A LINGUISTIC ANALYSIS OF MASS SHOOTER JOURNALS, DIARIES, CORRESPONDENCE, AND MANIFESTOS

by

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ABSTRACT

Mass shootings often result in panic and calls for increased public safety. Past research has focused on the motives and ambitions of the shooters in hopes of determining their rationale for prevention, while other studies have looked to create a consistent mass shooter profile using artifacts such as suicide notes, medical history, and/or testimonies from the shooters' friends and family. Written communications by mass shooters (suicide notes, manifestos, diaries, journals, and letters) are a pivotal resource because they allow researchers to investigate the shooters' motives from their point of view while also providing data for analysis. This study looked to examine the written communications of mass shooters through linguistic analysis to answer the following research questions. First, what are some of the common themes found in the written communications of mass shooters. Second, for each of the common themes found, do mass shooters who expressed that theme differ from those who did not with regards to select linguistic dimensions? I identified the writing themes in each writing sample, then quantitatively assessed linguistic word categories using the Linguistic Inquiry and Word Count (LIWC) tool for content analysis. Using an independent samples *t* test, I found mass shooters who expressed suicidal desires were less likely to use words referencing the past than mass shooters who did not express suicidal desires. This study looked to contribute to the body of literature by applying the writing themes found in earlier studies to the written communications of strictly mass shooters.

DEDICATION

I dedicate this thesis to the friends, family, and faculty that helped me develop my ideas. Thank you for your endless encouragement and help. Your feedback has made this paper possible.

LIST OF ABBREVIATIONS AND SYMBOLS

LIWC	Linguistic Inquiry and Word Count
FBI	Federal Bureau of Investigations
SD	Standard Deviation: a quantity calculated to indicate the extent of deviation for a group as a whole.
M	Mean consistency score: a quantity calculated to indicate the mean number of words used for each linguistic category in percentages.
t	Computed value of *t* test
=	Equal to
<	Less than

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CHAPTER 1

INTRODUCTION

As of 2019, there have been over 161 cases of mass shootings in the United States (Berkowitz, Lu, & Alcantara, 2019). Approximately one third of these shootings have occurred over the past decade. The early identification of these perpetrators has become a priority of researchers and policy makers alike. Researchers have attempted to eliminate or limit the threat of mass shooters by identifying their motives or triggers. The results of these studies have found the motives of mass shooters range from vengeful to psychotic (Knoll, 2012; Knoll, 2010a; Knoll, 2010b; Capellan et al., 2019; Fox & Levin, 1998; Leyton, 1986; Langman, 2014). The method of analysis for mass shooter studies typically involves an analysis of the shooters' childhood upbringing, relationship to their family and peers, mental health status, and/or their written communications (Anisin, 2018; Taylor, 2018; Myketiak, 2016). By analyzing various elements of a shooter's life, researchers strive to create a full profile detailing the causes and motivations for such a violent crime. These elements can include written communications by the shooter (manifestos, suicide notes, and letters) and by other relevant individuals (school disciplinary records, medical records, and media reports). The drawback of using sources from other individuals besides the shooter is the inclusion of potential bias and external perspective in the analysis. To address this drawback, some studies primarily analyze written communications solely authored by the mass shooter. Researchers acknowledge the significance of these perpetrator's writings and note mass murderers tend to "convey their central motivation in a psychological abstract" (Hempel, Meloy, & Richards, 1999, p.557). The first-person perspective

gives researchers a unique opportunity to analyze the mindset of the shooter prior to the shooting. In addition, the first-person perspective is an unfiltered report of the shooter's life as they see it. Researchers have examined written communications to determine the motivation(s) of the shooter; however, they have also critically analyzed the writings for significant content and context (Knoll, 2010b; Bushman, 2018; Myketiak, 2016; Dutton, White, & Fogarty, 2013; Lankford, 2016; Smith, 2016; Kaati, Shrestha, & Cohen, 2016)

Content analyses of mass shooter manifestos, journals, diaries, suicide notes, and letters have resulted in the discovery of recurring themes in the writings such as paranoia, revenge, suicide ideation, fame seeking, narcissism, and threatened masculinity (Twenge & Campbell, 2003; Langman, 2014a; Allely & Faccini, 2017; Langman, 2014b; Myketiak, 2016; Vito et al., 2017; O'Hagan, 2015; Follman, 2019; Bushman, 2018; Knoll & Meloy, 2014; Dutton, White, & Fogarty, 2013; Ho, Yip, Chiu, & Halliday, 1998; Kalish & Kimmel, 2010; Knoll, 2012; Knoll, 2010a; Knoll, 2010b; Capellan et al., 2018; Fox & Levin, 1998; Leyton, 1986)

The current study looked to examine the written communications of mass shooters through linguistic analysis to answer the following research questions. First, what are some of the common themes found in the written communications of mass shooters Second, for each of the common themes found, do mass shooters who expressed that theme differ from those who did not, with regards to select linguistic dimensions? This study contributes to the literature by linguistically analyzing the written works of multiple mass shooters, rather than the works of a single shooter, for the purpose of identifying linguistic differences between writings.

CHAPTER 2

LITERATURE REVIEW

What is a "Mass Shooting"?

Despite the widespread use of the term "mass shooting" in literature and news media, there is not a legal definition for mass shootings (Bagalman et al., 2013; Nichols, 2017). Although there is no definition for mass shooting there is a definition for the broader term, "mass murder," which is defined as "a number of murders (four or more) occurring during the same incident, with no distinctive time period between murders" (National Center for the Analysis of Violent Crimes & United States of America, 2008). After the 2012 Sandy Hook Shooting, the Investigative Assistance for Violent Crimes Act of 2012 proposed a new term: "mass killing". The act legally defined mass killings as "three or more killings in a single incident" in a "place of public use" (Investigative Violent Crimes Act of 2012, 2013). Then, in 2013 the Congressional Research Service introduced a new definition for public mass shootings where public mass shootings were defined as "incidents occurring in relatively public places, involving four or more deaths—not including the shooter(s)—and gunmen who select victims somewhat indiscriminately. The violence in these cases is not a means to an end such as robbery or terrorism" (Bjelopera et al., 2013). Later, The Stanford Mass Shootings in America project of 2015 created a data base of mass shootings and defined mass shootings as incidents where "three or more shooting victims (not necessarily fatalities), not including the shooter" (Stanford Mass Shootings in America, 2015). Schildkraut and Elsass (2016) noted the absence of a clear definition for mass shootings had led to inconsistences in mass shooting data collection and

research (Schildkraut & Elsass, 2016). They then proposed a new definition for mass shootings, which included elements of existing definitions:

> A mass shooting is an incident of targeted violence carried out by one or more shooters at one or more public or populated locations. Multiple victims (both injuries and fatalities) are associated with the attack, and both the victims and location(s) are chosen either at random or for their symbolic value. The event occurs within a single 24-hour period, though most attacks typically last only a few minutes. The motivation of the shooting must not correlate with gang violence or targeted militant or terroristic activity. (p.28)

Schildkraut & Elsass (2016) were not the only researchers to suggest and use their own definition for mass shootings. Non-governmental organizations such as Mother Jones, USA Today, and the Washington Post each defined mass shooting using various elements from existing terms. For this paper, I have chosen to follow best practices and use the common research definition for mass shooting where four or more people are killed by a lone shooter (sometimes two) using a firearm, not including domestic shootings (Berkowitz, Lu, & Alcantara, 2019).

A Brief History of American Mass Shooting Research

One of the first major mass shootings in the United States occurred in 1966 at the University of Texas at Austin where fifteen people died (Schildkraut, 2018). The American media, however, more often references the 1999 Columbine Shooting, 2007 Virginia Tech Shooting, 2012 Aurora Theatre Shooting, 2012 Sandy Hook Shooting, 2014 Isla Vista Shooting and 2017 Las Vegas Shooting as landmark mass shooting cases. Throughout the years, mass shootings continue to shock the public with their violent nature, and even more so when they are school shootings. Mass shootings, however, rarely occur and only accounted for one percent of homicides in the United States from 2000 and 2016 (Parks, Bechtold, Shelp, Lieberman, &

Coffey, 2019). Despite their rarity, mass shootings are increasing according to Mother Jones, who found the rate of mass shootings had tripled since 2011 (Cohen, Azrael, & Miller, 2014). Another study by the Office of Justice Programs, also using data from Mother Jones, determined the rate of mass casualty shootings in the United States is 2.4 times greater in the past ten years than in the previous decade (Office For Victims of Crime, 2018). The increase in mass shooting incidences and the fascination with the shooter's motivation has spurred research by psychologists, criminologists, sociologists, linguists, and even the Swedish Defense Research Agency who have come together to study the causes and motives for these shootings (Kaati, Shrestha, & Cohen, 2016).

