dependent variable School Practices and Programs and the predictor variables (Type, Level, Diversity Percentage, Free or Reduced Lunch Percentage, and Students). Descriptive statistics examined the procedures used to classify, organize, and summarize numerical data about changes in school security after the Newtown school shooting. The descriptive statistics and frequencies for research question one are depicted in Table 17.

Table 17

Descriptive Statistics for School Practices and Programs

Variable	Minimum	Maximum	*Mean*	*SD*
SPP	-2.00	7.00	1.34	1.68
Level	1.00	2.00	1.40	0.49
SqrRtStudents	6.86	40.25	22.90	6.07
SqrRtFreeRed	0.26	8.94	3.99	2.02
Rural	0.00	1.00	0.20	.40
Suburban	0.00	1.00	0.61	.49

Note. SPP represents School Practices and Programs, SqrRtStudents represents the Square Root of Students, SqrRtFreeRed represents the Square Root of Free or Reduced Lunch Percentage, n = 107.

Multivariate Assumptions for Multiple Linear Regression. Tabachnick and Fidell (2007) state that the multivariate assumptions that need to be verified for a multiple linear regression are multicollinearity, singularity, normality, homoscedasticity, linearity, tolerance, and variance inflation factor.

Multicollinearity and Singularity. The researcher examined bivariate correlations for multicollinearity. Meyers et al. (2006) emphasize that multicollinearity exists when there is high intercorrelation between the independent variables. Stevens (2002) notes that multicollinearity is problematic for three reasons; (a) multicollinearity reduces the size of the multiple correlation, (b) the confounding results from high intercorrelations between the independent variables makes interpretation problematic, and (c) multicollinearity increases regression coefficient variance resulting in a more unstable regression equation. Meyers et al. (2006) emphasize the importance of examining the Pearson correlations between variables in the analysis as a prelude to multiple regression. They note that two variables that are very strongly correlated should raise a "red flag." As a general rule, Meyers et al. recommend that two variables correlated in the middle 7s or higher should probably not be used together in a regression or any other multivariate analysis.

The bivariate correlations, displayed in Table 18 indicated that the variables SqrRtFreeRed and SqrRtDiversity were highly correlated r =.874. In addition, the variable Urban was highly correlated with SqrRtFreeRed at r =.758 and SqrRtDiversity r = .788. The researcher eliminated the variables Urban and SqrRtDiversity from subsequent analyses due to the high multicollinearity. Table 18 displays the correlations between the variables in Research Question 1c.

Table 18

Pearson Product Moment Correlations for Research Question 1c.

	Level	SqrRtSt	SqrRtFr	SqrtDiv	Rural	Urban	Suburb
SPP	-.154	-.109	-.169*	-.155	-.100	-.043	.116
Level		.574**	-.074	-.050	.123	-.069	-.044
SqrRtSt			-0.74	-.003	.004	-.018	.012
SqrRtFr				.874**	-.161	.758**	-.485**
SqrtDiv					-.266**	.788**	-.424**
Rural						-.244*	-.615**
Urban							-.615**

Note. SPP represents School Practices and Programs. Level refers to school level (elementary, middle, high school). SqrRtSt represents the Square Root of Students; SqrRtFr represents the Square Root of Free or Reduced Lunch Percentage; and SqrtDiv represents the Square Root of Diversity Percentage; $n = 107$, and $*p < .05$, $**p < .01$, $***p < .001$.

Tolerance and VIF. The researcher checked for multicollinearity using the tolerance and variance inflation factor diagnostics in SPSS (IBM, 2010). Meyers et al. (2006) note that a variable's tolerance is computed as 1-$R^2$of an independent variable. To compute tolerance for each independent variable, SPSS conducts a separate regression analysis where that predictor plays the role of a dependent variable being predicted by the remaining independent variables in the analysis (Tabachnick & Fidell, 2001b). Tolerance values range from 0 to 1 and multicollinearity is indicated for any variable with a tolerance value of .01 or less (Tabachnick & Fidell, 2001b). The lowest tolerance value is .673 for Level and the highest tolerance value is .999 for both SqrRtStudents and SqrRtFreeRed. Table 19 displays the tolerance values for the independent variables. All exceed .01 and, therefore, suggest that multicollinearity is not a problem.

The Variance Inflation Factor (VIF) is the reciprocal of the tolerance and is computed as 1/tolerance (Meyers et al, 2006). The VIF measures the degree of linear association between a particular independent variable and the remaining independent variables in the analysis. Stevens (2002) recommends a heuristic VIF greater than 10 as indicative of multicollinearity. The lowest VIF value is 1.001 for both SqrRtStudents and SqrRtFreeRed and the highest VIF value is 1.486 for Level. Table 19 displays the VIF for the independent variables, which are less than 10 and, therefore, suggest that multicollinearity is not a problem.

Table 19

Collinearity Statistics for Research Question 1c.

Predictor Variables	Tolerance	*VIF*
Level	.673	1.486
SqrRtStudents	.999	1.001
SqrRtFreeRed	.999	1.001
Rural	.975	1.026
Suburban	.763	1.311

Note. SqrRtStudents represents the Square Root of Students, SqrRtFreeRed represents the Square Root of Free or Reduced Lunch Percentage, and $n = 107$.

Normality, Linearity, and Homoscedasticity. Tabachnick and Fidell (2007) suggest checking for normality, linearity, and homoscedasticity simultaneously using a residuals scatter plot. The residuals scatter plot must be rectangular in shape with a concentration of points at the midline for normality, linearity, and homoscedasticity assumptions to be met. In the case of multiple regression, there is an assumption that the variables in the analysis are related to each other in a linear manner and that the best fitting function that represents the scatter plot is a straight line (Meyers et. al. 2006)

The researcher followed the process for producing the residuals scatter plots for each dependent variable recommended by Meyers et al. (2006) by placing the ZRESID, the standardized residuals representing the variance of the dependent variable in *z* score units remaining after the predictor variables have done their predictive work on the *y* axis. Subsequently, the researcher placed the ZPRED, the standardized predicted value, which is the predicted value of the dependent variable in *z* score units, on the *x* axis. Normality, linearity, and homoscedasticity were confirmed because the scatter plot was rectangular in shape and had a concentration of points along the midline. Figure 1 displays the residuals scatter plot for research question one.

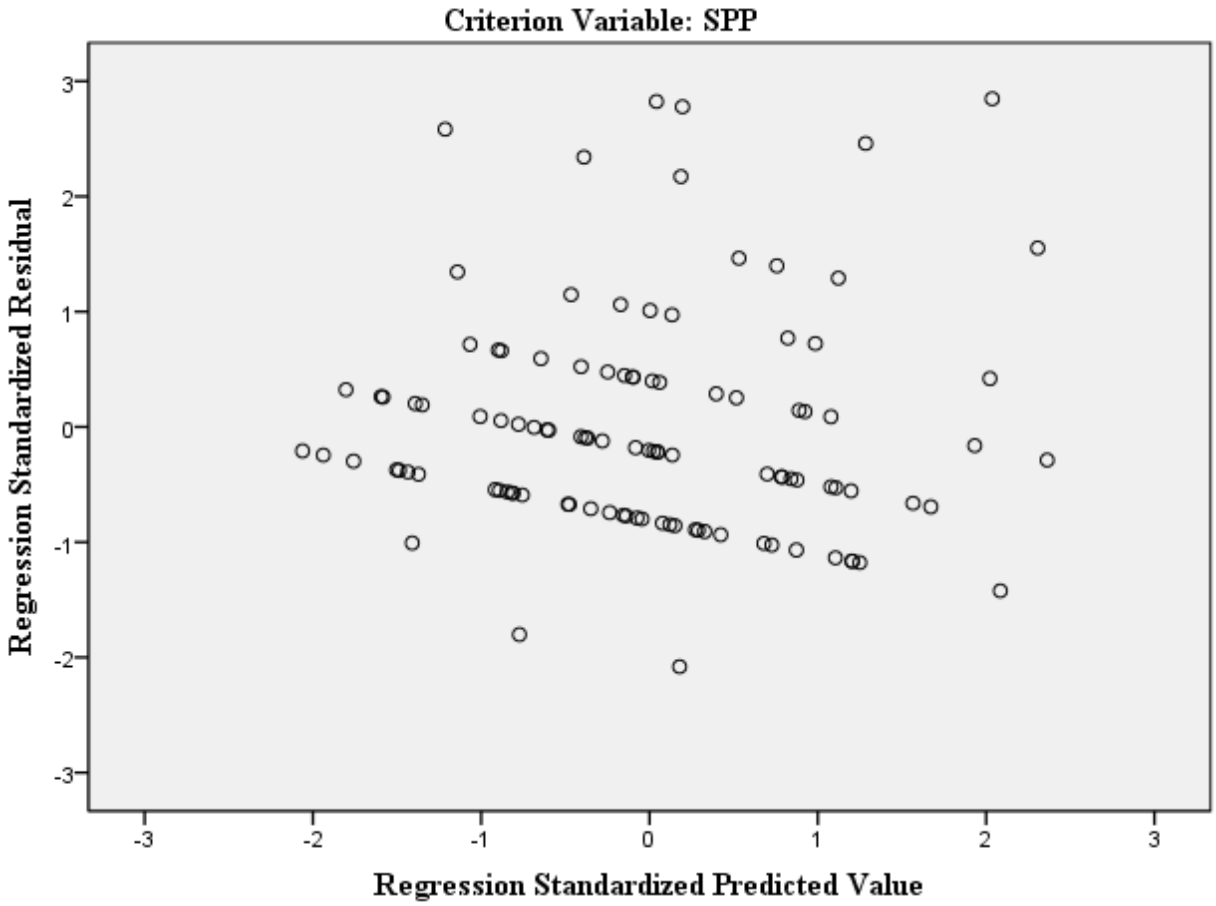

Figure 1. Scatterplot depicting criterion variable School Practices and Programs after removal of outliers.

Multiple Linear Regression Results—Research Question 1c. The model summary output shown in Table 20 indicated that 8.2% of the variability in SPP was explained by Level, SqrRtStudents, SqrRtFreeRed, Rural, and Suburban.

Table 20

Model Summary for Research Question 1c.

Model	*R*	R^2	AdjR^2	*SEE*	R^2Change	*F* Change	Sig *F* Change
1	.287	.082	.037	1.645	.082	1.816	.116

Note. **p* < .05, ***p* < .01, *** *p* < .001 *n* = 107

The ANOVA output indicated that the model was not significant $F(5,101) = 1.816$, $p = .116$. The alpha level was set at $p < .05$. The ANOVA table reinforces the data in the Model Summary where it indicates the sum of squares and degrees of freedom. Table 21 shows the ANOVA output for Research Question 1c.

Table 21

ANOVA Output for Research Question 1c.

Model	Sum of Squares	*df*	Mean Square	*F*	Sig
Regression	24.547	5	4.915	1.816	.116
Residual	273.314	101	2.706		
Total	297.888	106			

Note. **p* < .05, ***p* < .01, *** *p* < .001 *n* = 107

Although the model was not significant and the researcher rejected Hypothesis 1c, the predictor variable that was significant, SqrRtFreeRed ($p = .027$) is shown in Table 22.

Table 22

Coefficients Table for School Practices and Programs for Research Question 1c.

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	*Std. Error*	*Beta*	*t*	Sig.
(Constant)	4.047	1.156		3.500	.001
Level	-.406	.401	-.119	-1.013	.314
SqrRtStudents	-.017	.032	-.061	-0.524	.601
SqrRtFreeRed	-.273	.122	-.329	-2.238	.027*
Rural	-1.128	.686	-.268	-1.644	.103
Suburban	-.727	.626	-.213	-1.160	.249

Note. Dependent Variable is School Practices and Programs. $n = 107$, and *$p < .05$, **$p < .01$, ***$p < .001$.

Research Question 2a. Results

In the case of School Security Staff, the researcher again conducted multiple data analyses to determine the impact of the Newtown school shooting. The first step was to calculate the means and standard deviations of the data for entire data set of 117 schools pre and post the Newtown school shooting. These data are displayed in Table 23.

Table 23

Mean and Standard Deviation for School Security Staff Pre and Post

Variable	Pre Mean (SD)	Post Mean (SD)
SSS	5.73 (5.70)	9.54 (5.09)

These data show that there was an overall increase in the variable School Security Staff as a result of the Newtown school shooting as indicated by the increase in the mean from 5.73 pre to 9.54 post. The researcher accepted Hypothesis 2

Subsequently, the researcher conducted a paired samples *t*-test between the pre and post means for School Security Staff for all 117 schools to investigate whether there were statistical differences and determine the level of significance of the change. Green and Salkind (2008) explain that for a paired samples *t*-test, each case must have scores on two variables. The test essentially evaluates whether the mean of the difference between these two variables is significantly different from zero. In this study, the researcher ran a repeated measures design in which case the participant is assessed on two occasions or under two conditions on one measure (Green & Salkind, 2008.)

There are two assumptions underlying a paired samples *t*-test. The first assumption is that the difference scores are normally distributed in the population (Green & Salkind, 2008.) Using statistical and graphical methods, the researcher analyzed the skewness and kurtosis of the data. Tabachnick and Fidell (2007) note that skewness has to do with the symmetry of the distribution and that a skewed variable is a variable whose mean is not in the center of the distribution. Tabachnick and Fidell (2007) describe kurtosis as the peakedness of the distribution and discern between a distribution that is too peaked with short thick tails and data that are too flat with long thin tails. A normal distribution will have skewness and kurtosis values of zero. The cutoff levels are -1 to +1 as values falling outside of this range are skewed or too peaked (Tabachnick & Fidell, 2007).

In the case of School Security Staff, the skewness value for the pre data was .629. The skewness value was -.548 for the post data. Both of these values were within plus and minus 1,

indicating an acceptably normal distribution of the data. The kurtosis values were -.830 for the pre data, and -.388 for the post data. These kurtosis values were also within plus and minus 1, indicating that the data were normally distributed.

The second assumption is that the cases represent a random sample from the population, and the difference scores are independent of each other (Green & Salkind, 2008.) The difference scores in the data are independent from each other as they are all from different schools.

Having ascertained that the sample and data met the assumptions, the researcher conducted the *t*-tests to evaluate whether there were significantly more School Security Staff in place after the Newtown school shooting. The results, shown in Table 24 indicated that the mean number of School Security Staff in place post (M = 9.54, SD = 5.09) was significantly greater than the mean number of School Security Staff before the incident. The researcher accepted Hypothesis 2a.

Table 24

Paired Samples Statistics-School Security Staff

	Mean	*SD*	Std. Error
SSS Pre	5.73	5.70	.527
SSS Post	9.54	5.09	.470

Note. n = 117

The paired samples correlations are shown in Table 25.

Table 25

Paired Samples Correlations-School Security Staff

N	Correlation	Sig.
117	.646	.000

The results of the *t*-test $t(116) = 9.01$, $p = .000$ are displayed in Table 26. The 95% confidence interval for the mean difference between pre and post was 2.97 to 4.65. The results of this analysis demonstrated that schools added significant numbers of School Security Staff after the Newtown school shooting.

Table 26

Paired Samples Test-School Security Staff

Mean	SD	Std. Error Mean	Lower	Upper	*t*	Df	Sig.
3.81	4.58	.423	2.97	4.65	9.01	116	.000

Research Question 2b. Results

At this point in School Security Staff analysis, the researcher conducted a series of McNemar exact tests to determine the types of School Security Staff that increased significantly and those that did not. The researcher tested the assumptions for the McNemar's test to ensure that it was appropriate for the purposes of this study. The first assumption was that the sample data consisted of matched pairs. This assumption was met since the data in this study were dependent and the responses were from the same subjects (principals) as they indicated the security measures that they had in their schools before and after the Newtown school shooting. The second assumption was that the frequency count could be organized into a 2 x 2 Table with 2 variables (Before and After), each having two categories (Security in Place, Security Not in Place). This assumption was also met as the McNemar test was appropriately computed on the sample data to produce 2 x 2 contingency Tables (McNemar, 1947). When conducting the McNemar exact tests, the researcher used different Bonferroni adjustments for each subscale

because each contained a different number of questions. The results of the McNemar Exact Tests are displayed in Table 27.

Table 27

McNemar Analysis regarding School Security Staff

Question 5. During 2012-13 school year, did you have any security guards, security personnel, or sworn law enforcement officers present at your school at least once a week before (pre) and/or after (post) the December 14, 2012 Newtown school shooting?

	No	Yes	x^2	*p*
No	26	51	51	0.000**
Yes	0	40		

$p \leq .001$**

Question 6. Were these security guards, security personnel, or sworn law enforcement officers used at least once a week in or around your school at the following times before (pre) and/or after (post) the December 14, Newtown shooting?

6a. At any time during school hours

	No	Yes	x^2	*p*
No	24	54	51	0.000**
Yes	1	38		

6b. While students were arriving or leaving

	No	Yes	x^2	*p*
No	28	55	55	0.000**
Yes	0	34		

6c. At selected school activities

	No	Yes	x^2	*p*
No	43	32	32	0.000**
Yes	0	42		

6d. When school/school activities were not occurring

	No	Yes	x^2	*p*
No	82	14	11.27	.001**
Yes	1	20		

Note. Using a Bonferroni adjustment for 4 items. p = .01 (.05/4) *, $p \leq .001$**

(continued)

Table 27

McNemar Analysis regarding School Security Staff

Question 7. How many of the following were present in your school at least once a week before (pre) and/or after (post) the December 14, Newtown school shooting? If an officer works full-time across various schools in the district, please count this officer as "part-time" for your school.

7ai. Security guards or security personnel (not law enforcement) Full-Time

	No	Yes	x^2	*p*
No	82	17	14.22	0.000**
Yes	1	17		

7aii. Security guards or security personnel (not law enforcement) Part-Time

	No	Yes	x^2	*p*
No	107	7	.047	.180
Yes	2	1		

7bi. School Resource Officers Full-Time

	No	Yes	x^2	*p*
No	103	0	0	1.000
Yes	0	14		

7bii. School Resource Officers Part-Time

	No	Yes	x^2	*p*
No	82	12	5.4	.035
Yes	3	20		

7ci. Sworn law enforcement officer who are not School Resource Officers Full-Time

	No	Yes	x^2	*p*
No	112	3	3	0.250
Yes	0	2		

7cii. Sworn law enforcement officer who are not School Resource Officers Part-Time

	No	Yes	x^2	*p*
No	112	3	3	0.250
Yes	0	2		

Note. Using a Bonferroni adjustment for 6 items. p = .008 (.05/6) *, $p \leq .001$**

(continued)

Table 27

McNemar Analysis regarding School Security Staff

Question 8. Did any of the security guards, security personnel, or sworn law enforcement officers at your school routinely:

8a. Carry a stun gun

	No	Yes	x^2	*p*
No	48	20	20	0.000**
Yes	0	49		

8b. Carry chemical aerosol sprays

	No	Yes	x^2	*p*
No	56	18	18	0.000**
Yes	0	43		

8c. Carry a firearm

	No	Yes	x^2	*p*
No	36	27	27	0.000**
Yes	0	54		

Note. Using a Bonferroni adjustment for 3 items. p = .017 (.05/3) *, $p \leq .001$**

Question 9. Did these security guards, security personnel, or sworn law enforcement officers participate in the following activities at your school?

9a. Security enforcement and patrol

	No	Yes	x^2	*p*
No	31	46	43	0.000**
Yes	1	39		

9b. Maintaining school discipline

	No	Yes	x^2	*p*
No	77	9	6.4	.021
Yes	1	30		

9c. Coordinating with local police and emergency teams

	No	Yes	x^2	*p*
No	32	33	30.11	0.000**
Yes	1	51		

9d. Identifying problems in the school and proactively seeking solutions to those problems

	No	Yes	x^2	*p*
No	42	26	23.15	0.000**
Yes	1	47		

(continued)

Table 27

McNemar Analysis regarding School Security Staff

9e. Training teachers and staff in crime prevention

	No	Yes	x^2	*p*
No	71	19	16.20	0.000**
Yes	1	26		

9f. Mentoring students

	No	Yes	x^2	*p*
No	73	7	2.77	0.180
Yes	2	35		

9g. Teaching law-related education course of training students

	No	Yes	x^2	*p*
No	78	3	0.5	.727
Yes	5	31		

Note. Using a Bonferroni adjustment for 7 items. p = .007 (.05/7) *, $p \leq .001$**

In Table 27, the reader should note that the McNemar test results show that there were significant changes in many facets of School Security Staff. The results clearly indicate significantly increased SSS presence as students arrive and leave and at selected school activities. There were significant increases in full time security guards. The results also point to the significant increase in full-time school resource officers, carrying a firearm, who were focused on security enforcement and patrol after the Newtown school shooting. The significant increase in school security staff coordination with local police and emergency teams is very noteworthy. Finally, the results show that these additional full-time school resource officers focused on training teachers and staff in school safety or crime prevention. The researcher accepted Hypothesis 2b.

