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## Characteristics of Cause of Death, Victim, Crime, Offender, and Familial Relationship

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# Walden University

College of Social and Behavioral Sciences

This is to certify that the doctoral dissertation by

William J. Reilly

has been found to be complete and satisfactory in all respects,  
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the review committee have been made.

Review Committee

Dr. Charles Diebold, Committee Chairperson, Psychology Faculty

Dr. Eric Hickey, Committee Member, Psychology Faculty

Dr. Victoria Latifses, University Reviewer, Psychology Faculty

The Office of the Provost

Walden University  
2019

Abstract

Characteristics of Cause of Death, Victim, Crime, Offender, and Familial Relationship

by

William J. Reilly

MS, University of Colorado at Colorado Springs, 2008

BS, American Intercontinental University, 2005

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Psychology

Walden University

November 2019

## Abstract

Broad personality or global traits are unlikely to assist in solving capital crimes, so forensic psychologists have begun to focus on characteristics of the crime to create differentiating profiles. The purpose of this study was to determine if offender and victim characteristics and method of murder could provide cluster profiles differentiating familial relationship between offender and victim. Guided by classical conditioning theory and social learning theory, an archival database of 147 capital offenders responsible for 506 victims was analyzed. Cluster analysis yielded 3 distinct profiles. Compared to other clusters, Cluster 1 offenders tended to be Black and unfamiliar with their victims, who tended to be male between 20 and 50 years old that were typically shot. Cluster 2 offenders tended to be White and familiar with their typically female victims under the age of 20 who they typically murdered by use of blunt force or strangulation. Cluster 3 offenders were distinguished from the other 2 clusters only by having accounted for 90.6% of all victims who were stabbed, but no other associations with variables in the data set were discovered to explain this finding. Though limited in sample size, range of variables, and supplemental insights that could have been gained from case files or interviews, the results contribute to positive social change with offender-victim characteristics and method of murder profiles that begin to differentiate the familial offender-victim relationship and that future research can prospectively build on to create retrospective profiling models, which could potentially lead to resolving unsolved serial murder cases.

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## Dedication

This dissertation is dedicated to my family for making me the man, husband, and father that I am today. To my father looking down from heaven, you have taught me so much in life that I will be forever grateful. You molded me into the person I am today, everything that I have learned throughout my life was a direct effect and reflection of you. I am so proud to be your son and I know that you are proud to be my father. God took you too early, but I know that you have always been looking down from heaven and guiding me. To my mother, you have shown me the good in the world and provide me my faith. No matter the hard times or despair, you were there to help me through, right from the day that you and Dad adopted me. There is no greater love than that to give to another and for that I am forever grateful. I thank you and Dad and love you both very much. To my wife and children, without your love, support, and understanding throughout all the late nights and time taken away from you, none of this would be possible. All of you continued to push me to do better and to succeed in all I do, thank you and I love you.

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## Chapter 1: Introduction to the Study

### **Introduction**

Thousands of people, from all around the world, are missing who may have been tortured, killed, and buried somewhere in a clandestine grave (Palermo, 2013). In this study, I focused on identifying a relationship between the characteristics of the cause of death, crime, and criminal offender and familial relationship of victim and offender.

One function of a forensic psychologist is to develop a profile of a criminal. In doing so, the effectiveness of the psychological professional depends on their ability to distinguish the complex mental instability of an offender. Within the realm of criminal profiling, a forensic psychologist has the roles of conducting determinations for criminal insanity, criminal competence, and assisting law enforcement by building profiles that aid in the tracking and capture of suspects. A criminal profile is derived from the physical and behavioral evidence that is left at a crime scene in order to make inferences about the individual's psychopathology and personality characteristics (Torres, Boccaccini, & Miller, 2006). A forensic psychologist must be able to understand the individuals that they are pursuing by fully understanding not only their cultural background but also their upbringing and aspects of their life that may have aided in developing who they are and how they think. Accordingly, such understanding is detrimental in developing the most accurate profile possible. Additionally, recognizing and understanding the individual differences of either a victim or offender with regard to their gender, sexual orientation, culture, religion, and disabilities may assist in identifying triggers of certain behaviors.

Every individual perceives the world through a different scope and is affected by everything they do or the experiences that they have.

There are certain things at the crime scene that will assist in the development of offender characteristics or the relationship between the offender and victim, such as the cause of death of the victim. The cause of death, regarding the establishment of a relationship between the victim and offender, can assist in narrowing the suspect pool based on past correlations. According to Alison, Bennell, Mokros, and Ormerod (2002), there are five points concerning reliability and validity with regard to background characteristics obtained from a crime scene:

- The most current methods of profiling are considered to be outdated and naïve with regard to trait approach and a true understanding of personality.
- Broad personality traits or global traits are unlikely to assist in predicting offender behavior.
- The broad offender classifications are unlikely to assist the profiler in their ability to relate groups of sociodemographic characteristics into the different types.
- Producing more opportunities for research through the theoretical framework that emphasizes the importance of the event and the person in order to develop behavior.
- Profiling should not be utilized as evidence within a court proceeding until its validity is concrete.

With these reliability and validity concerns in mind, Pinizzotto and Finkel (1990) identified the following five steps of the profiling process:

- Assessment of the criminal act with regard to offenders who have previously committed similar acts,
- An in-depth analysis of the crime scene,
- Analysis of the offender(s) and victim's background,
- Identification of any and all motivations involved in the case, and
- The profile or "psychological make-up" of the offender is then generated.

Archival data of solved cases might yield a retrospective, reliable, and valid model that could prospectively assist the profiling process and linkage between victim and offender of unsolved cases.

### **Background of the Problem**

The focus of this study was to identify characteristics that may link a homicide offender to the victim and, therefore, provide law enforcement with potential leads in apprehending the offender. Research related to the background of this topic includes cause of death, clandestine graves, spatial distances, and characteristics of murderers. In addition, such characteristic similarities will provide a linkage to criminal profilers, enabling them to develop an effective profile of the offender. The Federal Bureau of Investigation (2015) conducted a statistical analysis of crime data throughout the United States that depicted relational data between the offender and the victim. Additionally, their analysis provided demographic data, situational data, and data pertaining to weapons used in the commission of the crime.



When a death occurs, there are three separate elements that must be determined in order to determine what surrounded the death of the individual: cause, mechanism, manner. According to a Crime Museum (2018) article on forensic investigation, the cause of death is defined by an injury or disease that creates a physiological disturbance in the body and, therefore, subsequently results in the death of an individual. An example of this would be a gunshot wound to the neck. Additionally, Crime Museum defined the mechanism of death, using the above example, as the actual physiological derangement of the body that resulted from the gunshot wound. In this case, the mechanism of death caused by the gunshot wound would be a severe loss of blood, also known as exsanguination. Lastly, the manner of death. refers to how the death came about. Manner of death is broken down into the following categories: natural, accidental, suicide, homicide, and undetermined (Crime Museum, 2018). In the above example, the initial manner of death would more than likely be determined a homicide unless further evidence proves otherwise.

Mellet (2011) expanded upon modern methods of locating clandestine graves utilizing instruments, such as ground penetrating radar, electromagnetic terrain conductivity, penetrometer, and thermal imaging. Spatial distancing and site locations of the victim are unknowing indicators themselves. It is sometimes the evidence that investigators do not see that provides the correlations needed. Lundrigan, Czarnomski, and Wilson (2010) reported the spatial distances between the known location of the murderer and the disposal site of the victim's body to be between 3 and 5 km. Additionally, Taylor, Lambeth, Green, Bone, and Chillane (2012) examined the

characteristics of offenders and patterns of disposal site locations in rural areas and found 73% of victims were in wooded areas, and 27% of victims were in water.

Characteristics of the offenders are paramount in being able to provide a connection between them and their victims. These characteristics are again things that may seem to be invisible at the crime scene; however, to the properly trained professionals, these pieces of the puzzle are evident. There are numerous studies, such as Wilson, MacDonald, and Tita (2010), that found positive correlations between offender psychological characteristics and correlations between the offender and victim, supporting characteristics of the murderer in connection to the victim. Moffatt and Hersey (2010) provided supporting evidence to infer that serial murderers have the characteristic nature of being atypical as opposed to a typical offender. Additionally, Salfati and Bateman (2005) studied the consistency of serial killers across their crimes to identify whether their crimes were expressive or instrumental. In doing so, they determined that all 23 murderers studied were consistent in their patterns of committing the murders.

The results of extant psychological studies have also suggested positive correlations between the offender and the victim. Culhane, Hildebrand, Walker, and Gray (2014) assessed violent offenders utilizing the Minnesota Multiphasic Personality Inventory - 2 and concluded that there is a significant presence of emotional disorders in serial killers, which supports characteristic development of criminal profiles. Additionally, Declercq, Willemsen, Audenaert, and Verhaeghe (2012) conducted research to assess psychopathy and predatory violence in offenders utilizing the Hare

PCL-R2 and concluded that personality traits of psychopathy are positively correlated with predatory violence.