In 2004, The United States Secret Service and United States Department of Education collaborated on the Safe School Initiative whose objective was to "identify information that could be obtainable, or "knowable," prior to an attack (Vossekuil et al., 2004). They found no accurate or useful profile for students who engage in school violence but that many felt "bullied, persecuted, or injured by others prior to the attack" (Vossekuil et al., 2004, p.18). Some students had a history of suicidal ideation or history of depression/desperation. Additionally, over half of the students showed interest in some form of violence (movies, video games, books, etc.) but most had no history of violence or criminal behavior. In 2009, Levin and Madfis (2009) proposed the cumulative strain model for school mass shooters, where strain can lead to disastrous, violent behavior. The cumulative strain model consisted of five stages: chronic strain, uncontrolled strain, acute strain, the planning stage, and the massacre (Levin & Madfis, 2009). This early model aimed to identify the cause of school mass murders through a sociological perspective. Later, Flannery et al. (2013) sought to contribute to school mass shooter research by identifying a profile, however, their data found no consistent profile. Flannery et al. (2013) then

warned mass shooting researchers against creating such a profile because it could lead to stereotyping and false reports.

Mass shooters, in general, are most commonly white males in their mid-thirties, as reported by Follman et al. (2019). The National Council for Behavioral Health Medical Director Institute then adds that mass shooters are commonly male perpetrators who are "often hopeless and harboring grievances that are frequently related to work, school, finances or interpersonal relationships; feeling victimized and sympathizing with others who they perceive to be similarly mistreated; indifferen[t] to life; and often subsequently dying by suicide" (Parks, Bechtold, Shelp, Lieberman, & Coffey, 2019). Another study, using the FBI supplementary homicide reports and the USA Today report of mass murders from 2007-2011, found mass murders typically occur after a triggering event, target non-strangers, and are rarely committed by persons with mental illnesses (Taylor, 2018). Although this study does not analyze mass shootings exclusively, the findings are relevant in determining the differences in characteristics between mass shooters and mass murderers. An analysis of pre-attack behaviors by active shooters found they "fail to successfully navigate multiple stressors in their lives while concurrently displaying four to five observable, concerning behaviors, engaging in planning and preparation, and frequently communicating threats or leaking indications of an intent to attack" (Silver, Simons, & Craun, 2018, p.27). In conclusion, there is not a consistent profile for potential mass shooters despite the increase in mass shooting incidences in the past decade in the United States. The inconsistencies in results are attributable to different data sources, mass shooting definitions, analytical tools, and more.

The Motives of Mass Shooters

The attempts at creating a universal mass shooter profile have left the literature with inconsistent profiles. The search for the mass shooter's motives is even more cumbersome. One study of manifestos by school mass shooters found motives are not readily apparent and typically are a combination of various factors including "political/religious motives, negative peer influences, and/or experiences of abuse, rejection, bullying, and/or mental illness" (Miller, 2017). Other studies attempted to unpack the motives of a mass shooter by delving deep into the shooter's childhood upbringing, the relationship between the shooter and their family and peers, their mental health status, and/or the manifestos they leave behind (Anisin, 2018; Taylor, 2018; Myketiak, 2016). These studies attempted to understand the shooter's motives by studying their lives and finding the triggers that motivated them to commit such a heinous act. The 2014 Isla Vista shooter is a common case study in mass shooting research. Some researchers have found the Isla Vista shooter was narcissistic and held himself in high esteem (Vito et al., 2017; Allely & Faccini, 2017; Myketiak, 2016). They argue his motivation was to avenge his bruised ego, damaged by women who he felt rejected his existence. Other researchers argue that the shooter suffered from psychosis and psychopathy (Langman, 2014). Yet another researcher argues the shooter had Asperger's syndrome (Duke, 2014), (which is also known as autism spectrum disorder). Evidently, the motives of the shooter vary according to the methodology of the study and data availability. It is of note that these studies typically had small sample sizes or are purely case studies of a single shooter. Case studies of deceased mass shooters may include more personal beliefs of the researcher than desired, at which point the results of the analysis may become distorted. However, the benefits of a case study include undivided attention from the researcher to the finer details of the case.

The Writings of a Mass Shooter

Psycholinguistic research has emphasized the importance of a murderer's writing, as they tend to "convey their central motivation in a psychological abstract" (Hempel, Meloy, & Richards, 1999, p.557). Psycholinguistic analyses of writings by mass shooters assume the shooter would only bother to write or communicate his thoughts if they "had great personal meaning" (Knoll, 2010b). Not all mass shooters leave notes; therefore, it is important to preserve and analyze the notes and writings of those who do. Previous studies analyzing the written communications of mass shooters have found several themes consistent across multiple disciplines including narcissism, threats to masculinity, paranoia, fame, suicide ideation, and revenge (Bushman, 2018; Myketiak, 2016; Dutton, White, & Fogarty, 2013; Lankford, 2016). While some researchers find these themes to appear independently in the writings, other researchers have found comorbidity in the themes. A psycholinguistic analysis of twelve American mass murderer manifestos strongly supported findings of "nihilism and ego survival and revenge" in the manifestos (Hamlett, 2017). The same study found "moderate support for heroic revenge fantasy and pseudo commando mindset, and limited support for entitlement and envy (Hamlett, 2017). As with general mass murder and mass shooter research, the result of linguistic analyses of mass murderer manifestos and mass shooter manifestos aid researchers in identifying key differences that separate mass shooters from other mass murderers. In a linguistic study of suicide notes and martyr manifestos, Smith (2016) found mass shooters were more likely to use individual voice (i.e. "I") than self-sacrificial attackers. Smith (2016) notes mass shooters are more likely to use individual voice because they are typically not involved with or influenced by an organization. Another linguistic analysis of written communications by a singular offender, which included terrorists and mass shooters, found these perpetrators used

words in their written communications referencing the third-person plural significantly more than the control group (Kaati, Shrestha, & Cohen, 2016). The study also found these perpetrators used big words (>6 letters), negative emotion words, certainty words, and power words significantly more than the control group. In the following sections, I will discuss themes in mass shooter writings and their prevalence through the years.

Narcissism

Research has found narcissism levels, in America, are increasing over time in college students due to the rise of social media use amongst teenagers and young adults (Twenge, Konrath, Foster, Campbell, & Bushman, 2008). This observation concurs with results from school shooting research, which found the Columbine shooters made comments resembling items on the Narcissistic Personality Inventory (Langman, 2014a; Allely & Faccini, 2017) and argue the comorbidity of narcissistic rage and autism spectrum disorder led the Isla Vista shooter onto the Path to Intended Violence (Twenge & Campbell, 2003). Another mass shooter, the Virginia Tech shooter, displayed narcissistic tendencies when he referred to himself as the leader of a revolution (Langman, 2014b). Recent findings credit narcissism as the reactive behavior to a damaged self-esteem (Bushman, 2018). In a study of school mass shooters, Twenge et al. (2008) found they significantly frequented social media and were teenagers or young adults. Bushman (2018) argues we should strongly consider narcissism as an important potential risk factor because of the increasing priority on self-image in modern society where increased use of media by younger people might increase narcissistic traits. These findings have contributed to lists where narcissism is listed as a warning sign for potential school shooters. Narcissism is a major theme in mass shooter writings and as a motive for mass shootings; however, the public has difficulty accepting this idea. The high self-esteem associated to narcissism is contrary to

popular opinion that all mass shooters have low self-esteem, which leads them to commit violent acts. Narcissism, as a theme amongst mass shooters, is sometimes related to two other themes: threatened masculinity and fame seeking. I will discuss the findings of the field in relation to these themes in the following sections.

Threatened Masculinity

The literature also suggests many mass shooters experienced threats to their masculinity, which may interact with their narcissism. The concept of threatened masculinity emerged from the fact that most mass shooters are males. The Isla Vista shooter contributed to this concept with a manifesto and videos citing his threatened masculinity as a motivation for his actions (Myketiak, 2016; Vito et al., 2017). In an article examining the writings of mass shooters, O'Hagan noted the relationship between the shooter and their grasp for masculine control (O'Hagan, 2015). According to Farr (2018), threatened masculinity transcends age and school shooters struggle with their inability to meet adolescent insider masculinity norms. Evans (2016) stated that unattainable masculinity, by society's standards, can lead to violence and self-destruction for those that cannot meet these standards. By becoming a mass shooter, these boys are affirming their masculinity to society in a way they could not before. Madfis (2014) concluded some white heterosexual male mass murders resort to violence due to their inability to cope with "subsequent life course losses," which causes them to experience shame and feelings of failure culminating at violence (Madfis, 2014). Of note is that threatened masculinity appears more likely to afflict shooters from rural areas in comparison to urban areas because the masculinity norms in rural areas are more stereotypical (Rocque & Duwe, 2018).

Threatened masculinity and involuntary celibates

"Incels" -- short for involuntary celibates -- are young men who believe that they are unable to find a sexual or romantic partner despite wanting one, and they are typically seeking a heterosexual relationship (Emba, 2019). Communities of incels exist primarily online where members share their experiences with likeminded individuals. Incels believe they are alone and unable to find sex or a romantic relationship because of their looks or personality, their inferiority to a select group of men, and/or the cruelty of women (Emba, 2019). The interest in incels erupted after the Isla Vista shooter's manifesto and YouTube videos became public. His popularity then brought more attention to incel culture, which evolved into these groups glorifying his videos and manifestos through t-shirts and indie films (BBC News, 2018). A recent study examining the relationship between masculinity and attitudes towards guns, violence, and aggressive fantasies found men who perceived a threat to the status of the male gender had increased approval of guns and violence, men who feel less accepted by other men have increased approval of guns, violence, and aggressive fantasies, and men who have traits of involuntary celibates are more likely to have aggressive fantasies (Scaptura, 2019). A Mother Jones article analyzing twenty-four mass shootings for defining factors found the shooters were likely to have misogynistic beliefs, perpetrate domestic violence, and have traits of toxic masculinity (Follman, 2019).