Research Question 2c. Results

Having confirmed significant changes in School Security Staff through analyses of the means and standard deviations, the paired *t*-tests, and the McNemar tests, the researcher

conducted a multiple linear regression procedure on School Security Staff to determine the extent and manner to which school level (elementary, middle/high school), school type (rural, urban, suburban), student diversity percentage, free or reduced lunch percentage, and number of students predicted the change factor in school practices and programs after the Newtown school shooting on December 14, 2012.

Assumptions for multiple regression analyses. The assumptions recommended by Tabachnick and Fidell (2007) were investigated.

Outliers. The data in the sample were prepared by finding and eliminating univariate and multivariate outliers in preparation for the multiple linear regression analyses. Tabachnick and Fidell (2007) suggest removing these outliers before a multiple linear regression analysis of the data occurs.

Univariate Outliers. Tabachnick and Fidell (2007) describe univariate outliers as cases with an extreme value on one variable and explain that, among dichotomous variables, the cases on the wrong side of an uneven split are likely univariate outliers. Tabachnick and Fidell (2007) emphasize the importance of screening continuous variables as an important step in the data process and that the solutions found in research are better when the data are normally distributed and that non normal distributions lead to degraded solutions. Using statistical and graphical methods, the researcher analyzed the skewness and kurtosis of the data. Tabachnick and Fidell (2007) note that skewness has to do with the symmetry of the distribution and that a skewed variable is a variable whose mean is not in the center of the distribution. Tabachnick and Fidell (2007) describe kurtosis as the peakedness of the distribution and discern between a distribution that is too peaked with short thick tails and data that are too flat with long thin tails. A normal

distribution will have skewness and kurtosis values of zero. The cutoff levels are -1 to +1 as values falling outside of this range are skewed or too peaked (Tabachnick & Fidell, 2007).

In the case of this study, the data suggested that the three continuous variables Students, Free and Reduced Lunch Percentage, and Diversity Percentage were not normally distributed. In the case of Students, the skewness was 1.766 and the kurtosis was 3.935. The skewness for Free and Reduced Lunch Percentage was 1.366 and the kurtosis was 1.029. Finally, regarding Diversity Percentage, the skewness was 1.472 and the kurtosis was 1.282. To correct the issues with skewness and kurtosis, transformations of the three variables were undertaken. Tabachnick and Fidell (2007) state that it is often required to attempt one transformation, then another until the researcher finds the transformation that produces the skewness and kurtosis values nearest zero, the prettiest picture, and/or the fewest outliers (p. 86). Tabachnick and Fidell (2007) describe the recommended order of attempted transformations from square root to logarithmic to inverse. If the distribution differs moderately from normal, a square root transformation is tried first. If the distribution differs substantially, a logarithmic transformation is tried. If the distribution differs severely, the inverse is tried (Tabachnick & Fidell, 2007).

The researcher attempted a square root transformation for Students, Free and Reduced Lunch Percentage, and Diversity Percentage. The square root transformation was successful in the case of Free or Reduced Lunch Percentage, and Diversity Percentage. The skewness of Square Root of the Free or Reduced Lunch (SqrRtFreeRed) was .439 and the kurtosis was -.364. The skewness of Square Root of Diversity (SqrRtDiv) was .662 and the kurtosis was -.083. The square root transformation was not successful with the variable Square Root of Students (SqrRtStudents) as the kurtosis was 1.235. The researcher attempted subsequent transformations with the variable Students. After the logarithmic transformation, the kurtosis value remained

high at 2.055. This was also the case after the inverse transformation with the kurtosis value remaining high at 51.82. In Table 28, the researcher displays the coded predictor variables. The variables will be referred to in their newly transformed codes in the remainder of the document.

Table 28

Transformed Predictor Variables in the Study

Label	Code Name	Type of SPSS Field
Diversity Percentage	SqrRtDiversity	Numeric
Free or Reduced Lunch Percentage	SqrRtFreeRed	Numeric
Number of Students	SqrRtStudents	Numeric

At this point in the SqrtFreeRed, SqrRtStudents, and SqrRtDiversity data analyses, the researcher examined the box plots for the SqrRtStudents variable to identify potential outliers. Tabachnick and Fidell (2007) describe a univariate outlier as a case with an extreme value on one variable. In the case of continuous variables, Tabachnick & Fidell (2007) note that univariate outliers are cases with very large standardized scores, *z* scores, on one or more variables, that are disconnected from the other *z* scores.

Analyzing the box plots of the square root of the predictor variables, the researcher identified univariate outliers in the variables SqrRtFreeRed, SqrRtDiversity, and SqrRtStudents. In the case of SqrRtFreeRed, there was 1 potential outlier (case 32, school 9-3). In the case of SqrRtDiversity, there were 5 potential outliers (case 22, school 9-3, case 32, school 9-3, case 27, school 23-10, case 50, school 27-18, and case 99, school 31-9.). In the case of SqrRtStudents, there was 1 potential outlier (case 32, school 18-7).

The researcher used SPSS to calculate the *z* scores for each of the predictor variables. Tabachnick and Fidell (2007) note that outliers having z scores within +3*SD* or -3*SD* should be included in the study. The *z* scores for SqrRtFreeRed ranged from -1.802 to 2.455, all within 3*SD* of the mean. The z scores for SqrtDiversity ranged from 1.990 to 2.542, all within 3*SD* of the mean. In the case of SqrRtStudents, the researcher removed the aforementioned outlier (case 32, school 18-7) which had a *z* score of 3.49. After removal of this outlier, the z scores for SqrtStudents ranged from -2.492 to 2.755, all within 3SD of the mean.

After removal of this outlier, the skewness and kurtosis values for SqrRtStudents and SqrRtFreeRed are all at the acceptable value of ±1. Table 29 depicts the skewness and kurtosis levels of the transformed variables.

Table 29

Predictor Variables-Skewness and Kurtosis for Research Question 2c.

Variable	Skewness	Kurtosis
SqrRtFreeRed	.432	-.388
SqrRtDiversity	.651	-.110
SqrRtStudents	.701	.682

Note. $N = 114$.

Multivariate Outliers. In the case of Research Question 2, the researcher checked for multivariate outliers using SPSS to perform a multiple regression analysis and by checking for casewise diagnostics. Meyers et al. (2006) explain that the casewise diagnostics table will display residual outliers that depict cases with standardized residuals greater than 3. SPSS did not produce any casewise diagnostics output, indicating that there were no residual outliers meeting the 3 standard deviation criterion (Meyers, et. al 2006).

Descriptive Statistics for Research Question 2c. This portion of the results contains descriptive statistics for the dependent variable School Security Staff and the predictor variables (Type, Level, Diversity Percentage, Free or Reduced Lunch Percentage, and Students). Descriptive statistics examined the procedures used to classify, organize, and summarize numerical data about changes in school security after the Newtown school shooting. The descriptive statistics for research question two are depicted in Table 30.

Table 30

Descriptive Statistics for School Security Staff

Variable	Minimum	Maximum	*Mean*	*SD*
SSS	-3	16	4.15	4.43
Level	1	2	1.39	.49
SqrRtStudents	6.86	40.25	22.67	5.99
SqrRtFreeRed	.26	8.94	3.93	2.04
Rural	0.00	1	.20	.40
Suburban	0.00	1	.61	.49

Note. SSS represents School Security Staff, SqrRtStudents represents the Square Root of Students, SqrRtFreeRed represents the square root of Free or Reduced Lunch Percentage, *n*= 114.

In Table 31, the researcher displays the Pearson Product Moment Correlations for School Security Staff.

Table 31

Pearson Product Moment Correlations for Research Question 2c.

	Level	SqrRtStudents	SqrRtFreeRed	Rural	Suburban
SSS	-.341***	-.229*	-.180*	-.086	.068
Level		.570***	-.056	.140	-.060
SqrRtStudents			-.029	-.002	-.005
SqrRtFreeRed				-.159*	-.486***
Rural					-.623***
Suburban					

Note. SSS represents School Security Staff, SqrRtStudents represents the Square Root of Students, SqrRtFreeRed represents the Square Root of Free or Reduced Lunch Percentage. *p < .05, **p < .01, *** p < .001 n = 114

All correlations, displayed in Table 31, were between -.75 and .75 and the researcher concluded that there were no issues with multicollinearity and singularity.

***Tolerance and VIF*.** The researcher checked for multicollinearity using the tolerance and variance inflation factor diagnostics in SPSS (IBM, 2010). Meyers et al. (2006) note that a variable's tolerance is computed as 1-$R^2$of an independent variable. To compute tolerance for each independent variable, SPSS conducts a separate regression analysis where that predictor plays the role of a dependent variable being predicted by the remaining independent variables in the analysis (Tabachnick & Fidell, 2001b). Tolerance values range from 0 to 1 and multicollinearity is indicated for any variable with a tolerance value of .01 or less (Tabachnick & Fidell, 2001b). The lowest tolerance value is .259 for Suburban and the highest tolerance value is .665 for SqrRtStudents. Table 32 displays the tolerance values for the independent variables. All exceed .01 and, therefore, suggest that multicollinearity is not a problem.

The Variance Inflation Factor (VIF) is the reciprocal of the tolerance and is computed as 1/tolerance (Meyers et al, 2006). The VIF measures the degree of linear association between a particular independent variable and the remaining independent variables in the analysis. Stevens (2002) recommends a heuristic VIF greater than 10 as indicative of multicollinearity. The lowest VIF value is 1.504 for SqrRtStudents and the highest VIF value is 3.858 for Suburban. Table 32 displays the VIF for the independent variables which are less that 10 and therefore suggest that multicollinearity is not a problem.

Table 32

Collinearity Statistics for Research Question 2c.

Predictor Variables	Tolerance	*VIF*
Level	.653	1.532
SqrRtStudents	.665	1.504
SqrRtFreeRed	.413	2.422
Rural	.326	3.072
Suburban	.259	3.858

Note. SqrRtStudents represents the Square Root of Students, SqrRtFreeRed represents the Square Root of Free or Reduced Lunch Percentage, and $n = 107$.

Normality, Linearity, and Homoscedasticity. Tabachnick and Fidell (2007) suggest checking for normality, linearity, and homoscedasticity simultaneously through a residuals scatter plot. The residuals scatter plot must be rectangular in shape with a concentration of points at the midline for normality, linearity, and homoscedasticity assumptions to be met. In the case of multiple regression, there is an assumption that the variables in the analysis are related to each other in a linear manner and that the best fitting function that represents the scatter plot is a straight line (Meyers et. al. 2006)

The researcher followed the process for producing the residuals scatter plots for each dependent variable recommended by Meyers et al. (2006) by placing the ZRESID, the standardized residuals representing the variance of the dependent variable in *z* score units remaining after the predictor variables have done their predictive work on the *y* axis. Subsequently, the researcher placed the ZPRED, the standardized predicted value which is the predicted value of the dependent variable in *z* score units on the *x* axis. Normality, linearity, and homoscedasticity were confirmed because the scatter plot was rectangular in shape and had a concentration of points along the midline. Figure 2 displays the residuals scatter plot for research question two.

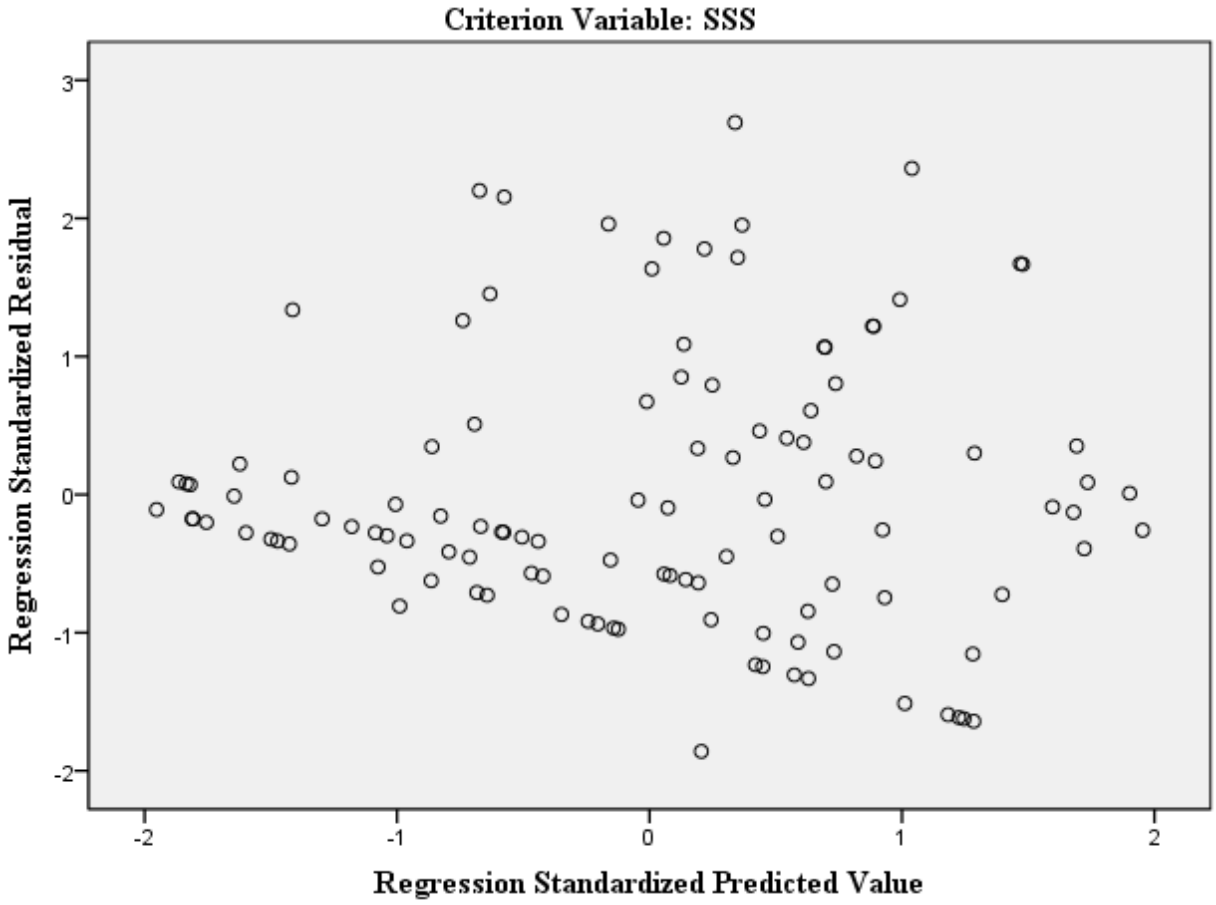

Figure 2. Scatterplot depicting criterion variable School Security Staff after removal of outliers

Multiple Linear Regression Results—Research Question 2c. The model summary output shown in Table 33 indicated that 20% of the variability in SSS was explained by Level, SqrRtStudents, SqrRtFreeRed, Rural, and Suburban.

Table 33

Model Summary for Research Question 2c.

Model	*R*	R^2	AdjR^2	*SEE*	R^2Change	*F* Change	Sig *F* Change
1	.450	.203	.166	4.045	.203	5.499*	.000

Note. ***p*** < .05, ****p*** < .01, *****p*** < .001, *n* = 101.

The ANOVA output indicated that the model was significant, $F(5,108) = 5.499$, $p = .000$. The alpha level was set at $p < .05$. The ANOVA table reinforces the data in the Model Summary where it indicates the sum of squares and degrees of freedom. Table 34 displays the ANOVA output for Research Question 2c.

Table 34

ANOVA Output for Research Question 2c.

Model	Sum of Squares	*df*	Mean Square	*F*	Sig
Regression	449.793	5	89.959	5.499	.000
Residual	1766.672	108	16.358		
Total	2216.465	113			

Note. *****$p < .05$, ******$p < .01$, *******$p < .001$, $n = 114$.

The predictor variables that were significant are Level ($p = .008$), SqrRtFreeRed ($p = .003$), Rural ($p = .031$), and Suburban ($p = .030$) are shown in Table 35. The researcher accepted Hypothesis 2c. Table 35

Coefficients Table for SSS for Research Question 2c.

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	*Std. Error*	*Beta*	*t*	Sig.
(Constant)	15.867	2.732		5.809	.000
Level	-2.682	.963	-.296	-2.785	.008**

(continued)

Table 35

Coefficients Table for SSS for Research Question 2c.

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	*Std. Error*	*Beta*	*t*	Sig.
SqrRtStudents	-.056	.078	-.076	-0.720	.431
SqrRtFreeRed	-.968	.291	-.445	-3.331	.003**
Rural	-3.945	1.654	-.359	-2.385	.031**
Suburban	-3.521	1.522	-.390	-2.313	.030**

Note. *$p \leq .05$, **$p \leq .01$, *** $p \leq .001$, $n = 114$

Research Question 3a. Results

For Staff Training, the researcher calculated the means and standard deviations for the variable pre and post the Newtown school shooting. These data are displayed in Table 36.

Table 36

Mean and Standard Deviation for Staff Training Pre and Post

Variable	Mean (SD) Pre	Mean (SD) Post
ST	4.36 (2.42)	4.83 (2.38)

These data suggested that there was an overall increase in the variable Staff Training as a result of the Newtown school shooting as indicated by the increase in the mean from 4.36 pre to 4.83 post. The researcher accepted Hypothesis 3.

Subsequently, the researcher conducted a paired samples *t*-test between the pre and post means for Staff Training for all 117 schools to investigate whether there were statistical

differences and determine the level of significance of the change. Green and Salkind (2008) explain that for a paired samples *t*-test, each case must have scores on two variables. The test essentially evaluates whether the mean of the difference between these two variables is significantly different from zero. In this study, the researcher ran a repeated measures design in which case the participant is assessed on two occasions or under two conditions on one measure (Green & Salkind, 2008.)

There are two assumptions underlying a paired samples *t*-test. The first assumption is that the difference scores are normally distributed in the population (Green & Salkind, 2008.) Using statistical and graphical methods, the researcher analyzed the skewness and kurtosis of the data. Tabachnick and Fidell (2007) note that skewness has to do with the symmetry of the distribution and that a skewed variable is a variable whose mean is not in the center of the distribution. Tabachnick and Fidell (2007) describe kurtosis as the peakedness of the distribution and discern between a distribution that is too peaked with short thick tails and data that are too flat with long thin tails. A normal distribution will have skewness and kurtosis values of zero. The cutoff levels are -1 to +1 as values falling outside of this range are skewed or too peaked (Tabachnick & Fidell, 2007).

In the case of Staff Training, the skewness value for the pre data was -.315. The skewness value was -.393 for the post data. Both of these values were within plus and minus 1, indicating an acceptably normal distribution of the data. The kurtosis values were -.822 for the pre data, and -.879 for the post data. These kurtosis values were also within plus and minus 1, indicating that the data were normally distributed.

The second assumption is that the cases represent a random sample from the population, and the difference scores are independent of each other (Green & Salkind, 2008.) The difference scores in the data are independent from each other as they are all from different schools.

Having ascertained that the sample and data met the assumptions, the researcher conducted the *t*-tests to evaluate whether there were significantly more Staff Trainings in place after the Newtown school shooting. The results, shown in Table 37 indicated that the mean number of Staff Trainings in place post (M = 4.83, SD = 2.38) was significantly greater than the mean number of Staff Trainings pre (M = 4.36, SD = 2.42). The researcher accepted Hypothesis 3a.

Table 37

Paired Samples Statistics-Staff Training

	Mean	*SD*	Std. Error
ST Pre	4.36	2.42	.224
ST Post	4.83	2.38	.220

Note. n = 117

The paired samples correlations for Staff Training are displayed in Table 38.