### **Statement of the Problem**

Forensic psychologists, who provide the function of criminal profilers to law enforcement agencies, do so in order to assist in development of psychological profiles of offenders in attempts to provide a link from an individual to a crime. Such profiles are based off behavioral analysis of that individual. A psychological profile requires the intricate detailing of significant cognitive, behavioral, demographic, and emotional features of an individual who is believed to have committed a crime (Bartol & Bartol, 2012). When conducting a spatial pattern analysis of sexual offenders, Lundrigan et al. (2010) found that the spatial distance from the location of the offender's home to the victim was 3 km or less (approximately less than 2 miles). Results showed spatial consistency proved that offenders would not travel too far away from their home and, as such, their site selection was not selected by chance but rather had a correlation of some kind (Lundrigan et al., 2010). In a separate study of spatial distance, 53 German murderers were studied to determine the spatial distance between each respective crime scene, where the bodies were recovered, and the murderer's home (Snook, Cullen, Mokros, & Harbort, 2005). These researchers identified that 63% of murderers lived within 10 km (approximately 6 miles) of where the victim's body was discovered. In addition, the distance from home-to-crime positively correlated with the murderer's IQ and available mode of transportation and its effect on their spatial decisions.

Although studies regarding spatial distance of disposal site to known offender's home or place of employment have been conducted, there has been minimal, if any, research conducted that holistically takes into account characteristics of cause of death being able to build a relationship to the offender based on characteristics of the crime, criminal offender, and victim. Location can play a role in assisting in the determination of a relationship between the victim and offender if significant studies can build a baseline and further expand past the baseline and identify a correlation. However, my goal with this study was to surpass a distance-based correlation and determine if the cause of death (e.g., gunshot, strangulation, etc.) can also assist in determining a relationship between victim and offender.

### **Purpose**

The purpose of this study was to identify how the cause of death, as determined by the crime scene and the medical examiner, could assist in revealing a familial relationship between the victim and the criminal offender. Spatial distance has been investigated in previous research, however incorporating the known cause of death could reveal a relationship, whether familial or not, and enhance the development of a psychological profile of the criminal offender. The ability to develop a psychological profile based off physical characteristics found at a crime scene and having the knowledge of the consistency of a cause of death that matches up with a familial relationship, or lack thereof, may significantly increase the ability to link an offender to a victim and, therefore, a crime. The results of this study may also further law enforcement efforts with cold cases as well as ongoing ones.

## **Theoretical Frameworks**

In order to assess the value of physical characteristics of the cause of death, victim, and offender in this study, I used the theoretical frameworks of classical conditioning theory and social learning theory. Each of these frameworks assisted in developing and building a connection that may exist between offender and victim.

### **Classical Conditioning Theory**

The classical conditioning theory, developed by Ivan Pavlov, states that behavior is a reflexive response that is provoked by the presence of stimuli (Bitterman, 2006). Additionally, with regard to the criminal mind, such stimuli can be the presence of an emotional trigger, where the looks, mannerisms, and other characteristic traits remind the individual of someone they knowingly love or despise. Fear itself can be a Pavlovian conditioning due to the events that led to create the fear. Every individual reacts differently to fear, and some can take on the internal notion of needing to protect themselves and act out in manners that they normally would not to combat the fear. Shultz and Helmstetter (2010) stated that as a part of Pavlovian fear conditioning, a conditional stimulus that may have come in the past can resurface in efforts to elicit a conditional response. This is provoked by the continual reoccurrences of an aversive unconditional response time and time again. Shultz and Helmstetter reported that this may derive a neutral conditional response to be a surrogate safety net.

### **Social Learning Theory**

Social learning theory, developed by Albert Bandura, follows the premise that behavior is learned, not only from the experience that an individual they themselves have,

but also from what they observe from others (Garcia et al., 2014). As such, violent or aggressive behavior that is observed at a young age can cause a younger individual to perceive such behavior incorrectly. Social learning, vicarious learning, or observed learning is present every day of our lives and is done through the act of observing the actions and behaviors of others, learning those behaviors, then reproducing them (Bartol & Bartol, 2011). Though these actions do not need to be acted upon in order to be a learned action, the behavior of reproducing them is generally how it is thought of. Social learning is complex in the sense that it requires the individual to be able to organize all of the learned behaviors and thoughts into rational models within their brain, forming their own personal thoughts about the observed behaviors. With regard to criminal behavior, learned behavior is extremely important. If a child or adolescent continually observes physical abuse and/or drug or excessive alcohol use, there is a high probability that when he or she grows older, they will think that it is normal to do those things. Social learning is the first step to learned behavior and continues over the course of a person's life.

### **Research Questions**

Research Question 1: What is the number and nature of cluster profiling cases with common characteristics of the cause of death, crime, victim, and criminal offender?

Because cluster analysis has no statistical test of significance, hypotheses for this research question were irrelevant.

Research Question 2: To what extent is the familial relationship of victim and offender associated with the clustered profiles of cases?

*H<sub>0</sub>2*: There will be no identified familial relationships between that of the victim and offender associated with the clustered profiles of cases.

*H<sub>1</sub>2*: Familial relationships will be identified and associated with the clustered profiles of cases.

### **Definitions of Terms**

*Body position or posture*: The positioning or posture of the victim's body in reference to whether the victim is "placed" face up or face down or if they are just discarded and there is no particular placement to their body.

*Cause of death*: Comprises three separate components: mode, mechanism, and manner of death. Mode of death or cause refers to the whether the death was a result of natural occurrences or trauma. Mechanism of death refers to the what caused the individual's vital organ(s) to fail, such as asphyxiation or exsanguination. Manner of death refers to the whether the death was homicide, suicide, accidental, or natural.

*Clandestine grave*: The location where a victim's body is placed or discarded by an offender (e.g., along the side of a road, in a wooded location, in water, etc.). This also included whether a victim is placed on the surface or buried subsurface.

*Crime scene*: The location where a crime occurred, whether a robbery, homicide, rape, burglary, etc. This is also the location where criminal investigators and crime scene investigators collect evidence in attempts to find the offender.

*Demographics*: Age, sex, race, marital status, employment status, socioeconomic status, and profession of both the offender and victim.

*Dismemberment:* The intentional or unintentional removal of an individual's body part from their body by another person or object.

*Disorganized:* When referring to the offender and the crime scene, this depicts the scene being messy and chaotic, conducted with little time or preparation. This generally indicates the victims were surprised when attacked and are less likely to be bound. The act is conducted quickly, and the offender departs as soon as possible.

*Familial relationship:* Any possible relationship, or lack thereof, between the offender and the victim (i.e., child, parent, cousin, sibling, close friend, colleague, or complete stranger).

*Forensic science:* The application and process of multiple scientific disciplines that work together in order to analyze and apply evidence to legal matters (e.g., blood splatter and pattern analysis, DNA, chemical analysis, document exploitation, trace evidence, etc).

*Forensic psychology:* Psychology that pertains to law; it is the connection between the criminal justice system and the science of psychology. It consists of the following subspecialties: criminal, juvenile, civil, investigative, correctional, and police.

*Offender signature:* A distinctive characteristic of the offender that allows investigators to be able to link several crimes to the same offender. This could be something that is consistently taken from or left at the crime scene as well as something that is done at the crime scene or to the victim.

*Pattern analysis:* The ability to analyze the similar characteristic or behaviors and derive a consistent or repetitive pattern.



*Psychological profile:* The results of piecing together all aspects of an individual's life in order to get a greater understanding of their current psychological state of mind. These aspects include childhood development and upbringing, childhood or adult trauma, personal relationships, past sexual trauma, work and expertise background, schoolwork, introverted or extroverted, and any other aspect of a person's life that can provide a greater understanding of their psyche.

*Restraints:* Items, such as handcuffs, rope, chain, zip ties, tape, clothing, bed sheets, or anything else, used to restrain an individual.

*Spatial distance:* The distance between the location of where a victim's body is found to the location of the offender.

*Organized:* When referring to the offender and the crime scene, this depicts the scene being intentional, making it apparent that the offender carefully planned their attack. They are well prepared, plan, and deceive their victims. They bring everything needed, such as restraints, to conduct the act. Additionally, victims are bound and tortured, and it is likely that the offender either will take a trophy from the crime scene or leave a signature.

*Trophy:* An object taken by an offender at a crime scene. The offender will take the same type of object from scene of every crime that they commit. This object has some sort of psychological or emotional meaning to them.

### **Limitations**

Due to the nature of this study and the way in which data were collected, there were some weaknesses to the study. All source data analyzed was collected from

preexisting data sets collected about serial murderers from 2011–2018. Therefore, most data, again previously collected within preexisting data sets, were accurate as of the time of which they were collected. Personal perception is a weakness that may be accounted for when the initial data collection was conducted. Though unlikely, this could have caused a limitation within the study. One final limitation that could have existed in this study lay with the lack of forensic psychologists within law enforcement agencies. Within some agencies and departments, criminal profiles are left to be developed by the investigators who lack the psychological training and certifications. This can also cause research within law enforcement to be conducted by external sources who may not be able to access all the content or variables required in order to conduct a study to the best of their ability.