Fame Seeking

Another theme that shares traits with narcissism is fame seeking. Fame seeking mass shooters have increased in recent decades (Lankford, 2016). Researchers have found specific passages in mass shooter's manifestos that highlight their goal of copying the fame of previous shooters (Bushman, 2018). They even found mass shooters, specifically school shooters, admit to

copying the attack method of earlier mass shooters (Lankford & Hoover, 2019). Langman (2018) also found many shooters thoroughly researched past shootings, serial killers, and murderers through media archives and books. A study of fame-seeking mass shootings in the United States from 1966 to 2018 found "a rise in incidents and casualties at the turn of the century" where fame-seeking mass shooters were predominately young white male students who showed signs of mental illness, suicide ideation, and grandiose behavior (Silva & Greene-Colozzi, 2019). The study also found fame-seeking mass shooters were more likely to "target schools and use a combination of weapons (Silva & Greene-Colozzi, 2019). Through an analysis of eleven fame-seeking mass shooters, Wills & Lankford (2019) created a checklist of warning signs attributable to fame-seeking mass shooters. The purpose of the checklist is to aid Behavioral Intervention Teams and other concerned parties in identifying individuals at risk of committing dangerous fame-seeking behavior. Individuals who exhibit more warning signs are more likely to engage in dangerous fame-seeking behavior. The checklist included factors such as narcissism, loneliness, abandonment/rejection, depression, suicide, conflict with family member, failure with love/romance/sex, anger against members of society, violent role models, criminal record/history of legal programs, and concerning internet/social media posts (Wills & Lankford, 2019).

As the academic community becomes more aware of fame seeking mass shooters, they have expressed their concern about the media portrayal of mass shooting as it may create a contagion copycat effect (Langman, 2018). "Fame-seeking mass shooters are more likely to receive media coverage than their counterparts, thereby reinforcing their initial motivation" (Silva & Greene-Colozzi, 2019, p. 24). On average, the media share sixteen more pictures of the shooters than of the victims for each mass shooting incident (Dahmen, 2018). Petitions and

suggestions to the media include replacing the shooters name with "shooter" and refraining from focusing on the shooter's profile (Lankford & Madfis, 2018).

Paranoia

Much like their findings on narcissism, researchers strongly support the idea that mass shooters experienced some level of paranoia prior to the shooting. Unlike narcissism, however, researchers infer paranoia in mass shooters using case files (Knoll & Meloy, 2014). In some studies, researchers even diagnose shooters with paranoid schizophrenia after the fact (Dutton, White, & Fogarty, 2013). Psychologists argue paranoia in mass shooters is a defense mechanism to injured masculinity (Knoll & Meloy, 2014). They further argue such paranoia can lead to violent actions, which supports previous findings where individuals on the spectrum of paranoid personality disorder can perceive mistreatment substantially greater than those who are not on the spectrum (Millon & Davis, 2000; Dutton, White, & Fogarty, 2013). Of note, the presence of a mental health disorder does not necessarily equate to violence (Dutton, White & Fogarty, 2013). Previous studies have found the Columbine shooters reported persecution by their peers in the form of slights and insults (Knoll & Meloy, 2014). Another study by Knoll (2012) found the Binghamton shooter presenting with "classic persecutory delusions of technology". An analysis of nine mass shooters and their writings found paranoid thinking leading up to the shooting (Dutton, White, & Fogarty, 2013). Recent literature has not focused so much on paranoia as a general theme or motive of mass shooters. Instead, it focuses more on aspects of paranoia including suicide ideation and revenge. The following sections will discuss these themes.

Suicide Ideation

The literature on suicide ideation and mass shooters is relatively new. One of the first studies that noted the relationship between mass shootings and perpetrator suicide found 48% of

mass shooters directly or indirectly ("suicide-by-cop") commit suicide after the shooting (Lankford, 2015). While some mass shooters explicitly state their suicide ideation, others do not. Even so, researchers have determined suicide ideation from shooters with no manifesto or diaries by noting their causes of death after the shooting. An early study of suicide note writers found younger suicidal people are more likely to beg for forgiveness in their suicide note than older suicidal people. Additionally, the study found all suicidal note writers in their sample referenced their past difficulties regardless of age (Ho, Yip, Chiu, & Halliday, 1998). A more recent study on suicide note writers addressed the gap in the literature on suicidal persons who do not leave suicide notes. They found suicidal persons who write suicide notes have similar demographics such as sex, age, family status, psychiatric care, motive, or method when compared to suicidal persons who do not write suicide notes (Eisenwort, B., Berzlanovich, Willinger, Eisenwort, G. Lindorfer, & Sonneck, 2006). Kalish and Kimmel (2010) examined three school shootings in the United States and found each shooter experienced varying levels of trauma to their sense of masculinity, as defined by American culture, resulting in "sense of entitlement conducive to violence" where suicide is an appropriate reaction to the insult to their masculinity (Kalish & Kimmel, 2010).

Revenge

Lastly, mass shootings are often the result of a vengeful shooter who is looking to regain their self-esteem or get satisfaction by committing mass violence upon those that supposedly harmed them. Researchers find revenge is the primary motivation for mass shooters (Knoll, 2012; Knoll, 2010a; Knoll, 2010b; Capellan et al., 2018; Fox & Levin, 1998; Leyton, 1986). Revenge, however, is not independent of other themes and motivations. According to his manifesto, the Binghamton shooter sought revenge due to beliefs of persecution (Knoll, 2010).

Another qualitative analysis argues that the Isla Vista shooter sought revenge against women, in the form of a mass shooting, to recover his bruised ego (Allely & Faccini, 2017). Most famously, the Columbine shooters rant about their revenge against their peers for looking down on them (Harris & Klebold, 2019). Because mass shooters are often personally connected to the locations where they attack, such as a school where they were a student or a workplace where they were an employee, it is not surprising that they often want revenge against people at those locations (Wills & Lankford, 2019).

What is Missing?

In sum, the existing literature analyzing mass shooter manifestos is sparse. Of these studies, only a handful move beyond case studies (Taylor, 2018). Macro level analyses of mass shootings often attribute the occurrence of mass shootings to relaxed gun control laws and poor mental health support, whereas micro level analyses of mass shootings often attribute the occurrence of mass shootings to poor stress management or weakened social relationships (Parks, Bechtold, Shelp, Lieberman, & Coffey, 2019). The body of the literature that explores the connection between the writings of mass shooters, their motives, and the factors that lead them to commit a mass shooting is relatively new and a branch of mass shooting literature. However, the existing literature provides a preliminary guide for themes in mass shooter writings that have been identified by various disciplines. The identification of these themes using psycholinguistic or linguistic analysis is a unique approach to understanding the psychology and motivation of mass shooters. Research that focuses explicitly on the shooter and the shooter's perception of the events that occurred prior to the shooting can reinforce or contradict existing findings.

In the current study, I strive to answer the following research questions. Research Question 1: What are some of the common themes found in the written communications of mass

shooters such as journals, diaries, suicide notes, and manifestos. Research Question 2: For each of the common themes found in answer to RQ1, do mass shooters who expressed that theme differ from those who did not with regards to the selected linguistic categories? The purpose of this study is to uncover thematic and structural trends in the suicide notes, manifestos, journals, and diaries of mass shooters through the use of the rhetorically sensitive content analysis software, Linguistic Inquiry and Word Count (Pennebaker Conglomerates, Inc., 2015). Through the content analysis software, I sought to identify differences in selected linguistic dimensions using the written communications of mass shooters. This study looked to contribute to mass shooter research by conducting a linguistic analysis on multiple shooters rather than a single shooter. In addition, this study contributed to the smaller body of work that exclusively analyzes written communications solely authored by mass shooters with hopes of providing additional data to the field.

Hypotheses

The following section first describes the rationalization behind the hypotheses for the present study. Then, the hypotheses are presented with reference to each writing theme. Finally, the section concludes with an in-depth explanation for each selected linguistic category. The present study includes six hypotheses. Each hypothesis includes five linguistic categories representing coding schemes from previous studies. I hypothesized specific linguistic categories would appear more or less based on the results of previous studies. The linguistic categories that had the most support for a given theme were hypothesized as appearing more often while the linguistic categories with mixed or less support were hypothesized as appearing less often. As such, each hypothesis represents the argument for the body of literature that previously identified each writing theme. For example, hypothesis one states, “Mass shooters who expressed suicidal

desires are more likely to use words referencing the past, death, and family and less likely to use words referencing the present and friends in their writings than mass shooters who did not express suicidal desires." The literature on suicidal mass murderers and mass shooters generally agree suicidal offenders are preoccupied with their past, death, and family, however, there is less support for their preoccupation with the present and friends. Therefore, words referencing the present and friends are hypothesized as less apparent in the written communications of mass shooters who reference suicide when compared to mass shooters who do not reference suicide. Of note, each hypothesis strives to accurately reflect the body of literature for each writing theme, however, variations can and do exist.

H1: Mass shooters who expressed suicidal desires are more likely to use words referencing the past, death, and family and less likely to use words referencing the present and friends in their writings than mass shooters who did not express suicidal desires.