Table 38

Paired Samples Correlations- Staff Training

n	Correlation	Sig.
117	.780	.000

The results of the test $t(116) = 3.19$, $p = .002$ are displayed in Table 39. The 95% confidence interval for the mean difference between pre and post was .178 to .762. The results

of this analysis demonstrated that schools added significant numbers of Staff Trainings after the Newtown school shooting.

Table 39

Paired Samples Test- Staff Training

Mean	*SD*	Std. Error Mean	Lower	Upper	*t*	*Df*	Sig.
.470	1.60	.147	.178	.762	3.18	116	.002**

Note. *$p \leq .05$, **$p \leq .01$, *** $p \leq .001$, $n = 117$

Research Question 3b. Results

At this point in the scope of the study, the researcher conducted a series of McNemar tests to determine which types of Staff Trainings increased significantly and those that did not. The researcher tested the assumptions for the McNemar's test to ensure that it was appropriate for the purposes of this study. The first assumption was that the sample data consisted of matched pairs. This assumption was met since the data in this study were dependent and the responses were from the same subjects (principals) as they indicated the security measures that they had in their schools before and after the Newtown school shooting. The second assumption was that the frequency count could be organized into a 2 x 2 Table with 2 variables (Before and After), each having two categories (Security in Place, Security Not in Place). This assumption was also met as the McNemar test was appropriately computed on the sample data to produce 2 x 2 contingency Tables (McNemar, 1947). When conducting the McNemar exact tests, the researcher used different Bonferroni adjustments for each subscale because each contained a different number of questions. The results of the McNemar tests are displayed in Table 40.

Table 40 *McNemar Analysis regarding Staff Training*

Question 10. During the 2012-13 school year, did your school or school district provide any of the following for classroom teachers or aides before (pre) and/or after (post) the December 14, 2012 Newtown school shooting?

10a. Training in classroom management for teachers

	No	Yes	x^2	*p*
No	40	6	0.40	.754
Yes	4	67		

10b. Training in school-wide discipline policies and practices related to violence

	No	Yes	x^2	*p*
No	39	7	7	.016
Yes	0	71		

10c. Training in school-wide discipline policies and practices related to alcohol and/or drug use

	No	Yes	x^2	*p*
No	70	8	8	.008
Yes	0	39		

10d. Training in safety procedures

	No	Yes	x^2	*p*
No	13	11	6.23	.022
Yes	2	91		

10e. Training in recognizing early warning signs of students likely to exhibit violent behavior

	No	Yes	x^2	*p*
No	64	12	12	0.000**
Yes	0	41		

10f. Training in recognizing signs of students using/abusing alcohol and/or drugs

	No	Yes	x^2	*p*
No	80	8	5.44	.039
Yes	1	28		

10g. Training in positive behavioral intervention strategies

	No	Yes	x^2	*p*
No	20	5	2.67	.219
Yes	1	91		

10h. Training in crisis prevention and intervention

	No	Yes	x^2	*p*
No	36	7	4.5	.070
Yes	1	73		

Note. Using a Bonferroni adjustment for 8 items. $p = .006$ (.05/8) *, $p \leq .001$**

The reader should note in Table 40 that the only McNemar test result on Staff Training that was significant was training in recognizing early warning signs of students likely to exhibit violent behavior. The researcher accepted Hypothesis 1b.

Research Question 3c. Results

Assumptions for multiple regression analyses. The following assumptions were investigated as recommended by Tabachnick and Fidell (2007).

Outliers. The data in the sample were prepared by finding and eliminating univariate and multivariate outliers in preparation for the multiple linear regression analyses. Tabachnick and Fidell (2007) suggest removing these outliers before a multiple linear regression analysis of the data occurs.

Univariate Outliers. Tabachnick and Fidell (2007) describe univariate outliers as cases with an extreme value on one variable and explain that, among dichotomous variables, the cases on the wrong side of an uneven split are likely univariate outliers. Tabachnick and Fidell (2007) emphasize the importance of screening continuous variables as an important step in the data process and that the solutions found in research are better when the data are normally distributed and that non normal distributions lead to degraded solutions. Using statistical and graphical methods, the researcher analyzed the skewness and kurtosis of the data. Tabachnick and Fidell (2007) note that skewness has to do with the symmetry of the distribution and that a skewed variable is a variable whose mean is not in the center of the distribution. Tabachnick and Fidell (2007) describe kurtosis as the peakedness of the distribution and discern between a distribution that is too peaked with short, thick tails and data that are too flat with long, thin tails. A normal distribution will have skewness and kurtosis values of zero. The cutoff levels are -1 to +1 as values falling outside of this range are skewed or too peaked (Tabachnick & Fidell, 2007).

In the case of this study, the data were used to determine the three continuous variables of Students, Free and Reduced Lunch Percentage, and Diversity Percentage were not normally distributed. In the case of Students, the skewness was 1.766 and the kurtosis was 3.935. The skewness for Free and Reduced Lunch Percentage was 1.366 and the kurtosis was 1.029. Finally, regarding Diversity Percentage, the skewness was 1.472 and the kurtosis was 1.282. To correct the issues with skewness and kurtosis, transformations of the three variables were undertaken. Tabachnick and Fidell (2007) state that it is often required to attempt one transformation, then another until the researcher finds the transformation that produces the skewness and kurtosis values nearest zero, the prettiest picture, and/or the fewest outliers (p. 86). Tabachnick and Fidell (2007) describe the recommended order of attempted transformations from square root to logarithmic to inverse. If the distribution differs moderately from normal, a square root transformation is tried first. If the distribution differs substantially, a logarithmic transformation is tried. If the distribution differs severely, the inverse is tried (Tabachnick & Fidell, 2007).

The researcher attempted a square root transformation for Students, Free and Reduced Lunch Percentage, and Diversity Percentage. The square root transformation was successful in the case of Free or Reduced Lunch Percentage, and Diversity Percentage. The skewness of Square Root of the Free or Reduced Lunch (SqrRtFreeRed) was .439 and the kurtosis was -.364. The skewness of Square Root of Diversity (SqrRtDiv) was .662 and the kurtosis was -.083. The square root transformation was not successful with the variable Square Root of Students (SqrRtStudents) as the kurtosis was 1.235. The researcher attempted subsequent transformations with the variable Students. After the logarithmic transformation, the kurtosis value remained high at 2.055. This was also the case after the inverse transformation with the kurtosis value

remaining high at 51.82. In Table 41, the researcher displays the coded predictor variables. The variables will be referred to in their newly transformed codes in the remainder of the document.

Table 41

Transformed Predictor Variables in the Study

Label	Code Name	Type of SPSS Field
Diversity Percentage	SqrRtDiversity	Numeric
Free or Reduced Lunch Percentage	SqrRtFreeRed	Numeric
Number of Students	SqrRtStudents	Numeric

At this point in the SqrRtFreeRed, SqrRtStudents, and SqrRtDiversity data analyses, the researcher examined the box plots for the SqrRtStudents variable to identify potential outliers. Tabachnick and Fidell (2007) describe a univariate outlier as a case with an extreme value on one variable. In the case of continuous variables, Tabachnick & Fidell (2007) note that univariate outliers are cases with very large standardized scores, *z* scores, on one or more variables, that are disconnected from the other *z* scores.

Analyzing the box plots of the square root of the predictor variables, the researcher identified univariate outliers in the variables SqrRtFreeRed, SqrRtDiversity, and SqrRtStudents. In the case of SqrRtFreeRed, there was 1 potential outlier (case 32, school 9-3). In the case of SqrRtDiversity, there were 5 potential outliers (case 22, school 9-3, case 32, school 9-3, case 27, school 23-10, case 50, school 27-18, and case 99, school 31-9.). In the case of SqrRtStudents, there was 1 potential outlier (case 32, school 18-7).

The researcher used SPSS to calculate the *z* scores for each of the predictor variables. Tabachnick and Fidell (2007) note that outliers having z scores within +3*SD* or -3*SD* should be

included in the study. The *z* scores for SqrRtFreeRed ranged from -1.802 to 2.455, all within 3*SD* of the mean. The z scores for SqrRtDiversity ranged from 1.990 to 2.542, all within 3*SD* of the mean. In the case of SqrRtStudents, the researcher removed the aforementioned outlier (case 32, school 18-7) which had a *z* score of 3.49. After removal of this outlier, the z scores for SqrRtStudents ranged from -2.492 to 2.755, all within 3SD of the mean.

After removal of this outlier, the skewness and kurtosis values for SqrRtStudents and SqrRtFreeRed were all at the acceptable value of ±1. Table 42 depicts the skewness and kurtosis levels of the transformed variables.

Table 42

Predictor Variables-Skewness and Kurtosis for Research Question 3c.

Variable	Skewness	Kurtosis
SqrRtFreeRed	.432	-.388
SqrRtDiversity	.651	-.110
SqrRtStudents	.701	.682

Note. $n = 114$.

Multivariate Outliers. The researcher checked for multivariate outliers using SPSS by running multiple regression analyses with the predictor variables SqrRtFreeRed, SqrRtDiversity, and SqrRtStudents and the criterion variable ST and checking the casewise diagnostics table for multivariate outliers. Meyers et al. (2006) explain that the casewise diagnostics table will display residual outliers that depict cases with standardized residuals greater than 3. An examination of the Casewise Diagnostics Table suggested that there were five multivariate outliers: cases 9, 14, 30, 31 and 113, with standardized residuals greater than 3 standard deviations above the mean. These outliers are displayed in Table 43.

Table 43

Casewise Diagnostics for Research Question 3c., First Analysis

Case Number	Std. Residual	ST	Predicted value	Residual
9	4.027	7	.82	6.183
14	3.989	7	.87	6.126
30	4.147	7	.63	6.368
31	3.835	7	1.11	5.889
113	4.097	7	.71	6.292

Note. $n = 109$.

Based on the outcome shown in Table 44, the researcher eliminated these five cases from the sample and repeated the statistical procedure in an iterative fashion. This second analysis, displayed in Table 44, indicated that there were three cases: cases 44, 54, and 94, with standard deviations that exceeded 3 standard deviations above the mean.

Table 44

Casewise Diagnostics for Research Question 3c., Second Analysis

Case Number	Std. Residual	ST	Predicted Value	Residual
44	4.302	3	.19	2.813
54	-3.336	-2	.18	-2.181
94	-3.240	-2	.12	-2.119

Note. $n = 106$.

The researcher eliminated these three cases from the sample and repeated the statistical procedure. This third analysis suggested that there were four cases: 29, 54, 62, and 65 which exceeded 3 standard deviations above the mean and is displayed in Table 45.

Table 45

Casewise Diagnostics for Research Question 3c., Third Analysis

Case Number	Std. Residual	ST	Predicted Value	Residual
29	3.453	2	.22	1.782
54	3.586	2	.15	1.850
62	3.448	2	.22	1.779
65	3.509	2	.19	1.811

Note. $n = 102$.

The researcher eliminated these four cases from the sample and repeated the statistical procedure. This fourth analysis, which is displayed in Table 46 suggested that there was one case: case 74 which exceeded 3 standard deviations above the mean.

Table 46

Casewise Diagnostics for Research Question 3c., Fourth Analysis

Case Number	Std. Residual	SSP	Predicted Value	Residual
74	-3.708	-1	.12	-1.119

Note. $n = 101$.

The researcher eliminated this one case from the sample and repeated the procedure. SPSS did not produce any additional Casewise Diagnostics output, indicating that there were no more residual outliers meeting the 3 standard deviation criteria. (Meyers, et. al 2006). After the

univariate and multivariate outliers were removed from research question three, the sample size was $n = 101$.

Descriptive Statistics for Research Question 3c. This portion of the results contains descriptive statistics for the dependent variable Staff Training and the predictor variables (Type, Level, Diversity Percentage, Free or Reduced Lunch Percentage, and Students). Descriptive statistics examined the procedures used to classify, organize, and summarize numerical data about changes in school security after the Newtown school shooting. The descriptive statistics for research question three are depicted in Table 47.

Table 47

Descriptive Statistics for Staff Training

Variable	Minimum	Maximum	*Mean*	*SD*
ST	-1	1	.11	.344
Level	1	2	1.39	.489
SqrRt Students	6.86	40.25	22.448	6.104
SqrRtFreeRed	.31	8.94	3.950	2.033
Rural	0.00	1	.208	.408
Suburban	0.00	1	.604	.492

Note. ST represents Staff Training, SqrRtStudents represents the Square Root of Students, SqrRtFreeRed represents the Square Root of Free or Reduced Lunch Percentage, $n = 101$.

Multivariate Assumptions for Multiple Linear Regression. Tabachnick and Fidell (2007) state that the multivariate assumptions that need to be verified for a multiple linear regression are multicollinearity, singularity, normality, homoscedasticity, linearity, tolerance, and variance inflation factor.

Multicollinearity and Singularity. The researcher examined bivariate correlations for multicollinearity. Meyers et al. (2006) emphasize that multicollinearity exists when there is high intercorrelation between the independent variables. Stevens (2002) notes that multicollinearity is problematic for three reasons; (a) multicollinearity reduces the size of the multiple correlation, (b) the confounding results from high intercorrelations between the independent variables makes interpretation problematic, and (c) multicollinearity increases regression coefficient variance resulting in a more unstable regression equation. Meyers et al. (2006) emphasize the importance of examining the Pearson correlations between variables in the analysis as a prelude to multiple regression. They note that two variables that are very strongly correlated should raise a "red flag." As a general rule, Meyers et al. recommend that two variables correlated in the middle 7's or higher should probably not be used together in a regression or any other multivariate analysis.

The bivariate correlations in table 18 indicated that the variables SqrRtFreeRed and SqrRtDiversity were highly correlated $r = .874$. In addition, the variable Urban was highly correlated with SqrRtFreeRed at $r = .758$ and SqrRtDiversity $r = .788$. The researcher eliminated the variables Urban and SqrRtDiversity from the Research Question 3c. analysis due to the high multicollinearity. In Table 48, the researcher displays the Pearson Product Moment Correlations for Research Question 3c.

Table 48

Pearson Product Moment Correlations for Research Question 3c.

	Level	SqrRtStudents	SqrRtFreeRed	Rural	Suburban
ST	.104	.030	-.096	-.020	.021
Level		.567***	.010	.145	-.106
SqrRtStudents			.011	.042	-.063
SqrRtFreeRed				-.156	-.473***
Rural					-.633

Note. $*p < .05$, $**p < .01$, $*** p < .001$, $n = 101$

Tolerance and VIF. The researcher checked for multicollinearity using the tolerance and variance inflation factor diagnostics in SPSS (IBM, 2010). Meyers et al. (2006) note that a variable's tolerance is computed as $1-R^2$ of an independent variable. To compute tolerance for each independent variable, SPSS conducts a separate regression analysis where that predictor plays the role of a dependent variable being predicted by the remaining independent variables in the analysis (Tabachnick & Fidell, 2001b). Tolerance values range from 0 to 1 and multicollinearity is indicated for any variable with a tolerance value of .01 or less (Tabachnick & Fidell, 2001b). The lowest tolerance value is .263 for Suburban and the highest tolerance value is .673 for SqrRtStudents. Table 49 displays the tolerance values for the independent variables. All exceed .01 and, therefore, suggest that multicollinearity is not a problem.

The Variance Inflation Factor (VIF) is the reciprocal of the tolerance and is computed as 1/tolerance (Meyers et al, 2006). The VIF measures the degree of linear association between a particular independent variable and the remaining independent variables in the analysis. Stevens (2002) recommends a heuristic VIF greater than 10 as indicative of multicollinearity. The lowest

VIF value is 1.485 for SqrRtStudents and the highest VIF value is 3.797 for Suburban. Table 49 displays the VIF for the independent variables which are less that 10 and therefore suggest that multicollinearity is not a problem.

Table 49

Collinearity Statistics for Research Question 3c.

Predictor Variables	Tolerance	*VIF*
Level	.661	1.512
SqrRtStudents	.673	1.485
SqrtFreeRed	.429	2.331
Rural	.327	3.054
Suburban	.263	3.797

Note. SqrRtStudents represents the Square Root of Students, SqrRtFreeRed represents the Square Root of Free or Reduced Lunch Percentage, and $n = 101$.

Normality, Linearity, and Homoscedasticity. Tabachnick and Fidell (2007) suggest checking for normality, linearity, and homoscedasticity simultaneously through a residuals scatter plot. The residuals scatter plot must be rectangular in shape with a concentration of points at the midline for normality, linearity, and homoscedasticity assumptions to be met. In the case of multiple regression, there is an assumption that the variables in the analysis are related to each other in a linear manner and that the best fitting function that represents the scatter plot is a straight line (Meyers et. al. 2006)

The researcher followed the process for producing the residuals scatter plots for each dependent variable recommended by Meyers et al. (2006) by placing the ZRESID, the standardized residuals representing the variance of the dependent variable in *z* score units remaining after the predictor variables have done their predictive work on the *y* axis.

Subsequently, the researcher placed the ZPRED, the standardized predicted value which is the predicted value of the dependent variable in *z* score units on the *x* axis. Normality, linearity, and homoscedasticity were confirmed because the scatter plot was rectangular in shape and had a concentration of points along the midline. Figure 3 displays the residuals scatter plot for Research Question 3a.

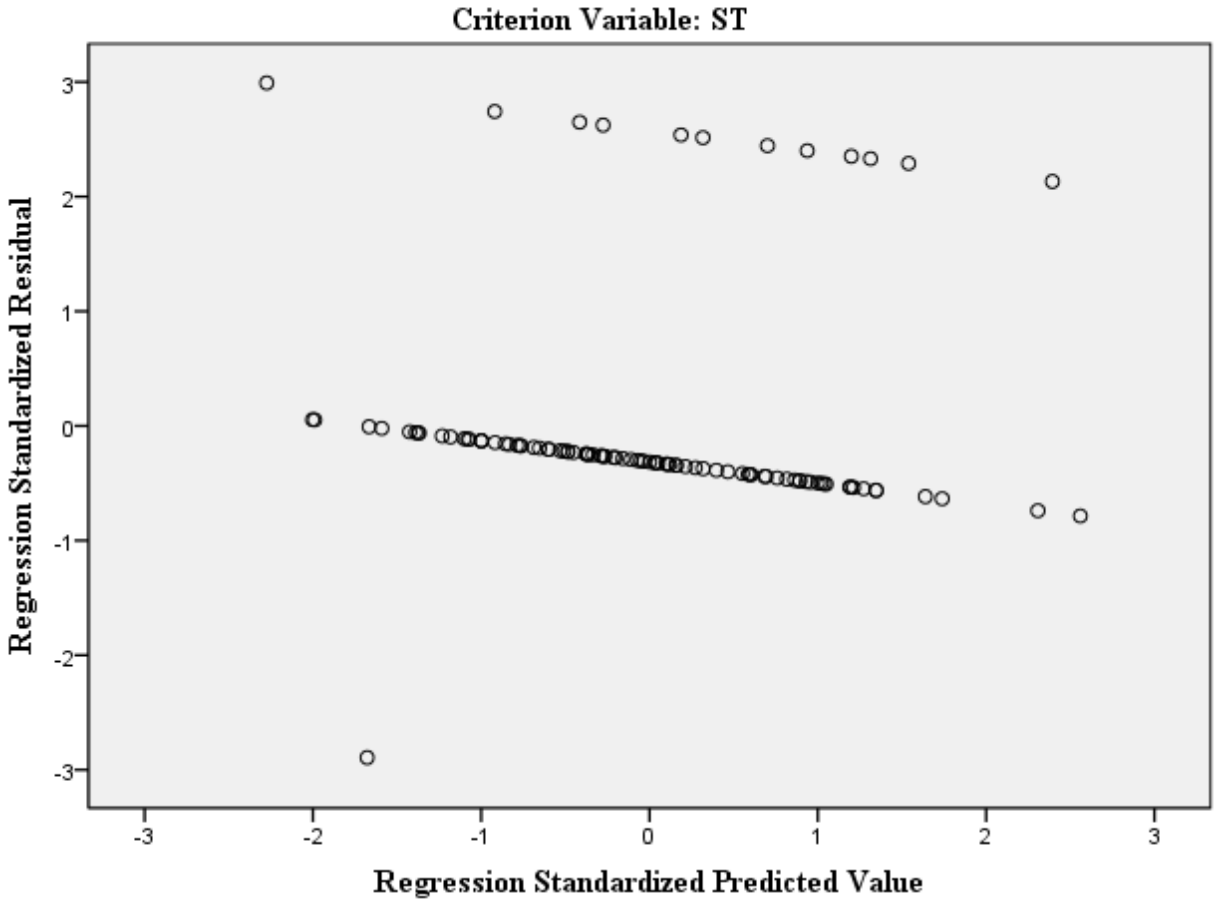

Figure 3. Scatterplot depicting criterion variable Staff Training after removal of outliers

Multiple Linear Regression Results—Research Question 3c. The model summary indicated that 3.4% of the variability in ST was explained by Level, SqrRtStudents, SqrRtFreeRed, Rural, and Suburban. The model summary is shown in Table 50.