### **Significance**

The results of this study fill a gap in the understanding of how the characteristics of the cause of death can provide a correlation to the relationship, or lack thereof, between an offender and the victim. This study is significant and unique because it addresses an issue that surpasses spatial distances within the field for investigative psychology. Studies of spatial distances and consistency of offenders have shown that offenders are correlated to live within certain distances of their victims (Lundrigan et al., 2010; Taylor et al., 2012). Spatial distance is only one element that may be able to assist in building a relationship between the victim and offender. The results of this study provide an additional linkage between the two and understanding of correlations that are made from the cause of death with regard to the criminal mind and may assist in

determining whether a relationship exists between the offender and the victim. If investigators are able to correlate that certain causes indicate that an attachment may be present, then they will be able to generate a connection from the victim to the offender. Hammond and Youngs (2011) indicated the importance of the theoretical understanding of offender spatial behavior. As such, the results of this research will be able to assist law enforcement efforts in identifying and apprehending individuals that are linked to murders. Additionally, the findings of this study will provide continued validity and credibility to the efforts of criminal or offender profiling and its relevance to forensic psychology and law enforcement.

### **Summary**

Aspects, such as organized offenders, disorganized offenders, and spatial distancing, have been studied extensively. In doing so, the aspects of the characteristics used to build a connection between the victim and the offender has been left wide open. There are many characteristics at a crime scene that can assist in laying a foundation from which to build a profile of the offender, assisting in making a connection between the victim and offender. In this study, I aimed to identify how the characteristics associated with the cause of death correlate to characteristics of the criminal offender. In this chapter, I provided an overview of the theoretical frameworks that supported my examination of the behavioral characteristics of an offender, the key terms associated with the study, and how significant the results of this study can be to law enforcement agencies around the country. In Chapter 2, I review and summarize the most current

research related to criminal profiling as well as the characteristics of an offender and their crime scene.

## Chapter 2: Literature Review

### **Introduction**

The evolution of forensic psychology, established as a subset of psychology, can be dated back to 1893 and the work of J. M. Cattell concerning the psychology of testimony (Devery, 2010). Decade after decade, forensic psychology has continued to evolve. Today, one of the subspecialties of forensic psychology is investigative psychology, which has a role conducting criminal profiles of offenders. The ability of a criminal profiler to piece together aspects and characteristics of a criminal's life and psychological mindset enables them to be able to provide correlations or connections between the offender and their victims as well as the probability of behaviors of similar offenders and their actions. In this study, I conducted in-depth investigation into the literature of the variables that may contribute to the ability of linking the evidence to an offender that identifies a relationship that may exist.

My review of the literature assisted in understanding the nature and intricacies of all the aspects of this study and aided in building a correlation between the characteristics of clandestine graves, victims, crime, offender, and any existence of a familial relationship. In the literature review, I provide a summary of the following: criminal profiling, the separate classifications of homicide as described by the Federal Bureau of Investigation (2015), the different types of crime scenes, clandestine gravesites and the significance of burial depths, spatial distance between the known location of the offender and the crime scene, known relationships between the offender and the victim, offender behavior at a crime scene, patterns or signature of murderers, and significance of body

placement. Additionally, I review the theories of social behavior, classical conditioning, and attachment in order to provide a rationale of associated behaviors.

### **Literature Search Strategy**

I derived the literature for this review from a series of books on serial killers, crime scene investigation, criminal profiling, psychological traits, and crime classification. The articles included in the literature review were peer reviewed and retrieved from several sources and databases, including Criminology Highlights, PsycARTICLES, PsycBOOKS, PsycEXTRA, and PsycINFO. To locate literature for this chapter, I used several local and university libraries. The publication date range of the literature reviewed ranged from 1921 to 2017. The search terms used to locate the literature were: *offender typology, male offenders, female offenders, offender profiling, criminal profiling, cause of death, offender signature(s), offender trophy(ies), clandestine grave, spatial distance, psychological traits, murder classification, personality types, organized killer, organized offender, disorganized killer, and disorganized offender.*

### **Criminal Profiling**

The role of criminal profiling is a function that provides law enforcement assets with the ability to link the psychological characteristics of an individual to the evidence that is left a crime scene. As it has continually been refined since it was developed with the Federal Bureau of Investigation in the 1970s, there have been two individuals who have continued to pioneer criminal profiling within the field: forensic psychologist, Howard Teten, and forensic psychiatrist, Dr. James Brussel (Devery, 2010). Teten was appointed the first Director of the Federal Bureau of Investigation's Behavioral Science

Unit, which was birthed from the Hostage Negotiation Unit, and this unit developed a series of projects investigating the characteristics of serial murderers in efforts to collect data that would assist in their ability to analyze and predict future crime. Canter and Alison (2000) stated that the validity of criminal profiling is yielded from the following questions:

- Which offender behavioral characteristics identified are associated with the crime, and which would enable successful prosecution?
- What inferences can be yielded from said offender characteristics, and which may lead to the identity of the offender?
- Could any other crimes have likely been committed by said suspect?

Torres et al. (2006) conducted a study in order to assess the reliability and validity of criminal profiling, otherwise referred to as criminal investigative analysis. The results of their study showed that the simple terminology of criminal profiling could be detrimental to its use in court. In their research, they assumed that profiling testimony was more likely to be accepted within a court of law when it was referenced as anything other than criminal profiling, such as criminal investigative analysis. However, the forensic psychology role of criminal profiling provides a much-needed benefit to law enforcement because it produces a psychological sketch of an offender suspect of a crime. The production of this sketch enables the prediction of offender behaviors and assists in providing leads within criminal cases. As indicated by Bartol and Bartol (2012), a psychological sketch requires the recording of significant emotional, cognitive, and demographic characteristics of an individual believed to have committed a crime.

Being developed by the Federal Bureau of Investigation's Behavioral Science Unit, criminal profiling provides an additional strength of having the ability to profile crime scenes.

An effective and successful criminal profiler will utilize information obtained from the crime scene and the predictive characteristic traits, habits, and behaviors of the offender in order to generate an offender. In nontechnical language, this information acts as a possible prediction of how and where the crime may have been committed. With that being said, the process, effectiveness, and accuracy of a criminal profile is determined by means of the information that is obtained and the method of data collection that is utilized (Salfati & Bateman, 2005). Such methods are based on the experience of the investigator or profiler, any research that have been conducted, and most importantly, the interviews that have been conducted. There are points within certain cases where the only evidence that is available to the prosecution is empirical evidence, which then may be a significant piece in aiding the prosecution's and detrimental to the trial's outcome. The forensic psychologist's role as a criminal profiler is to employ their experiences and expertise in order to collect and extract information from an offender that may be vital to an investigation.

In order to be an effective criminal profiler, an individual must be engulfed within the community in order to understand the cultures of the individuals that live in and around the area of operation. Therefore, communication is paramount, and this communication is two-fold. By this, I mean that a criminal profiler will have to not only be able to effectively communicate verbally, but they must also be able to read the



nonverbal communication being exhibited by others. This may tell the profiler as much about what it is that they need to know as the verbal communication. Behavioral analysis is a key component of what a criminal profiler's role is, and as such, they need to be able to understand the cultural and behavioral norms of the community in which they work. One of the criminal profiler's largest challenges is the diverse populations they encounter and discerning between a cultural norm, a behavior of a mentally ill individual, and a psychological characteristic of a criminal. With 26.2% of the U.S. population suffering from some form of mental illness (The Kim Foundation, 2014), the inability to identify a mental illness in an individual will cause interference within a case and cloud the ability of an officer or psychologist to assess and act accordingly.

The largest challenge that exists within the role of criminal profiling is the validity of profiling itself. The slowly gained validity and reliability of criminal profiling has posed and continues to pose a challenge for forensic psychologists. Since its inception with the Federal Bureau of Investigation in the 1970s, criminal profiling has slowly gained recognition within the courts and the field of science. In 1981, in the case of *United States v Cortez*, the Supreme Courts suggested that criminal profiling is an acceptable tool that utilizes deductive reasoning in order to make a determination of innocence (Regis University, 2015). Professional profilers generate more accurate offender characteristics while performing duties than those who lack an investigative background. However, Devery (2010) indicated a difficulty in identifying cases that have yielded significant findings solely using criminal profiling but also stated that when

utilized alongside an enthusiastic prosecutor and good investigative detail, criminal profiling is very successful.

### **Personality Types**

The development of an individual's personality can lead their life on many different paths: The path can be one of assistance, care, and a positive influence within their society or a path of criminal activity that can either get them killed or placed in prison where they can attempt being rehabilitated. How do the separate personality traits play a role within our ability to display deviant or criminal behavior? The focus behind this study was to determine whether one personality trait is more susceptible to criminal behavior over another. According to Krueger et al. (1994), many personality psychologists have developed several well-articulated theories that may provide a link from personality traits to crime and other antisocial behavior. Many of these theories are focused on trait-based personality models. Though they have been criticized in the past, over the past 20 years researchers have assisted in creating such connection. Additionally, Krueger et al. stated that this research has demonstrated the long-term stability and cross-situational consistency of personality traits and, therefore, has rebirthed the concept that traits are paramount within the construct of a person's personality. Personality traits portray characteristics of individuals that correlate to a wide variety of behavioral domains, including criminal behavior.

