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WHAT WE SHOULD BE LEARNING: A STUDY OF SCHOOL SHOOTING AFTER-ACTION REPORTS

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ABSTRACT

This report analyzes after-action reports from three mass school shooting events: Columbine, Virginia Tech, and Sandy Hook. The after-action reports were reviewed in order to determine how the reports are structured and distributed; what the reports recommend to prevent future incidents; and if there are any areas for improvement. This thesis used a case-study approach with a set of guiding questions for analyzing each report. Data came from publicly available after-action reports. By completing this research, valuable information is added to the literature regarding mass school shooting after-action reports. Researchers will find areas where after-action reports can be improved. These results will make students, teachers, and others involved in education safer.

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Chapter 1

Introduction

Since Columbine put school shootings on the public radar in 1999, there have been 50 mass shootings or attempted mass shootings at U.S. educational institutions, with nearly 150 deaths (Pearle, 2016). The mass murders have ranged from targeting first graders at Sandy Hook Elementary to students and faculty at Virginia Tech and Northern Illinois University. These incidents have occurred in every region in the United States, from rural Pennsylvania to major urban centers such as Denver and the San Francisco Bay Area. Furthermore, the threat may only become more dire in the future as at least one study has found the rate of mass shootings has increased since 2011 (Cohen, Azrael, & Miller, 2014).

In most of the cases, investigations followed the shootings. In the Columbine, Virginia Tech, and Sandy Hook cases, committees assembled and large-scale reviews conducted. The findings were reported and released to the public. These reports are known as after-action reports (AAR). This study seeks to determine what can be learned from the AARs, and if the findings from the different reports are related.

This thesis will begin with a literature review discussing the history and development of the AAR. It will also expand upon the best practices and issues as found in current research. As previous noted, the study uses a case study approach to examine AARs from Columbine, Virginia Tech, and Sandy Hook. Attention is focused on the characteristics of the reports and the recommendations given to prevent or mitigate future incidents.

Analysis and discussion will follow the methodology section. The analysis will focus on what the AARs actually say, as well as note their characteristics. The discussion section will

consist of comparing and contrasting the findings from the analysis. The emphasis is on understanding how recommendations have evolved over the reports. The research will conclude with a recap of findings, challenges experienced, and suggestions for future research.

The purpose of this thesis is to better understand the after-action reports for mass school shootings. Along with developing a better understanding, the goals are to thoroughly review the information process and provide recommendations for improvement. This research will be useful to educational institutions, law enforcement, and anyone with an interest in school safety.

Chapter 2

Literature Review

The AAR process, originally developed by the U.S. Army, is standard in all branches of the military as well as in businesses and emergency management (Villado, 2008). Due to this widespread use, many researchers have examined AARs, determined their strengths and weaknesses, and developed recommendations for improvement and future research. It appears no researchers have examined AARs after mass shootings at educational institutions, which is the focus of this thesis. This lack of research is surprising as many of the findings from AARs can be applied to school shootings, especially considering the reports issued after the events at Columbine, Virginia Tech, and Sandy Hook. To accomplish this goal, a comprehensive literature review of AAR research was conducted. The review briefly describes the development of the AAR, and then synthesizes current research.

History of the AAR

In order to understand the after-action report, it needs definition. From a military perspective, the U.S. Army defines an AAR as "a professional discussion of an event, focused on performance standards, that enables soldiers to discover for themselves what happened, why it happened, and how to sustain strengths and improve on weaknesses" (as cited in Morrison & Meliza, 1999, p. 1). From an emergency management and industrial perspective, Tami et al. (2013) said AARs are "designed to facilitate learning from errors and from successes, to identify strengths that should be maintained and weaknesses that should be rectified, and to reveal misses and near-misses" (p. 799). To draw from both perspectives, AARs provide a learning opportunity by utilizing a formal review process of recent events.

The U.S. Army developed the AAR in the 1970s after researching the strengths and weaknesses of preceding review processes. One review process was the “interview after combat”. S.L.A. Marshall, an Army historian, created this method. The method consists of conducting group interviews after the fighting ended where the researchers asked participants questions intended to cause them to describe their experiences (Morrison & Meliza, 1999). Critics argued this method was subjective and risked misinformation being provided by the interviewees.

Another review process was the performance critique. An umpire evaluates the outcome of an assault based on factors such as numerical superiority, swiftness, and noise level of the attacking unit. The umpire provides an estimated outcome along with his opinion on the tactical performance of the assessed unit (Morrison & Meliza, 1999). Obviously, this method relies on the interpretations of a single umpire and is extremely subjective. This shortcoming influenced the development of the AAR.

The evolution of tactical engagement simulations also influenced the AAR. Specifically, the technology behind the simulations provided real data, which allowed for objective reviews of performance. The Multiple Integrated Laser Engagement Simulation (MILES) provided statistics on friendly and enemy casualties during force-on-force training, which were measurable indicators of performance to units. Following MILES, computer-based simulations SIMNET (simulation networking) and Close Combat Tactical Trainer (CCTT) also provided hard, measurable data (Morrison & Meliza, 1999). An AAR uses this technology and data for unit feedback. The military of today has evolved the AAR to where it has become a “well-planned process whereby data are collected, analyzed for trends, and compiled into complex presentations with cameras recording activities for later playback” (Salter & Klein, 2007, p. 4).

This system certainly seems to be an improvement. However, technological malfunctions are a major weakness because such a failure can mean the loss of valuable data. Furthermore, the system cannot enter the head of simulation participants, which means it cannot collect data AAR facilitators may find useful.

Theory Behind the AAR

The theories behind the AAR demonstrate why the AAR has been successful for the military and been adapted by businesses and emergency management operations. As noted by Salter and Klein (2007), behavioral science forms the AAR basis, especially in the areas of "feedback, performance measurement, memory, group dynamics, communication, and instruction" (p. 5). Morrison and Meliza (1999) researched these behavioral science areas thoroughly:

- *Feedback*. Feedback refers to information provided to individuals during and after a performance so they might learn. The feedback occurs as an observer/controller leads a unit through a review utilizing self-discovery.
- *Performance Measurement*. By utilizing standards and computer-based data, an AAR can reduce subjectivity and provide an objective evaluation of performance.
- *Memory*. AARs ask review questions before discussion in order to help participants remember their experiences. AARs also occur quickly after an event to maximize memory retention. Take home packages (THP) provide further study.
- *Group Dynamics*. By reviewing as a unit, learning and problem solving can occur at the group level, not just the individual level.
- *Communication*. Open-ended questions allow the unit to learn through self-discovery. Questions also promote collective changes instead of individual change.

- *Instruction*. AARs promote discovery learning rather than simply lecture. Experience facilitates learning through actual exercises. AARs also promote cooperative learning, which holds that groups and individuals learn more efficiently by working together rather than separately.

The AAR implements these theories into a process for continuous learning by either sustaining or changing behavior.

Current Research on the AAR

The current research focuses on identifying characteristics of both effective and ineffective after-action reports and recommending improvements. In reviewing the literature, several themes became clear that researchers felt were the ideal standard for AARs. These themes were evident in effective AARs and, if present, would improve ineffective AARs. These themes included structure, reporting, and facilitation as well as common issues.

Structure

Researchers found AARs with a well-defined structure are the most effective and coherent. Garvin (2000) observes this characteristic is necessary to "avoid random, rambling discussions" (Structure section, para. 1). Unfortunately, a well-defined structure is hard to achieve, as there is "no universally accepted approach to the development or content of reports" (Donahue & Tuohy, 2006, p. 12).