Table 50

Model Summary for Research Question 3c.

Model	*R*	R^2	AdjR^2	*SEE*	R^2Change	*F* Change	Sig *F* Change
1	.186	.034	-.016	.346	.025	.493	.781

Note. ***p* < .05, ****p* < .01, *****p* < .001, *n* = 101.

The ANOVA indicated that the model was not significant $F(5, 95) = .678$, $p = .641$. The alpha level was set at $p < .05$. The ANOVA table reinforces the data in the Model Summary where it indicates the sum of squares and degrees of freedom. Table 51 shows the ANOVA output for Research Question 3c.

Table 51

ANOVA Output for Research Question 3c.

Model	Sum of Squares	*df*	Mean Square	*F*	Sig
Regression	.407	5	.081	.678	.641
Residual	11.395	95	.120		
Total	11.802	100			

Note. ***p* < .05, ****p* < .01, *****p* < .001, *n* = 101.

The model was not significant and none of the predictor variables were significant as depicted in Table 52. The researcher rejected Hypothesis 3c.

Table 52

Coefficients Table for ST for Research Question 3c.

Model	Unstandardized Coefficients		Standardized Coefficients	*t*	Sig.
	B	*Std. Error*	*Beta*		
(Constant)	.300	.243		1.235	.220
Level	.102	.087	.145	1.167	.246
SqrRtStudents	-.003	.007	-.054	-.436	.664
SqrRtFreeRed	-.037	.026	-.220	-1.431	.156
Rural	-.167	.148	-.198	-1.122	.265
Suburban	-.137	.137	-.196	-.999	.320

Research Question Four Results

To answer Research Question Four, the researcher composed a survey for the 36 district superintendents. The researcher asked the superintendents the following question: "Has your school district experienced increased demands on your budget due to increased security measures: school practices and programs, school security staff, and staff training that have been added or will be added since the Newtown school shooting on December 14, 2012?" The superintendents were asked to circle "yes" or "no." If the response was "yes," the superintendents were asked to quantify the increase by checking the budget impact range.

The researcher produced descriptive statistics for Research Question 4 that are depicted in Table 53. Included in the sample of 36 districts were 11 rural districts, 6 urban districts, and 19 suburban districts. Enrollment in these districts ranged from 383 students to 15,715 students, with a mean of 3,265. Districts ranged from 1% free and reduced lunch to 70% free and reduced

lunch with a mean of 19.42%. The percentage diversity ranged from 5 to 66 with a mean of 20.21.

Table 53

Descriptive Statistics for District Budgets

Variable	Range	Min	Max	*Mean*	*SD*
Students	15,332	383	15,715	3,265	3,227
FreeRed	69	1	70	19.42	18.66
Diversity	61	5	66	20.21	18.17
Budget	1	0	1	.92	.28
Range	13	1	14	11.15	4.45

Note n = 36.

The superintendent surveys indicated that many districts increased their security budget as a result of the Newtown school shooting. The researcher accepted Hypothesis 4. These data on the district security budget increases are depicted in Table 54 below. The surveys indicated that of the 36 districts, 33 districts (92%) increased their budgets as a result of the incident. Three districts (8%) made no change. The 33 districts that made changes increased their budgets from a range of less than $4,999 to more than $100,000. Twenty districts or 56% of the districts increased their budgets by more than $100,000.

Table 54

Amount of District Security Budget Increase after Newtown School Shooting.

Budget Impact Range	Number of Districts in Impact Range and Percentage
No Change	3(8)
$1-$4,999	4(11)
$5,000-$9,999	0(0)
$10,000-$14,999	0(0)
$15,000-$19,999	0(0)
$20,000-$24,999	0(0)
$25,000-$29,999	0(0)
$30,000-$39,999	2(6)
$40,000-$49,999	1(3)
$50,000-$59,999	3(8)
$60,000-$69,999	0(0)
$70,000-$79,999	1(3)
$80,000-$89,999	2(6)
$90,000-$99,999	0(0)
More than $100,000	20(56)

Note n = 36.

The researcher felt that it was important to analyze descriptive statistics on the schools in each range in the security budget changes. The researcher did not, however, have SSOCS data on all the schools in each district. These numbers are total district numbers and cannot be used for statistical comparisons between the change factors in research questions 1-3 since the other

data represent school level data. Additionally, without a 100% response rate from schools, district data could not be used at that level. Table 55 displays these data including the number of districts and schools in each range and an analysis of the data on school level.

Table 55

District Security Budget Ranges with Analysis of School Data by Level

Budget Range	Districts *N* (%)	Schools *N* (%)	Elem *N* (%)	MS/HS *N* (%)
No Change	3(8)	8(7)	3(4)	5(11)
1-4,999	4(12)	22(19)	14(20)	8(17)
30,000-39,000	2(6)	10(8)	5(7)	5(11)
40,000-49,000	1(3)	2(2)	1(1)	1(2)
50,000-59,000	3(8)	7(6)	5(7)	2(4)
70,000-79,000	1(3)	1(1)	1(1)	0(0)
80,000-89,000	2(6)	5(4)	4(6)	1(2)
100,000+	20(56)	62(53)	38(54)	24(52)

Note. Districts $n = 36$, Schools $n = 117$.

An analysis of Table 55 shows that 62 (53%) schools in the study were located in districts that increased their security budget more than $100,000. On the other end of the continuum, 22 schools (19%) made a nominal change between $1.00 and $4,999. Additional analysis of the data shows that of the 71 elementary schools in the study, 38 elementary schools (54%) were located in districts that increased their security budget more than $100,000. Of the 46 middle and high schools in the study, 24 middle and high schools (52%) were located in districts that increased their security budget more than $100,000.

Table 56 displays data on the number of districts and schools in each range and an analysis of the data by school type. An analysis of Table 56 shows that of the 24 rural schools in the study, 16 rural schools (67%) were located in districts that increased their security budget more than $100,000. Of the 22 urban schools in the study, 12 urban schools (55%) were located in districts that increased their security budget more than $100,000. Conversely, 7 of the urban schools (32%) increased their budget less than $4,999. Of the 71 suburban schools in the study, 34 suburban schools (48%) were located in districts that increased their security budget more than $100,000.

Table 56

District Security Budget Ranges with Analysis of School Data by Type

Budget Range	Districts	Schools	Rural Schools Number and Percentage	Urban Schools Number and Percentage	Suburb Schools Number and Percentage
No Change	3(8)	8(7)	2(8)	0(0)	6(8)
1-4,999	4(12)	22(19)	1(4)	7(32)	14(20)
30,000-39,000	2(6)	10(8)	0(0)	0(0)	10(14)
40,000-49,000	1(3)	2(2)	2(8)	0(0)	0(0)
50,000-59,000	3(8)	7(6)	0(0)	3(14)	4(6)
70,000-79,000	1(3)	1(1)	1(4)	0(0)	0(0)
80,000-89,000	2(6)	5(4)	2(8)	0(0)	3(4)
100,000+	20(56)	62(53)	16(67)	12(55)	34(48)

Note. Districts, $n = 36$; Schools, $n = 117$.

The researcher also calculated the means and standard deviations for student enrollment and the free or reduced lunch and diversity percentages in these districts. The researcher further classified these data, displayed in Table 57, according to the budget range in which they fell. These data show that the Newtown school shooting impacted the security budget of districts of various free and reduced and diversity percentages.

Table 57

District Security Budget Ranges with Analysis of Number of Students, Free or Reduced Lunch Percentage, Diversity Percentage

Budget Range	Districts	Students	FreeRed %	Diversity %

		M (SD)	*M (SD)*	*M (SD)*
No Change	3	739 (438.75)	10.75 (7.83)	11.96 (6.38)
1-4,999	4	561 (452.48)	24.87 (22.28)	22.23 (19.2)
30,000-39,000	2	471 (260.10)	24.60 (15.16)	12.80 (3.24)
40,000-49,000	1	455 (63.64)	7.50 (3.54)	1.00 (1.41)
50,000-59,000	3	446 (122.60)	33.13 (20.42)	29.57 (17.03)
70,000-79,000	1	473	5.1	12.4
80,000-89,000	2	298 (118.74)	11.40 (4.81)	10.40 (9.70)
100,000+	20	570 (310.64)	18.04 (18.82)	19.49 (20.41)

Note. Districts, $n = 36$; Schools, $n = 117$.

It is interesting to note that the districts with the highest free or reduced lunch and diversity percentages fell in the $50,000-$59,000 range.

CHAPTER FIVE: SUMMARY AND RECOMMENDATIONS

In Chapter Five, the researcher provides a summary of the research and an overview of the findings of the study. The chapter is comprised of six sections in which the researcher addresses the four research questions. Within the findings section, the statistical analyses and results of the research questions are reviewed. In the second section, the researcher compares and contrasts the findings in the context of the literature review that supports or refutes the findings. This research study led to multiple ideas and implications for school districts and school communities that are outlined in the third section. Implications for future research are discussed in section four. The limitations section provides a review of the internal and external limitations that were revealed during the study. Finally, the researcher provides a brief summary of the chapter.

Summary and Review of the Findings

The purpose of this study was to examine and evaluate the impact of the December 14, 2012 Newtown school shooting on school security in the state of Connecticut. Specifically, the researcher examined the impact on School Practices and Programs, School Security Staff, Staff Training, and Security Budgets. Using the School Survey on Crime and Safety (SSOCS), (U.S. Department of Education, 2010B) and a superintendent budget questionnaire, the researcher gathered data directly from Connecticut superintendents and principals on changes in school security measures that were implemented as a result of the shooting. Analyzing the data that administrators reported on security measures they had in place before and after the Newtown school shooting, the researcher calculated the change factor in school practices and programs, school security staff, and staff training to determine whether educational leaders made significant changes in school security.

Regarding the district security budgets, the researcher produced and analyzed descriptive statistics on the changes that districts made to their security budgets. The researcher also analyzed descriptive data on the schools in the different budget change ranges including analysis of the grade level and type (rural, urban, suburban) of these schools and the means and standard deviations for the student enrollment, free or reduced lunch percentage, and diversity percentage in these schools.

The researcher contacted all 169 districts in Connecticut and received consent from 36 superintendents. A survey response rate of 21% was achieved from the districts in the accessible population. There were 69 elementary schools, 22 middle schools, 22 high schools, and 2 combined elementary/middle schools in the original study sample. There were 22 rural, 22 urban, and 71 suburban schools in the original study sample.

Research Question One

How have school administrators addressed School Practices and Programs before and after the Newtown school shooting on December 14, 2012? 1a. Is there a significant difference in school administrator responses on the School Survey on Crime and Safety regarding School Practices and Programs that were in effect prior to and after the Newtown school shooting? 1b. Is there a significant difference on individual items of the School Survey on Crime and Safety regarding School Practices and Programs that were in effect prior to and after the Newtown school shooting? 1c. To what extent and in what manner do school level (elementary, middle/high school), school type (rural, urban, suburban), student diversity percentage, free or reduced lunch percentage, and number of students predict the change factor in School Practices and Programs?

Findings for Research Question One

The results of the paired *t*-tests conducted on the total number of School Practices and Programs in place pre and post the Newtown school shooting showed that the mean number of School Practices and Programs in place post (M = 27.66, SD = 5.42) was significantly greater than the mean number of school practices and programs pre (M = 24.21, SD = 5.19), $t(116)$ = 9.79, p = .000. This demonstrates that administrators evaluated the school practices and programs at their schools before and after the incident and added security measures.

The researcher conducted McNemar tests to analyze the changes that were implemented in School Practices and Programs at a more granular level. Analyzing the results of these tests, the researcher determined that there was a statistically significant difference in the proportion of specific School Practices and Programs that schools had in place before and after the Newtown school shooting. These significant changes included Require Faculty and Staff ID Badges (McNemar x^2 = 29.121, p = .000), which was the largest change after the incident. This change was important because it showed that school administrators were intent on being able to identify any adults who were in the building without an ID badge and who could potentially pose a threat to the school community. School systems also added security cameras in response to the incident as indicated by the result on Use One or More Security Cameras to Monitor School (McNemar x^2 = 10.286, p = .002).

After the incident, more educational leaders ensured that written plans for crises were in place and that they were drilling them so that the school community would be better prepared in the event of an emergency situation. This finding is supported by the following significant McNemar results: Written Plan for Shootings (McNemar x^2 = 14, p = .000), Written Plan for Armed Intruders (McNemar x^2 = 13, p = .000), Written Plan for Hostages (McNemar x^2 = 12, p

= .000), Drill Conducted for Shootings (McNemar $x^2 = 16$, $p = .000$), Drill Conducted for Armed Intruders (McNemar $x^2 = 9$, $p = .004$), Drill Conducted for Hostages (McNemar $x^2 = 11$, $p = .001$), and Drill Conducted for Bomb Threats or Incidents (McNemar $x^2 = 10$, $p = .002$). In summary, after the incident school leaders were ensuring that staff members were prepared to follow a designed plan for shootings, armed intruders, and the possibility that hostages could be taken in their schools.

There were other School Practices and Programs that educational leaders did not significantly increase including Requiring Visitors to Sign or Check In (McNemar $x^2 = .333$, $p = 1$), Control Access to School Grounds During School Hours (McNemar $x^2 = 5.44$, $p = .039$), and Providing Telephones in Classrooms (McNemar $x^2 = 2$, $p = .5$). These results suggest that these security measures are very common in most schools and were already in place.

One of the focus areas in the School Practices and Programs subsection of the SSOCS was Formal Programs Intended to Prevent or Reduce Violence. Specifically, question four on the survey asked, "Did your school have any formal programs intended to prevent or reduce violence that included the following components for students before (pre) and after (post the December 14, 2012 Newtown school shooting?" There were no significant McNemar results in this subsection. Some specific examples of non-significant results include Counseling, Social Worker, Psychological or Therapeutic Activity for Students (McNemar $x^2 = 5.44$, $p = .039$) and Programs to Promote Sense of Community/Social Integration among Students (McNemar $x^2 = 1$, $p = 1$). These findings suggest that educational leaders were already being proactive hiring school support staff (i.e., school counselors, social workers, and school psychologists) before December 14, 2012. They also were implementing formal programming intended to prevent or reduce violence.

For Research Question 1c., a multiple linear regression was conducted to test the hypothesis that the predictor variables level, type, student diversity percentage, free or reduced lunch percentage, and number of students predicted the change factor in school practices and programs. The researcher calculated the change factors based on data reported by the administrators on the security measures that they had in place pre and post December 14, 2012. Responses of pre yes-post yes and pre no-post no represented no change and equaled zero in the change factor column on the spreadsheet. Responses of pre no-post yes represented measures that were added and equaled +1 in the change factor column. Responses of pre yes-post no represented measures that had been removed and equaled -1 in the change factor column. The data in the change factor columns for each of the survey questions per subscale were added to calculate the cumulative change factor. The change factors for the respective criterion variables (SPP, SSS, ST) were conducted on the final data set after univariate and multivariate outliers were removed.

In the regression analysis, the researcher found that the model containing the predictor variables school level, school type, student diversity percentage, free or reduced lunch percentage, and number of students was not a significant predictor of the change factor in school practices and programs. The researcher rejected the hypothesis.

Research Question Two

How have school administrators addressed School Security Staff before and after the Newtown school shooting on December 14, 2012? 2a. Is there a significant difference in school administrator responses on the School Survey on Crime and Safety regarding School Security Staff that were in place prior to and after the Newtown school shooting? 2b. Is there a significant difference on individual items of the School Survey on Crime and Safety regarding

School Security Staff that were in place prior to and after the Newtown school shooting? 2c. To what extent and in what manner do school level (elementary, middle/high school), school type (rural, urban, suburban), student diversity percentage, free or reduced lunch percentage, and number of students predict the change factor in School Security Staff?

Findings for Research Question Two

The most important finding in the research on School Security Staff was that there was a significant increase in the variable School Security Staff as a result of the Newtown school shooting as indicated by the increase in the mean from 5.73 pre to 9.54 post. The results of the paired *t*-tests conducted on the total number of School Security Staff in place pre and post the Newtown school shooting confirmed the finding that the mean number of School Security Staff in place post (M = 9.54, SD = 5.09) was significantly greater than the mean number in place pre (M = 5.73, SD = 5.70), $t(116) = 9.01$, p =.000. Analysis of the means and standard deviations pre and post clearly showed that schools added significant numbers of School Security Staff after the Newtown school shooting.

For School Security Staff, the researcher conducted McNemar x^2 tests to analyze the specific changes that educational and town leaders made. Analyzing the results of these tests, the researcher determined that there was a statistically significant difference in the proportion of specific School Security Staff that schools had in place before and after the Newtown school shooting. In response to the overarching question whether schools had school security staff present at least once per week before and after the Newtown school shooting, the McNemar x^2 test yielded significant results (McNemar $x^2 = 51$, $p = .000$). Specific areas of significant increase included School Security Staff at Any Time during School Hours (McNemar $x^2 = 51$, $p = .000$), School Security Staff While Students Were Arriving and Leaving (McNemar $x^2 = 55$, p

= .000), and School Security Staff at Selected School Activities (McNemar $x^2 = 32$, $p = .000$). In short, educational leaders ensured that they had additional School Security Staff in their schools when students were present in the aftermath of the incident.

Educational and town leaders demonstrated a strong preference and tendency to add sworn law enforcement officers as opposed to security guards. The increase in Part-Time School Resource Officer (McNemar $x^2 = 5.4$, $p = .035$) combined with the aforementioned significant increases in School Security Staff While Students Were Arriving and Leaving and School Security Staff at Selected School Activities shows that municipalities stationed police officers at schools before and after school and at school events as a deterrent to threats and to reassure students, staff, and the public of their safety. Significant McNemar x^2 results also showed that these police officers carried a stun gun, chemical aerosol sprays, and a firearm. There were not significant increases in Full-Time or Part-Time Security Guards.

The research findings on the roles that the police officers played post Newtown were quite interesting. The areas of significant increase included the following: School Security Staff on Security Enforcement and Patrol (McNemar $x^2 = 43$, $p = .000$), School Security Staff Coordinating with Local Police and Emergency Teams (McNemar $x^2 = 30.11$, $p = .000$), School Security Staff Identifying Problems in School and Proactively Seeking Solutions (McNemar $x^2 = 23.15$, $p = .000$) and School Security Staff Training Teachers and Staff in School Safety or Crime Prevention (McNemar $x^2 = 16.2$, $p = .000$). Essentially, School Security Staff were hardening the school perimeter and interior, coordinating with local police departments, and training school staff to be prepared for crises that could threaten the safety of their schools.

The areas that did not increase significantly included: School Security Staff Teaching Law Related Education Course or Training Students (McNemar $x^2 = .5$, $p = .727$), School

Security Staff Mentoring Students (McNemar $x^2 = 2.78$, $p = .18$), and School Security Staff Maintaining School Discipline (McNemar $x^2 = 6.4$, $p = .021$). In summary, there was a shift from educating and mentoring students toward heightening staff security awareness, security enforcement, patrol, and target hardening.

For this research question, a multiple linear regression was conducted to test the hypothesis that the predictor variables level, type, student diversity percentage, free or reduced lunch percentage, and number of students predicted the change factor in school security staff.

In the regression analysis, the researcher found that the model containing the predictor variables school level, school type, student diversity percentage, free or reduced lunch percentage, and number of students was a significant predictor of the change factor in school security staff. Schools made significant increases in school security staff as a result of the Newtown school shooting. The researcher did not reject the hypothesis that schools made significant increases in school security staff.