There are currently 16 personality traits that may or may not play a pivotal role in the development of criminal behavior within an individual. There are several components that make up the separate personality traits, and it is the different combinations of these

components that make them unique to each other; these components are as follows: introverted (I), extroverted (E), intuition (N), feeling (F), sensing (S), perceiving (P), thinking (T), and judging (J; CITE). Regarding an individual being either introverted or extroverted, eight personality types exist for each (CITE). According to Truity Psychometrics (2014), the eight introverted personality types are: the inspector (ISTJ), the protector (ISFJ), the craftsman (ISTP), the composer (ISFP), the mastermind (INTJ), the healer (INFP), the counselor (INFJ), and the architect (INTP). Truity Psychometrics listed the eight extroverted personality types as: the dynamo (ESTP), the performer (ESFP), the supervisor (ESTJ), the provider (ESFJ), the champion (ENFP), the visionary (ENTP), the teacher (ENFJ), and the commander (ENTJ). In the following paragraphs, I provide brief descriptions for each of the personality types.

The inspector is considered serious and quiet, interested in security and peaceful living. This individual is extremely thorough, responsible, dependable, and has well-developed powers of concentration. They are well-organized and hardworking, steadily working towards identified goals (Truity Psychometrics, 2014).

The protector is considered quiet, kind, and conscientious. This individual can be depended on to follow through on what they are given and will put the needs of others above their own needs. They are stable and practical; they value security and traditions (Truity Psychometrics, 2014).

The craftsman is considered quiet and reserved. They have excellent skills with mechanical things and are interested in how things work and why. This individual is a risk taker who lives for the moment. They are loyal to their peers and to their

internal value systems but lack concern for laws and rules if they get in the way of getting something done (Truity Psychometrics, 2014). They tend to be detached and analytical and excel at finding solutions to practical problems.

The composer is considered quiet, serious, sensitive, and kind. This individual does not like conflict and is not likely act in a manner to generate conflict. They are loyal and faithful but are not interested in leading or controlling others. They have well-developed senses, are open-minded, and have an aesthetic appreciation for beauty (Truity Psychometrics, 2014).

The mastermind is considered independent, original, analytical, and determined. This individual has an exceptional ability to turn theories into solid plans of action; natural leaders. They highly value knowledge, competence, and structure. Driven to derive meaning from their visions and have very high standards for their performance and the performance of others (Truity Psychometrics, 2014). The healer is considered quiet, reflective, idealistic, and very loyal. This individual would be interested in serving humanity. They have a well-developed value system, which they strive to live in accordance with. They are adaptable and laid-back unless their strongly-held value is threatened (Truity Psychometrics, 2014). The counselor is considered quietly forceful, original, and sensitive. This individual is an individualist who tends to stick with things until they are complete. They are extremely intuitive about people and concerned for their feelings. They have a well-developed value system which they strictly adhere to and are well-respected for their perseverance in doing the right thing (Truity Psychometrics, 2014). The architect is considered logical, original, a creative thinker. They tend to

become very excited about theories and ideas and are exceptionally capable and driven to turn their theories into clear understandings. They hold valuable knowledge, competence, and logic. Because they are quiet and reserved, they are hard to get to know very well. They are also individualists, who do not care to lead nor follow (Truity Psychometrics, 2014).

The dynamo is considered friendly, adaptable, and action-oriented. This individual is a "doer" who is focused on immediate results. They are risk takers with great people skills who thrive on living in a fast-paced lifestyle. They are extremely loyal to their peers, but are not respectful of laws and rules, especially if they get in the way of things getting done (Truity Psychometrics, 2014). The performer is considered to be people oriented and fun-loving; they make things more fun for others by their enjoyment. They live for the moment and love new experiences. This individual is not one who likes theory and impersonal analysis. They would rather serve others and be the center of attention in social situations. They have good common sense and practical ability (Truity Psychometrics, 2014). The supervisor is considered to be practical, traditional, and organized. This individual is not particularly interested in theory or abstraction unless it has a practical application. They have clear visions of the way things should be and are exceptionally capable of organizing and running activities. They are also loyal and hardworking individuals who value security, peaceful living, and like to be in charge (Truity Psychometrics, 2014). The provider is considered to be warm hearted, popular, and conscientious. This individual tends to put the needs of others over their own needs due to their strong sense of responsibility and duty. They value traditions and security

and need positive reinforcement to feel good about themselves (Truity Psychometrics, 2014).

The champion is considered to be enthusiastic, idealistic, and creative. This individual is able to do almost anything that interests them. They feel the need to live life in accordance with their inner values and have great people skills. They are excited by new ideas but bored with details. They are open minded and flexible, with a broad range of interests and abilities (Truity Psychometrics, 2014). The visionary is considered creative, resourceful, and intellectually quick. This individual enjoys debating issues and is a one-upper. They get very excited about new ideas and projects but may neglect the more routine aspects of life. They are generally outspoken and assertive but have an excellent ability to understand concepts and apply logic to find solutions (Truity Psychometrics, 2014). The teacher is considered to be popular and sensitive, with outstanding people skills. This individual is externally focused, with real concern for how others think and feel. They see everything from the human angle, dislike impersonal analysis, and do not like being alone. They are very effective at managing people issues and leading group discussions. They are also interested in serving others and placing others needs of others over their own (Truity Psychometrics, 2014). Lastly, the commander is considered assertive and outspoken; they are driven to lead. This individual has an excellent ability to understand difficult organizational problems and create solid solutions. They are intelligent and well informed, who will usually excel at public speaking. They value knowledge and competence, and usually have little patience with inefficiency or disorganization (Truity Psychometrics, 2014).

What do the separate personality traits mean with regard to possible criminal behavior? Are there characteristics within each of these personality traits that may either provide a possible connection to deviant or criminal behavior or do the characteristics within assist to determining the minimal correlation to such behavior? This research is not anything new and upcoming, but rather is one that has been around for quite some time. The problem that arises within this research is the follow-thru of the results and the ability to take previous work and make a correlation and then do something with it. Edith Spaulding wrote an article in 1921 entitled "The Role of Personality Development in the Reconstruction of the Delinquent" in which it stated that there has been something amiss within the design of research with regard to personality. Additionally, it was stated that the element of personality has often been continuously neglected and in doing so has come to overlook the fact that personality is connected to behavior and its relation to the social constructs of society.

Spaulding (1921) continues to say that with the limitless venue for investigations into personality, which investigators have yet to dive into the vast possibility of what could be. The largest factor that Spaulding identifies is the fact that though medicine has done a great job in controlling some functions within personality, that there still exists a component that medicine cannot fix; social influence. Additionally, you find yourselves face to face with the fact that no matter the physical condition that you can revive an individual to, there still remains a part of their physical body that will not react and therefore the behavioral patterns can and will persist unless treated accordingly. Therefore, for an individual to be able to rehabilitate back to complete health it is

necessary for them to be able to overcome any and all antisocial habits which may have caused the disturbances in their lives (Spaulding, 1921).

A study conducted by Hicks, Vaidyanathan, and Patrick (2010) on “Validating female psychopathy subtypes: Differences in personality, antisocial and violent behavior, substance abuse, trauma, and mental health” explains the personality differences that they discovered within their research. In doing so they identified the factors of aggression, alienation, stress reaction, absorption, and social potency. What was also discovered was the lack of communal PEM, social closeness, and control (Hicks et al., 2010). These characteristics are very common to those of psychopathic individuals and are seemingly common across the board regarding individuals who have the characteristics and personality traits common to deviant or criminal behavior. Within this study it was also identified that the onset for criminal activity was before the age of seventeen years and the two categories that provided the most significance was that of “Criminality, Institutional Infractions, and Interpersonal Aggression”, in addition to “Substance Use and Abuse”. Both categories showed signs of violent and deviant behavior for participants within the study.

Research conducted by Herrero and Colom (2008) studied the personality traits of a distinguishing impulsive, and unsocialized sensation seeking individual. Within this study they searched to identify a comparison between criminal offenders and the general population. They identify sensation seeking as being novel, varied, complex, and intense sensations and experiences. This type of individual will also be compelled to engage in social, physical, financial, and legal risks solely for the purpose of experiencing them.



This type of behavior is not only reckless but can be associated with deviant acts and could lead to criminal behavior. Herrero and Colom also stated that this trait is comprised of four separate and intertwined dimensions: experience seeking, thrill and adventure seeking, boredom susceptibility, and disinhibition.