Savoia, Agboola, and Biddingers' findings support the notion that structured reports are easier to comprehend. It is far easier to browse AARs for relevant information regarding problems and solutions when there is a consistent format (Savoia, Agboola, and Biddinger, 2012). Due to the active lives of professionals, it is logical that they would prefer a structure where it is easy to extract information.

Along with increased coherence, structured AARs are more effective at promoting continuous learning. For example, DeGrosky interviewed firefighters regarding their AAR practices and knowledge. While most used some sort of debriefing practice, few were familiar with AAR practices and terms. With no standard practice in place, participants may miss lessons and there is less purpose to these reviews (DeGrosky, 2005). Tami et al. found results that supported this assertion when researching AARs used by medical teams in emergency departments. Specifically, the researchers asserted "a structured AAR tool would facilitate the opportunity of ED [emergency department] medical personnel to learn lessons and express emotions after MCIs [mass casualty incidents], thus improving performance in the next emergency event" (Tami et al., 2013, p. 801). With a structured AAR, rather than an imprecise briefing, it is easier to insure learning is occurring from reviews.

Reporting and Distribution

One of the characteristics of effective AARs is that they are widely distributed among organizations and easily found by interested parties. An AAR cannot be effective, no matter how informative, if it does not reach those for whom it may help. Donahue and Tuohy (2006) found "The value of even well-crafted reports is often undermined because they are not distributed effectively" (p. 13).

Ahmad, Hadgkiss, and Ruighaver examined distribution while researching post-incident reports in supporting an organization's cyber-security function. They found even when a report records critical incident information, a lack of information dissemination means the report is not distributed (Ahmad, Hadgkiss, & Ruighaver, 2012). A systematic approach to reporting AAR findings and making those findings available can be extremely beneficial. DeGrosky (2005) stated there is a need to share AARs with those who are conducting similar actions to promote learning.

While there appears to be agreement on the need to disseminate AARs, there is little research on maintaining the effectiveness of AARs as they are widely distributed. Jarrett (2012) suggests there is no process loss between a co-located team AAR and an AAR distributed to dispersed team members. However, Jarrett was only examining AARs in single teams and not across teams. Furthermore, he notes his findings conflicted with previous research. Therefore, a future research topic is how learning occurs when using findings from a previous AAR.

Facilitation

An AAR's effectiveness often depends on the facilitation of the report. A competent facilitator must lead AARs in order to maximize knowledge gained. One quality of competent facilitators is that they allow dissent within reviews. Scott, Allen, Bonilla, Baran, and Murphy consider allowing dissent among participants crucial in promoting learning from an incident. The researchers also found it is important for a facilitator to state that dissent is acceptable as soon as the review begins (Scott et al., 2013). However, Mastaglio et al. (2011) found the presence of a facilitator in some cases could actually prevent dissent, which hurts the free exchange of information and future learning.

Mastaglio et al. also found facilitators should be skilled and trained in order to facilitate. Not everyone is able to lead an AAR. Garvin (2000) and DeGrosky (2005) support these findings. Garvin notes facilitators have the difficult task of being tough and probing without causing defensiveness. Salter and Klein mention that standards should be modeled for AAR facilitators, as too many facilitators have no set method for facilitation. They recommend using a handbook or performance checklist for this purpose (Salter & Klein, 2007).

Common Issues

Several issues consistently appear across AARs. Donahue and Tuohy found leaders want to know what went right during successes, not just what went wrong during failures (2006). However, Ellis, Mendel, and Nirs' research on Israeli undergraduate students found there is potential for unintentionally causing complacency when reviewing successful events (2006). For instance, reviewers could inadvertently cause participants to feel they have mastered a situation and, therefore, stop improving. Causes and mitigation strategies of complacency needs future research.

Donahue and Tuohy found many AARs have weak solutions that are not specific enough to implement. The weak solutions often cause teams to continue to use old, familiar methods and practices, even if ineffective (Donahue and Tuohy, 2006). Savoia, Agboola, and Biddinger attribute this effect to a lack of specific, detailed examples of what went wrong, which plagues many AARs (2012). If solutions and examples in a report are poor, it will be difficult to correct the circumstances.

Conclusion

As is clear from the research, there are several important characteristics of effective after-action reports. While most of this research comes from the military, emergency management agencies, and businesses, the conclusions are still very applicable to the after-action reports issued following mass school shootings. For instance, making the Sandy Hook report widely available following its publication is very beneficial to school administrators who are interested in learning from the incident and preventing a similar incident at their school. This thesis uses the literature review research to determine the preventive and learning effectiveness of these mass-shooting AARs.

Chapter 3

Methodology

This project uses a case-study research method focusing on the after-action reports issued following the active shooter situations at Columbine, Virginia Tech, and Sandy Hook. A school shooting is a mass shooting (four or more killings with no cooling off period) that takes place at an educational institution (Langman, 2009). A case study is a situation in real life studied to learn about a phenomenon or phenomena. Several factors determine whether a case study or another research method should be used:

- The types of questions to be answered;
- The extent of control over behavioral events; and
- The degree of focus on contemporary as opposed to historical events (Rowley, 2002).

According to Yin (1994), case study approaches should be used when answering the "how" and "why" questions of a phenomenon (p. 6). Regarding the other two factors, Rowley states, "Case study research is also good for contemporary events when the relevant behaviour cannot be manipulated" (Rowley, 2002, p. 17). According to Stake (1978), "If the readers of our reports are the persons who populate our houses, schools, governments, and industries; and if we are to help them understand social problems and social programs, we must perceive and communicate in a way that accommodates their present understandings. Those people have arrived at their understandings mostly through direct and vicarious experience" (p. 5). Therefore, the case-study method is appropriate. It becomes a base for generalization, which is valuable to the reader. According to philosopher John Locke (1765), it is experience "in that all our knowledge is

founded; and from that it ultimately derives itself" (p. 87). If this is true, then the case study may be the preferred research method.

There are limitations to the case study. One of the major criticisms is external validity. Many researchers argue case studies are limited in explaining wider trends. This criticism is valid and the only remediation is to "be as explicit as possible about the degree of uncertainty that accompanies our prediction" (King et al, 1994, p. 212).

Other researchers have criticized case studies as a sort of "freeform" research. They believe it does not stand up to the rigor and requirements of other research methods (Murphy, 2014). However, even with these arguments in mind, the case-study approach is best for this thesis.

This project chose the case study approach due to the limited number of school shootings examined, thus enhancing the project's flexibility and making it achievable. Despite media sensationalism, school shootings are relatively rare phenomena; one expert estimates the chances of a school shooting occurring any given year at a K-12 institution in the United States to be 1 in 53,295 (Wachtel, 2012). Therefore, there are limited opportunities for data collection.

Furthermore, it is obviously ethically and practically difficult to run a controlled school shooting experiment. Manipulating the behavior in order to create a viable experiment is not possible. Considering these limitations on data collection, a case study approach becomes the most viable method. Data must come from past incidents and a case study approach solves this issue.

The cases selected for this study are Columbine High School, Virginia Polytechnic Institute and State University, and Sandy Hook Elementary School. One reason for this selection is that each school represents a different level of American education. Sandy Hook is a primary school, Columbine is a secondary school, and Virginia Tech is a university. All schools have varying levels of size as well. Sandy Hook is smaller with less than 500 students, Columbine is medium-

size with about 1,500 students, and Virginia Tech is very large with over 30,000 students. It is the researcher's belief that while types and size of institutions vary, the information contained in AARs should be broadly applicable.