Research Question Three

How have school administrators addressed Staff Training before and after the Newtown school shooting on December 14, 2012? 3a. Is there a significant difference in school administrator responses on the School Survey on Crime and Safety regarding Staff Training that were in place prior to and after the Newtown school shooting? 3b. Is there a significant difference on individual items of the School Survey on Crime and Safety regarding Staff Training that were in place prior to and after the Newtown school shooting? 3c. To what extent and in what manner do school level (elementary, middle/high school), school type (rural, urban, suburban), student diversity percentage, free or reduced lunch percentage, and number of students predict the change factor in Staff Training?

Findings for Research Question Three

The results of the paired *t* tests conducted on the total number of Staff Trainings in place pre and post the Newtown school shooting showed that the mean number of Staff Trainings in place post (M = 4.83, SD = 2.38) was significantly greater than the mean number of Staff Trainings pre (M = 4.36, SD = 2.42), $t(116) = 3.19$, $p = .002$. This demonstrates that administrators evaluated the Staff Training at their schools before and after the incident and added trainings.

The McNemar x^2 tests on the individual questions in the Staff Training section of the survey showed that only one area was significant; Staff Training in Recognizing Early Warning Signs of Students Likely to Exhibit Violent Behavior (McNemar $x^2 = 12$, $p = .000$). This is a logical response since most school shootings are carried out by students or individuals with a connection to the school. Educational leaders trained staff to heighten their awareness of signs that students could potentially engage in violent behavior.

Staff Trainings that did not show significance included Training in Recognizing Signs of Students Using/Abusing Alcohol and/or Drugs (McNemar $x^2 = 8$, $p = .008$). and Training in Positive Behavior Intervention Strategies (McNemar $x^2 = 2.67$, $p = .219$). Educational leaders did not prioritize training in these areas as a result of the Newtown school shooting.

For Research Question 3c., a multiple linear regression was conducted to test the hypothesis that the predictor variables school level, school type, student diversity percentage, free or reduced lunch percentage, and number of students predicted the change factor in staff training.

In the regression analysis, it was found that the model containing the predictor variables school level, school type, student diversity percentage, free or reduced lunch percentage, and

number of students was not a significant predictor of the change factor in staff training. The researcher failed to reject the null hypothesis.

In terms of the coefficients, none of the predictor variables contributed significantly to the prediction of changes in staff training.

Research Question Four

The fourth research question was used to evaluate the impact of the Newtown school shooting on district security budgets.

Findings for Research Question Four

Regarding the district security budgets, the researcher produced and analyzed descriptive statistics on the changes that districts made to their security budgets. The researcher also analyzed descriptive data on the schools in the different budget change ranges including analysis of the level and type of these schools and the means and standard deviations for the student enrollment, free or reduced lunch percentage, and diversity percentage in these schools.

The major finding in this research question was that the vast majority of districts (92%) increased their security budgets as a direct result of the Newtown school shooting. In fact, 56% of the districts increased their budget by more than $100,000. It also holds true that the majority of schools (53%) were located in districts that increased their budget by more than $100,000. There were only three districts (8%) that made no change. Clearly, the Newtown school shooting caused districts to increase their school security budgets.

The analysis of budget changes and school level shows that the schools were distributed relatively evenly across the middle of the budget ranges for elementary and middle/high schools. There were, however, higher concentrations of elementary (n = 38) and middle/high schools (n = 24) in the high range of $100,000+ and a concentration of elementary (n = 14) and middle/high

schools (n = 8) in the lower range of $1-$4,999. This finding shows that although some schools made little change, the majority of schools were located in districts that made changes of $100,000+.

In addition, the Newtown school shooting impacted the security budget of schools of various free or reduced lunch and diversity percentages. It is interesting to note that the districts with the highest free or reduced and diversity percentages fell in the $50,000-$59,000 range and the schools with the lowest percentage fell in the $80,000-$89,000 range. This finding demonstrates that the higher socioeconomic school districts spent in the higher band of expenditures because they had available funds.

Comparison and Contrast of Findings Related to the Literature Review

The review of the literature presented in Chapter Two suggested that school safety and security have an historical underpinning in Abraham Maslow's (1954) theory on the Hierarchy of Needs. Abraham Maslow's (1954) theory is highly relevant to the safety needs of the school community and the impact that school violence can have on its members, especially its students. Students must feel safe and secure in school to perform optimally and reach their maximum academic, social, and emotional potential. Maslow (1954) explained in his Hierarchy of Needs that when students' physiological needs are met, then safety needs emerge. He included security, stability, dependency, protection, freedom from fear, freedom from anxiety and chaos, need for structure, order, law, limits, and strength in the protector in these needs (Maslow, 1954).

Fundamentally, these aforementioned needs and Maslow's theory also serve as the underpinning for the school security research that the NCES, educational researchers, and educational leaders conduct. This research provides the basis for programs, security staff,

training, and funding that educational leaders implement to ensure that we are protecting our learning environments and our students.

Research Question One

The Newtown school shooting led to significant increases in some school practices and programs. In other areas, there were no significant changes. This finding was supported during the literature review of the most recent SSOCS data. The 2009-2010 SSOCS study reported important data on school security measures with a trend toward increased measures to protect student and staff safety. Between the 1999-2000 and 2009-2010 school years, there was an increase in the percentage of public schools reporting the use of the following safety and security measures; controlled access to the school building during school hours (from 75% to 92%); controlled access to the school grounds during school hours (from 34% to 46%); the use of one or more security cameras to monitor the school (from 19% to 61%); and the provision of telephones in most classrooms (from 45% to 74%) (US Department of Education, 2010B). The state of Connecticut report on the Newtown incident itself reflects that there was already controlled access to the building and a lock down procedure in place when the event occurred.

The finding of this study that many school practices and programs were already in place before December 14, 2012 was supported by Addington (2009), who described the historic development of school security measures. In the 1970s the purpose of school security was to deter property crimes and problems related to graffiti and vandalism. In the 1980s, educational leaders shifted their school security measures to address school violence, primarily in "problematic" urban schools in larger cities (Addington, 2009). Finally, Addington (2009) emphasized that since Columbine in 1999, the use of school security to prevent violence

expanded into suburban and rural schools and changed to incorporate more cutting-edge technologies.

Addington (2009) also examined data from the administration of the U.S. Department of Education's School Survey on Crime and Safety (SSOCS). In summary, Addington (2009) found that the primary security changes after Columbine were the use of security guards and security cameras. Other changes focused on limiting access to schools by policies including locking doors, requiring visitors to check in, and using identification badges. Addington (2009) cited the following data from the SSOCS (2007): Eighty five percent of principals reported locking and monitoring doors during the school day, 48% required identification badges for staff, 45% of the principals reported using school security officers, and 43% reported using security cameras.

Educational leaders also designed school practices and programs that focus on promoting a positive school climate in which students feel secure and supported. This priority is supported by Maslow's theory on the importance of human safety needs. The findings of this study demonstrated that schools had adequate counseling, social work, and school psychologist support in place. Also, programs promoting social integration of students were already a clear priority. These findings are supported by Nickerson (2007) who found that 74% of schools had formal programs to prevent or reduce violence, such as prevention training in social skills, student counseling, behavior modification, and mentoring/tutoring.

Research Question Two

The Newtown school shooting led to significant increases in school security staff in Connecticut schools. School officials significantly increased the use of police officers during school hours, while students were arriving to and leaving school and at selected school activities.

There is research demonstrating that adding security staff is common after a major school shooting. In Addington's (2009) study using the SSOCS to review the policy response to the Columbine incident, Addington found that the primary security changes after Columbine were the use of security guards and security cameras. In contrast to Addington's research on the Columbine incident about increased security guards, the findings of the current research study suggest that the school security staff increases after the Newtown incident were primarily sworn law enforcement officers.

Citing data from the SSOCS (2007), Addington (2009) noted that 45% of the principals reported using school security officers to improve school safety. The school security staff increases after the Newtown school shooting occurred at all levels and in all types of school as was the case after the Columbine attack. Addington (2009) emphasized that since Columbine in 1999, the use of school security to prevent violence expanded into suburban and rural schools and changed to incorporate more cutting-edge technologies.

In response to Columbine, Addington (2009) emphasized the fear that Americans expressed for their children's safety. School resource officers and police officers serve as a visual of security measures that can assuage parental fear for their child's safety which explains why so many were deployed to schools after the Newtown school shooting. It is also appropriate to tie this response to Maslow's emphasis on the fundamental human need for safety and security.

Target hardening, through the presence of school security staff, is based on the premise that a strong visible defense will delay or deter an attack. Jennings et al. (2011) found that school violence was significantly lower in schools where security officers (Guards or SRO's) were in uniform. DeAngelis et al. (2011) emphasized the role that school resource officers play

as a deterrent to crime and violence and that they contributed to safe and secure learning environments. Although Maskaly et al. (2011) found that school violence was higher in larger sized schools and in middle schools relative to elementary schools, the Newtown incident led to target hardening through additional security staff in Connecticut elementary schools. Examples of this included School Security Staff on Security Enforcement and Patrol (McNemar $x^2 = 43$, $p = .000$), and School Security Staff Coordinating with Local Police and Emergency Teams (McNemar $x^2 = 30.11$, $p = .000$).

After the Newtown incident, educational and town leaders added school resource officers and patrol officers to Connecticut schools, primarily in a patrol and target hardening posture. School resource officers are a deterrent to school violence, but also are intended to promote a positive and safe school climate and be a resource for students. McDevitt and Paniello (2005), at Northeastern University, conducted a research study for the U.S. Department of Justice as part of the National Assessment of School Resource Officer Programs. McDevitt and Paniello (2005) found a statistically significant relationship between students having a positive opinion of the SRO and students feeling comfortable reporting crime. Using a regression model, McDevitt and Paniello (2005) found that, compared with other students, students who have a positive opinion of the SRO were more than 2.5 times more likely than other students to feel comfortable reporting crime. Students' perception of safety also had a significant relationship to their comfort level reporting crime. Students who reported that they felt safe at school were more than 2.5 times more likely than other students to feel comfortable reporting crime. This finding suggests that it is important for SROs to promote safety both as a goal in itself, and as a method of increasing students' reporting of crime.

Although school resource officers in Connecticut schools are also expected to contribute positively to school climate, the findings in this research study suggest a shift in SRO roles from climate building to enforcement and patrol in the aftermath of the Newtown incident.

Research Question Three

The Newtown school shooting led to significant changes in staff training in Connecticut schools. Schools added training in the important area of Staff Training in Recognizing Early Warning Signs of Students Likely to Exhibit Violent Behavior. One area in which the incident influenced staff training is in the area of threat assessment. Threat assessment training is based on a specific protocol that helps staff identify students who exhibit specific behaviors that may pose a threat to the school community (O'Toole, 1999). In this model, a trained threat assessment team evaluates the level of risk and designs an intervention plan to help the identified student (O'Toole, 1999).

An interdisciplinary group of 100 organizations and more than 200 prevention scholars and practitioners issued a position statement entitled the *December 2012 Connecticut School Shooting Position Statement* that includes the recommendation that "using much-needed federal and state funding, community-based mental health organizations should work in cooperation with local law enforcement, schools, and other key community stakeholders to create a system of community-based mental health response and threat assessment" (p. 2). It further stated that these efforts should promote wellness as well as address mental health needs of all community members while simultaneously responding to potential threats to community safety. The Newtown incident is leading to an increase in threat assessment training at the school level in Connecticut schools.

The study conducted by Allen, Cornell, Lorek and Sheras (2008) entitled *Response of School Personnel to Student Threat Assessment Training* supported the value of threat assessment training for staff. This approach, in part, stemmed from the Federal Bureau of Investigation's finding that profiling potential school shooters was ineffective, if not fully impossible, and that strategic threat assessment was a more proactive research-based approach to identifying those who could potentially pose a threat to members of the school community (O'Toole, 1999). Allen et al. (2008) found that, prior to the training, 21.1% of the participants had concerns that a homicide could occur in their school, and 23% were uncertain. After the training, only 5.4% were concerned, 9% were uncertain, and a full 84.9% were not concerned at all. Staff recognition that violence prevention programs could reduce school violence increased from 41% to 90.1%. In fact, 94% of the participants agreed that the training would help them respond to student threats of violence (Allen et al., 2008).

Research Question Four

The superintendent survey responses in this study showed that the vast majority of districts (92%) increased their security budgets as a direct result of the Newtown school shooting. In fact, 56% of the districts increased their budget by more than $100,000. The majority of schools in the study (53%) were located in districts that increased their budget by more than $100,000. There were only three districts (8%) that made no change. In short, the Newtown school shooting caused districts to increase their school security budgets.

The largest budget item in every school district's budget is salary and benefits. DeAngelis et al. (2011), in their study on school security budgets, found that security personnel are the most costly security measure in Texas school budgets. They found that Texas schools employed one full-time security person for every 700 students. In their research, DeAngelis et

al. (2011) also found that United States schools employed, on average, one full-time security person for every 1,000 students. DeAngelis et al. (2011), presented findings that support the current study that there were significant increases in police officers as a result of the Newtown school shooting. These sworn police officers are very expensive to fund.

These findings on increased security budgets are further supported by Addington's (2009) previous study using the SSOCS to review the policy response to the Columbine incident. Addington (2009) found that the primary security changes after Columbine were security guards and video surveillance cameras. The results of the current study indicate that the use of security cameras to monitor schools increased significantly after the Newtown incident. Consequently, these increases in security camera systems caused the district security budgets to be increased.

The Newtown school shooting caused educational leaders to evaluate their level of school security and programming in the context of their overall budgets. Essentially, many Connecticut districts conducted a needs assessment and made decisions regarding school practices and programs, school security staff, staff training, and security budgets. Trump's (2010) study led to some recommendations that reflect the current post Newtown landscape in Connecticut. Trump (2010) emphasized that district administrators must engage community agencies as partners, while not expecting them to assume the whole load for school security. An internal strengths and needs assessment can help ensure that limited financial resources are being used in a cost effective strategy, according to Trump (2010). Superintendents and boards of education must remain politically astute while communicating school safety funding needs to state and federal legislators through their respective associations. Finally, Trump (2010) notes that it is sometimes cost effective to have a strategic school safety plan that compliments the internal strengths and needs assessment, developed by an independent, external professional school

safety firm. On the SSOCS, the principal responses suggested that among the factors that limit schools' efforts to reduce or prevent crime "in a major way," the most likely reason was inadequate funds (25%). The results of the current study suggest that, although district budgets are generally tight, most superintendents were able to find funding for police officers and security cameras because they were concerned that student and staff safety were potentially threatened.

Implications of the Study

This study was prompted by a violent school incident that took the lives of 20 elementary school children and six elementary educators. Previous data from the SSOCS show that most school security measures designed to prevent violent incidents in schools were focused on high schools and middle schools. This incident served as a major wake-up call that all of our schools, regardless of level and location, may be vulnerable to attack.

Research Question One

In the area of school practices and programs, there are many measures and approaches that can be implemented. In this section of the SSOCS, there were 48 indicators that describe school practices and programs in school security and safety. These measures include specific security procedures, written plans describing procedures to be followed in specific crisis situations, drills to prepare for crisis situations, and formal programs intended to prevent or reduce violence. District and school leaders must assess the needs of their individual schools and design a security plan for the district and a specific safety plan for each school depending on its layout and access points.

All schools should implement measures designed to improve school climate and promote positive interactions between all members of the school community. Schools should have formal

programming to ensure that each student in the school community has a caring and trusted adult whom they can talk with in the event that they need social emotional support. Educational leaders should ensure that there are open lines of communication between staff and students and that students understand expectations and protocols for reporting potentially dangerous behavior.

Research Question Two

In this section of the SSOCS on school security staff, the questions addressed whether security personnel were present at the school, when they were present, the type of security personnel and how they were armed, and the type of programs and services they provided. The results of this study suggest that one of the main changes made after the Newtown school shooting was the addition of school security staff. Now that these security staff have been added, it is incumbent on school leaders to ensure that they are used in the most effective manner. These security personnel may serve as a deterrent, a resource, critical members of crisis intervention teams and, ideally, integral members of teams designed to improve school climate and ensure important, positive connections between students and staff.

Research Question Three

In this section of the SSOCS on staff training, there were eight indicators that the principals answered. These indicators included training in school-wide discipline policies and practices related to violence, training in safety procedures and how to handle emergencies, training in recognizing early warning signs of students likely to exhibit violent behavior, and training in crisis prevention and intervention. The results of this study indicate that administrators made significant changes in staff training to recognize early warning signs of students likely to exhibit violent behavior. This lack of significant results in the other areas

suggest that educational leaders had already ensured that staff were trained in these procedures and approaches.

In the area of staff training, one of the emerging approaches to school safety and security is the threat assessment model. In fact, in the Connecticut School Shooting Position Statement (2012), following the Newtown school shooting, one of the recommendations was that each school should have a threat assessment protocol in place. The implication is that each district should consider the threat assessment model and whether it should be adopted as part of the comprehensive school security programming for each school.

Research Question Four

The questionnaire on security budget changes as a result of the Newtown school shooting asked whether or not leaders made changes to the budget and inquired about the budgetary range associated with these changes. Of the 36 districts in the study, 33 added funding to their budget as a result of the Newtown incident. Of these 33 districts, 19 added more than $100,000 to the district security budget.

Educational leaders should demonstrate a vision for the required security personnel and measures to protect their school community. This vision should be based on the results of a needs assessment and collaborative conversations with community leaders. Next, these leaders must work concertedly to secure the required resources because personnel comprise the largest part of district budgets. Finally, school leaders must use the funding judiciously and effectively.

Implications for Future Research

Research Question One

The purpose of research question one was to determine whether there were significant increases in school practices and programs in Connecticut schools as a result of the Newtown

school shooting. The researcher also examined the extent to which and manner in which the predictor variables school level (elementary, middle/high school, school type (rural, urban) student diversity percentage, free or reduced lunch percentage, and number of students predict the change factor in school practices and programs after the Newtown school shooting on December 14, 2012. Opportunities exist for future research into the long-term impact of the Newtown school shooting on school practices and programs in Newtown and other Connecticut school districts. Longitudinal research on the duration and impact of recently implemented security measures would be of interest and could help lead to new and innovative school security practices and programs that will be effective in preventing future violence in United States schools. The long term impact of this tragic event on the children and staff who were present that day will be a research topic.

Continued research into the type of school practices and programs that are developmentally appropriate and effective at the elementary, middle, and high schools levels will be necessary. Specifically, which measures will be effective in elementary schools? Many schools have written plans in place that outline procedures to be performed in crisis situations. Research could be performed on the changes and variations of how schools drill these procedures post December 14, 2012. Elementary school principals have typically been cautious with the types of drills that they run because they fear the impact these drills may have on the psyche of young children. What will the research show on whether there is a different, cold reality to drills post December 14, 2012?

A research study on students' perceptions of increased security measures would be valuable. At the high school level, for example, adolescents highly value freedom at this developmental stage. In an era of front security booths, locked doors, security cameras, and

closed campuses, research into student perceptions of the impact of these measures on their school and its climate would be very interesting.

In the Connecticut School Shooting Position Statement (2012), written in response to the shootings at Sandy Hook Elementary School, the researchers emphasized that school violence prevention efforts must include adequate mental health supports and threat assessment teams in every school and community. Threat assessment is a unique program in the sense that it is a specific approach or model designed to identify members of the current school community who may pose a threat. Further research must be conducted into threat assessment as a school program and its potential impact on preventing school shootings.

Research Question Two

The purpose of research question two was to determine whether there were significant increases in school security staff in Connecticut schools as a result of the Newtown school shooting. The researcher also examined the extent to which and manner in which the predictor variables school level (elementary, middle/high school), school type (rural, urban), student diversity percentage, free or reduced lunch percentage, and number of students predict the change factor in school security staff after the Newtown school shooting on December 14, 2012. Research into the dichotomy between police presence as a school violence preventative measure and deterrent versus an enforcement measure will be important. In addition, the Newtown school shooting is forcing the issue of target hardening in schools because a school with locked exterior doors and a controlled access system was quickly breached. Researchers will investigate the appropriate balance between target hardening, through additional security staff and police, and the reality that schools are neither prisons nor impregnable fortresses. The

impact of school security personnel on school climate should also be a continued area of research for the future.

Further research into the cost and value added by school security staff will be of interest. The results of this study suggest that Connecticut school districts added significant numbers of police officers after the Newtown school shooting. One of the trends in school districts in proximity to Newtown is the hiring of retired police officers as security guards. A research study on the specific composition of post Newtown school security staff and the role of retired, sworn police officers could prove valuable and inform which are the research based, effective approaches.