H2: Mass shooters who expressed narcissism are more likely to use words referencing achievement, affiliation, and power and less likely to use words referencing certainty and insight in their writings than mass shooters who did not express narcissism.

H3: Mass shooters who expressed threatened masculinity are more likely to use words referencing female, male, body, and sexuality and less likely to use words that referencing anger in their writings than mass shooters who did not express threatened masculinity.

H4: Mass shooters who expressed desire for fame are more likely to use words referencing achievement, reward, and power and less likely to use words referencing the future and insight in their writings than mass shooters who did not express desire for fame.

H5: Mass shooters who expressed desire for revenge are more likely to use words referencing anger, negative emotions, and reward and less likely to use words referencing power and anxiety in their writings than mass shooters who did not express desire for revenge.

H6: Mass shooters who express paranoia are more likely to use words referencing perceptual processes, hearing, social processes and less likely to use words referencing negative emotions and sexuality in their writings than mass shooters who did not express desire for revenge.

Selected Linguistic Categories for Suicide Ideation

The linguistic categories selected for "suicide" were an adaptation of risk factors and warning signs for suicidal individuals (American Psychiatric Association, 2018; Center for Disease Control and Prevention, 2018) and partially influenced by the results of a previous study analyzing key characteristics of suicide note writers (Ho, Yip, Chiu, & Halliday, 1998). The selected linguistic categories include past focus, present focus, death, family, and friend. The linguistic category of "past focus" represented findings from Ho, Yip, Chiu, & Halliday's (1998) study of suicide note writers where they frequently referenced their past difficulties regardless of age. Examples of words referencing the past could include ago, talked, and tried. The linguistic category of "present focus" represented warning signs from the American Psychiatric Association (2018) where suicidal individuals make "comments about being hopeless, helpless or worthless." Examples of words referencing the present could include have, am, and now. The linguistic category of "death" represented warning signs from the American Psychiatric Association (2018) and Center for Disease Control and Prevention (2018) where suicidal individuals are likely to talk/post about wanted to die or make plans for suicide. Examples of words referencing death could include kill, die, and bury. The linguistic category of "family" and

"friends" represented warning signs from American Psychiatric Association (2018) where suicidal individuals "withdraw[al] from friends, family and community" and "talking about feeling trapped or being a burden to others." Examples of words referencing family could include mom, dad, and sister. Examples of words referencing friends could include buddy or neighbor. The examples given in this section for words associated with each linguistic category are not exhaustive. For more examples of words associated to each category, refer to the examples given by Pennebaker Conglomerates, Inc. (2015) via Appendix 2.

Selected Linguistic Categories for Narcissism

The linguistic categories selected for "narcissism" were an adaptation of the American Psychiatric Association's clinical description of narcissistic personality disorder from the DSM-IV (American Psychiatric Association, 2000). The selected linguistic categories include insight, certainty, power, achievement, and affiliation. The linguistic category of "insight" represents the diagnostic criteria where individuals are "often envious of others or believes that others are envious of them" (American Psychiatric Association, 2000). Examples of words referencing insight includes think and know. The linguistic category of "certainty" represents the diagnostic criteria where individuals "[have] a sense of entitlement, i.e., unreasonable expectations of especially favorable treatment or automatic compliance with his or her expectations" (American Psychiatric Association, 2000). Examples of words referencing certainty includes always and never. The linguistic category of "power" represents the diagnostic criteria where the individual "is preoccupied with the fantasies of unlimited success, power, brilliance, beauty, or ideal love" (American Psychiatric Association, 2000). Examples of words referencing power includes superior and bullying. The linguistic category of "achievement" represents the diagnostic criteria where the individual "has a grandiose sense of self-importance (e.g.) exaggerates achievements

and talents, expects to be recognized as superior without commensurate achievements" (American Psychiatric Association, 2000). Examples of words referencing achievement includes win and best. The linguistic category of "affiliation" represents the diagnostic criteria where the individual "believes that he or she is "special" and unique and can only be understood by, or should associate with, other special or high-status people (or institutions)" (American Psychiatric Association, 2000). Examples of words referencing affiliation could include elite, ally, and social. The examples given in this section for words associated with each linguistic category are not exhaustive.

Selected Linguistic Categories for Threatened Masculinity

The linguistic categories selected for "threatened masculinity" were an adaptation from Myketiak's (2016) earlier analysis of mass shooter writings. The selected linguistic categories include anger, female, male, sexual, and body. The linguistic category of "female" represents a coding factor used by Myketiak (2016) in an earlier study of mass shooters and threatened masculinity namely the "viewing women and sex as one entity to be possessed". Examples of words related to female includes woman and feminine. Myketiak (2016) also lists "regard[ing] the media portrayal of manliness as desirable" as a coding factor for threatened masculinity. This factor is closely related to the linguistic category of "male" and "body". Examples of words referencing male includes man and guy while words referencing body includes arms, abs, and muscles. For the linguistic category of "anger", previous studies have noted the angry tones mass shooter with threatened masculinities express in their diaries, manifestos, and videos. Examples of words referencing anger includes mad, frustrated, and hate. The linguistic category of "sexual" was selected to represent the studies on involuntary celibates (incels) and their participation and influence in mass shooting culture. Examples of words referencing sexual or

sexuality includes sex, mate, and love. The examples given in this section for words associated with each linguistic category are not exhaustive.

Selected Linguistic Categories for Fame Seeking

The linguistic categories selected for "fame seeking" were an adaptation from Silva and Greene-Colizzi's (2019) study of fame seeking mass shooters. The selected linguistic categories include future focused, power, reward, achievement, and insight. Silva and Greene-Colizzi (2019) found fame seeking mass shooters "[sought] notoriety via submitted legacy tokens (e.g. letters or videos sent or requested to be sent to the media)" with the goal of achieving influence over a group of similar individuals. They also found fame-seeking mass shooters make "direct statements about becoming famous" and "mention(ing) role models with a history of violence including famous fictional figures or actual mass murderers/shooter" as characteristics of fame-seeking mass shooters. The linguistic categories of "future focused", "power", "reward", "achievement", and "insight" each represented these findings. Examples of words referencing the future includes later, soon, and tomorrow. Words referencing power includes popular and influence. Examples of words referencing reward includes take, prize, and benefit. Examples of achievement words includes win, success, and better. Lastly, examples of words that referencing insight includes think and know. The examples given in this section for words associated with each linguistic category are not exhaustive.

Selected Linguistic Categories for Revenge

When selecting the linguistic categories for "revenge," I used best practice from previous studies analyzing intent and motives of mass shooters (Allely & Faccini, 2017; Knoll, 2012; Knoll, 2010a; Knoll, 2010b; Capellan et al., 2018; Fox & Levin, 1998; Leyton, 1986). The selected linguistic categories include anger, power, reward, negative emotion, and anxiety. By

definition, revenge is the act of imposing suffering upon those who have made one suffer (Elster, 1990). According to this definition, revenge is retaliation ("anger") for suffering ("negative emotion") with the purpose of imposing suffering unto the individual or group who caused you distress. Anger, then, is an appropriate linguistic category for analysis where words describing anger includes mad, frustrated, and hate. The negative emotions experienced is a critical experience in revenge, therefore, negative emotions and its affiliated words (hurt, ugly, nasty, etc.) is also an appropriate linguistic category for analysis. The outcome of revenge is to inflict suffering on those who made you suffer; therefore, you receive a "reward" by committing revenge in the suffering of the individual. Examples of words referencing reward includes take, prize, and benefit. Prior studies of revenge seeking mass shooters have found they resort to violence as a means of asserting their place above those who have caused their suffering. They seek "power" through violence. Examples of power words include popular and influence. (Allely & Faccini, 2017; Knoll, 2012; Knoll, 2010a; Knoll, 2010b; Capellan et al., 2018; Fox & Levin, 1998; Leyton, 1986). Lastly, "anxiety" as a linguistic category represents the psychological processes of individuals spurred into committing mass murder. Words referencing anxiety includes worried and fearful.

Selected Linguistic Categories for Paranoia

The linguistic categories selected for "paranoia" were an adaptation of the American Psychiatric Association's clinical description of paranoid personality disorder from the DSM-IV (American Psychiatric Association, 2000). The selected linguistic categories include perceptual processes, negative emotion, social processes, hearing, and sexuality. The diagnostic criterion for paranoid personality disorder includes "perceive[ing] attacks on his or her character or reputation that are not apparent to others and is quick to react angrily or to counterattack" and "perceiv[ing]

hidden demeaning or threatening meanings into benign remarks or events" (American Psychiatric Association, 2000). These two criterions described perceptual processes by the individual. Words referencing perceptual processes includes look, heard, and feelings. I also included "hearing" as a linguistic category for this theme because it tangentially relates to perceptual processes. Words referring to hearing includes listen and heard. The linguistic category of "negative emotion" represented the diagnostic criteria where the individual "persistently bears grudges, i.e. is unforgiving of insults, injuries, or slights". Words referencing negative emotion includes hurt, ugly, and nasty. Other diagnostic criterions include "suspect[ing] that others are exploiting, harming, or deceiving him or her" and a "preoccupation with the loyalty or trustworthiness of friends or associates" (American Psychiatric Association, 2000). These criterions represent the linguistic category of "social process". Words referencing social processes includes mate, talk, and they. The linguistic category of "sexuality" represents the diagnostic criteria where the individual "has recurrent suspicions, without justification, regarding fidelity of spouse or sexual partner". Words referring to sexuality includes mates, sex, and love.