Another study conducted by Vernables and Patrick (2012) studied the validity of the use of the Externalizing Spectrum Inventory within a sample of criminal offenders and focused the research on identifying correlations with regard to personality, disinhibitory psychopathology, and psychopathic features. Regarding personality, the study identified that the study was indicative of externalizing proneness and that investigators identified that there did exist two relevant trait domains. The first trait domain, disinhibition, like other studies was also identified as a main factor. Within this study disinhibition was considered to encompass traits such as sensation seeking, impulsivity, and unconventionality. The second trait domain was negative affectivity, which would encompass traits such as suspiciousness, anxiousness, and aggressiveness (Vernables & Patrick, 2012). This research was conducted utilizing the five-factor model, and in doing so was able to identify that a personality profile marked by low agreeableness, prone to hostility and conflict with others, and low conscientiousness, no regard for control and order, is therefore associated with antisocial behaviors. Additionally, the three-factor model was identified to have two broad domains: negative emotionality and constraint. These results yielded the behavioral onset of these individual is at or before the age of 18 and predicted to be dependent by the age of 21.

## **Offender Typology**

Within law enforcement, investigators utilize one of two different ways of gathering information on an offender in order to build profiles to assist them in being able to catch criminals. The two ways utilized are geographical and typological. According to the Federal Bureau of Investigation gathering information on a suspect via a geographical means is focused on a concentration of crimes in series, whereas gathering via typological focuses the investigator to gather information about the suspect based on the behavioral evidence within the case that is generally discovered at the scene of the crime (Sammons, 2009). Each offender type is derived by the psychological characteristics that they each have in common. Unlike with geographical profiling, which can be applied to any form of crime bases on the geographical pattern analysis that is conducted, offender typology is applied to a smaller target of offenders. Offender typology is broken down into four sub types to assist in narrowing a focus which helps further conduct research and understands the subsets to the best of our ability; mentally disordered offenders, family violence offenders, sex offenders, and violent offenders.

Mentally disordered offenders are one of the more difficult groups of offenders to profile based on their uncontrollable biological functions to commit crime. According to Bartol and Bartol (2011) mental illness is defined as the disease or disorder of and individual's mind which interrupts the brain's normal function and therefore interfering with individual's ability to cope with life's daily occurrences and stressors. Therefore, due to the brain's interruption of normal function, the individual is rendered unable to make free and rational choices on a continual basis. In addition, their behavior becomes

altered and therefore their behavior becomes abnormal in comparison from how it would be if their brain was not affected by this disorder. The term disorder is much more preferred than the term illness due to the fact that illness focuses us as professionals to research the symptoms, etiology, and cures, relying on pure medical treatment, whereas disorder is much less restrictive, therefore needing not to imply that an individual is sick or that no responsible is place on them for their actions (Bartol & Bartol, 2011). A tool that is available to mental health professionals and the courts, in forensic settings, is the Diagnostic and Statistical Manual of Mental Disorders, which was released in May of 2012, consisting of over 400 separate diagnoses, is the governing body for the classifications of all mental disorders.

Family violence offenders fall into their own typology based on the origin of the offence. The offences within this typology occur within an individual's family, therefore meaning that both the victim and the offender belong to the same family. Family or domestic violence is referred to the actions taken by one family member to another in the same residence, to which they utilize any form of intimidation, assault, battery, sexual assault or battery, or any other form of criminal activity that results in the injury or death of any other family member (Bartol & Bartol, 2011). This typology offender is driven by their sense of power, authority, and control that they have over others. In their minds they are not intentionally harming their other family member, but rather feel that they are deserving of respect in one form or another. The actions or abuse is not restricted to one form of abuse, but rather can be psychological, physical, and or sexual in nature. Children take the largest brunt of family violence. There are six different forms of child abuse

(physical abuse, emotional abuse, emotional neglect, sexual abuse, missing and exploited, and child neglect). Of those six, 63.4% occur to infants less than 1 year old (Bartol & Bartol, 2011). On a positive note, actions such as the Violence against Women Act of 1994 and 2000 have been passed and implemented in order to aid women and children against such abuse.

The third offender typology, which is the least socially accepted offender based on the demoralizing nature of the act, is the sex offender. Unlike other offenders who may be looked at by society in different lights dependent upon the level of violence they emit, a sex offender is looked at all in one light. Whether someone was charged with indecent exposure for urinating on the side of the road or whether they were charged and found guilty of rape, they are all classified as sex offenders in a society's eyes. Sex offenders have no specific personality trait, age, race, color, or creed, they are each unique in their own way. Bartol and Bartol (2011) stated that sex offenders generally do not only commit sex offenses, but rather are more likely to be committed of a nonsexual offense before and after they are been convicted of a sexual offense. Each sexual offender differs in how they commit the act, the time and place, the age and gender of the victim, the planning that is involved (or lack of), and whether or not violence is intended to be used during the commission of the act (Bartol & Bartol, 2011). Interesting to note that most sexual offenders are not likely to reoffend in a sexual way, but rather a nonsexual one.

Lastly is the violent offender with is generally classified as one who commits murder and aggravated assault. Aggravated assault is clumped within this category based

off the fact that aggravated assault is simply a failed murder. There is a theory that criminal homicide exists due to a person's fascination with the mysterious, therefore craving takes of terror and science fiction to the point where one feels the need to possess a certain level of arousal and excitement in attempts to prevent their existence from becoming too boring and mundane (Bartol & Bartol, 2011). Unfortunately, this need for stimulation and excitement comes at the expense of others. Unlike introverts, extroverts tend to thrive on excitement and adrenaline. Extroverts also are more likely to enjoy creatures of gore such as werewolves and vampires. In addition, extreme violence is very appealing to this type of individual, who subconsciously would like to act out their visual excitement directly, therefore receiving gratification for the acts that they have committed.

Among the four separate sub types of offender typology, minus the mentally disordered offender, there are similarities that can be pulled from each. The stem root of each of the other three offenders derives from either the internal desire or internal need for power and control. Family violence is directly showcased as a need for authority, power, and control over another family member whether that is sexual or not. The sexual offender receives gratification for the excitement of having that power over the other person, whether the victim is an adult or child. The violent offender, as stated above, is an extrovert who gains that excitement from being able to prove that they have that power and ability to take commit suicide. I believe that there is also a similarity between certain sex offenders and mentally disordered offenders. Also as stated previously, since all sex offenders are looked at the same, we tend to discredit the fact there are some sex

offenders that do what they do uncontrollably and therefore need mental intervention in order to be able to function normally so that their thoughts or urges do not take over. Lastly, the characteristics themselves are the differences that set each of them apart from one another, and therefore assist in leading investigators on the right path towards finding and apprehending them.

### **Male and Female Offender Differences**

As a criminal offense is conducted, from one crime to another, there are certain characteristics of each crime that may help to determine whether the offender was either male or female; this being another aspect which could assist in the victim-offender relationship. Burkhead (2006) posed the question of whether the relationship between crime and gender is one of a developmental issue or a maturational issue. Although it is more widely known that males are more apt to be involved in delinquent behavior and criminal conduct, offenses being conducted by the female persuasion is continually increasing. Over 30 years ago it was said that male offenders were four times more likely to be arrested for criminal conduct than that of females. But as the tides change and the passing of 3 decades, now males are only 2 times as likely to be arrested as females (Cauffman, 2008). Therefore, what characteristics or traits have caused such an increase in criminal and delinquent behavior in females? What is it that separates the male offender from the female offender, or are the two not that much different?

According to arrest record data provided by the Federal Bureau of Investigation woman account for 25.9% of the prison population, leaving the remaining 74.1% to be accounted for by males (National Criminal Justice Reference Service, 2012). The

paramount contribution to criminal and delinquent behavior for female, which differ from males, is due to their prior personal experiences in life. These contributing factors include physical or sexual abuse where they were being victimized either from a significant other or as a child, the stressors of bearing the responsibility of caring for children, mental disorders that are altering their normal brain functions, and having an addiction to drugs (National Criminal Justice Reference Service, 2012). In addition, components that are considered significant for the delinquency within a woman, as small as they may seem, are behaviors such as truancy and running away from home. It is likely that there is something that this individual is attempting to escape from, therefore just causing them to be even more susceptible to additional delinquent behavior.

Males have the tendency to be involved in more risky behavior and therefore show their difference between them and females in the criminal conduct that they engage in. Males are recorded to be the ones to commit more violent offenses, along with offenses of the sexual nature. It is also known that not only are they more likely to be arrested than females, but when arrested they are also more likely to be adjudicated and sentenced (Cauffman, 2008). Men constantly chose the path that they take based on a fight or flight response. This response is not also one that is for the benefit for the individual and therefore causes them to make impulse decisions based on instant gratification. This gratification is generally fulfilled by stealing, narcotics trafficking, or through a relationship that has been built of a false and negative nature, such as a gang.

Males and females share contributing factors of criminal behavior such as the components of drug addiction or mental illness. In addition, females and males alike, who

show signs of aggression at an early age are likely to partake in criminal or delinquent behavior as they grow older. Some additional characteristics that are similar between males and females include: low cortisol levels and resting heart rate, ADHD, lower levels of empathy, early pubertal maturation, harmful natal biological experiences, impulsivity, and low IQ (Cauffman, 2008). There are also environmental factors that are shared between both genders, such as poor parental oversight, delinquent peers, poverty, and a negative environment. An additional difference that females have is their ability to maintain adversarial interpersonal relationships. As stated by Cauffman (2008) despite some differences between female and male offenders, majority of the root causes are quite similar (i.e. victimization and trauma) and start early in their childhood.