Another reason for these selections is the shootings had several factors in common. All had a high number of casualties. All received massive amounts of public and media attention. All are well documented and are the subjects of many publications. All featured public after-action investigations and reports. All occurred in a relatively short span of time (less than 15 years). All featured only one or two perpetrators who were not members of an outside conspiracy. The perpetrators motivation was personal rather than political, economic, or religious thus it was not necessary to introduce the complexity of terrorism into the study.

A third reason for selecting these cases is location. The three cases are distant from each other, and this means that location likely did not influence the shootings. It is possible the distinct locations will make the findings of this thesis more applicable to schools around the United States. The residential area for each school is suburban, and the demographics are similar for the surrounding communities. While this may reduce the applicability of findings to other schools in urban or rural settings, it makes comparison between the incidents easier.

Analysis was conducted on the data collected in order to find links between each report's AAR recommendations and to determine if lessons learned from a preceding incident were applied or noted in the report of a later incident. This project examines each case with the following questions:

- What are the recommendations for each AAR?
- Are there similar recommendations in each AAR?
    - Concerning preparedness?

    - Concerning response?
    - Concerning mitigation?
    - Concerning recovery?
- Are there similarities in the reports' profiles of the shooters such as mental health issues and fascination with violence?
    - What might be learned about school shooters?
- How broadly were the AARs disseminated?
- Based on these cases, how effective are AARs in preparing other institutions for similar events?

Chapter 4

Analysis

Summary of Reports

Columbine Synopsis

On April 20, 1999, students Eric Harris and Dylan Klebold killed 12 students and a teacher and wounded 21 others before committing suicide at Columbine High School in Jefferson County, Colorado. The public high school is located in a suburban, middle-class neighborhood outside of Denver and has an enrollment of more than 1,500 students and 90 teachers ("Columbine High School Overview", 2015).

The attack is the deadliest high school shooting in U.S. history. Harris and Klebold used a variety of illegally obtained firearms and attempted to detonate explosives, which ultimately failed. Their motives for the attack are somewhat unclear, though their personalities played a major role. Experts consider Harris a textbook psychopath who killed primarily "to demonstrate his superiority and to enjoy it" (Cullen, 2009, p. 239). Klebold's personality is more complicated to assess. It seems likely he was a depressive who, heavily influenced by Harris, turned to murder in order to punish anyone (and everyone) he believed had a role in his misfortune (Cullen, 2009). Some researchers' hold that bullying was the primary cause of the shooting but this view is debated (Larkin, 2013). The attack caused debate on a wide variety of issues including high school subculture, bullying, heavy metal music, violent video games, and firearms availability in the US.

Columbine After-Action Reports

The Jefferson County Sheriff's Office produced the Columbine Task Force report. Eighty investigators from a dozen city, county, state, and federal law enforcement agencies contributed

to the report. The Columbine Review Commission report came from a panel created by then-Colorado Governor Bill Owens. The members had a variety of backgrounds including law and law enforcement, education, and public policy among others. The producers released these reports publicly.

The Columbine Task Force report mainly focuses on documenting the events of April 20, 1999. It provides details about the perpetrators' actions and movements and a timeline of the events. It also describes the incident response from local, state, and national law enforcement as well as the response from emergency management entities, victim support entities, and the media. This report is noticeably lacking any recommendations or lessons learned from the shooting. It does mention some problems, such as law enforcement communications, but only gives a few vague suggestions for improvement. The report seems solely focused on reporting the details of the Columbine shooting. The lack of recommendations may be due to the audience. The primary audience was the citizens of Jefferson County as demonstrated by the introductory letter accompanying the report. This approach seems to exclude schools, law enforcement agencies, and other parties interested in such recommendations. CNN's website has hosted a CD-ROM format of the report since 2000.

The Report of Governor Bill Owens' Columbine Review Commission has a wider scope and is more in-depth. A primary purpose of the report is to save even one life at a future Columbine-type emergency. One of the significant differences between the reports is that the Columbine Task Force hopes "that our nation shall never see anything resembling the tragedy at Columbine High School again" while the Governor's Commission report presents recommendations for preventing a future Columbine but also gives suggestions on response to a future incident (Jefferson County Sheriff's Office, 2000). This difference suggests the Governor's

Commission intended the audience to be a broad international audience of schools, government agencies, law enforcement and emergency management personnel, and individuals who are interested in safer schools. There is no mention of how the Governor's Commission disseminated the report to the mentioned parties, but it is available through the National Criminal Justice Reference Service.

Like the Jefferson County report, the Governor's Commission report features a chronology of the shooting. It also includes recommendations for first responders, emergency preparation, school violence prevention, student protection when violence does occur, and victim support.

The first recommendation is the need for police training in rapid emergency deployment. Time is often limited when one or more active shooters control a building with many potential victims. The Jefferson County SWAT response time was 45 minutes, long enough for Harris and Klebold to carry out their rampage. As part of the rapid emergency deployment training, responders also need training in acting without complete information. During the Columbine shooting, law enforcement knew little about the layout of the school, or the situation inside and faced conflicting witness reports. This lack of knowledge hampered the response.

The second recommendation is the need for first responders to be properly equipped. The report makes no specific weapon or equipment recommendations. Rather, it simply urges law enforcement agencies to consider the variety of dangerous situations first responders face and to equip the responders accordingly. The police were equipped properly at Columbine and the report praised this characteristic.

The third recommendation is the need for proper communication. During the Columbine incident, heavy smoke and the fire alarm shriek limited visual and verbal communication and hurt the response effort. Communication equipment must be able to overcome problem. Another issue

is digital communication can be broken up in large buildings. For this reason, the report suggests transmission repeaters be installed in schools and public buildings.

The report outlines several elements needed to prepare for critical emergencies such as Columbine. One element is resource planning. Emergency planners need to analyze possible scenarios and determine the need for resources. Once completed, planners should find the location and availability of such resources. Finally, advance crisis planning is required. Planners must try to think of the many operational requirements of a Columbine-type emergency. This requirement includes assignments of police officers to specific duties as well as deciding how medical personnel and resources distribution.

A second element is multi-agency planning and training for critical emergencies. Schools and other agencies must train and prepare prior to an emergency in order to have an effective response. The Governor's Commission recommends planning sessions include all levels of law enforcement and emergency management agencies as well as school officials. According to the report, the focus should be on many different types of emergency scenarios, including worst-case, and the plan should be the basis for inter-agency training and rehearsals.

A third element is the importance of incident command structures during major crises. The report urges establishment of a command structure well in advance of an emergency occurring. The report suggests a senior officer of a participating agency lead the command structure. The command structure handles a variety of roles including coordinating agencies, distributing resources, and releasing information to the media. The report states the command structure should be used in training and rehearsals in order to discover any issues prior to an actual emergency.

While the Governor's Commission places an emphasis on inter-agency and school cooperation during an emergency like Columbine, there are specific issues that can affect this

cooperation. For instance, the various agencies involved in the Columbine response used radios that were not compatible and were unable to share information quickly. Therefore, the report recommends all cooperating agencies use inter-operable communication equipment. Furthermore, large-scale emergencies require large-scale communication abilities. Simply sharing handheld radios with other agencies is unlikely to be effective.

Another goal of the Governor's Commission was to give recommendations for preventing future violence in schools. In the Columbine case, no one person had all the pieces of information to conclude that Klebold and Harris were planning an attack. However, students, teachers, and others in the community had suspicions, but they did not share them. The report recommends that schools place an emphasis on reporting information. Schools should fight the "code of silence" and emphasize to students that loyalty to other students has limits, especially when violence is threatened. Schools should also establish an anonymous hotline to report worrisome statements or behavior.