CHAPTER 3

METHODS

The purpose of this study is to first identify common themes in written communications of mass shooters such as their journals, diaries, suicide notes, and manifestos. For each of the common themes found, this study then seeks to determine if mass shooters who expressed that theme differ from those who did not with regards to the selected linguistic categories using an independent samples *t* test. The broader goal is to uncover thematic and structural trends in the suicide notes, manifestos, journals, diaries, and online postings of mass shooters. Of the 161 incidences of mass shootings in the United States from 1966 to 2019, I selected shootings in which writings from the shooter were publicly accessible through the internet. The total number of written works by mass shooters analyzed in this study is seventeen.

The following section recounts the sources for each writing sample (see Table 1). For written communications by school shooters (n = 11), I collected the samples from Dr. Peter Langman's website, https://schoolshooters.info. Researchers commonly reference Dr. Langman's website in the field of mass shootings, specifically school shootings. Next, I collected the original written communications by mass shooters from third party sources such as public media outlets and crowd-sourced databases. I found letters by mass shooters in The New York Times (n = 1), Heraldnet (n = 1), and murderpedia.org (n=1). These sources had the full, original writings available for collection while other sources only reported limited or paraphrased portions of the writings. Then, I collected two writing samples directly from the source where the material was published. In this case, the source is the online forums that two shooters chose to

post their writings onto: the “Last Rhodesian” (n = 1) and “Ex Pentacostal Forum " (n = 1). Finally, I collected one writing sample from the Austin History Center. The Austin History Center has primary ownership of the letters from the University of Texas shooter. Mass shooter writings are widely available and extensively shared throughout the internet. As validity of the data is a possible concern, I verified the validity of each writing by referring to previous studies analyzing the same writing source.

Table 1: Types of First-Person Reports and Data Source

Mass Shooter	Type of First-Person Report	Source
Adam Lanza	Online Blog	SchoolShooters.info
Charles Whiteman	Letter	Austin History Center
Christopher Sean Harper-Mercer	Manifesto	SchoolShooters.info
Dylan Klebold	Journal/Diary	SchoolShooters.info
Dylann Roof	Manifesto	The Last Rhodesian Website
Elliot Rodger	Manifesto	SchoolShooters.info
Eric Harris	Journal/Diary	SchoolShooters.info
Gang Lu	Letter	SchoolShooters.info
James Holmes	Journal/Diary	SchoolShooters.info
Jiverly Wong	Letter	SchoolShooters.info
Kipland Philip Kinkel	Journal/Diary	SchoolShooters.info
Kyle Aaron Huff	Letter	murderpedia.org
Mark Barton	Letter	The New York Times
Matthew Murray	Online Blog	Ex Pentacostal Forum
Robert Flores	Manifesto	SchoolShooters.info
Robert Hawkins	Letter	Heraldnet
Seung-Hui Cho	Manifesto	SchoolShooters.info

Defining Written Communications

Written communications can include journals, suicide notes, diaries, manuscripts, manifestos, letters and online postings. Manifestos, specifically, are written communications that precede the mass shooting and for which the writing itself was minimally or entirely uninfluenced by another person (i.e., the document was written by the shooter himself). The mass shooter, law enforcement, or media publicize the writings of mass shooters, depending on the specific case (Kaati, Shrestha, & Cohen, 2016). A characteristic of written communications in mass shooting research is the body of work is solely authored by the mass shooter without influence or corrections made by an outside source.

This study cannot analyze all existing written communications by mass shooters for several reasons. First, a written communication by a mass shooter may exist, however, the work may not be accessible to researchers, if elements of the mass shooting are currently under litigation. Second, I did not consider incomplete works, quotes, or excerpts for this study. I did not analyze manifestos that were incomplete because their inclusion may skew the results of the linguistic analysis. However, I did include journal and diary entries in the analysis because the nature of a journal or diary is a work in progress. Third, the study did not include written communications that have less than 100 words of total text. The purpose of this restriction was to eliminate any errors in the analytical software and prevent skewness towards shorter writings. Fourth, the study only analyzed written communications by mass shooters prior to the shooting. The purpose of this restriction was to eliminate works written after the event, such as prison or jailhouse letters. This provides a consistent linguistic analysis across perpetrators.

Themes

A major focus of this study was writing themes, with six potential themes considered per writing sample. The themes are narcissism, fame seeking, suicide ideation, threatened masculinity, paranoia, and revenge. The writing theme is a bivariate nominal measure coded as "yes" or "no" (1/0). I determined the presence or absence of each theme in the writing by using an inductive method of analysis. First, I examined each writing and corrected spelling errors. The purpose of this step is two folds: to increase the validity of the Linguistic Inquiry and Word Count (LIWC) output and to assist in greater reading comprehension. When correcting spelling errors, I did not correct for grammar, punctuation, or context. By doing so, I sought to preserve the writing in the way that the shooter intended the work to be read. For example, I corrected the following sentence:

> "Undercover cop usual coined some nasty was not true about me and spread a rumor to the receiver and some people know me conduce toward many people predudiced and selfish to me . . cop made me lost my job ... cop put me became poor" (Jiverly Wong, 2009)

For this portion of writing, I corrected "predudiced" to "prejudiced". Clearly, the shooter intended to use the word "prejudice" but misspelled it. I did not correct, however, the improper word tense agreement. This correction is not necessary, for the purpose of this study, because LIWC simply identifies individual words and does not account for context. It should be noted that most of the writing samples were clearer (and contained fewer mistakes) than the example provided above.

Second, I read each writing and noted if the shooter expressed any of the six themes, and if so, which ones. I read each writing in its entirety noting the appearance of the aforementioned themes in a separate excel spreadsheet. If a theme appeared one or more times, I coded the theme as present. If the theme did not appear in the writing, I coded the theme as not present. In most of the writings there were more than one theme present (see Appendix 1).

Linguistic Categories

I selected specific linguistic categories from the Linguistic Inquiry and Word Count (LIWC) analysis software for this study. For each theme, I selected a set of five linguistic categories for statistical analysis (see Table 2). I selected linguistic categories that seemed to best represent or correspond to the coding schemes of earlier works analyzing mass murder or mass shooter writings. For a detailed explanation of each linguistic category and the originating coding scheme, please refer to the Hypotheses section of this paper.

Table 2: Themes and Linguistic Categories

	Suicide	Narcissism	Threatened Masculinity	Fame	Revenge	Paranoia
Linguistic Categories						
1	Past Focus	Insight	Anger	Future Focused	Anger	Perceptual Processes
2	Present Focus	Certainty	Female	Power	Power	Negative Emotion
3	Death	Power	Male	Reward	Reward	Social Processes
4	Family	Achievement	Sexual	Achievement	Negative Emotion	Hearing
5	Friend	Affiliation	Body	Insight	Anxiety	Sexuality

The Present Instrument

Linguistic Inquiry and Word Count (LIWC) is a text analysis program that codes the occurrence of items on a word-by-word basis into 80 pre-established language dimensions (see Figure 2). LIWC takes a writing sample and categorizes individual words in the sample into separate linguistic categories. The output file from LIWC presents the percentage of words that reflect difference psychological process, core drives and needs, personal concerns, time orientations, and more (Pennebaker Conglomerate, 2015). Handelman and Lester (2007) have proven the success of LIWC through a study analyzing suicide notes. More recently, researchers have applied LIWC to manifestos and used the results to draw conclusions about the possible motivations and mental state of the shooter prior to the attack (Kaati, Shrestha, & Cohen, 2016; Kaati, Shrestha, & Sardella, 2016). LIWC may be an ideal analytical tool based on the needs for empirical objectivity in this study.

Tausczik & Pennebaker (2010) found LIWC and human evaluation agreed 93 to 100% per category. Their study found pre-established dictionaries in LIWC identified an average of 89.03% of the words in their sample. The average 11% of words that LIWC could not identify is attributable to specific names and locations. Excluding these specific names and locations, LIWC correctly identified and analyzed a considerable number of items. Additionally, an evaluation of automated text analysis program has found LIWC to have high face validity particularly for smaller data sets (Iliev, Dehghani, & Sagi, 2016). LIWC is arguably one of the most used automated text analysis software. For these reasons LIWC is the choice instrument for this study.

LIWC has pre-established dictionaries that draw from four dimensions: linguistic dimensions, other grammar, psychological processes, personal concerns. Each dimension further consists of specific linguistic categories that the program draws from. For example, the category

of “power” could include “superior”, “winner”, and “best.” Human evaluation is necessary for phrases that have multiple meanings. LIWC could incorrectly categorize “my God” as a religious item, however, further manual analysis could find the item is in fact a “power” item.

CHAPTER 4

RESULTS

Using an independent samples *t* test, I analyzed the proportional differences in linguistic categories between writings that did or did not have themes of suicide, narcissism, threatened masculinity, revenge, or fame. For each theme, I conducted an independent samples *t* test comparing the mean consistency scores across five linguistic categories. The mean consistency scores representing the percentage of words counted in each linguistic category. Each theme had a separate set of linguistic categories for analysis. The literature informed my decision when picking the linguistic categories. The descriptive statistics for writing theme, is below in two separate descriptions. Table 3 has the writing themes and shows the number of writings where each theme has appeared (see Table 3).