Research Question Three

The purpose of research question one was to determine whether there were significant increases in staff trainings in Connecticut schools as a result of the Newtown school shooting. The researcher also examined the extent to which and manner in which the predictor variables school level (elementary, middle/high school), school type (rural, urban), student diversity percentage, free or reduced lunch percentage, and number of students predict the change factor in staff training after the Newtown school shooting on December 14, 2012. Continued research into the value added by proactive staff training in violence prevention would be meaningful. Specifically, what value is added by classroom management training; training in school-wide discipline policies and practices designed to prevent violence; and specific violence prevention programs?

As a further example, research into the impact of staff training in the threat assessment model will be beneficial. Are all school staff members adequately trained to detect and recognize students whose behaviors may pose a threat to their school community? Is there a

clear process and communication protocol in place to report these students and evaluate the level of threat they may pose?

Emergency operations procedures (EOPS) are an important component of any school safety program. EOPS involves drilling staff on emergency procedures so that they are optimally prepared for events that may occur. Research into the type, level of realism, and scope of emergency procedures drills post December 14, 2012 and their impact on preventing school violence would be beneficial.

An area for continued focus and research is the value and impact of staff training in school climate and bullying. Educators recognize that bullying can have very adverse effects on its victims and can impact learning, mental health, and social emotional well-being, but they sometimes do not have the capacity to recognize and intervene with acts of bullying. Continued research into the specific role and behaviors of educational leaders who promote positive school climates where bullying is mitigated will be beneficial.

Research Question Four

The fourth research question was designed to evaluate the impact of the Newtown school shooting on district security budgets. The scarcity of literature on this topic partially prompted this research question. As educational leaders struggle to meet all the budgetary requirements at the district level, research on the topic of adequate and efficacious per pupil expenditures in the area of school security could provide guidelines and benchmarks for district leaders as they reach these decisions. Additionally, continued research on the economic impact of previous incidents of school violence and the long-term impact of the measures implemented would be valuable to guide future decision-making.

Further research that details the budgetary impact of a school shooting on specific schools would be valuable. The research could analyze how school security has been augmented, the exact cost by school, and whether or not there are differences between elementary, middle, and high schools. An in-depth study could further analyze the exact budgetary increases that occurred in school practices and programs, school security staff, and staff training as defined in the questions on the SSOCS.

Limitations for Internal and External Threats

The results from a quantitative research study may be affected by the internal and the external limitations of the study. The researcher attempted to address threats and limitations due to circumstances or protocols beyond the control of the researcher. This section lists and discusses the types of threats or limitations to this quantitative study.

Internal Validity

Gall et al. (2003) defined internal validity as, "the extent to which extraneous variables have been controlled by the researcher so that any observed effect can be attributed solely to the treatment of the study" (p. 368). To ensure that the measured results of the dependent variable were attributed to the independent variables only, the researcher controlled for as many variables as possible. The threats to internal validity in this research study were history, instrumentation, and experimental mortality.

History. This is the threat of other events occurring and intervening that may affect the results of the study. If an unanticipated event occurs during the course of a study it may affect the responses of the participants (Gall et al., 2007). This threat was mitigated by conducting the study relatively soon after the Newtown school shooting so that other incidents did not affect the responses to the survey questions. The researcher asked the respondents to check "post yes" if

they planned increased school practices and programs and staff training for the future as result of the Newtown school shooting.

Instrumentation. The sample selected for this study was limited to school administrators. The administrators responded solely to questions from the School Survey on Crime and Safety, Principals Questionnaire, which relies on unbiased responses from school administrators. Unbiased responses assume that respondents were honest, accurate, and that they correctly understood the survey questions. Their perception may not reflect the perceptions of other school stakeholders, including students, teachers, and parents. In addition, the study included the categorical responses to the survey questions. Although the SSOCS is a valid and reliable instrument and adhered to best practices in survey development, the SSOCS asked for dichotomous (yes and no) responses and principals may have endorsed the use of many of the listed school security practices. Further measures would need to assess the extent to which principals rely on various strategies to prevent violence and the frequency with which they are used.

Since the researcher began the study shortly after the Newtown school shooting, the principals who completed the SSOCS were instructed to mark security measures as "Post Yes" if they planned to implement these security measures in the future as a result of the Newtown school shooting. A potential threat regarding this instruction is that these plans may not have come to fruition because of other external factors (i.e., budgetary constraints).

The superintendent questionnaire was developed and tested by the researcher. The researcher defined the last budget category as over $100,000. As time passed after the Newtown school shooting, it became obvious that Connecticut districts were budgeting additional funding to school security, including costly school security staff. The researcher should have listed

higher budgetary categories beyond $100,000 on the survey. This would have provided a clearer picture of the extent of budget increases and may have allowed for a regression analysis of the data.

Subject Selection. Selection of the appropriate participant population plays a critical role in experimental design. This threat refers to the criteria and standards used for the determination whether certain subjects are appropriate to be included in a research study. In the case of this study, the population and sample were appropriate because all Connecticut districts and administrators were invited to participate. However, the subjects self-selected when they decided whether or not to consent to the study. The study, therefore, does not contain a random sample. The researcher addressed this threat by persistently contacting subjects and encouraging them to participate. The result was a sample that was representative of the population of districts and schools in Connecticut.

Experimental Mortality. Gall et al. (2003) explain that experimental mortality occurs when some research participants are lost from the data set because they drop out of the study or are deleted by the researcher. In this research study, there were two districts that originally consented to participate only to withdraw shortly afterward because they viewed it as an additional commitment that they could not make due to other district priorities. Other schools were deleted because they were deemed as outliers.

External Validity

Gall et al. (2003) described external validity as "the extent to which the findings of an experiment can be applied to individuals and settings beyond those that were studied" (p. 374). The threats to external validity in this research study were population validity, ecological validity, and the Hawthorne effect.

Population Validity. Gall et al. (2007) described population validity as, "the extent to which the results of an experiment can be generalized from the sample that was studied to a specified, larger group" (p. 374). The generalizations made by the researcher were to populations that were demographically similar to the experimental sample the researcher employed. The sample in the research study consisted of 22 rural, 22 urban, and 71 suburban Connecticut schools. This sample was reflective of the population of school districts in the State of Connecticut, which is a largely suburban state. This threat was further expended by including administrators from elementary, middle, and high schools. In short, the sample was reflective of the experimentally accessible population, which was constituted by schools and districts in the State of Connecticut.

Ecological Validity. Gall et al. (2003) described ecological validity as, "the extent to which the results of an experiment can be generalized from the set of environmental conditions created by the researcher to different environmental conditions" (p. 375). The researcher attempted to create environmental conditions in the study that could be obtained by any other researcher using the SSOCS.

Hawthorne Effect. This refers to situations in which the experimental conditions are such that the mere fact that individuals are aware of participation in an experiment, are aware of the hypothesis, or are receiving special attention improves their performance (Gall et al. 2003). This threat could cause administrators to indicate that they are making more changes in the area of school security and safety after the Newtown incident than they actually are. The researcher attempted to avoid this threat by clearly stating in the cover letter that the data to be collected would not be used for any participant evaluation or performance judgment of the school or district.

Chapter Summary

This study represented a research-based assessment of the impact of the Newtown school shooting on schools and districts in the state of Connecticut. The research led to important findings including the statistically significant increase in school practices and programs, school security staff, and staff training to protect our school children at all grade levels. Using McNemar x^2 tests, the researcher was able to identify the specific changes that educational leaders made to ensure student and staff safety. The Newtown school shooting prompted educational leaders to examine security in all schools and cast a more laser-like focus on security in elementary schools than had previously been casted.

The literature review largely validated and supported the results of the study. The literature review revealed that there is a large variety of school practices and programs that schools use to protect their student and staff. Many of these measures were implemented in the wake of the Columbine, Colorado school shootings. The literature review reinforced the value of school resource officers as a measure to help students feel safe in school. Training in threat assessment is now considered to be valuable to schools as a school security measure. There was limited research in the literature review on school security and its impact on education budgets.

The researcher gleaned some important implications for schools and districts that were illuminated through the use of the SSOCS during this research study. District and school leaders must assess the needs of their individual schools and design a security plan for the district and a specific safety plan for each school depending on its layout and access points. With the addition of school security staff, it is incumbent on school leaders to ensure that they are used in the most effective manner. These security personnel can serve as a deterrent, a resource, critical members of crisis intervention teams and, ideally, integral members of teams designed to improve school

climate and ensure important positive connections between students and staff. The Newtown school shooting has prompted educational leaders to reexamine emergency operations training and to consider a preventative threat assessment approach to school security.

Implications for future research were numerous considering the four major areas of this study. The long-term impact of this tragic event on the children and staff who were present that day will be a research topic of interest. In the wake of the worst elementary school shooting in U.S. history, continued research into the type of school practices and programs that are developmentally appropriate and effective at the elementary, middle, and high schools levels will be necessary. Specifically, which measures will be effective in elementary schools? Many schools have written plans in place that outline procedures to be performed in crisis situations. Research could be performed on the changes and variations of how schools drill these procedures post December 14, 2012.

The researcher limited the effect of internal and external threats to the validity of the study including history, instrumentation and experimental mortality. External threats that were controlled were population validity, ecological validity, and the Hawthorne effect.

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Appendix A: School Survey on Crime and Safety

U.S. DEPARTMENT OF EDUCATION
Conducted by:
NATIONAL CENTER FOR EDUCATION STATISTICS
U.S. DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. CENSUS BUREAU

SCHOOL SURVEY ON CRIME AND SAFETY
PRINCIPAL QUESTIONNAIRE
2009–10 SCHOOL YEAR

(Please correct any errors in name, address, and ZIP Code.)

THIS SURVEY HAS BEEN ENDORSED BY:

TBD.

Your answers may be used only for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law [*Education Sciences Reform Act of 2002 (ESRA 2002)* Public Law 107-279, Section 183]. This survey is authorized by Title I, Part E, Sections 151(b) and 153(a) of Public Law 107-279, the Education Sciences Reform Act of 2002.

PLEASE RESPOND BY:

FORMSSOCS-1
(1-14-2009)

The following words are bolded and marked by an asterisk (*) wherever they appear in the questionnaire. Please use these definitions as you respond.

At school/at your school – activities happening in school buildings, on school grounds, on school buses, and at places that hold school-sponsored events or activities. Unless otherwise specified, this refers to normal school hours or to times when school activities/events were in session.

Cult or extremist group – a group that espouses radical beliefs and practices, which may include a religious component, that are widely seen as threatening the basic values and cultural norms of society at large.

Firearm/explosive device – any weapon that is designed to (or may readily be converted to) expel a projectile by the action of an explosive. This includes guns, bombs, grenades, mines, rockets, missiles, pipe bombs, or similar devices designed to explode and capable of causing bodily harm or property damage.

Gang – an ongoing loosely organized association of three or more persons, whether formal or informal, that has a common name, signs, symbols, or colors, whose members engage, either individually or collectively, in violent or other forms of illegal behavior.

Hate crime – a criminal offense or threat against a person, property, or society that is motivated, in whole or in part, by the offender's bias against a race, color, national origin, ethnicity, gender, religion, disability, or sexual orientation.

Insubordination – a deliberate and inexcusable defiance of or refusal to obey a school rule, authority, or a reasonable order. This includes but is not limited to direct defiance of school authority, failure to attend assigned detention or on-campus supervision, failure to respond to a call slip, and physical or verbal intimidation/abuse.

Sexual battery – an incident that includes threatened rape, fondling, indecent liberties, child molestation, or sodomy. Both male and female students can be victims of sexual battery. Classification of these incidents should take into consideration the age and developmentally appropriate behavior of the offender(s).

Sexual harassment –conduct that is unwelcome, sexual in nature, and denies or limits a student's ability to participate in or benefit from a school's education program. The conduct can be carried out by school employees, other students, and non-employee third parties. Both male and female students can be victims of sexual harassment, and the harasser and the victim can be of the same sex. The conduct can be verbal, nonverbal, or physical.

Special education student – a child with a disability, defined as mental retardation, hearing impairments (including deafness), speech or language impairments, visual impairments (including blindness), serious emotional disturbance, orthopedic impairments, autism, traumatic brain injury, other health impairments, or specific learning disabilities, who needs special education and related services and receives these under the Individuals with Disabilities Education Act (IDEA).

Specialized school – a school that is specifically for students who were referred for disciplinary reasons, although the school may also have students who were referred for other reasons. The school may be at the same location as your school.

Theft/larceny (taking things worth over $10 without personal confrontation) – the

Physical attack or fight – an actual and intentional touching or striking of another person against his or her will, or the intentional causing of bodily harm to an individual.

Rape – forced sexual intercourse (vaginal, anal, or oral penetration). This includes penetration from a foreign object. Both male and female students can be victims of rape.

Robbery (taking things by force)– the taking or attempting to take anything of value that is owned by another person or organization, under confrontational circumstances by force or threat of force or violence and/or by putting the victim in fear. A key difference between robbery and theft/larceny is that robbery involves a threat or battery.

unlawful taking of another person's property without personal confrontation, threat, violence, or bodily harm. This includes pocket picking, stealing a purse or backpack (if left unattended or no force was used to take it from owner), theft from a building, theft from a motor vehicle or motor vehicle parts or accessories, theft of a bicycle, theft from a vending machine, and all other types of thefts.

Vandalism – the willful damage or destruction of school property including bombing, arson, graffiti, and other acts that cause property damage. This includes damage caused by computer hacking.

Violence – actual, attempted, or threatened fight or assault.

Weapon – any instrument or object used with the intent to threaten, injure, or kill. This includes look-alikes if they are used to threaten others.

SURVEY INSTRUCTIONS:

- For most questions, please mark the box that best reflects your school's circumstances. Please mark your response with an "X".
- For questions that ask for counts or percents, please place an "X" in the None box, rather than leaving the item blank.
- It is not necessary to consult any records for items 5 and 27. Please provide estimates for these questions.
- Definitions are available for many terms on page 2. Defined terms are bolded and marked with an asterisk (*) throughout the survey.
- Some questions refer to the 2009–10 school year. Please report for the school year to date.
- Please have this questionnaire filled out by the person most knowledgeable about school crime and policies to provide a safe environment. Please keep a copy of the completed questionnaire for your records.

WHERE SHOULD I RETURN MY COMPLETED QUESTIONNAIRE?

Please return your completed questionnaire in the enclosed postage-paid envelope or mail it to:

U.S. CENSUS BUREAU
ATTN: SPB 64C
1201 E 10TH STREET
JEFFERSONVILLE, IN 47132-0001

If you have any questions about this questionnaire, please contact the U.S. Census Bureau at: **1-800-221-1204** or at dsd.education.surveys@census.gov.

Paperwork Burden Statement

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control number for this information collection is 1850-0761. Public reporting burden for this collection of information is estimated to average 45 minutes, including the time for reviewing instructions, searching existing data sources, gathering the data needed, and completing and reviewing the collection of information. If you have any comments concerning the accuracy of the time estimate or suggestions for improving the survey instrument, please write to: U.S. Department of Education, Washington, D.C. 20202-4537. If you have comments or concerns regarding the status of your individual response to this survey, write directly to: School Survey on Crime and Safety, National Center for Education Statistics, 1990 K Street, N.W., Room 9017, Washington, D.C. 20006.

Please provide the following information:

NAME OF PERSON COMPLETING FORM

010

TELEPHONE NUMBER
Area code Number

012

TITLE/POSITION
Check one response.

014 1 ☐ Principal
2 ☐ Vice-principal or disciplinarian
3 ☐ Other – Please specify

015

NUMBER OF YEARS AT THIS SCHOOL

016

BEST DAYS AND TIMES TO REACH YOU (IN CASE WE HAVE FURTHER QUESTIONS)

018

E-MAIL ADDRESS

020

IS **LOW - HIGH** THE CORRECT GRADE RANGE FOR THIS SCHOOL?

Xxx Yes → *GO TO QUESTION 1 ON PAGE 5.*
Xxx No → Which of the following grades are offered in this school?

- Check all that apply.
  Xxx __ PK
  Xxx __ K
  Xxx __ 1
  Xxx __ 2
  Xxx __ 3
  Xxx __ 4
  Xxx __ 5
  Xxx __ 6

Xxx __ 7
Xxx __ 8
Xxx __ 9
Xxx __ 10
Xxx __ 11
Xxx __ 12
Xxx __ Ungraded

GO TO QUESTION 1 ON PAGE 5.

School Practices and Programs

1. During the 2009–10 school year, was it a practice of your school to do the following?
   - If your school changed its practices during the school year, please answer regarding your most recent practice.
     - Check "Yes" or "No" on each line.

		YES	NO
a. Require visitors to sign or check in	110	1 ☐	2 ☐
b. Control access to school buildings during school hours (e.g., locked or monitored doors)	112	1 ☐	2 ☐
c. Control access to school grounds during school hours (e.g., locked or monitored gates)	114	1 ☐	2 ☐
d. Require students to pass through metal detectors each day	116	1 ☐	2 ☐
e. Perform one or more random metal detector checks on students	120	1 ☐	2 ☐
f. Close the campus for most or all students during lunch	122	1 ☐	2 ☐
g. Use one or more random dog sniffs to check for drugs	124	1 ☐	2 ☐
h. Perform one or more random sweeps for contraband (e.g., drugs or **weapons***), but not including dog sniffs	126	1 ☐	2 ☐
i. Require drug testing for athletes	128	1 ☐	2 ☐
j. Require drug testing for students in extra-curricular activities other than athletics	130	1 ☐	2 ☐
k. Require drug testing for any other students	132	1 ☐	2 ☐
l. Require students to wear uniforms	134	1 ☐	2 ☐
m. Enforce a strict dress code	136	1 ☐	2 ☐
n. Provide school lockers to students	138	1 ☐	2 ☐

o.	Require clear book bags or ban book bags on school grounds	140	1 ☐	2 ☐
p.	Provide an electronic notification system that automatically notifies parents in case of a school-wide emergency	141	1 ☐	2 ☐
q.	Provide a structured anonymous threat reporting system (e.g., online submission, telephone hotline, or written submission via drop box)	143	1 ☐	2 ☐
r.	Require students to wear badges or picture IDs	142	1 ☐	2 ☐
s.	Require faculty and staff to wear badges or picture IDs	144	1 ☐	2 ☐
t.	Use one or more security cameras to monitor the school	146	1 ☐	2 ☐
u.	Provide telephones in most classrooms	148	1 ☐	2 ☐
v.	Provide two-way radios to any staff	150	1 ☐	2 ☐
w.	Limit access to social networking websites (e.g. Facebook, MySpace, Twitter) from school computers	XXX	1 ☐	2 ☐
x.	Prohibit <u>use</u> of cell phones and text messaging devices during school hours.	XXX	1 ☐	2 ☐

*Please use the definition on page 2.

2. Does your school have a written plan that describes procedures to be performed in the following crises? If yes, has your school drilled students on the use of this plan during the 2009–10 school year?		Have a written plan?			If "Yes," has your school drilled students on the plan		
		YES	NO		YES	NO	
a.	Shootings	154	1 ☐	2 ☐	156	1 ☐	2 ☐
b.	Natural disasters (e.g. earthquakes or tornadoes)	158	1 ☐	2 ☐	160	1 ☐	2 ☐
c.	Hostages	162	1 ☐	2 ☐	164	1 ☐	2 ☐
d.	Bomb threats or incidents	166	1 ☐	2 ☐	168	1 ☐	2 ☐
e.	Chemical, biological, or radiological threats or incidents (e.g., release of mustard gas, anthrax, smallpox, or radioactive materials)	170	1 ☐	2 ☐	172	1 ☐	2 ☐
f.	Suicide threat or incident	169	1 ☐	2 ☐			
g.	The U.S. national threat level is changed to Red (Severe Risk of Terrorist Attack) by the Department of Homeland Security	171	1 ☐	2 ☐			
h.	Pandemic flu	173	1 ☐	2 ☐			

3. During the 2009–10 school year, did your school have any formal programs intended to prevent or reduce **violence*** that included the following components for students?
   - If a program has multiple components, answer "Yes" for each that applies.
   - Check "Yes" or "No" on each line.