The report also looks at bullying in schools but acknowledges that bullying is complex and not easily solved. It also acknowledges that there is not necessarily a direct link between bullying and school violence. With this background, the report recommends that school administrators and communities do their best to create a safe and supportive environment. This recommendation includes competency in evaluating threats as well as the need for information sharing between schools and law enforcement agencies. The report summarizes three models for such an environment:

- *The Safe Communities-Safe Schools Model*. This model consists of four components. The first is a safe school planning team, which includes students, teachers, administrators, and community representatives. The second component is the creation of a code that includes

the rights and responsibilities of students and teachers in the school. The third component is a school support team, including administrators, mental health workers, and law enforcement. The fourth component is the creation of an emergency crisis plan that details what school personnel should do during an incident such as a mass shooting. The plan should be rehearsed like a fire drill.

- *The John Nicoletti Model.* Created by psychologist John Nicoletti, this model emphasizes violence prevention through school policies, which warn the school community that administrators will act immediately to in response to violent threats.
- *The FBI Approach to Threats of School Violence.* The FBI's approach focuses on assessing violent threats. A school should have a threat assessment coordinator who coordinates a school's response to a threat. A school should also consider a multi-disciplinary threat assessment team to evaluate threats (The Governor's Columbine Review Commission, 2001).

The Commission notes that not all violence is preventable and gives recommendations to prepare for non-preventable school emergencies. The main recommendation is developing a crisis plan for a school district. The Commission acknowledges the plan might need to be one-size-fits-all because school districts potentially have many different schools and limited resources for protection. However, a one-size-fits-all plan should be tailored enough to fit each school's needs and characteristics as much as possible. All school personnel need training and drills so any issues can be uncovered.

The Commission also considers "target hardening" schools by making it more difficult for unauthorized persons to enter or students to smuggle in weapons or explosives. However, the Commission does not believe that "target hardening" is as useful as a broad violence prevention

plan. Rather, it is best for specific issues such as gang violence or graffiti on school grounds. The report's authors doubt that security devices such as metal detectors and cameras would have prevented the violence seen at Columbine.

Finally, the Commission examines victim support beginning with medical treatment. In order to effectively distribute resources and victims and coordinate the response, the report recommends hospitals set up an intranet network. Hospitals should also be prepared to deal with intense media attention, a phenomenon for which the hospitals in Colorado were not ready. There was also difficulty in reaching the wounded because the perpetrators were still active and firing. For this reason, the Commission recommends at least one SWAT member be a trained medic in order to minimize the time interval between the SWAT team reaching the victim and primary treatment beginning.

Regarding reuniting victims with their families, the report suggests that victims' advocates be available at the command post in order to provide accurate and timely information as well as comfort to victims' family and friends. Another issue is identifying and reuniting the deceased with their families. At Columbine, the bodies of those killed were not moved until the following day due to the investigation. The Commission recommends investigative procedures be flexible enough to address the emotional needs of the families. The Commission also acknowledges the increased risk for suicide among victims and teenagers and recommends the implementation of suicide prevention programs.

Virginia Tech Synopsis

On April 16, 2007, the deadliest shooting in U.S. history occurred at Virginia Polytechnic Institute and State University in Blacksburg, Virginia. Undergraduate Seung-Hui Cho shot and killed 32 people while wounding 17 others before killing himself. Virginia Tech is a large public

university with a primary campus in the small town of Blacksburg. It has nearly 30,000 students and over 1,500 academic staff.

The incident consisted of two separate attacks: Cho first killed two students in a dormitory, paused to rearm and mail a package to NBC News, and then walked to a classroom building where he opened fire again. Unlike the Columbine shooters, Cho obtained all his weapons legally and was able to pass a background check. Cho should not have passed the investigation as he had been judged "a danger to himself and ordered to outpatient treatment", but no mental health records were found (TriData Division, System Planning Corporation, 2009, p. 2). No evidence has pointed to a clear motive for Cho. He was "pathologically shy," made no effort to make friends, and consistently displayed abnormal behavior including an unreciprocated obsession over female students (TriData Division, System Planning Corporation, 2009, p. 53).

As with Columbine, the attack sparked a national debate, especially concerning gun control and the U.S. mental health system. Virginia Governor Timothy M. Kaine commissioned an AAR that became known as the Virginia Tech Review Panel.

Virginia Tech After-Action Report

The Panel's scope was to review the "tragedy and to make recommendations regarding improvements to the Commonwealth's laws, policies, procedures, systems and institutions, as well as those of other governmental entities and private providers" (TriData Division, System Planning Corporation, 2009, p. 5). Like Columbine, the Panel consisted of a wide variety of experts with backgrounds in law and law enforcement, academia, politics, and health. The report has been available online since November 2009.

The first recommendations in the report concern the university setting and security. This thesis categorized the recommendations as follows:

- *Emergency planning.* The Panel suggests a campus risk assessment, an updated and enhanced campus emergency response plan, training for faculty, students, and staff, and compliance with the Clery Act.
- *Campus alerting.* The report recommends installing a communication system that can share information over multiple platforms (text message, email, etc.) and can send immediate messages and updates during an emergency. Campus police and administrators should have access to send information.
- *Police role and training.* The Panel emphasizes the need for campus police or security to be involved in the threat assessment process and emergency planning committee as well a police mission statement emphasizing security. First responders may need to respond without SWAT reinforcement because assembling a SWAT team can be too time consuming when time is critical (TriData Division, System Planning Corporation, 2009).

The Panel focuses primarily on Cho's past and his mental history and developed recommendations based on the findings. The report acknowledges the privacy requirements of universities, but urges schools to promote the sharing of information internally and with parents when significant safety and health concerns arise. This recommendation is obviously difficult given privacy laws, but the report states that students, faculty, parents, law enforcement and other related parties should be educated about the privacy laws' allowance of information sharing when public safety is a stake. In the Virginia Tech case, English professors had concerns about Cho, but did not share this information with the rest of the faculty.

The report recommends that all threatening or dangerous behavior be documented and reported to the threat assessment group, health services, and the student's parents. Policy should be enacted requiring professors to report dangerous or threatening behavior from a student to the

appropriate dean as well. The Panel emphasizes the need for effective mental health support for universities and the surrounding communities, which the report acknowledges was available for Cho.

Besides the school and community recommendations, the report suggests improvements for Virginia laws and federal laws and policy regarding mental health, privacy, and gun purchasing. While these topics are important, schools and communities are not capable of implementing them without state and federal government support, which can obviously be difficult to obtain. Therefore, these recommendations will regretfully not be covered in detail in this thesis.

The Panel provides further lessons learned and recommendations from the rampage. Regarding the initial two murders at West Ambler Johnston residence hall, the report recommends, when an incident occurs, key facts be discerned and sent immediately with specific information to all students, faculty, staff, and anyone else on campus. Very few Virginia Tech students were aware of Cho's initial killings. Police also need to inform decision makers of all possible theories and not focus on a single explanation. The communications system should not be entirely dependent on technology as attacks and natural disasters can too easily take out a modern information system. The emergency operations plan needs to contain a section on rapidly canceling classes or closing the campus if needed.

The Norris Hall massacre taught lessons as well. Campus police should train with other police departments in handling an active shooter situation. The Virginia Tech Police Department was able to save lives due to their training with the Blacksburg Police. Emergency dispatchers also need to be cautious when giving advice to victims in an unknown situation. Giving the wrong advice can result in death; it is better for the dispatcher to reassure the caller rather than direct him or her. Furthermore, the report recommends police escort survivors out of a building whenever

possible. As Cho chained shut several doors to prevent escape, schools should check the hardware on doors to ensure chaining is impossible. Finally, students and faculty should view bomb threats seriously. It is better to have false alarms than ignore a real emergency.