Table 3: Mass Shooter Writings by Theme

Theme	# of Writings
Suicide	11
Narcissism	4
Threatened Masculinity	6
Fame	4
Revenge	9
Paranoia	7

For this study, suicide appeared most in the writing samples (n = 11) whereas fame and narcissism appeared the least (n =4). Table 4 describes the number of mass shooter writings that present with one, two, three or four and more themes (see Table 4). In this study, a significant

portion of mass shooter writings present with two or more themes (n = 11). Appendix 1 includes every mass shooter and how I coded their writings by theme. Writings that exhibited a theme were coded as 1 and writings that did not exhibit a theme were coded as 0 (see Appendix 1 in the appendix).

Table 4: Mass Shooter Writings with Multiple Themes

	# of Themes	# of Writings
N = 17	1	6
	2	3
	3	7
	4+	1

Table 5: Bivariate Analyses of Writings With and Without Suicide ideation Using Five Linguistic Categories

		M (%)	SD	*t*
Past Focus	With Suicide Ideation	3.26	0.85	-0.945***
	Without Suicide Ideation	4.51	3.16	
Present Focus	With Suicide Ideation	11.66	3.33	0.448
	Without Suicide Ideation	10.75	5.08	
Death	With Suicide Ideation	0.92	0.93	0.141
	Without Suicide Ideation	0.86	0.84	
Family	With Suicide Ideation	0.67	0.82	0.198
	Without Suicide Ideation	0.60	0.42	
Friend	With Suicide Ideation	0.53	0.76	1.053
	Without Suicide Ideation	0.19	0.19	

Table 5: I conducted an independent samples *t* test comparing the mean consistency scores of writings that expressed suicide and writings that did not express suicide. Writings that expressed suicide (M = 3.26, SD = 0.85, n = 11) referenced the past significantly less than writings that did not express suicide (M = 4.51, SD = 3.16, n = 6), t(5.399) = -0.945, p = .001, two-tailed. However, the independent sample *t* test did not find the other four categories, "present focus" $t(15) = 0.448$, $p > .05$, "death" $t(15) = 0.141$, $p > .05$, "family" $t(15) = 0.198$, $p > .05$ and "friend" $t(15) = 1.053$, $p > .05$, to be significant. Therefore, writings that express suicidal thoughts do not significantly have more words associated with present focus, death, family, and friends than writings without suicidal thoughts.

Table 6: Bivariate Analyses of Writings With and Without Narcissism Using Five Linguistic Categories

		M (%)	SD	*t*
Insight	With Narcissism	2.71	1.30	-0.193
	Without Narcissism	2.83	1.05	
Certainty	With Narcissism	2.66	0.74	0.635
	Without Narcissism	2.24	1.24	
Power	With Narcissism	2.73	1.01	0.013
	Without Narcissism	2.72	1.04	
Achievement	With Narcissism	1.05	0.27	-0.565
	Without Narcissism	1.24	0.63	
Affiliation	With Narcissism	2.62	0.82	0.83
	Without Narcissism	1.99	1.42	

Table 6: An independent samples *t* test was performed comparing the mean consistency scores of writings that expressed narcissism (n = 4) and writings that did not express narcissism (n = 13).There is not a significant difference in the selected linguistic categories between writings that expressed narcissism and writings that did not express narcissism where “insight” $t(15) = -0.193$, $p > .05$, “certainty” $t(15) = 0.635$, $p > .05$, “power” $t(15) = 0.013$, $p > .05$, “achievement” $t(15) = -0.565$, $p > .05$, and “affiliation” $t(15) = 0.83$, $p > .05$.

Table 7: Bivariate Analyses of Writings With and Without Threatened Masculinity Using Five Linguistic Categories

		M (%)	SD	*t*
Anger	With Threatened Masculinity	1.58	1.16	-0.886
	Without Threatened Masculinity	2.12	1.20	
Female	With Threatened Masculinity	0.89	0.74	-0.105
	Without Threatened Masculinity	0.94	1.01	
Male	With Threatened Masculinity	1.10	0.68	0.562
	Without Threatened Masculinity	0.88	0.78	
Sexual	With Threatened Masculinity	0.51	0.49	-0.418
	Without Threatened Masculinity	0.67	0.89	
Body	With Threatened Masculinity	0.78	0.32	-0.414
	Without Threatened Masculinity	0.88	0.55	

Table 7: I conducted an independent samples *t* test comparing the mean consistency scores of writings that expressed threatened masculinity (n = 6) and writings that did not express threatened masculinity (n = 11). There is not a significant difference in the selected linguistic categories between writings that expressed threatened masculinity and writings that did not express threatened masculinity where "anger" $t(15) = -0.866$, $p > .05$, "female" $t(15) = -0.105$, $p > .05$, "male" $t(15) = 0.562$, $p > .05$, "sexual" $t(15) = -0.418$, $p > .05$, and "body" $t(15) = -0.414$, $p > .05$.

Table 8: Bivariate Analyses of Writings With and Without Fame Seeking Using Five Linguistic Categories

		M (%)	SD	*t*
Future Focus	With Fame Seeking	1.67	0.64	0.432
	Without Fame Seeking	1.48	0.77	
Power	With Fame Seeking	2.33	1.48	-0.903
	Without Fame Seeking	2.85	0.85	
Reward	With Fame Seeking	1.39	0.54	0.645
	Without Fame Seeking	1.22	0.42	
Achievement	With Fame Seeking	0.91	0.31	-1.157
	Without Fame Seeking	1.28	0.60	
Insight	With Fame Seeking	2.17	0.57	-1.379
	Without Fame Seeking	2.99	1.13	

Table 8: I conducted an independent samples *t* test comparing the mean consistency scores of writings that expressed desire for fame (n = 4) and writings that did not express desire for fame (n = 13). There is not a significant difference between shooters who express fame in their writings and shooters who do not express fame in their writing where "future focused" $t(15) = 0.432$, $p > .05$, "power" $t(15) = -0.903$, $p > .05$, "reward" $t(15) = 0.645$, $p > .05$, "achievement" $t(15) = -1.157$, $p > .05$, and "insight" $t(15) = -1.379$, $p > .05$.

Table 9: Bivariate Analyses of Writings With and Without Revenge Using Five Linguistic Categories

		M (%)	SD	*t*
Anger	With Revenge	1.29	0.43	1.006
	Without Revenge	1.03	0.37	
Power	With Revenge	1.11	0.37	-0.619
	Without Revenge	0.92	0.33	
Reward	With Revenge	0.55	0.18	0.212
	Without Revenge	0.30	0.11	
Negative Emotions	With Revenge	1.77	0.59	1.345
	Without Revenge	1.23	0.44	
Anxiety	With Revenge	0.27	0.09	-0.274
	Without Revenge	0.52	0.18	

Table 9: I conducted an independent samples *t* test comparing the mean consistency scores of writings that expressed desire for revenge (n = 9) and writings that did not express desire for revenge (n = 8). There is not a significant difference between shooters who express revenge in their writings and shooters who do not express revenge in their writing where "anger" $t(15) = 1.006$, $p > .05$, "power" $t(15) = -0.619$, $p > .05$, "reward" $t(15) = 0.212$, $p > .05$, "negative emotions" $t(15) = 1.345$, $p > .05$, and "anxiety" $t(15) = -0.274$, $p > .05$.

Table 10: Bivariate Analyses of Writings With and Without Paranoia Using Five Linguistic Categories

		M (%)	SD	*t*
Negative Emotion	With Paranoia	4.78	1.38	1.383
	Without Paranoia	3.74	1.63	
Perceptual Processes	With Paranoia	2.58	1.43	0.527
	Without Paranoia	2.27	1.03	
Social Processes	With Paranoia	10.02	0.92	-0.197
	Without Paranoia	10.28	3.93	
Hearing	With Paranoia	0.59	0.19	0.529
	Without Paranoia	0.52	0.29	
Sexuality	With Paranoia	0.87	0.73	1.187
	Without Paranoia	0.43	0.76	

Table 10: I conducted an independent samples *t* test comparing the mean consistency scores of writings that expressed paranoia (n = 7) and writings that did not express desires for revenge (n = 10). There is not a significant difference between shooters who expressed paranoia in their writings versus shooters who did not express paranoia in their writings where "social processes" $t(10.37) = -0.197$, $p > .05$, "negative emotion" $t(15) = 1.383$, $p > .05$, "perceptual processes" $t(15) = 0.527$, $p > .05$, "hearing" $t(15) = 0.529$, $p > .05$ and "sexuality" $t(15) = 1.187$, $p > .05$, to be significant. Though non-significant, writings that reference paranoia use "negative emotion" words 1.04% ($p = 0.187$) more than writings that did not reference paranoia. In both writings with and without paranoia, "social process" words were used more than any other selected linguistic category.

CHAPTER 5

DISCUSSION

In this study, I tested if the presence of specific writing themes were associated with a predetermined set of linguistic categories at a statistically significant level. The results of this study filled the gap in mass shooting literature by expanding upon the methodology used to analyze written communications by mass shooters. Namely, applying a quantitative approach using a linguistic analysis software adds to previous attempts to analyze them qualitatively. In addition, this study has incorporated the findings and results of earlier linguistic studies of mass shooter writings to bolster the generalizability of the results. The following sections will discuss the results of the relationship between the linguistic categories of each theme and the associated hypotheses.