### **Types of Killers**

Different offenders commit murders with different motives and in different ways. According to the Federal Bureau of Investigation they categorize such offenders into two separate categories: organized and unorganized.

#### **Organized**

An organized offender and subsequently the crime scene that they leave behind is one that is preplanned and very intentional (Sammons, 2017). This depicts that the offender is out to control their victim and as such everything that they do is directed with that in mind. The more control that they have, the more they enjoy the act of killing. Sammons (2017) stated that with an organized killer, very little is left to chance. Though he may not have made prior contact with all their victims, predetermination is key as well as every other aspect of their kill is; location, method of abduction, method of killing, and



most have certain characteristics that they look for in their victims. Additionally, Sammons states that an organized killer is likely to bind and torture his victims, again a technique used to control another. As is the nature of being organized, this type of offender is prepared and brings everything necessary for the kill. Organized offenders also take precaution in making finding the victim's body difficult, though it may seem as a game to some organized offenders, the main purpose is the ability to have control (Sammons, 2017). Lastly, this type of offender is likely to take trophies from each crime scene and may elevate the level of sophistication with each kill and will follow the news in order to assess where the investigation may be or to relive the offense.

### **Disorganized**

Unorganized offenders and subsequently their crime scene show lack of planning and may even display emotion within their crime. This type of offender will leave crime scene in complete disarray, chaotic, and is obvious that there was no control involved (Sammons, 2017). As opposed to an organized offender, an unorganized one, due to the lack of control and prior planning, may not have selected his target victims. However, there still tends to be certain characteristics of each victim that remains constant. Additionally, the type of offender is generally unprepared, with strike quickly to subdue the victim and the kill is out of control and done quickly in order to leave the crime scene (Sammons, 2017). This means that there is no time taken to either hide the body or even remove any evidence, though there are times where even this type of killer will take trophies. As opposed to an organized killer who is intelligent and confident, an unorganized killer lacks social skills and is not confident with the opposite sex.

According to Sammons (2017), evidence supports that this type of offender would most likely be one to be employed by a nonskilled employer and even probable to have a psychological disorder or psychosis.

### **Spatial Distance**

There is a significance of identifying any relationship between the offender and the victim, and one specific relationship that has been studying well is that of spatial distance. This distance refers to the known separation between in either kilometers or miles between the location of the offender and the location of the crime scene or found victim. Earlier studies have indicated that such crimes and locational variables are not arbitrary, but yet very intentional (Brantingham & Brantingham, 1981; Canter & Larkin, 1993; Rengert & Wasilchick, 1985). Additionally, these studies have concluded that with the nonarbitrary nature, the selection sites for which the offenders choose to conduct their crimes are based off their personal experience. These locations, within a set distance from daily dwelling (either residence or work) allow the offender to feel comfortable and build their confidence.

An additional study conducted by Lundrigan and Canter (2001) further dove into the purpose of spatial distancing in relation to different types of crimes. Crimes within their study that would assist within this research are homicide, serial murders and any other violent crime. As with robbery or burglary, where an offender must not only select location of the offense, one of the larger aspects that must be assessed is weighing the cost and gain of the offense. Is the gain worth the cost? However, when the offense has no gain, such as material or money, what is that the offender must utilize to assess their

choices and select their victims? Serial murderers are unique, and some may say that they are bizarre in the way in which that they act and conduct out their murders (Lundrigan & Canter, 2001). However, spatially they are not as unique. Much time and planning go into selecting the locations of conducting their murders. Of course, not all offenders are identical and are absolutely bound by spatial distance, such as ones that conduct their acts for the purpose of instilling fear.

Studies of spatial distancing can be dated back to the 1940, where it was first determined that offenders would only operate and conduct the offenses within their respective neighborhoods. In 1946, a study conducted by Erlanson yielded that 86% of rapes occurred by an offender that lived within the same neighborhood. It was perceived back then that an offender would not spread out their selection locations further than their own neighborhood. A separate study conducted by Amir (1971) expanded this data to state that 68% of rapes occurred within five city blocks of the offender's home. It wasn't until the early 1980's that it would be assumed that the known location of the offender may surpass their residence and be extended to their work location or even known locations where an offender may frequent (Brantingham & Brantingham, 1981). This known action of the offender can be explained by what is called the routine activity theory. This theory states that crime can be viewed as an opportunity within space and time of an individual's normal schedule in their day to day life (Cohen & Felson, 1979). Accordingly, utilizing to the routine activity theory, an offender goes about their normal day to day life, minimizing change to not be detected. Opportunities of the crime,

specifically location, then becomes routine somewhere along their path during their travels throughout the day.

The study conducted by Lundrigan and Canter (2001) reviewed 155 serial killers between the United Kingdom and the United States, which incorporated some total of 1105 victims. Their study yielded that 89% of killers within the United States traveled a mean distance of less than 15 km (9.3 miles), while 86% of killers within the United Kingdom, traveled a mean distance of less than 9 km (5.5 miles) from their homes. Though there is a different in the distances within each country, the patterns of travel were relatively the same. An additional study conducted by Snook et al. (2005) support the above findings by Lundrigan and Canter (2001). Their study, conducted in Germany with a sample size of 53 German serial killers, yielded that 63% of killers traveled a mean distance of less than 10 km (6.2 miles) from their homes to commit the murder. As the data supports that there is a spatial distance that exist within the scope of rapes and murders occurring this is also something that may be differentiated over time. That being said, Snook et al. (2005) stated that knowledge of spatial distance may be gained over time; an offender that commits several murders over the course of several years will have more spatial knowledge than that of an offender that commits the same amount of murders over the course of several weeks.

### **Clandestine Gravesites**

Clandestine gravesites become the final resting place for some victims who unfortunately are never found by law enforcement. Though there is no set location for a clandestine grave, these locations generally are set in places that are less frequented, such

as wooded areas, water, abandoned locations, or as simple as the somewhere on the offender's property (either in their yard or even under structures). Such graves do not necessarily mean that the victim is always buried, as the term grave assumes. These graves can be surface or subsurface. It is important to consider every aspect of these graves in order to have the ability to link as much of the evidence at the crime scene to the offender. Additionally, as this study is attempting to answer, do aspects such as the body position or posture provide any incite in deriving a correlation between the offender and the victim? By offenders utilizing these techniques, it affords them an opportunity to walk free of a crime by covertly hiding the body of their victim. Clandestine graves are not a new concept and have been utilized in the past on a larger scale, known as mass graves, which have been used throughout history all around the world, from World War II to Rwanda, as well as with Russian and Italian crime families. In any criminal investigation, either of a war crime or civil action, the key to a case is evidence. As forensic evidence has become extremely important and detrimental to the outcome of criminal cases, new evidence is raising to the surface and are aiding in the investigations of cold cases.

NecroSearch International, one of the leading groups in the investigation and recovery of clandestine graves, assist law enforcement agencies all around the United States and all around the world. Based out of Colorado, this multidisciplinary group of experts have been leading the role for some time now. NecroSearch International, a nongovernment, nonprofit organization, comprised of various forensic specialties have been working effortlessly with local and federal law enforcement to investigate, search

for, and recover clandestine graves (NecroSearch International, 2017). The mission of NecroSearch is three-fold, research, training, and assistance and members within the organization are experts in the following fields; archeology, botany, decomposition dogs, criminalistics, entomology, data processing, geology, geophysics, meteorology, psychology, remote sensing, serology, underground mine exploration, search and rescue, forensic investigations, and underwater methods (NecroSearch International, 2017). Additionally, NecroSearch members develop methods through research that affords law enforcement agencies to have the necessary tools for the location of human remains, and other evidence that may be found within a grave. Such findings and results, from their applied research and training, are then shared with law enforcement professionals in efforts to assist investigators.

Past studies have dived into the depths of what investigative techniques or tools, such as electromagnetics, ground penetrating radar, hydrology patterns, and even aerial photography can assist in finding clandestine grave. Research conducted by Jervis, Pringle, and Tuckwell (2009) studied the effects that electrical resistivity in locating clandestine graves. The study was conducted utilizing multiple cadaver locations (only two containing cadavers) and yielded that the use of the electrical resistivity located all cadaver locations. According to Jervis et al., this was indicated by the low resistivity anomalies within the graves that contained cadavers, and there was no indication of disturbed soil in other graves that did not contain cadavers. Another study conducted in Columbia by Pringle, Molina, Hernandez, Pringle, and Saumett (2015) researched the effectiveness of utilizing ground penetrating radar (vertically and horizontally) in finding

clandestine graves. Their study yielded that at up to 19 weeks after burial discovery was achievable, however past that timeframe the effectiveness was decreased. Two additional factors that were variables noted within their study were the depths of the graves, and different types of vegetation. There are numerous additional studies that research different techniques and methods of identifying clandestine graves, however none of these have been conducted in order to identify a correlation between the offender and the victim.