The Governor's Commission provides many recommendations concerning emergency management and victim support. Like the law suggestions, many of these recommendations are important, but the school or university cannot implement these recommendations solely. However, some recommendations are possible to implement. For instance, a school should have a victim support plan. The plan should include a design for a joint information center to release updates as well as provide victim with services such as counseling, briefings for families of victims, and training in crisis management for employees.

Sandy Hook Synopsis

On December 14, 2012, the deadliest shooting at an elementary school in American history occurred in Newtown, Connecticut. Adam Lanza killed his mother and then drove to Sandy Hook Elementary School where he killed 20 schoolchildren and 6 adult staff members and wounded two others before committing suicide. Sandy Hook Elementary School's enrollment was 454 at the time of the shooting (Hutson, 2014). Newtown is a middle-class suburban community.

As with the Columbine and Virginia Tech shooters, there is no clear motive for Lanza. He had mental health issues, which made social interaction difficult. These issues worsened as Lanza grew older and refused treatment. Lanza also was obsessed with firearms and school shootings, but he never displayed any violent or aggressive behavior prior to the shootings (Sedensky, 2013). Once again, the shooting caused debate regarding gun control and mental health support.

Sandy Hook After-Action Reports

In the aftermath of the shooting, investigators issued three major reports. One was an investigative report issued by the Connecticut State's Attorney's Office for the Judicial District of Danbury. The second was a report issued by the Sandy Hook Advisory Commission created by Connecticut Governor Dannel P. Malloy in order to make recommendations to reduce the chances of another mass shooting. The Connecticut Office of the Child Advocate issued the third report and focused on Adam Lanza's life and any missed warning signs.

The Office of the State's Attorney of the Judicial District of Danbury's report is a documentation of the investigation into Adam Lanza's crimes and background. It is an informative document, but contains no direct recommendations to prevent future violence. Therefore, it is of limited value for this thesis.

The Sandy Hook Advisory Commission report provides a comprehensive guide to making schools safer and reducing violence. The Commission's goal was to reduce the chances of such a tragedy occurring again by providing recommendations. The report has been available online since March 2015. The report's audience is individuals involved in the design and construction of schools, educational personnel, and emergency management and law enforcement personnel among others. One category is physical recommendations. The report contains recommendations for safe school design and operations (SSDO) in hopes of providing a holistic approach to hazard reduction. These physical recommendations include:

- *Door security.* According to the Commission, classroom and other doors should have the ability to be locked from the inside, as there is no record of an active shooter breaching a locked classroom door. All exterior doors in a school should be equipped with hardware

for a full perimeter lockdown. School districts should also study safety standards to implement concerning substitute teacher key distribution.

- *School security and safety committees.* Teachers, administrators, and custodians should be appointed to a school security and safety committee with the consent and approval of other employees with the same classification. The report emphasizes the importance of custodians as these employees have a wealth of knowledge concerning the physical building. Another committee should ensure SSDO strategies and standards are being implemented in the district. The membership should include school employees as well as emergency management, police, and mental health professionals in the community.
- *Emergency contact information.* Schools should maintain an accurate list of faculty, staff, and students along with parent/guardian information for students. The information should be stored at two specific locations within a school. Local emergency response should know the locations.
- *Safety and security training.* Faculty, staff, and students should study safety and security training on how to respond to emergencies and hazards. The training should meet current standards and should include live exercises. Schools should have individuals serve as security and safety wardens to execute and manage training (The Sandy Hook Advisory Commission, 2015).

The council also endorses several current Connecticut General Assembly legislative actions as well as standards created by school safety groups.

Concerning policy recommendations, the Commission presents a variety of suggestions for firearms. While the Commission states it was not promoting political viewpoints, many of its recommendations are controversial and lean towards gun control. Regardless of the polarization

of the issue, a school could not solely implement the firearms recommendations and, therefore, they will not be covered in detail. Some recommendations schools could implement are programs such as violence reduction through education and alcohol awareness programs in K-12 curriculum.

The Commission's report also provides recommendations from their mental health-writing sub-group. The mental health section is divided into the following categories: Models of Care; Barriers to Access: Insurance and Funding Issues; Barriers to Access: Stigma and Discrimination; Privacy, Confidentiality and Community Safety; The Role of Mental Illness in Violent Events; and Response, Recovery, and Resilience.

- *Models of Care.* Schools must be positive centers for students' social and emotional development. Both should be included in the curriculum and should include anti-bullying messages as well as alcohol and drug awareness. Schools must also be prepared to deal with students experiencing mental stress in their health centers. A risk assessment team must identify and help at-risk children. Schools should also strive to enhance and augment resources, as school may be the only chance for students to receive such services.
- *Barriers to Access: Insurance and Funding Issues.* Many of the recommendations are important but are, once again, outside the ability of a single school to implement.
- *Barriers to Access: Stigma and Discrimination.* School-based behavioral health services can treat mental health issues while reducing the stigma by treating in an environment not attached to the public mental health system.
- *Privacy, Confidentiality, and Community Safety.* The Commission recommends schools and treatment providers, with parent permission, should be able to share important information in order to facilitate the care and education of children.

- *Role of Mental Illness in Violent Events.* The report discusses the importance of schools creating risk-assessment teams to identify at-risk students. The team members study threat assessment and the latest threat assessment policies, particularly those used by other educational institutions and the U.S. military.
- *Response, Recovery, and Resilience.* The report lists recommendations for the state of Connecticut in order to promote victim recovery and crisis response (The Sandy Hook Advisory Commission, 2015).

The Connecticut Office of the Child Advocate looked thoroughly into the life of Adam Lanza and made recommendations from that perspective. The report provided key recommendations along with additional recommendations for each phase of Lanza's life. The recommendations focused on a mental health and child development perspective. The key recommendations include:

- *Screening.* Children ages birth to 21 must receive screening for behavioral health and developmental impairments. It is especially important for a pediatric primary care setting.
- *Evaluation.* A child displaying developmental impairments similar to Lanza should be thoroughly tested and evaluated. Outside experts should confirm testing.
- *Care Coordination and Information Sharing.* Care coordination should be available for children with developmental impairments and mental health concerns. Information sharing among the community, medical providers, and schools is crucial.
- *Training and Workforce Development.* Training concerning mental health issues must be available for a wide variety of personnel including teachers and parents.
- *Support and Engagement with Families.* Engaging with families is crucial for a child's mental health treatment. Providers should have the resources available for family-focused

support. Systems should be prepared to address mental health stigma, overwhelmed parents, and parents who are unable or unwilling to meet the needs of their child.

- *Education.* Schools must be concerned with mental well-being of students. Schools must ensure they are holistically evaluating children in all areas of suspected disabilities, even if there are no academic concerns. Schools should focus on preparing disabled students to live independently, with or without community support, after their academic career.
- *Increase Expertise and Services to Support Children with Developmental and Mental Health Challenges.* Schools may not be able to provide comprehensive behavioral support and will need help to ensure adequate support and expertise for children with highly specialized needs (The Sandy Hook Advisory Commission, 2015).

After reviewing Lanza's early life, the report provides recommendations for early-childhood screening, evaluation, and early intervention. Most of the recommendations pertain to the state. One that pertains to schools is the need for schools to be included in information sharing between families and pediatricians in order to coordinate care and ensure adequate support is provided.