		YES	NO
a. Prevention curriculum, instruction, or training for students (e.g., social skills training)	174	1 ☐	2 ☐
b. Behavioral or behavior modification intervention for students	176	1 ☐	2 ☐
c. Counseling, social work, psychological, or therapeutic activity for students	178	1 ☐	2 ☐
d. Individual attention/mentoring/tutoring/coaching of students by students	180	1 ☐	2 ☐
e. Individual attention/mentoring/tutoring/coaching of students by adults	xxx	1 ☐	2 ☐
f. Recreational, enrichment, or leisure activities for students	182	1 ☐	2 ☐
g. Student involvement in resolving student conduct problems (e.g., conflict resolution or peer mediation, student court)	184	1 ☐	2 ☐
h. Programs to promote sense of community/social integration among student	186	1 ☐	2 ☐

*Please use the definition on page 2.

Parent and Community Involvement at School

4. Which of the following does your school do to involve or help parents?
   - Check "Yes" or "No" on each line.

		YES	NO
a. Have a formal process to obtain parental input on policies related to school crime and discipline	190	1 ☐	2 ☐
b. Provide training or technical assistance to parents in dealing with students' problem behavior	192	1 ☐	2 ☐
c. Have a program that involves parents **at school*** helping to maintain school discipline	194	1 ☐	2 ☐

5. What is your best estimate of the percentage of students who had at least one parent or guardian participating in the following events during the 2009–10 school year?
   - Check one response on each line.

		0-25%	26-50%	51-75%	76-100%	School does not offer
a. Open house or back-to-school night	196	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
b. Regularly scheduled parent-teacher conferences	198	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
c. Special subject-area events (e.g., science fair, concerts)	200	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
d. Volunteered **at school*** or served on a committee	202	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

6. Were any of the following community and outside groups involved in your school's efforts to promote safe, disciplined, and drug-free schools?
   - Check "Yes" or "No" on each line.

		YES	NO
a. Parent groups	204	1 ☐	2 ☐
b. Social service agencies	206	1 ☐	2 ☐
c. Juvenile justice agencies	208	1 ☐	2 ☐
d. Law enforcement agencies	210	1 ☐	2 ☐
e. Mental health agencies	212	1 ☐	2 ☐
f. Civic organizations/service clubs	214	1 ☐	2 ☐
g. Private corporations/businesses	216	1 ☐	2 ☐
h. Religious organizations	218	1 ☐	2 ☐

*Please use the definition on page 2.

School Security Staff

7. During the 2009–10 school year, did you have any security guards, security personnel, or sworn law enforcement officers present **at your school*** at least once a week?

014 1 ☐ Yes
2 ☐ No – *GO TO QUESTION 12 ON PAGE 9.*

8. Were these security guards, security personnel, or sworn law enforcement officers used at least once a week in or around your school at the following times?
   - Check "Yes" or "No" on each line.

		YES	NO
a. At any time during school hours	222	1 ☐	2 ☐
b. While students were arriving or leaving	224	1 ☐	2 ☐
c. At selected school activities (e.g., athletic and social events, open houses, science fairs)	226	1 ☐	2 ☐
d. When school/school activities were not occurring	228	1 ☐	2 ☐

9. How many of the following were present in your school at least once a week?
   - If an officer works full-time across various schools in the district, please count this officer as "part-time" for your school.
   - If none, please place an "X" in the None box.

		Number **at your school***	
a. Security guards or security personnel (not law enforcement)			
i. Full-Time	232	☐☐	☐ None
ii. Part-Time	234	☐☐	☐ None
b. School Resource Officers (Include all career law enforcement officers with arrest authority, who have specialized training and are assigned to work in collaboration with school organizations)			
i. Full-Time	236	☐☐	☐ None
ii. Part-Time	238	☐☐	☐ None
c. Sworn law enforcement officers who are not School Resource Officers			
i. Full-Time	240	☐☐	☐ None
ii. Part-Time	242	☐☐	☐ None

10. Did any of the security guards, security personnel, or sworn law enforcement officers **at your school*** routinely:
    - Check "Yes" or "No" on each line.

		YES	NO
a. Carry a stun gun (e.g., Taser gun)	246	1 ☐	2 ☐
b. Carry chemical aerosol sprays (e.g., Mace, pepper spray)	248	1 ☐	2 ☐
c. Carry a **firearm***	250	1 ☐	2 ☐

11. Did these security guards, security personnel, or sworn law enforcement officers participate in the following activities **at your school*?**
    - Check "Yes" or "No" on each line.

		YES	NO
a. Security enforcement and patrol	252	1 ☐	2 ☐
b. Maintaining school discipline	254	1 ☐	2 ☐
c. Coordinating with local police and emergency team(s)	256	1 ☐	2 ☐
d. Identifying problems in the school and proactively seeking solutions to those problems	258	1 ☐	2 ☐
e. Training teachers and staff in school safety or crime prevention	260	1 ☐	2 ☐
f. Mentoring students	262	1 ☐	2 ☐
g. Teaching a law-related education course or training students (e.g., drug-related education, criminal law, or crime prevention courses)	264	1 ☐	2 ☐

Staff Training

12. During the 2009–10 school year, did your school or school district provide any of the following for classroom teachers or aides?
    - Check "Yes" or "No" on each line.

		YES	NO
a. Training in classroom management for teachers	266	1 ☐	2 ☐
b. Training in school-wide discipline policies and practices related to **violence***	268	1 ☐	2 ☐
c. Training in school-wide discipline policies and practices related to alcohol and/or drug use	xxx	1 ☐	2 ☐
d. Training in safety procedures (e.g., how to handle emergencies)	270	1 ☐	2 ☐
e. Training in recognizing early warning signs of students likely to	272	1 ☐	2 ☐

exhibit violent behavior

f. Training in recognizing signs of students using/abusing alcohol and/or drugs	274	1 ☐	2 ☐	
g. Training in positive behavioral intervention strategies	276	1 ☐	2 ☐	
h. Training in crisis prevention and intervention	xxx	1 ☐	2 ☐	

*Please use the definition on page 2.

Limitations on Crime Prevention

13. To what extent do the following factors limit your school's efforts to reduce or prevent crime?
    - Check one response on each line.

		Limits in	Limits in	Does not
a. Lack of or inadequate teacher training in classroom management	280	1 ☐	2 ☐	3 ☐
b. Lack of or inadequate alternative placement/programs for disruptive students	282	1 ☐	2 ☐	3 ☐
c. Likelihood of complaints from parents	284	1 ☐	2 ☐	3 ☐
d. Lack of teacher support for school policies	286	1 ☐	2 ☐	3 ☐
e. Lack of parental support for school policies	288	1 ☐	2 ☐	3 ☐
f. Teachers' fear of student retaliation	290	1 ☐	2 ☐	3 ☐
g. Fear of litigation	292	1 ☐	2 ☐	3 ☐
h. Inadequate funds	294	1 ☐	2 ☐	3 ☐
i. Inconsistent application of school policies by faculty or staff	296	1 ☐	2 ☐	3 ☐
j. Fear of district or state reprisal	298	1 ☐	2 ☐	3 ☐
k. Federal, state, or district policies on disciplining **special education students***	300	1 ☐	2 ☐	3 ☐
l. Federal policies on discipline and safety other than those for **special education students***	302	1 ☐	2 ☐	3 ☐
m. State or district policies on discipline and safety other than those for **special education students***	304	1 ☐	2 ☐	3 ☐

Frequency of Crime and Violence at School

14. During the 2009–10 school year, have any of your school's students, faculty, or staff died as a result of a homicide committed **at your school***?

306 1 ☐ Yes
2 ☐ No

15. During the 2009–10 school year, has there been at least one incident **at your school*** that involved a shooting (regardless of whether anyone was hurt)? Please include those incidents that occurred **at school***, regardless of whether a student or non-student used the **firearm***.

308 1 ☐ Yes
2 ☐ No

*Please use the definition on page 2.

16. Please record the number of incidents that occurred **at school*** during the 2009–10 school year for the offenses listed below. (NOTE: The number in column 1 should be greater than or equal to the number in column 2).

- If none, please place an "X" in the None box.

Please provide information on:

- The number of incidents, not the number of victims or offenders.
- Recorded incidents, regardless of whether any disciplinary action was taken.
- Recorded incidents, regardless of whether students or non-students were involved.
- Incidents occurring before, during, or after normal school hours.

	Column 1 Total number of recorded incidents	Column 2 Number reported to police or other law enforcement
a. **Rape*** or attempted **rape***	310 ☐☐☐ ☐ None	312 ☐☐☐ ☐ None
b. **Sexual battery*** other than **rape*** (include threatened **rape***)	314 ☐☐☐ ☐ None	316 ☐☐☐ ☐ None
c. **Robbery*** (taking things by force) i. With a weapon*	318 ☐☐☐ ☐ None	320 ☐☐☐ ☐ None

ii. Without a weapon*	322		None	☐	324		None	☐
d. **Physical attack or fight*** i. With a weapon*	326		None	☐	328		None	☐
ii. Without a weapon*	330		None	☐	332		None	☐
e. Threats of **physical attack*** i. With a weapon*	334		None	☐	336		None	☐
ii. Without a weapon*	338		None	☐	340		None	☐
f. **Theft/larceny*** (taking things worth over $10 without personal confrontation)	342		None	☐	344		None	☐
g. Possession of a **firearm or explosive device***	346		None	☐	348		None	☐
h. Possession of a knife or sharp object	350		None	☐	352		None	☐
i. Distribution, possession, or use of illegal drugs	354		None	☐	356		None	☐
j. Inappropriate distribution, possession, or use of prescription drugs	xxx		None	☐	xxx		None	☐
k. Distribution, possession, or use of alcohol	358		None	☐	360		None	☐
l. **Vandalism***	362		None	☐	364		None	☐

*Please use the definition on page 2.

17. During the 2009–10 school year, how many of the following incidents occurred **at your school***?

- If none, please place an "X" in the None box.

		Total Number
a. **Hate crime*** (excludes gang-related hate crime)	366	☐☐☐
		None ☐
b. **Gang-related*** crime (excludes gang-related hate crime)	368	☐☐☐
		None ☐
c. **Gang-related* hate crime***	369	☐☐☐
		None ☐

18. How many times during the 2009–10 school year were activities disrupted by unplanned fire alarms (i.e., false alarms)? Do not include fire alarms due to actual emergencies.

- If none, please place an "X" in the None box.

370 Number of unplanned fire alarms ☐☐☐

☐ None

19. Excluding planned and unplanned fire alarms, how many times during the 2009–10 school year were activities disrupted by other actions such as death threats, bomb threats, or chemical, biological, or radiological threats?

- If none, please place an "X" in the None box.

372 Number of disruptions

☐ None

*Please use the definition on page 2.

Disciplinary Problems and Actions

20. To the best of your knowledge, how often do the following types of problems occur **at your school***?

- Check one response on each line.

			Happens daily	Happens at least once a week	Happens at least once a month	Happens on occasion	Never happens
a.	Student racial/ethnic tensions	374	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
b.	Student bullying	376	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
c.	Student **sexual harassment*** of other students	378	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
d.	Student harassment of other students based on sexual orientation or gender identity (i.e., lesbian, gay, bisexual, transgender, questioning)	xxx	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
e.	Widespread disorder in classrooms	382	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
f.	Student verbal abuse of teachers	380	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
g.	Student acts of disrespect for teachers other than verbal abuse	384	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
h.	**Gang*** activities	386	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
i.	**Cult or extremist group*** activities	388	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

21. Cyberbullying occurs when willful and repeated harm is inflicted through the use of computers, cell phones, or other electronic devices. To the best of your knowledge, thinking about problems that can occur anywhere (both at your school and away from school), how often do the following occur?

[apple] Check one response on each line.

			Happens at least once a week	Happens at least once a month	Happens on occasion	Never happens
a. Cyberbullying among students who attend your school	XXX	1 ☐ Happens daily	2 ☐	3 ☐	4 ☐	5 ☐
b. School environment is affected by cyberbullying	XXX	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
c. Staff resources are used to deal with cyberbullying	XXX	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

*Please use the definition on page 2.

22. During the 2009–10 school year, did your school allow for the use of the following disciplinary actions? If yes, were the actions used this school year?

		Does your school allow for use of the			If "Yes," was the action used this		
			YES	NO		YES	NO
a.	Removal with no continuing school services for at least the remainder of the school year	390	1 ☐	2 ☐	392	1 ☐	2 ☐
b.	Removal with school-provided tutoring/at home instruction for at least the remainder of the school year	394	1 ☐	2 ☐	396	1 ☐	2 ☐
c.	Transfer to a **specialized school*** for disciplinary reasons	398	1 ☐	2 ☐	400	1 ☐	2 ☐
d.	Transfer to another regular school for disciplinary reasons	402	1 ☐	2 ☐	404	1 ☐	2 ☐
e.	Out-of-school suspension or removal for less than the remainder of the school year i.…With no curriculum/services provided	406	1 ☐	2 ☐	408	1 ☐	2 ☐
	ii.…With curriculum/services provided	410	1 ☐	2 ☐	412	1 ☐	2 ☐
f.	In-school suspension for less than the remainder of the school year i.…With no curriculum/services provided	414	1 ☐	2 ☐	416	1 ☐	2 ☐
	ii.…With curriculum/services provided	418	1 ☐	2 ☐	420	1 ☐	2 ☐
g.	Referral to a school counselor	422	1 ☐	2 ☐	757	1 ☐	2 ☐
h.	Assignment to a program (during school hours) designed to reduce disciplinary problems	426	1 ☐	2 ☐	428	1 ☐	2 ☐
i.	Assignment to a program (outside of school hours) designed to reduce disciplinary problems	430	1 ☐	2 ☐	432	1 ☐	2 ☐
j.	Loss of school bus privileges due to misbehavior	434	1 ☐	2 ☐	436	1 ☐	2 ☐
k.	Corporal punishment	438	1 ☐	2 ☐	440	1 ☐	2 ☐
l.	Placement on school probation with consequences if another incident occurs	442	1 ☐	2 ☐	444	1 ☐	2 ☐
m.	Detention and/or Saturday school	446	1 ☐	2 ☐	448	1 ☐	2 ☐
n.	Loss of student privileges	450	1 ☐	2 ☐	452	1 ☐	2 ☐
o.	Requirement of participation in community service	454	1 ☐	2 ☐	456	1 ☐	2 ☐

*Please use the definition on page 2.

23. During the 2009-10 school year, how many students were involved in committing the following offenses, and how many of the following disciplinary actions were taken in response?

- If none, please place an "X" in the None box.

Please follow these guidelines when determining the number of offenses and disciplinary actions:

- If more than one student was involved in an incident, please count each student separately when providing the number of disciplinary actions.
- If a student was disciplined more than once, please count each offense separately (e.g., a student who was suspended five times would be counted as five suspensions).
- If a student was disciplined in two different ways for a single infraction (e.g., the student was both suspended and referred to counseling), **count only the most severe disciplinary action that was taken.**
- If a student was disciplined in one way for multiple infractions, record the disciplinary action for only the most serious offense.

Column Number

		1	2	3	4	5
		Total students involved in recorded offenses (regardless of disciplinary action)	Removals with no continuing school services for at least the remainder of the school year	Transfers to **specialized schools***	Out-of-school suspensions lasting 5 or more days, but less than the remainder of the school year	Other disciplinary action (e.g., suspension for less than 5 days, detention, etc.)
a. Use/possession of a **firearm/ explosive device***	458	460	462	464	466	
		None☐	None☐	None☐	None☐	None☐
b. Use/possession of a **weapon*** other than a **firearm/ explosive device***	468	470	472	474	476	
		None☐	None☐	None☐	None☐	None☐
c. Distribution, possession, or	478	480	482	484	486	

use of illegal drugs		None☐	None☐	None☐	None☐	None☐
d. Distribution, possession, or use of alcohol	488	None☐	490 None☐	492 None☐	494 None☐	496 None☐
e. **Physical attacks or fights***	498	None☐	500 None☐	502 None☐	504 None☐	506 None☐

24. During the 2009–10 school year, how many of the following occurred?

- If none, please place an "X" in the None box.

		Total number
a. Students were removed from your school without continuing services for at least the remainder of the school year for disciplinary reasons. (NOTE: This number should be greater than or equal to the sum of entries in item 22, column 2).	518	None☐
b. Students were transferred to **specialized schools*** for disciplinary reasons. (NOTE: This number should be greater than or equal to the sum of entries in item 22, column 3).	520	None☐

*Please use the definition on page 2.

25. As of October 1, 2009, what was your school's total enrollment?

522 ☐☐☐☐☐ Students

26. What percentage of your current students fit the following criteria?
- If none, please place an "X" in the None box.

		Percent of students
a. Eligible for free or reduced-price lunch	524	☐☐☐
		None ☐
b. Limited English Proficient (LEP)	526	☐☐☐
		None ☐
c. **Special education students***	528	☐☐☐
		None ☐
d. Male	530	☐☐☐
		None ☐

27. What is your best estimate of the percentage of your current students who meet the following criteria
- If none, please place an "X" in the None box.

		Percent of students
a. Below the 15th percentile on standardized tests	532	☐☐☐
		None ☐
b. Likely to go to college after high school	534	☐☐☐
		None ☐
c. Consider academic achievement to be very important	536	☐☐☐
		None ☐

28. How many classroom changes do most students make in a typical day?
- Count going to lunch and then returning to the same or a different classroom as two classroom changes. Do not count morning arrival or afternoon departure.
- If none, please place an "X" in the None box.

538 Typical number of classroom changes

☐ None

*Please use the definition on page 2.

29. How would you describe the crime level in the area(s) in which your students live?
- Check one response.

560
1 ☐ High level of crime
2 ☐ Moderate level of crime
3 ☐ Low level of crime
4 ☐ Students come from areas with very different levels of crime

30. How would you describe the crime level in the area where your school is located?
- Check one response.

562
1 ☐ High level of crime
2 ☐ Moderate level of crime
3 ☐ Low level of crime

31. Which of the following best describes your school?
- Check one response.

564
1 ☐ Regular public school
2 ☐ Charter school
3 ☐ Has a magnet program for part of the school
4 ☐ Exclusively a magnet school
5 ☐ Other – Please specify

565

32. What is your school's average daily attendance?

568 Percent of students present

33. During the 2009–10 school year, how many students transferred to or from your school after the start of the school year? Please report on the total mobility, not just transfers due to disciplinary actions. (NOTE: This number should be greater than or equal to the number of students who were transferred for disciplinary reasons, as reported in item 23b).
- If a student transferred more than once in the school year, count each transfer separately.
- If none, please place an "X" in the None box.

a. Transferred to the school 570 ☐☐☐☐

None ☐

b. Transferred from the school 572 ☐☐☐☐

None ☐

34. Please provide the following dates.

		Month	Day
a. Start date for your school's 2009–10 academic year	574	☐☐	☐☐
		\	2009
b. End date for your school's 2009–10 academic year	576	☐☐	☐☐
		\	2010
c. Date you completed the questionnaire	578	☐☐	☐☐
		\	2010

Please return your completed questionnaire in the enclosed postage-paid envelope or mail it to:
U.S. Census Bureau
Attn: SPB 64C
1201 E 10th Street
Jeffersonville, IN 47132-0001

Thank you very much for your participation in this survey. If you have any questions, please contact us, toll–free at: 1–800–221–1204 or by e-mail at: dsd.education@census.gov

To learn more about this survey and to access reports from earlier collections, see the School Survey on Crime and Safety (SSOCS) website at:

http://nces.ed.gov/surveys/ssocs

Additional data collected by the National Center for Education Statistics (NCES) on a variety of topics in elementary, secondary, postsecondary, and international education are available from the NCES website at:

http://nces.ed.gov

For additional data collected by various Federal agencies, including the Department of Education, visit the Federal Statistics clearinghouse at:

http://www.fedstats.gov

Appendix B: Table of Literature Searches

Literature Search Results

Search Term	Limiters	Number of Results	Database
"School Security" and "school practices and programs"	None	116	EBSCO Host – Academic Search Premier, Education Research Complete, ERIC
"School Security" and "school security staff"	None	82	EBSCO Host – Academic Search Premier, Education Research Complete, ERIC
"School Security" and "staff training"	None	244	EBSCO Host – Academic Search Premier, Education Research Complete, ERIC
"School Security" and "budget"	None	871	EBSCO Host – Academic Search Premier, Education Research Complete, ERIC
School Security	None	14,833	EBSCO Host – all databases selected
School Survey on Crime and Safety	None	342	EBSCO Host – all databases selected
School Resource Officer	None	1,298	EBSCO Host – all databases selected
School Security and "threat assessment"	None	255	EBSCO Host – Academic Search Premier, Education Research Complete, ERIC
School Safety	None	25,956	EBSCO Host – Academic Search Premier, Education Research Complete, ERIC
School Violence	None	28,365	EBSCO Host – Academic Search Premier, Education Research Complete, ERIC
School Security Measures	None	1,530	EBSCO Host –

			Academic Search Premier, Education Research Complete, ERIC
School Security and "target hardening"	None	27	EBSCO Host – Academic Search Premier, Education Research Complete, ERIC
SSOCS	None	158	ProQuest
School Climate	None	27,652	EBSCO Host – Academic Search Premier, Education Research Complete, ERIC
Bullying	None	58,132	EBSCO Host – Academic Search Premier, Education Research Complete, ERIC
School Violence and "Columbine"	None	361	EBSCO Host – Academic Search Premier, Education Research Complete, ERIC
School Violence and "Sandy Hook"	None	212	EBSCO Host – Academic Search Premier, Education Research Complete, ERIC

Appendix C: Principal Letter

Western Connecticut State University
Department of Education and Educational Psychology
181 White Street
Danbury, CT 06810

Dear Principal,

I am writing to you as a fellow principal who is currently enrolled in the doctoral program for Instructional Leadership at Western Connecticut State University which requires that I design and implement a research study. The research study I have designed examines the impact of the December 14, 2012 Newtown school shooting on school security practices and programs, school security staff, security staff training, and security budgets. I have contacted, and received permission for participation from your school district's Superintendent.