### **Classifications of Homicide**

Homicide is identified as one of the five categories that classifies the manner of death in determining the events that surround an individual's demise: regarding the cause, mechanism, and manner of death classifications. Homicide, according to the Crime Classification Manual (Douglas, Burgess, Burgess, & Ressler, 2006), is categorized into four main categories of homicide, each of which have several subcategories: criminal enterprise homicide, personal cause homicide, sexual homicide, and group cause homicide.

#### **Criminal Enterprise Homicide**

Criminal homicide involves those types of murder that result in a personal or organizational gain. This gain can either be financial or informational; gaining information or not wanting certain information to be released. According the Crime Classification Manual (Douglas et al., 2006), these murders include: contract murder by a third party, gang-motivated murder, criminal competition, kidnap murder, product

tampering, drug murder, insurance-related death (individual or commercial profit), and felony murder, whether indiscriminate or situational.

### **Personal Cause Homicide**

Personal cause homicide involves those types of murder that are on a personal level and are not derived for financial or personal gain. These offenses tend to be based off emotion or loss of control. According the Crime Classification Manual (Douglas et al., 2006), these murders include: erotomania-motivated murder, domestic homicide (spontaneous or staged), neonaticide, argument/conflict murder, authority murder, revenge, nonspecific motive murder, extremist homicide (political, religious, or socioeconomic), “mercy/hero” homicide, and hostage murder.

### **Sexual Homicide**

Sexual homicide involves those types of murder that someone gains sexual gratification from the fear that is elicited from the victim. These murderers want to control their victims and display the power that they have over them. According the Crime Classification Manual (Douglas et al., 2006), these murders include: organized, disorganized, mixed, sadistic murder, and elder female sexual homicide.

### **Group Cause Homicide**

Group cause homicide, though having similarities of the motive behind the murders, the main being power and control, these are not of a sexual nature. Though some may contain sexual acts, there is no personal sexual gratification for committing the murder. According the Crime Classification Manual (Douglas et al., 2006), these murders include: cult, extremist (whether political or religious), and group excitement. The sheer



numbers within the groups instills a fear in their victims, which in turn provides the power over those individual, whether it is through physical or psychological means.

### **Trophies Taken by Murderers**

An offender that ties themselves in some way to the crimes that they commit tend to have a psychological connection to their actions in one way or another. One of the ways in which an offender ties themselves to the crime in order to be able to remember it or hold it close to them is the act of taking something from the crime scene or specifically the victim. These are known as trophies of their crime. There is no set item or evidence that is taken, it is the thing to them that means something for some reason or another. They take them not only to remember the kill, but to also keep track of their “record” in some cases. This is most common with an organized killer, however there are times where this can also occur with one that is disorganized. However, can there be a relationship build between the offender and the victim, what psychological characteristic is there that can place a connection between the victim and the offender in efforts of assisting an investigation.

Trophies are generally thought to only be taken by serial offenders, either serial killers or even serial rapists. However, the study of this can also assist with utilizing identified characteristics of such trophies that may also assist in single or nonserial offender. Jeffery Dahmer, a serial killer that would cannibalize his victims, taking their genitals, along with pictures of his victims as trophies (Ferri, 2016). John Wayne Gacy, in the 1970 murdered over 30 young men and his trophy was that he would keep the bodies and he buried them underneath the floorboards of his home. Ahmad Suradji, of Indonesia,

was convicted of murdering 42 women in the 1980s and would keep their saliva as a trophy (Ferri, 2016). He believed that after draining and consuming their saliva that it would provide him with a special power. Additionally, Russian serial killer, Alexander Pichushkin was convicted of murdering 60 victims, 4 short of his intended goal. Pichushkin's unique trophy was chess squares; his goal uniquely associated with 64 squares on a chess board. Serial killer Jerome Brudos had a fetish with feet, and he would dismember and take the left foot of each of his victims (Ferri, 2016). As you can see dependent upon the offender, the object of obsession will be different, however what correlation does this provide investigators for building a profile to assist in the investigation.

### **Signature Left Murderers**

Like trophies, that are taken from a crime scene or the victim themselves, murderers also may leave what is known as an offender signature. A signature, or calling card, is something that is left by the offender at each of their crime scenes in order to bring attention to themselves, which in turn will also notify investigators of two things. The first thing that the signature does is alerts investigators that they are dealing with the same individual that had committed additional crimes; they are linked together. The second thing that the signature may represent is that there is a message of some sort that is trying to be conveyed by the offender and therefore in their mind the game is on and the end game is to see if they can win. Richard Ramirez, better known as the Night Stalker, would leave his signature of a pentagram on the walls of his victims, as he was a fan of Satan.

In a study by Harbers, Deslauriers-Varin, Beauregard, and Van Der Kemp (2012) was conducted for the purpose of being able to identify a signature that may exist across a set of 347 sexual assaults that occurred from 69 different sexual offenders. The study was focused at pinpointing a common signature that may be evident within each crime and as such their assumptions did in fact identify commonality within the cases. The yielding of the study concluded that there is a very high probability that sexual offenders are very likely to commit their crimes in a consistent manner (Harbers et al., 2012). This makes the ability to connect previous and current crimes to each other. Additionally noted, as the series of their crimes continue the signatures left behind are also likely to remain.

### **Victim-Offender Relationships**

The relationship that is established between a victim and their offender is one that may not only be complex, however may also be the missing link to many investigations. When an individual is either sexually assaulted or murdered, a large piece of investigative information or evidence is the unseen. As this is something that this study is attempting to identify, it is not necessarily the specific of correlating one victim to one offender, but rather the associated characteristics that can be continually seen in order to link the behavioral characteristics of the offender to the characteristics of the victim at the time. Yes this is done by the continued assessment of data from individual cases and then isolating such characteristic differences and therefore providing a basis for the information. Quinet and Nunn (2014) conducted a study in order to establish a victim-offender relationship of initially unsolved homicides. The study was investigating the categoric differences of partner, family, acquaintance, and stranger. The research

included 829 solved and unsolved homicides within the Indianapolis area. Additionally, Quinet and Nunn (2010) stated that the study yielded that the myth of most of the unsolved homicides were primarily categorized as stranger, when in fact when solved they were then considered to be acquaintances.

It is known that the offenders of homicide, rape, or other violent crimes, themselves are either known or unknown to the victim; partner, family, acquaintance, or stranger. Therefore, the differences between them, either provide a strong association or victim-offender relationship. There are certain characteristics that are common with each respectively, though not always guaranteed. Cao, Hou, and Huang (2008) studied the victim-offender relationship in order to differentiate between the different offender identities. They deemed that when taking into account the demographical and situational variables, both were very important in determining such relationships. Their study identifies two main findings. First Cao et al. stated that premeditation of homicide is found within acquaintance homicide, however not within intimate (partner) homicide. Additionally, intimate or partner homicide is correlated with previous offense, which is unlikely with acquaintance homicide. This being said, the relationship between the victim and offender shows support that premeditation is more characteristic of an offender that does not know the victim, therefore providing no relationship.

The victim-offender relationship is one that is not only linked to homicides, it is extremely important to take into account other crimes, such as rape, in order to get a complete understanding of the different characteristics that can link an offender to the victim. A study conducted by Woods and Porter (2008) does just that as they research the

victim-offender relationship with a focus of understanding interpersonal differences; particularly stranger or non-stranger. Woods and Porter analyzed 100 separate rape cases (50 stranger / 50 non-stranger) and assessed the behaviors of both through the crime and yielded that an offender who was deemed to be a stranger to the victim, was more likely to display behaviors of violence towards the victim, rather than that of a non-stranger. As such the non-stranger offender was more likely to display less violent behavior and therefore being on a more personal level and gain. This research shows support on part of the victim-offender relationship that the act of violence towards the victim is more likely generated by an offender that is unknown to the victim.

### **Summary**

This chapter reviewed and summarized the most current research related to criminal profiling and the characteristics of an offender and their crime scene: criminal profiling, personality types, offender typology, male and female offender differences, spatial distance, clandestine graves, classifications of homicide, trophies taken by the offender, signatures left by the offender, and the relationship between the victim and the offender. All these aspects, and the research behind them, not only assist in understanding the purpose and significance within this study but also clarifies the gap in the research and the need to further investigate. Chapter 3 describes the objectives of the study and outlines the methodological approach used to collect and analyze data within the study.

## Chapter 3: Research Method

### **Introduction**

In this study, I focused on identifying a relationship between the characteristics of the cause of death, crime, criminal offender, and familial relationship of victim and offender. Archival data of solved cases might yield a retrospective, reliable, and valid model that could prospectively assist the profiling process and linkage between victim and offender of unsolved cases. In this chapter, I describe the research design, population and sampling strategy, data collection procedures, research questions, and analysis plan.

### **Research Design and Approach**

The nature of this study was mixed methods because I employed a qualitative case study approach for the collection and coding of data and a quantitative analysis by means of conducting a cluster analysis and association of resulting clusters with familial relationship of victim and offender. A case study has the ability to explore real life cases, a contemporary bound system, and multiple cases over time, requiring an in-depth collection of data via multiple means (Creswell, 2013). In doing so, this approach allowed me to identify case themes or similarities. Creswell (2013) stated that using a case study approach will allow for the identified themes and similarities to be organized into chronology and analyzed across several cases for differences and similarities among each case or displayed as a new theoretical model. Therefore, using this approach provided me with the most latitude in the study concerning my ability to collect and analyze data and allowed a profile of characteristics to emerge.