For Lanza's elementary school years, the report provides several recommendations. One recommendation is the need for schools to bring in professionals to review disturbing student creations and work. During fifth grade, Lanza wrote and submitted a creative writing assignment titled "The Big Book of Granny". The book contained extreme, unnerving violence and should have signified a need for evaluation and treatment. However, the report does admit nothing in the findings would have shown Lanza would commit mass murder.

The report includes additional recommendations for the elementary years. Educational personnel and parents need access to training and information regarding mental health.

Furthermore, teachers need support for requesting consultation and resources so they can continue to meet the needs of their classrooms while helping an individual child. Schools also need to provide experts in children's mental health and development, especially in cases where children have rapid evaluation and treatment needs. With the development of electronic records, schools should strive to provide shareable, comprehensive records. Finally, schools should also focus on holistic treatments for children as opposed to focusing on a single issue.

Regarding Lanza's middle school years, the report notes Lanza was in homebound education in 8th grade due to his disabilities. However, the report states Lanza was not receiving any instruction whatsoever during this time. The report urges the federal and state governments to better audit and regulate homebound education to ensure students are receiving instruction.

Lanza's high school experience prompts more recommendations. The report states schools must play a critical role in identifying students with social, emotional, and behavioral issues. To aid in this role, faculty and staff must receive mental health warning signs training. Schools must also have the resources to refer and possibly coordinate mental health treatment. Schools should implement the ability to address socio-emotional learning and offer evidence-based treatment. Schools should import therapeutic and other services and establish mechanisms for Medicaid and private insurance. Schools should also be members of an educational planning process for an individual along with health and developmental specialists among others. Such an education plan must include accurate, data-driven information about a child's performance, goals, and clear objectives in areas of need and growth. Schools should promote awareness about community resources and services for parents. Schools must have a capacity to develop and provide transitional support for children with Autism Spectrum Disorders through age 21. In all areas of disability, schools should report the needs of students and identify resources used to support them.

Since special education children are at a higher risk of bullying, schools should address bullying through school-wide intervention and zero tolerance policies. Schools need to focus on quality assurance and ensuring they meet regulations and best practices. Finally, schools have an obligation to identify, evaluate, and provide services to students with disabilities, but the authors of the report acknowledge that resources to accomplish this mission must come from a variety of sources outside of a school.

Similarity of Recommendations

Although depth and specificity varied, there were similar recommendations in most of the AARs concerning preparedness, response, mitigation, and recovery.

Table 1. List of Reports

Name of Report	Incident	Did the report provide preparedness recommendations?	Did the report provide response recommendations?	Did the report provide mitigation recommendations?	Did the report provide recovery recommendations?
Jefferson County Sheriff's Office Columbine Report	Columbine	No	No	No	No
The Report of Governor Bill Owens' Columbine Review Commission	Columbine	Yes	Yes	Yes	Yes
Virginia Tech: Addendum to the Official Report	Virginia Tech	Yes	Yes	Yes	Yes
Report of the State's Attorney for the Judicial District of Danbury on the Shootings at Sandy Hook Elementary School and 36 Yogananda Street, Newtown, Connecticut on December 14, 2012	Sandy Hook	No	No	No	No

Shooting at Sandy Hook Elementary School: Report of the Office of the Child Advocate	Sandy Hook	No	No	Yes	No
Final Report of the Sandy Hook Advisory Commission	Sandy Hook	Yes	Yes	Yes	Yes

Preparedness

This thesis defines preparedness as being properly organized and equipped prior to a school shooting taking place. The three reports that mentioned preparedness recommendations were unanimous in recommending thorough planning and rehearsals in order to prepare for a shooting incident. All schools should have an emergency plan known to students, teachers, and staff through training and rehearsals similar to rehearsals for fire drills and natural disasters. The Columbine and Virginia Tech reports also provide many recommendations for police, medical, and emergency management preparation, such as training and war-gaming, in conjunction with schools.

Response

This thesis defines response as the actions of school personnel, law enforcement, medical personnel, and emergency management when a shooting is taking place. Three reports gave response recommendations. The response recommendations from the Columbine and Virginia Tech reports focus on the response of police, medical personnel, and emergency management. The actions of these groups are particularly important as lives depend on their responses. The Sandy Hook report has similar recommendations but also emphasizes the important of educational personnel response.

Mitigation

This thesis defines mitigation as reducing the likeliness and danger of a school shooting. Four reports provide mitigation recommendations. These recommendations are physical security recommendations, student support recommendations, and policy recommendations.

Regarding physical security, the Columbine Review Commission, the Virginia Tech report, and the Sandy Hook Advisory Commission all provide tips on how to better construct and equip buildings, known as target hardening, in order prevent incidents. The Sandy Hook Advisory Commission provides the most specific recommendations while the others reports' recommendations are more general.

Regarding student support, all four reports provide recommendations for improving mental health and emotional support for students. The Office of the Child Advocate's Sandy Hook report provides the most in-depth recommendations for student support.

Regarding policy recommendations, all four reports provide policy suggestions for government to implement. Interestingly, this category shows some divide between the reports, specifically regarding firearms. The Virginia Tech report seems to show some support for arming individuals at schools while the Sandy Hooks report recommend stricter gun control. All reports agree more public resources need to be devoted to mental health support. As was noted earlier, schools cannot implement most of the policy recommendations and would require public support.

Recovery

This thesis defines recovery as the restoration or a return to normalcy after an incident. Three AARs provide recovery recommendations. The reports are very similar in recommending a variety of trauma support for survivors, family and friends of victims, and first responders.

The AARs' Profiles of the Shooters

All six of the reports provide background information on the shooters, though some of the AARs contain more detail than others. While these profiles provide some valuable information, schools should not use them to identify potential perpetrators, as there is no uniform profile for rampage school shooters (Langman, 2013). With this finding in mind, the shooters had several characteristics in common, according to the reports.

The shooters obsessed over violence, according to the AARs. The Columbine Review Commission report categorizes Harris and Klebold as having "suicidal and violent tendencies" and "one of them had written a troubling essay, and the other had created a web page filled with threats" (The Governor's Columbine Review Commission, 2001, p. 19). The Virginia Tech report describes Cho as having a history of writing extremely violent literature (TriData Division, System Planning Corporation, 2009). During his school years, Lanza's creative writing "was so graphic that it could not be shared" (Connecticut Office of the Child Advocate, 2014, p. 37).

All the shooters had histories of mental health issues. Harris and Klebold both suffered from depression (The Governor's Columbine Review Commission, 2001). Doctors recommended Cho for depression counseling in both primary school and college (TriData Division, System Planning Corporation, 2009). Mental health professionals repeatedly treated Lanza for Autism Spectrum Disorder, Anxiety, and Obsessive Compulsive Disorder (Connecticut Office of the Child Advocate, 2014).

All the shooters had difficulty interacting with peers. Harris and Klebold both bullied other students and were bullied (The Governor's Columbine Review Commission, 2001). Cho routinely isolated himself from peers and harassed several female classmates at Virginia Tech (TriData Division, System Planning Corporation, 2009). Lanza had no close friends during his primary

schools years and was socially isolated from anyone other than family members in the year leading up to the shooting (Connecticut Office of the Child Advocate, 2014).

Characteristics from Literature Review

Using current research, the literature review identified the characteristics of effective AARs. This section applies those characteristics to the AARs from Columbine, Virginia Tech, and Sandy Hook in order to determine any weaknesses in the reports.

Structure

The AARs were all written reports produced months or even years after the incidents had taken place. Therefore, they are all structured coherently and do not suffer as much from the disjointed speech issues that can plague in-person briefings. The reports are logically organized and searchable through their respective tables of contents.