To collect data related to school security practices and programs, school security staff, security staff training, and security budgets, I am enclosing for you an abbreviated version of the School Survey on Crime and Safety (SSOCS) Administrator Questionnaire which should take 10-20 minutes to complete. I have received written permission from the National Center of Educational Statistics (NCES) to modify and use this survey for the purposes of my research study on this very important topic. Please complete the survey by November 1 and return it to me in the enclosed, self addressed stamped envelope.

Results of this study will not be used for any participant evaluation or performance judgment at the school or district level. The results will provide valuable feedback and data on the impact of school shootings on school security practices and programs, school security staff, security staff training, and security budgets. There is limited research on the impact of school shootings on these constructs at the elementary school level. Research on this subject may help other educational leaders and districts make an informed decision on school security as it relates to the needs of their students, educators, and school community. The information and data that you provide will be kept confidential. Participating districts and schools may request to receive the results of the research upon completion of the study.

In closing, thank you for your school's participation in this valuable research study and please return the survey to me in the stamped, self addressed envelope enclosed.

Sincerely,

Robert William O'Donnell
Principal
Wilton High School
Western Connecticut State University Doctoral Candidate
odonnell010@connect.wcsu.edu

Appendix D: Adapted School Survey on Crime and Safety

SCHOOL SURVEY ON CRIME AND SAFETY

ADMINISTRATOR QUESTIONNAIRE
2012–13 SCHOOL YEAR

THIS SURVEY HAS BEEN ENDORSED BY:

Western Connecticut State University

FORMSSOCS-1
(06-17-2013)

SURVEY INSTRUCTIONS:

- Respond to each question with a response that indicates security measures in place in your school before (pre) and after (post) the December 14, 2013 Newtown school shooting**.**
- **If you plan to implement measures in the future as a result of the Newtown school shooting, but have not yet done so, mark them as "Post Yes" on your survey.**
- For most questions, please mark the box that best reflects your school's circumstances. Please mark your response with an "X".
- Please have this questionnaire filled out by the administrator most knowledgeable about school security and policies to provide a safe environment. Please keep a copy of the completed questionnaire for your records.

WHERE SHOULD I RETURN MY COMPLETED QUESTIONNAIRE?

Please return your completed questionnaire in the enclosed postage-paid envelope or mail it to:

Robert William O'Donnell
Principal
Wilton High School

395 Danbury Road
Wilton, CT, 06897

If you have any questions about this questionnaire, please contact Robert O'Donnell at (203) 762-0381, extension 6200 or at odonnellr@wilton.k12.ct.us

Please provide the following information:

NAME AND SIGNATURE OF PERSON COMPLETING FORM

TELEPHONE NUMBER
Area code Number

TITLE/POSITION
Check one response.
1 ☐ Principal
2 ☐ Assistant Principal
3 ☐ Other – Please specify

NUMBER OF YEARS AT THIS SCHOOL

BEST DAYS AND TIMES TO REACH YOU (IN CASE I HAVE FURTHER QUESTIONS)

E-MAIL ADDRESS

School Characteristics: 2012–13 School Year

As of October 1, 2012, what was your school's total enrollment?

☐☐☐☐☐ Students

What percentage of your current students fit the following criteria?

- If none, please place an "X" in the None box.

Percent of students

a. Percentage eligible for free or reduced-price lunch ☐☐☐

None ☐

b. Percentage Diversity (Non Caucasian) ☐☐☐

None ☐

CIRCLE THE CORRECT GRADE RANGE FOR THIS SCHOOL

- Circle all that apply.

PK
K
1
2
3
4
5
6
7
8
9
10
11
12

CIRCLE THE CORRECT SCHOOL TYPE DESIGNATION FOR THIS SCHOOL: Rural Urban Suburban

School Practices and Programs

1. During the 2012–13 school year, was it a practice at your school to do the following before **(pre)** and/or after **(post)** the December 14 Newtown school shooting?

- **Check "Pre Yes" or "Pre No" and Check "Post Yes" or "Post No"**

on each line. If you plan to implement measures in the future as a result of the Newtown school shooting, but have not yet done so, mark them as "Post Yes" on your survey.

	Pre Yes	Pre No	Post Yes	Post No
a. Require visitors to sign or check in	1 ☐	2 ☐	3 ☐	4 ☐
b. Control access to school buildings during school hours (e.g., locked or monitored doors)	1 ☐	2 ☐	3 ☐	4 ☐
c. Control access to school grounds during school hours (e.g., locked or monitored gates)	1 ☐	2 ☐	3 ☐	4 ☐
d. Require students to pass through metal detectors each day	1 ☐	2 ☐	3 ☐	4 ☐
e. Perform one or more random metal detector checks on students	1 ☐	2 ☐	3 ☐	4 ☐
f. Close the campus for most or all students during lunch	1 ☐	2 ☐	3 ☐	4 ☐
g. Use one or more random dog sniffs to check for drugs	1 ☐	2 ☐	3 ☐	4 ☐
h. Perform one or more random sweeps for contraband (e.g., drugs or **weapons***), but not including dog sniffs	1 ☐	2 ☐	3 ☐	4 ☐
i. Require drug testing for athletes	1 ☐	2 ☐	3 ☐	4 ☐
j. Require drug testing for students in extra-curricular activities other than athletics	1 ☐	2 ☐	3 ☐	4 ☐
k. Require drug testing for any other students	1 ☐	2 ☐	3 ☐	4 ☐
l. Require students to wear uniforms	1 ☐	2 ☐	3 ☐	4 ☐
m. Enforce a strict dress code	1 ☐	2 ☐	3 ☐	4 ☐
n. Provide school lockers to students	1 ☐	2 ☐	3 ☐	4 ☐
o. Require clear book bags or ban book bags on school grounds	1 ☐	2 ☐	3 ☐	4 ☐
p. Provide an electronic notification system that automatically notifies parents in case of a school-wide emergency	1 ☐	2 ☐	3 ☐	4 ☐

q.	Provide a structured anonymous threat reporting system (e.g., online submission, telephone hotline, or written submission via drop box)	1 ☐ 2 ☐ 3 ☐ 4 ☐
r.	Require students to wear badges or picture IDs	1 ☐ 2 ☐ 3 ☐ 4 ☐
s.	Require faculty and staff to wear badges or picture IDs	1 ☐ 2 ☐ 3 ☐ 4 ☐
t.	Use one or more security cameras to monitor the school	1 ☐ 2 ☐ 3 ☐ 4 ☐
u.	Provide telephones in most classrooms	1 ☐ 2 ☐ 3 ☐ 4 ☐
v.	Provide two-way radios to any staff	1 ☐ 2 ☐ 3 ☐ 4 ☐
w.	Limit access to social networking websites (e.g. Facebook, MySpace, Twitter) from school computers	1 ☐ 2 ☐ 3 ☐ 4 ☐
x.	Prohibit use of cell phones and text messaging devices during school hours.	1 ☐ 2 ☐ 3 ☐ 4 ☐

2. Did your school have a written plan that describes procedures to be performed in the following crises before **(pre)** and/or after **(post)** the December 14, 2012 Newtown school shooting?

- **Check "Pre Yes" or "Pre No" and Check "Post Yes" or "Post No" on each line**.

	Pre Yes	**Pre No**	**Post**	**Post No**
a. Shootings	1 ☐	2 ☐	3 ☐	4 ☐
b. Armed Intruders	1 ☐	2 ☐	3 ☐	4 ☐
c. Hostages	1 ☐	2 ☐	3 ☐	4 ☐
d. Bomb threats or incidents	1 ☐	2 ☐	3 ☐	4 ☐
e. Chemical, biological, or radiological threats or incidents (e.g., release of mustard gas, anthrax, smallpox, or radioactive materials)	1 ☐	2 ☐	3 ☐	4 ☐
f. Suicide threat or incident	1 ☐	2 ☐	3 ☐	4 ☐
g. The U.S. national threat level is changed to Red (Severe Risk of Terrorist Attack) by the Department of Homeland Security	1 ☐	2 ☐	3 ☐	4 ☐
h. Pandemic flu	1 ☐	2 ☐	3 ☐	4 ☐

3. Did your school conduct a drill for students and staff to prepare them for the following emergency situations before **(pre)** and/or after **(post)** the December 14, Newtown school shooting?

- **Check "Pre Yes" or "Pre No" and Check "Post Yes" or "Post No" on each line.**

	Pre Yes	Pre No	Post	Post No
a. Shootings	1 ☐	2 ☐	3 ☐	4 ☐
b. Armed Intruders	1 ☐	2 ☐	3 ☐	4 ☐
c. Hostages	1 ☐	2 ☐	3 ☐	4 ☐
d. Bomb threats or incidents	1 ☐	2 ☐	3 ☐	4 ☐
e. Chemical, biological, or radiological threats or incidents (e.g., release of mustard gas, anthrax, smallpox, or radioactive materials)	1 ☐	2 ☐	3 ☐	4 ☐
f. Suicide threat or incident	1 ☐	2 ☐	3 ☐	4 ☐
g. The U.S. national threat level is changed to Red (Severe Risk of Terrorist Attack) by the Department of Homeland Security	1 ☐	2 ☐	3 ☐	4 ☐
h. Pandemic flu	1 ☐	2 ☐	3 ☐	4 ☐

4. Did your school have any formal programs intended to prevent or reduce **violence*** that included the following components for students before **(pre)** and/or after **(post)** the December 14, 2012 Newtown school shooting?

- **Check "Pre Yes" or "Pre No" and Check "Post Yes" or "Post No" on each line.**

	Pre Yes	Pre No	Post Yes	Post
a. Prevention curriculum, instruction, or training for students (e.g., social skills training)	1 ☐	2 ☐	3 ☐	4 ☐
b. Behavioral or behavior modification intervention for students	1 ☐	2 ☐	3 ☐	4 ☐
c. Counseling, social work, psychological, or therapeutic activity for students	1 ☐	2 ☐	3 ☐	4 ☐

d.	Individual attention/mentoring/tutoring/coaching of students by students	1 ☐	2 ☐	3 ☐	4 ☐
e.	Individual attention/mentoring/tutoring/coaching of students by adults	1 ☐	2 ☐	3 ☐	4 ☐
f.	Recreation, enrichment, or leisure activities for students	1 ☐	2 ☐	3 ☐	4 ☐
g.	Student involvement in resolving student conduct problems (e.g.conflict resolution or peer mediation, student court)	1 ☐	2 ☐	3 ☐	4 ☐
h.	Programs to promote sense of community/social integration among students	1 ☐	2 ☐	3 ☐	4 ☐

School Security Staff

5. During the 2012–13 school year, did you have any security guards, security personnel, or sworn law enforcement officers present **at your school** at least once a week before**(pre)** and/or after**(post)** the December 14, Newtown school shooting?

1 ☐ Pre Yes
2 ☐ Pre No
3 ☐ Post Yes
☐ 2 Post No

6. Were these security guards, security personnel, or sworn law enforcement officers used at least once a week in or around your school at the following times before**(pre)**and/or after**(post)** the December 14, Newtown school shooting?

- **Check "Pre Yes" or "Pre No" and Check "Post Yes" or "Post No" on each line.**

		Pre Y	**Pre N**	**Post**	**Post**
a.	At any time during school hours	1 ☐	2 ☐	3 ☐	4 ☐
b.	While students were arriving or leaving	1 ☐	2 ☐	3 ☐	4 ☐
c.	At selected school activities (e.g., athletic and social events, open houses, science fairs)	1 ☐	2 ☐	3 ☐	4 ☐
d.	When school/school activities were not occurring	1 ☐	2 ☐	3 ☐	4 ☐

7. How many of the following were present in your school at least once a week before **(pre)**and/or after **(post)** the December 14, Newtown school shooting?
   - If an officer works full-time across various schools in the district, please count this officer as "part-time" for your school.

	Number at your school Pre	**Number at your school Post**
a. Security guards or security personnel (not law enforcement)		
i. Full-Time	☐☐	☐☐
ii. Part-Time	☐☐	☐☐
b. School Resource Officers (Include all career law enforcement officers with arrest authority, who have specialized training and are assigned to work in collaboration with school organizations		
i. Full-Time	☐☐	☐☐
ii. Part-Time	☐☐	☐☐
c. Sworn law enforcement officers who are not School Resource Officers		
i. Full-Time	☐☐	☐☐
ii. Part-Time	☐☐	☐☐

8. Did any of the security guards, security personnel, or sworn law enforcement officers **at your school*** routinely:
   - **Check "Pre Yes" or "Pre No" and Check "Post**

Yes" or "Post No" on each line.

	Pre	Pre	Post	Post No
a. Carry a stun gun (e.g., Taser gun)	1 ☐	2 ☐	3 ☐	4 ☐
b. Carry chemical aerosol sprays (e.g., Mace, pepper spray)	1 ☐	2 ☐	3 ☐	4 ☐
c. Carry a **firearm**	1 ☐	2 ☐	3 ☐	4 ☐

9. Did these security guards, security personnel, or sworn law enforcement officers participate in the following activities **at your school*?**
   - Check "Pre Yes" or "Pre No" and Check "Post Yes" or "Post No" on each line.

	Pre	Pre	Post	Post No
a. Security enforcement and patrol	1 ☐	2 ☐	3 ☐	4 ☐
b. Maintaining school discipline	1 ☐	2 ☐	3 ☐	4 ☐
c. Coordinating with local police and emergency team(s)	1 ☐	2 ☐	3 ☐	4 ☐
d. Identifying problems in the school and proactively seeking solutions to those problems	1 ☐	2 ☐	3 ☐	4 ☐
e. Training teachers and staff in	1 ☐	2 ☐	3 ☐	4 ☐

	school safety or crime prevention	
f.	Mentoring students	1 ☐ 2 ☐ 3 ☐ 4 ☐
g.	Teaching a law-related education course or training students (e.g., drug-related education, criminal law, or crime prevention courses)	1 ☐ 2 ☐ 3 ☐ 4 ☐

Staff Training

10. During the 2012–13 school year, did your school or school district provide any of the following for classroom teachers or aides before **(pre)**and/or after **(post)** the December 14, 2012 Newtown school shooting?

- **Check "Pre Yes" or "Pre No" and Check "Post Yes" or "Post No" on each line. Check "Post Yes" for any additional training that is planned for the future, but not yet implemented.**

		Pre	Pre	Post	Post No
a.	Training in classroom management for teachers	1 ☐	2 ☐	3 ☐	4 ☐
b.	Training in school-wide discipline policies and practices related to violence	1 ☐	2 ☐	3 ☐	4 ☐
c.	Training in school-wide discipline	1 ☐	2 ☐	3 ☐	4 ☐

	policies and practices related to alcohol and/or drug use	
d.	Training in safety procedures (e.g., how to handle emergencies)	1 ☐ 2 ☐ 3 ☐ 4 ☐
e.	Training in recognizing early warning signs of students likely to exhibit violent behavior	1 ☐ 2 ☐ 3 ☐ 4 ☐
f.	Training in recognizing signs of students using/abusing alcohol and/or drugs	1 ☐ 2 ☐ 3 ☐ 4 ☐
g.	Training in positive behavioral intervention strategies	1 ☐ 2 ☐ 3 ☐ 4 ☐
h.	Training in crisis prevention and intervention	1 ☐ 2 ☐ 3 ☐ 4 ☐

.

Appendix E: Superintendent Letter and Consent Form

Western Connecticut State University
Department of Education and Educational Psychology
181 White Street
Danbury, CT 06810

Superintendent of Schools
School District
Address
[Date XX/XX/XX]

Dear Superintendent of Schools,

Thank you for your willingness and consent to participate in my doctoral study. The research study I have designed examines the impact of the December 14, 2012 Newtown school shooting on school security practices and programs, school security staff, security staff training, and security budgets.

To collect data related to school security practices and programs, school security staff, security staff training, and security budgets, I am enclosing for your principals copies a modified and abbreviated version of the School Survey on Crime and Safety (SSOCS) Administrator Questionnaire. I have received written permission from the National Center of Educational Statistics (NCES) to modify and use this survey for the purposes of my research study on this very important topic. In addition, please respond to the enclosed questions on the impact of the Newtown school shooting on your district security budget. Please complete the survey by and return it to me in the enclosed self addressed stamped envelope.

Results of this study will not be used for any participant evaluation or performance judgment at the school or district level. The results will provide valuable feedback and data on the impact of school shootings on school security practices and programs, school security staff, security staff training, and security budgets. There is limited research on the impact of school shootings on these constructs at the elementary school level. Research on this subject may help other educational leaders and districts make an informed decision on school security as it relates to the needs of their students, educators, and school community. The information and data that you provide will be kept confidential as your district and schools will be coded to protect their anonymity. Participating districts and schools will receive the results of the research upon completion of the study.

In closing, thank you for your district's participation in this valuable research study. You can return the endorsement to me in the stamped, self addressed envelope enclosed.

Sincerely,

Robert William O'Donnell
Principal
Wilton High School
Western Connecticut State University Doctoral Candidate
odonnell010@connect.wcsu.edu

This research project has been reviewed and approved by the WCSU Institutional Review Board. If you have questions concerning the rights of the subjects involved in research studies please email the WCSU Assurances Administrator at irb@wcsu.edu and mention Protocol Number [to be filled in after approved]. This study is valid until [fill in 1 year date from approved date].

Superintendent Consent Form

By signing below you are giving consent for the study described on the previous pages to be conducted at the schools in your district, Protocol Number (XX). It is understood consent will be needed from the principal before the study begins.

****

_____ _____

Signature of Superintendent Date
Dr.

Appendix F: Superintendent Survey

Superintendent Questions on School Security Budgets

1. Has your school district experienced increased demands on your budget due to increased security measures: school practices and programs, school security staff, and staff training that have been added or will be added since the Newtown school shooting on December 14, 2012?

Circle one: YES NO

2. **If yes, please quantify the increase by checking a budget impact range below:**

_____ 0-$4,999

_____ $5,000-$9,999

_____ $10,000-$14,999

_____ $15,000-$19,999

_____ $20,000-$24,999

_____ $25,000-$29,999

_____ $30,000-$39,999

_____ $40,000-$49,999

_____$50,000-$59,999

_____ $60,000-$69,999

_____$70,000-79,999

_____ $80,000-$89,999

_____$90,000-99,999

_____ More than $100,000

Appendix G: IRB Approval

Dear Robert,

I am pleased to inform you that your I.R.B. protocol number 1213-197 has been approved by full review. Your approval copies will be sent to Dr. Olmstead. The WCSU I.R.B. wishes you all the best with your research.

Thank you,

Carol O'Connor
Psychology Department Secretary
C.E.L.T
I.A.C.U.C.
I.R.B.
Warner Hall 304
Phone: 203-837-8470
Fax: 203-837-8905