Suicide ideation

Mass shooters who expressed suicidal desires *did not* reference death words in their writings more than mass shooters who did not express suicidal desire. The result of this analysis was surprising when considering "talking about committing suicide, preparing for death by writing a will and making final arrangements, previous attempts at suicide and a preoccupation with death and dying" are cited by the American Psychiatric Associations as warning signs for suicidal persons (Suicide Warning Signs, 2018). Earlier studies on suicide and mass shooters have found 48% of mass shooters directly or indirectly commit suicide post shooting (Lankford, 2015). In this study, 64.7% (n = 17) of the writings sampled coded as suicidal, however, their cause of death was not a control variable. It is imaginable that cause of death may affect the use

of death words in the shooter's written communication. Further, the cause of death may also affect important aspects of the shooter's behavior. If, however, cause of death does not affect the use of death words in writings with suicidal themes researchers should evaluate suicidal writings using a different method. Another perspective to consider is the desired outcome for all mass shooters in this study. Namely, every shooter wanted to victimize and kill people with their actions. LIWC cannot distinguish to whom the death words are directed towards may it be the shooter themselves or their soon-to-be victims. The lack of significant use of death words by suicidal mass shooters when compared to non-suicidal mass shooters is possibly attributable to a small sample size and the shortcomings of LIWC. The application of this finding is valuable for creating a valid list of warning signs for those with suicide ideation.

Mass shooters who expressed suicidal desires used words referencing the past significantly less than mass shooters who did not express suicidal desires. A prior study found younger, suicidal writers are more likely to beg for forgiveness with a significant portion mentioning their past difficulties (Ho, Yip, Chiu, & Halliday, 1998). The results of this analysis does not support this study, however, age was not a control variable in the present study. It is arguable that mass shooters with suicide ideation are more focused on present day grievances and losses as noted in the American Psychiatric Associations Suicide Warning Signs (2018), however, this study did not find a significant use of present focused words between the two groups either. With a 1.25% mean difference between writings with suicide ideation and writings without suicide ideation, an increase in power may better identify the defining characteristic between the groups. Future studies should consider controlling for age as with the Ho, Yip, Chiu, & Halliday (1998) study.

Words related to family, the present, death, and friends are not statistically significant while words related to referencing the past are statistically significant in written communications without suicidal desire when compared to written communications with suicidal desire. The independent samples *t* test did not support Hypothesis 1. It is possible, the lack of significance for words referencing the past, death, family, and friends are attributable to the small sample size of this study. It is also possible the nature of the crime and the intent of the shooter themselves may have increased or decreased the shooter's usage of family, friend, and present tense related words outside of normal context.

Narcissism

Mass shooters who expressed narcissism *did not* reference words of achievement, affiliation, power, certainty, and insight in their written communications more than mass shooters who did not express narcissism. This study coded the writings of the Isla Vista Shooter, Columbine Shooters, and the Virginia Tech Shooter as narcissistic. This aligns with previous case studies and meta-analyses of mass shooters who displayed narcissistic traits (Twenge & Campbell, 2003; Langman, 2014b; Allely & Faccini, 2017; Langman, 2014a; Twenge et al., 2008). The results of this analysis do not support school shooter risk factor lists that cite narcissistic traits as a warning sign of a potential mass shooter. In fact, it supports the movement to amend the risk factor list.

The independent samples *t* test does not support Hypothesis 2. The diagnostic criterions used to select the linguistic categories relies on a clinician's observation of the individuals perceptual and social processes. As LIWC cannot assume the truth in the contents of the mass shooter's written communications, it is arguable the lack of significance for their linguistic dimensions is due to methodology or small sample size. The lack of significance in this study,

however, supports real concerns that school shooter risk factor lists rely too heavily on narcissistic traits as a warning sign. For this variable, the lack of significance may serve as a decisive factor in future school violence prevention programming and policy.

Threatened Masculinity

Mass shooters who expressed threatened masculinity *did not* use words referencing female, male, body, sexuality, and anger more than mass shooters who did not express threatened masculinity. The lack of significance for each of these linguistic categories is surprising because it does not support the idea of mass shooters with threatened masculinities. According to the literature, mass shooters with threatened masculinities are angry with women, other men, their own sexuality, and the world for denying them a heterosexual relationship (Myketiak, 2016; Vito et al., 2017; Farr, 2017; Evans, 2016). Perhaps the lack of significance derives from a sampling error or a confounding variable. However, these findings may promote a new discussion about the motives of mass shooters that are not related to gender.

The independent samples *t* test does not support Hypothesis 3. The lack of significance is attributable to the small sample of mass shooters who express threatened masculinity in their written communications (n=6). Future studies should consider analyzing the difference between the written communications of mass shooter's with threatened masculinities and the written communications of a control population using the same linguistic categories. Sampling written postings from online forums for the incel community may also serve as a way to increase sampling size to better find levels of significance for specified linguistic dimensions.

Fame Seeking

Mass shooters who expressed desire for fame *did not* use words referencing achievement, the future, power, reward, or insight more than mass shooters who did not express

desire for fame. The lack of significance for power and reward words are most surprising in this analysis. Previous research has consistently coded fame-seeking mass shooters as those who seek timeless power through the influence of others after their death (Silva & Greene-Colozzi, 2019). Fame-seeking mass shooters reference the influence of earlier mass shooters and how they wish to imitate that power over future generations of mass shooters (Lankford & Hoover, 2019). The linguistic categories chosen for this analysis may not fully encompass the idea of fame, therefore, LIWC was unable to recognize fame related words. However, the results will contribute to the further refinement of linguistic analysis.

The independent samples *t* test does not support Hypothesis 4, however, of the five writing themes analyzed in this study fame seeking was the least represented in the writing samples (n = 4). As with the other writing themes in this study, a larger sample size may increase analytical power. Despite the lack of significance, however, the results may encourage the usage of alternative linguistic analysis software that has the ability to analyze context in addition to word content.

Revenge

Mass shooters who expressed desire for revenge *did not* use words referencing anger, power, reward, negative emotions, or anxiety more than mass shooters who did not express desire for revenge. The lack of significance for anger related words is inconsistent with previous studies linking mass shootings to anger against women and peers (Allely & Faccini, 2017; Harris, 1999; Klebold, 1999). It is conceivable that words associated with reward were not significant because the death of those who caused the perpetrator grief was reward enough. The results of this analysis are relevant because many researchers cite revenge as the main motive of mass shooters (Knoll, 2012; Knoll, 2010a; Knoll, 2010b; Capellan et al., 2018; Fox & Levin,

1998; Leyton, 1986). If anger is not a significant indicator of revenge, then what is a valid linguistic measurement of revenge?

The independent samples *t* test does not support Hypothesis 5. The linguistic categories selected for "revenge" may have yielded more significant results if the categories were analyzed in relation to one another i.e. mass shooters who express desire for revenge are more likely to use anger *and* reward words together than mass shooters who do not express desire for revenge. Future studies should consider this angle in linguistic analysis of mass shooter communications because it would yield more complex results. Alternatively, a qualitative approach may better detect subtle differences in the writings of mass shooters who reference revenge and those that do not.

Paranoia

Mass shooters who expressed paranoia *did not* use words referencing perceptual processes more than mass shooters who did not express desire for revenge. Perceptual process words are words that describe a sensory experience. Example of perceptual process words include "observing", "heard", "feelings", "view", and "saw" (Hasan, M., Sen, T., Yang, Y., Baten, R., Haut, K., & Hoque, M., 2019). They also did not reference words about negative emotions, social processes, hearing, or sexuality more than mass shooters who did not express paranoia. Prior research diagnosed mass shooters with paranoid schizophrenia posthumously (Dutton, White, & Fogarty, 2013), while others inferred paranoia through their writings and interviews with family and peers (Knoll & Meloy, 2013). The results of this analysis supplement the qualitative data in these studies with quantitative data. However, it is not entirely surprising the data does not support the significant use of the specific linguistic categories by those who express paranoia. For this theme, context is important in determining which parts of the writings

express baseless paranoia. Identification of perception and suspicion requires a more nuanced methodology. Therefore, determining the significance in linguistic categories between writings that express paranoia and writings that do not express paranoia is best approached using qualitative analysis in addition to quantitative measures.

Mass shooters who express paranoia *do not* reference social process words such as mate, talk and they more than mass shooters who do not express paranoia. This result conflicts with the diagnostic criteria for paranoid personality disorder, which states that persons with paranoid personality disorder are concerned with other's perception of them. A diagnostic criterion of paranoid personality disorder is a preoccupation with other people's perceptions and actions. It also conflicts with previous case studies that found some mass shooters displayed paranoid traits or tendencies (Knoll & Meloy, 2013; Dutton, White, & Fogarty, 2013; Knoll & Meloy, 2014). These studies qualitatively inferred such paranoia with writing samples and reference materials. It is possible that the quantitative nature of the present study failed to detect the subtlety paranoid individuals experience with social processes. The independent samples *t* test does not support Hypothesis 6.