With the exception of the Columbine Task Force report, each report begins with an introduction including an executive summary and scope. Since the scope is different for each report, each report structures the sections differently. To generalize, some of the sections focus on findings from the incident or describing the background of the shooter(s). Other sections contain recommendations for improvement. As described in the Cases section, the reports categorize recommendations based on their subject matter. The recommendations are very specific in some reports and more general in others but all make similar points.

The format for the AARs is not entirely consistent, but are similar enough there seems to be little chance of confusion. Since there are not constant shooting incidents at the same school, there is no need for continuous AARs at that school. Learning can still occur from the AARs, but it will not be continuous as emphasized by the current research. This development is not a fault of the AAR authors; rather it is simply a natural development based on the frequency of incidents.

Reporting and Distribution

Given that nearly all the AARs provide recommendations pertaining to students, teachers, staff, administrators, parents, law enforcement officers, mental health professionals, and others, it seems clear a wide variety of individuals are meant to read the reports. Furthermore, all the reports were available free online. This raises the question whether this reporting and distribution is effective.

The Columbine Review Commission report, The Office of the Child Advocate report, The Sandy Hook Advisory Commission report, and the Addendum to the Report of the Virginia Tech Review Panel all stated a key goal was to give information and recommendations to the public in order to heighten safety. However, none of the reports discusses the implementation of this goal. The committees presented the reports to the party who ordered the investigation, but did not present at conferences or widely publish the results. The reports are also available online, but there is no discussion on how the public will read the reports or even be aware of the findings.

Since the AARs contain many similar recommendations, there is a possibility the reports are not being read. If report sharing and recommendation implementation was occurring, it follows that each report should contain entirely new recommendations rather than re-stating suggestions that are remarkably similar to previous reports. Notwithstanding, the lack of commitment from officials and lack of resources are two examples of impediments to implementing previous recommendation. Future research might focus on determining if the public are reading the reports and, if so, why recommendations are not being implement.

Facilitation

All the AARs seemed to have strong facilitation. Committees handled all investigations and reports. Though not all the reports mentioned the members of the committee, the members

mentioned were all very experienced and came from a wide variety of fields including government, law enforcement, education, and emergency management among others. The backgrounds of the committee members made them well qualified to launch an investigation and write an AAR.

Unfortunately, it is difficult to determine if the various AAR facilitators overcame the concerns mentioned in the literature review. It seems likely the vast experience of the committee members allowed them to overcome the potential problems found by researchers as mentioned in the literature review. For instance, it is almost certain the members have dealt with dissent in their careers and know appropriate management techniques for dissent. Most of the members had at least some experience in investigations based off their careers and would know how to probe and obtain information without causing defensiveness. The same career experiences also made it likely the committee members generally knew the standards for facilitating discussions and investigations. Admittedly, these assumptions are purely speculative.

However, the experiences of the committee members could cause other issues. Self-interest could be a problem. For instance, if a committee member has a background in engineering or construction, he or she might strongly promote physical recommendations rather than what the schools objectively needed.

Additionally, committee member experiences could promote biases regarding communication. Many committee members had background in law-enforcement where information is usually “need to know” or limited to protect investigations. Since their careers have certain information sharing protocols, law-enforcement members may not be able to improve information sharing.

Common Issues

The common issues found by researchers as mentioned in the literature review do not seem to affect the school shooting AARs. Though not all the AARs made recommendations (some merely reported investigative findings), the ones that did discuss recommendations also mentioned what went well during the various incidents as well as what went wrong. It is unlikely the reports will cause the complacency feared by Ellis, Mendel, and Nirs because the overall situations were failures with mass casualties and destruction, and individuals at those schools will remember the incidents for the near future.

Chapter 5

Discussion

Overall, analysis of the data shows many similarities in recommendations between the reports. The Report of Governor Bill Owens' Columbine Review Commission stated recommendations. The Virginia Tech Review Panel's report restated those recommendations and added some new ones. The Sandy Hook Advisory Commission report and the Connecticut Office of the Child Advocate report expanded The Virginia Tech Review Panel's report recommendations. With these characteristics in mind, a stacked Venn diagram represents these reports with recommendations building off each other. However, as Figure 2 demonstrates below, the fact that recommendations in the report were very similar indicates lessons learned from Columbine were not necessarily implemented at Virginia Tech and lessons learned from both Columbine and Virginia Tech were not implemented at Sandy Hook.

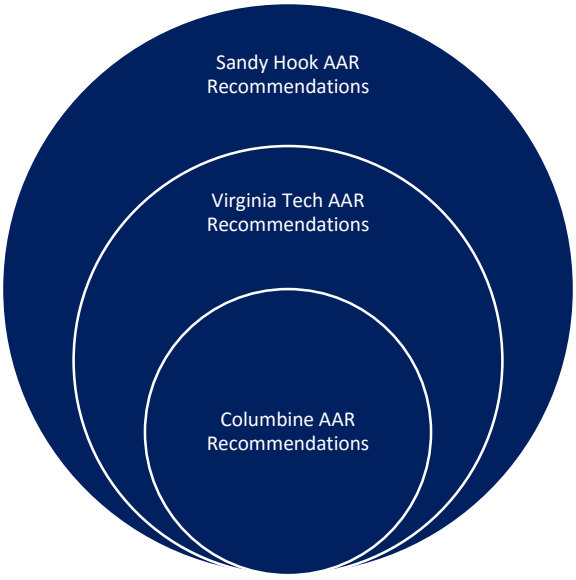

Figure 1. Stacked Venn Diagram of AARs

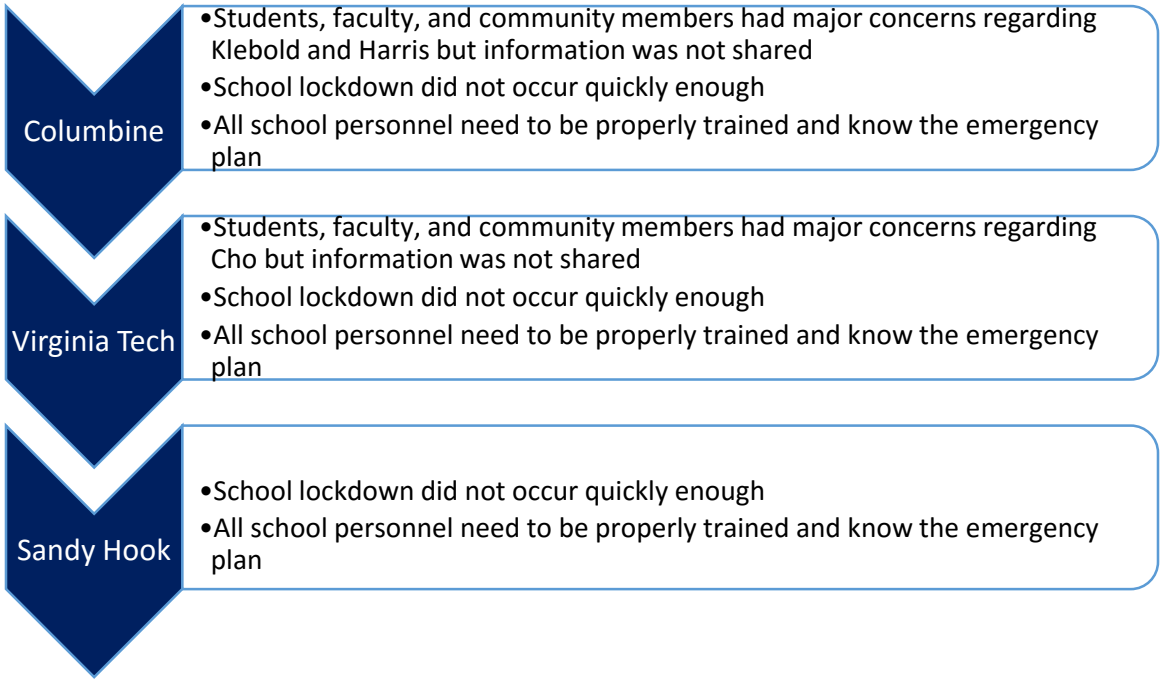

Figure 2. Lessons Not Learned from AARs

One of the major conclusions from the reports is the importance of physical security and target hardening. While some of the strategies could be costly and difficult for schools to implement, some are very simple. For instance, doors inside schools should lock from the inside. According to the Sandy Hook Advisory Commission, an active shooter has never breached a locked classroom door (The Sandy Hook Advisory Commission, 2015). This solution is inexpensive and nearly schools could implement it.