With these results in mind, it begs the question of whether themes in the written communications of mass shooters can predict linguistic patterns. Earlier works have asserted the importance of the written word by perpetrators of violence (Hempel, Meloy, & Richards, 1999, p.557). The lack of significance in linguistic categories between writings with and without a specific theme may be attributable to the various mediums of writings used in my analysis. The writers of manifestos, letters, and online blog posts intend for others to read their works, while journals and diaries are more personal mediums of expression. The medium of writing may have affected the writers writing style and ultimately their choice in words. In addition, this study

strictly utilized a quantitative analysis where a qualitative or mixed method approach may have resulted in different findings. As previously mentioned, the lack of significance in selected linguistic categories does not necessarily equate to a lack of viable findings. If anything, the results of this study encourages further analysis of mass shooter communications using larger samples sizes, which will increase the power of the analysis. In some cases, the lack of significance contributes to the existing literature as the results supports policy amendments for mass shooter warning/risk lists that may lead to stereotyping a certain group of individuals.

Application of Results to School Shooter Policies

After a school shooting incident occurs, parents, policy makers, and companies often propose solutions to harden security on school campuses. The high-tech solutions include visual detection technology that surveys the appearances of students in the South Florida school system for suspicious persons (Harwell, 2019). The Bristol Public School District pays a third party to monitor the social media traffic of the geographical area of their district for specific words, phrases, and images (WQAD Digital Team, 2018). Other tools include instant background checks and social-media monitoring software altogether creating a multi-billion-dollar industry aimed at preventing another school shooting (Schuppe, 2018). These solutions are a relatively novel approach to boosting school security but with little empirical data to support their effectiveness, it is difficult to claim they are effective in preventing school shootings.

The results of this study apply to the technology solutions that focus on the digital surveillance of linguistic contents. For example, Bark is the premier software for monitoring student activities in school email accounts, internet-based chats, and documents (Beckett, 2019). Gaggle is another leading provider of digital surveillance for American school districts. School districts in Missouri and Alaska are utilizing these services to monitor their students for suicidal,

violent, and cyberbullying behavior (Beckett, 2019; Lockett, 2019). Digital surveillance costs the average American public-school district over one million dollars a year with an increase in cost every year (Beckett, 2019). Applying the results of this study to existing and new digital surveillance systems will optimize the system's ability to identify valid threats to school security. However, I caution school districts against the strict use of linguistic surveillance programs without additional monitoring from human personnel. As demonstrated in this study, a quantitative linguistic analysis software is limited by its inability to perceive perception or even sarcasm. It is irresponsible to fully depend on software that can not analyze context. Total dependency on linguistic surveillance may contribute to zero tolerance and stereotyping policies.

Limitations

The contributions of this study to the deeper understanding of mass shooters through their writing is numerous, however, there are also limitations to this study. First, the number of writings collected in this study is only a portion of the first-person reports by mass shooters available. The sample size poses a power problem for statistical analysis. Some writings did not qualify for analysis due to the definition of first-person report in this study. Despite this limitation, this study moves beyond the typical case study and applies earlier research to a broader group of mass shooters.

Another limitation of this study is the choice of linguistic analysis software. LIWC, although widely used, cannot integrate context into its analysis. Contextual analysis would provide a quantitative output for cross-referencing the qualitative thematic assignments. Future studies should consider a mixed method approach or utilizing a different linguistic analysis software entirely. The purpose of this study, however, was not to identify intent or motivation of

the shooter through their writing. Instead, it was to identify and analyze the significance of themes in linguistic categories. Therefore, LIWC adequately fulfilled the purpose of this study.

Next, the writing samples analyzed in this study included manifestos, letters, diaries, journal entries, and online blog posts. The medium in which the shooter chose to write down their thoughts varied by intent and time. Those who intended their writing to become public knowledge acknowledged and addressed the future readers of their writing, whereas those who did not intend for their writing to become public knowledge simply mused to themselves. Such a variety in writing mediums most likely affected the linguistic analysis. To combat this issue, I did not analyze linguistic categories within the linguistic dimensions of personal pronoun, first person singular, first person plural, etc. (see Figure 2). The purposeful abandonment reduces the effect of multiple writing sources within the sample.

Finally, the reliability of this study suffers due to the lack of inter-rater reliability. In future studies involving a qualitative analysis of first-person reports, I recommend multiple readers to increase the reliability of thematic identification. By increasing inter-rater reliability, the qualitative assessment of themes in the writings of mass shooters will have greater generalizability and validity. I sought to overcome this limitation by reading each written work in its entirety two times. By reading each work twice, I was able to identify themes that I may have missed the first time.

CHAPTER 6

SUMMARY AND RECOMMENDATIONS

In the current study, I answered two research questions. First, what are some of the common themes found in the written communications of mass shooters. Second, for each of the common themes found in answer to the first research question, do mass shooters who expressed that theme differ from those who did not with regards to the selected linguistic categories? The purpose of this study is to uncover thematic and structural trends in the suicide notes, manifestos, journals, and diaries of mass shooters through the use of the rhetorically sensitive content analysis software, Linguistic Inquiry and Word Count (Pennebaker Conglomerates, Inc., 2015). The common writing themes used in this study include narcissism, paranoia, suicide ideation, revenge, fame seeking, and threatened masculinity. Using an independent samples *t* test, I found mass shooters who expressed suicidal desires were significantly less likely to use words referencing the past than mass shooters who did not express suicidal desires. The results of this study are relevant to the development of lists for risk factors and warning signs associated with mass shooters. Additionally, the results are applicable to linguistic analysis digital surveillance initiatives in public school districts. In particular, the results of this study could assist in improving machine learning, refining latent linguistic inquiry software, and identifying the complexities of linguistic analysis.

The non-significant findings in this study also yield interesting results for discussion. Of note, mass shooters who express threatened masculinity in their writings do not use words

referencing anger, female, male, sexual, or body more than mass shooters who do not express threatened masculinity. The lack of significance for these linguistic categories could indicate mass shooters, as a group, express characteristics of threatened masculinity to some degree. Mass shooters who do not overtly express threatened masculinity may unknowingly express these linguistic characteristics. The sample size of this study (n = 17), however, is on par with previous studies analyzing the written works of mass murderers and mass shooters. In the future, researchers should revisit this study with a larger sample size once the written communications of mass shooters currently on trial are released to the public.

Recommendations

Future studies should consider analyzing a more modern approach to mass shooter writings, such as mass shooter videos. The Isla Vista Shooter, in addition to his written manifesto, uploaded several videos on YouTube prior to the shooting. The New Zealand shooter streamed his shooting rampage live on Facebook after previously uploading his intentions on Twitter. Analysis of these videos could result in a more robust analysis of the shooters behavior and intentions by researchers and clinical professionals. A video supplies data in the form of speaker tone, facial expression, and voice projection. Further, researchers should consider cross analyzing the first-person reports by shooters who also film a "manifesto" type video. Does the medium in which the shooter expresses their thoughts translate to a different interpretation of their motives, ideals, and intentions? The results of this question can have a significant impact on the regulation of video messages on public domains.

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APPENDIX

Appendix 1: Coding of Written Communications by Mass Shooters

	Theme					
	Suicide	Narcissism	Paranoia	Fame	Revenge	Threatened Masculinity
Adam Lanza	0	0	1	0	0	0
Charles Whiteman	1	0	0	0	0	0
Christopher Sean Harper-Mercer	0	0	0	1	0	1
Dylan Klebold	1	1	1	0	0	1
Dylann Roof	1	0	0	0	0	0
Elliot Rodger	0	1	0	1	1	1
Eric Harris	1	1	1	0	0	0
Gang Lu	1	0	1	0	1	0
James Holmes	1	0	0	0	0	1
Jiverly Wong	1	0	0	0	0	0
Kip Kinkel	1	0	1	0	1	0
Kyle Aaron Huff	0	0	1	0	1	1
Mark Barton	1	0	0	0	1	0
Matthew Murray	0	0	1	0	1	0
Robert Flores	0	0	0	0	1	1
Robert Hawkins	1	0	0	1	1	0
Seung-Hoi Cho	1	1	0	1	1	0

Appendix 2: LIWC Dimensions and Categories

Categories	Abbreviation	Examples
Psychological Processes		
Negative Emotion	negemo	hurt, ugly, nasty
Anxiety	anx	worried, fearful
Anger	ang	hate, kill, annoyed
Social processes	social	mate, talk, they
Family	family	daughter. dad, aunt
Friends	friend	buddy, neighbor
Female referents	female	girl, her, mom
Male referents	male	boy, his, dad
Insight	insight	think, know
Certainty	certain	always, never
Perceptual Processes	percept	look, heard, feeling
Hearing	hear	listen, hearing
Body	body	cheek, hands, spit
Sexuality	sexual	horny, love, incest
Core Drives and Needs		
Affiliation	affiliation	ally, friend, social
Achievement	achieve	win, success, better
Power	power	superior, bully
Reward focus	reward	take, prize, benefit
Time Orientation	TimeOrient	
Past focus	focuspast	ago, did, talked
Present focus	focuspresent	today, is, now
Future focus	focusfuture	will, later, soon
Personal Concerns		
Death	death	bury, coffin, kill

Note. Adapted from Kaati, Shrestha, & Sardella (2016) and Pennebaker Conglomerates, Inc. (2015)