The effectiveness of locked interior doors demonstrates the importance of lockdowns as a form of physical security. According to several school safety experts, the "lockdown is still one of our most effective tools to prevent death in mass casualty school shootings" (Dorn et al., 2013). The reports mention several recommendations pertaining to lockdowns. The first is risk assessment. Several reports mentioned full risk assessments of schools need to be completed and schools need to create emergency plans. Preparation is essential to preventing a mass shooting or

at least reducing the damage. While lockdown procedures seem to be common, schools should be concerned regarding the speed of a lockdown occurring. As noted above, in all three of the incidents, the lockdowns did not occur quickly enough to prevent casualties.

The reports are also clear it is not simply enough to have an emergency plan; students and teachers need to rehearse the plans and individuals need training. Returning to the door-locking example, most employees take between 30 and 40 seconds to find their key and lock the door (Dorn et al., 2013). When seconds matter, the consequences of not reacting quickly enough may be deadly. Therefore, similar to fire drills, training and rehearsal is crucial. While these suggestions are not simple, they are less costly than other suggestions and are likely within the ability of many educational institutions to implement.

Most of the reports also discuss the importance of a supportive environment for students. A primary recommendation is schools need to integrate their work with outside mental health and counseling services. This is certainly not an easy task and requires resources and commitment from the school and community. Schools will need to decide how to pay for such services and must develop a plan that includes what roles teachers and staff will assume. Once again, training is vital. While the reports mention the importance of these efforts, they contain only general recommendations. Schools will need to self-examine and conduct their own research in order to determine what system is best for them. Privacy issues and legal requirements are also a major question schools must face.

Though such an implementation is costly, as the AARs suggest, the benefits may outweigh the costs. According to research conducted by adolescent psychiatrist William Dikel (2012):

> "By taking a middle path that neither ignores mental health issues, nor takes the responsibility to diagnose and treat them, schools can clearly define their roles in the

> process and ultimately improve educational outcomes and realize cost savings. Most importantly, the process is likely to result in greater success for vulnerable and at-risk students. There is even the possibility of preventing severe violent behavior for those 'tip of the iceberg' students who have the most severe and dangerous mental health disorders." (p. 6).

However, this research report does not provide suggestions on overcoming the cost, which is likely to be of interest to budget-strapped schools.

Besides the possible prevention of mass shootings, schools may also want to offer such services due to the fact that "about one in five children suffers from an emotional or behavioral problem in which their symptoms meet the psychiatric community's criteria for a diagnosable disorder" (Koppelman, 2004, p. 2).

However, as in the case of Seung-Hui Cho, schools must be prepared for the fact that students or their parents will reject efforts to help them. This situation is obviously difficult. Universities often have the authority to remove students who refuse treatment but this is a controversial solution (Baker, 2014). Primary schools can place students in alternative education or push for home schooling. Unfortunately, this solution can also lead to Adam Lanza's situation where he was homebound due to his anxiety but "was not receiving home-bound or hospital-based tutoring" and had little social interaction with peers (Connecticut Office of the Child Advocate, 2014, p. 43). While the Virginia Tech report mentions Cho's refusing treatment, none of the reports mention any recommendations for the refusal of treatment. This weakness is an important limitation of all of the reports because it leaves those recommending treatment without an option.

When discussing the need for physical security and a supportive environment at schools, the AARs consistently mention the need for teamwork. Teachers, staff, administrators, students,

parents, and community members must work together when reducing the danger of school shootings. Nearly every recommendation in all the AARs depends on the cooperation of many individuals. Obviously, this level of collaboration can be difficult to achieve even when dealing with a topic as important as school safety.

As mentioned, the AARs contain many similar recommendations regarding training and emergency planning in particular. This is an important topic, as it would stand to reason the later reports would contain new recommendations if schools implemented recommendations from previous reports. This topic needs more research. If individuals are reading the reports, researchers should examine why schools are not implementing the recommendations. Additionally, my thesis only focused on three school shooting AARs. Researchers may want to examine other school shooting AARs not mentioned in this thesis.

Additionally, the recommendations themselves may need reviewing. After all, school shootings continue to occur. If schools are reading the reports and the suggestions are being implemented, the continuation of shooting incidents raises a major concern. Researchers should consider this topic.

When examining whether or not these reports are being read, it would be very useful to survey educational personnel in order to determine if AARs were being used in their schools. Future researchers may want to send a comprehensive survey to a variety of educational institutions including K-12 and higher education institutions. A limitation of this thesis is that I did not have the opportunity with talk with administrators, teachers, and school safety officials. Future researchers may want to consider this approach.

Another topic for future research is the effectiveness of AARs in preventing rampage school shootings. Researchers may want to look at instances where shootings were prevented, and determine if the schools had implemented the lessons learned from AARs.

Finally, it may be necessary to review the characteristics of strong AARs. For instance, the most glaring weakness of the school shooting AARs was the lack of dissemination. Perhaps strong AARs should have a dissemination plan. In academia, it is often required for researchers to create a plan for disseminating findings, such as in publications and at conferences. Since AARs usually contain findings and recommendations, it seems a dissemination plan would be very useful for information sharing.

Chapter 6

Conclusion

This paper contributes to better understanding AAR structures and recommendations based on the AARs from three major mass casualty shootings. The study found AARs have similar recommendations although the reports from the Virginia Tech and Sandy Hook incidents have more in-depth recommendations than the Columbine reports.

Overall, the AARs were logically structured. They met the best practices for AARs mentioned in the literature review. The characteristics for strong AARs were present in the school shooting reports. While the recommendations from the reports vary concerning ease of implementation, the unity among the papers in the types of suggestions should convince schools to consider the recommendations. This research helps highlight the importance of AARs, the process for writing effective AARs, and lessons learned from past AARs.

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Education

The Pennsylvania State University (PSU) – University Park **Class of 2016**
College of Information Sciences and Technology (IST); Schreyer Honors College
(BS) Security and Risk Analysis w/Minor in Information Sciences and Technology

Select Employment History

PwC
Forensics Technology Solutions Intern – June 2015 to August 2015

College of Information Sciences and Technology
Learning Assistant – January 2014 to May 2016
Research Assistant – June 2014 to November 2014

Activities

Financial Officer – Penn State Red Cell Analytics Lab

Webmaster – Gamma Tau Phi Honors Society

Recorder – Penn State Chapter of the Knights of Columbus

Participant – Penn State Alternative Spring Break 2016

Honors and Awards

Meyer Family Honors Scholarship – September 2015

Keith and Angela Deaven Award in the College of Information Sciences and Technology – September 2014

Dean's List – Fall 2012 to Spring 2016