## **Methodology**

### **Population and Sampling Strategy**

I used a stratified, purposeful sampling strategy to blend maximum variation and capture of critical cases. The purpose of a maximum variation is to document common as well as diverse or unique variations of case characteristics (Patton, 2002). This benefited the study by allowing characteristics to be analyzed within separate environmental conditions in order to identify key patterns that exist among the different conditions. Critical case sampling allows for maximum application of information to cases and logical generalization due to the concept that if something is true within one case, there is a good likelihood that it is true of all similar cases (Patton, 2002). This allowed for the logical generalization that is paramount when conducting a study that is attempting to identify common trait behaviors among separate individuals. The blend of these two strategies provided for a dynamic sampling strategy, allowing crucial data to be collected to answer the research questions.

There is no rule of thumb for a minimum sample size for cluster analysis (Siddiqui, 2013). A target sample size of 120 was adequate to ensure maximum variation for the capture of meaningful clusters and critical cases and was sufficient, per G\*Power, for a chi square test of independence between familial relationships (up to three levels) and up to seven clusters to detect a medium effect size of Cohen's  $w = .30$  with alpha = .05.

## **Types and Sources of Data**

There were two main sources of data. The first being document review of case files from law enforcement agencies throughout the state of Colorado. This provided me with the opportunity to code for targeted characteristics and emergence of additional, unexpected categories or variables in the data. The second source of data was taken from two preexisting data sets that have been collected from serial killers throughout the United States from 2011–2017 (see Hickey, 2014, 2017). Sources of data for collection consisted of the Colorado Bureau of Investigation, Colorado State Patrol, 10 county law enforcement agencies (out of 63) to be selected based off crime statistics in ranking order based on number of murders, and preexisting data sets provided by Dr. Eric Hickey (2014, 2017). I collected and recorded data in the study in three separate categories: victim data, offender data, and crime data.

I sent a memorandum letter to each of the law enforcement agencies requesting permission to access case records. These served as a data use agreement between the agency and me, as the researcher. Additionally, a data use agreement was provided to Dr. Eric Hickey for use of the two preexisting data sets (i.e., 2014 and 2017) that he provided. The memorandum letter was utilized in order to request permission and access to collect data, obtain informed consent for each agency and Dr. Hickey, and as a nondisclosure agreement in this study.

Once permission was granted by the respective law enforcement agency and consent was provided by Dr. Hickey, I began collecting data consisting of characteristics of cause of death, crime, and criminal offender and familial relationship of victim and



offender. More specifically, the type of data I expected to find in the case files and specifically targeted for purposes of this research are outlined in Table 1.

Table 1

*Characteristics to be Coded From Case Files*

| Referent                 | Variable   |
|--------------------------|--|
| Victim and victim's body | Age; sex; race; marital status; employment status; profession; socioeconomic status; posture (e.g., face up, face down, intentionally posed, thrown); organized (completely and correctly clothed); disorganized (e.g., clothing torn or missing); dismemberment; restraints (e.g., handcuffed, arms or legs tied, etc.) |
| Crime                    | Cause of death (e.g., suffocation, gun shot, poison, drug overdose, etc.); sexual assault  |
| Offender                 | Age; sex; race; marital status; employment status; profession; socioeconomic status; previous offenses; same or opposite sex of victim   |
| Familial relationship    | Relative (child, parent, sibling, etc.); colleague; stranger   |

**Instrumentation**

Following the demographics characteristics, I answered a series of questions using the data collected and recorded within the tables (see Appendix: Data Collection Variables): characteristics and demographics of the victim, offender, and crime scene (i.e., surface or clandestine grave, location, depth, face up vs. face down, and objects within the grave [if known]); organized vs. disorganized; positioning of the body; cause of death; and any known familial relationship between the victim and the offender.

Tables for the Data Collection Variables are attached (see Appendix).

## Research Questions

Research Question 1: What is the number and nature of clusters profiling cases with common characteristics of the cause of death, crime, and criminal offender?

Because cluster analysis has no statistical test of significance, hypotheses for this research question are irrelevant.

Research Question 2: To what extent is familial relationship of victim and offender associated with the clustered profiles of cases?

$H_{02}$ : There will be no identified familial relationships between that of the victim and offender associated with the clustered profiles of cases.

$H_{12}$ : Familial relationships will be identified and associated with the clustered profiles of cases.

## Analysis Plan

I used cluster analysis to group cases with similar characteristics of the cause of death, victim and victim's body, crime, and offender. Being an explorative analysis, the purpose of this type of data analysis is to identify structure within homogenous groups of cases (Everitt, Landau, Leese, & Stahl, 2011; Hair & Black, 2000; Norusis, 2005). The grouping of cases emerges from the similarities and dissimilarities across the variables, rather than being predetermined, so the number of salient clusters is subjectively determined by the practical usefulness of the emergent profiles.

There are a number of processes for creating clusters. I used the IBM SPSS TwoStep Cluster Analysis procedure because it easily handles large data sets made up of a mixture of categorical and metric variables (see Norusis, 2005). Because the reliability

of clusters can be adversely affected by outliers and multicollinearity, screening was conducted prior to the cluster analysis. Outliers consist of cases with extreme values on a metric variable (i.e., univariate outlier) and cases with extreme Mahalanobis distance on a set of metric variables (i.e., multivariate outlier). Standard procedures were used to identify and address any univariate or multivariate outliers (Tabachnick & Fidell, 2007). A metric variable with very little variance or a categorical variable with a highly disproportionate distribution (such as 10% male, 90% female) are also outliers and were eliminated as needed. Multicollinearity exists when two or more metric variables are highly correlated. Standard procedures were used to identify and address multicollinearity (Tabachnick & Fidell, 2007). Variables that do not substantially contribute to any of the cluster profiles are irrelevant and can adversely affect how clusters are formed (Hair & Black, 2000). Initial solutions were examined for irrelevant variables and removed as needed in subsequent solutions.

After outliers, multicollinearity, and irrelevant variables have been addressed, I examined and compared several cluster solutions for interpretability and practical usefulness. The Two Step procedure automatically selects the number of clusters based on the Schwarz Bayesian criterion, but alternate solutions that specify the number of clusters are typically conducted for comparison purposes (Norusis, 2005). Common factors to consider when re-clustering for comparison are the number of clusters, the proportion of cases in each cluster, the variable composition of each cluster, and the simple structure of variables across clusters. Once a final cluster solution was solidified, I conducted a chi square test of independence with familial relationship to determine any

association between a cluster profile and the victim being a relative, colleague, or stranger. Additional descriptive and exploratory analyses, such as correlations, regressions, ANOVAs, discriminant, canonical, may be conducted to more fully examine and understand the relationships between variables.

### **Threats to Validity**

Without validity, a researcher cannot guarantee that there has not been any influence that has been placed in the study that may result in false or skewed data. In a study, there is both internal and external validity. Internal validity is established when there is evidence that change within the dependent variable was caused by changes within the independent variable (Frankfort-Nachmias & Nachmias, 2008). Additionally, factors that can affect internal validity exist either in the study, known as intrinsic factors, or one that occurred outside of the study, known as extrinsic factors. External validity is considered the extent to which the research can be connected to a larger scale within the population, either being applied to different political or social environments (Frankfort-Nachmias & Nachmias, 2008). Additionally, the main issues surrounding external validity deal with reactive arrangement in the research procedure and the representativeness of the sample itself.

### **Ethical Procedures**

The primary and secondary data collection in this study came from case identifiers of closed homicide cases; therefore, there was a minimal risk of violating an ethical standard concerning the treatment of the participants involved. Through the primary means of data collection, I received written authorization from each law

enforcement agency where data were collected from. In this study, I only collected statistical data on homicide cases, and no personal data of offenders or victims were recorded. There was no statistical value in collecting personal data of either the victim or offender, the value remained within the characteristics of the crime and the traits of the victims and offenders. When cases were reviewed, I only recorded the data categorically.

The secondary form of data that I collected, when needed, was via two preexisting data sets provided by Dr. Hickey. First, written authorization was given by Dr. Hickey prior to the collection and analysis of the data. Authorization included access to the data sets, informed consent, and a nondisclosure agreement to not release either data set to anyone outside the study. Once that authorization was provided, case data were reviewed, collected, and recorded within the data collection variables tables (see Appendix). Dr. Hickey owns the data sets and, as such, has the right to revoke access to the data sets if terms of the data use agreement were not met or followed. If this were to have occurred, I would have immediately halted data collection and analysis and that data would be excluded from the results of the study.

### **Summary**

Using the mixed methods approach described within Chapter 3 provided me the best means of data collection and analysis in this study. The qualitative approach of collection by means of case study via document review and extrapolation of variables from the data sets allowed me the ability to collect data over a large set of cases, yielding associations among the separate characteristics in the study. Using cluster analysis as a primary means of data arrangement, followed by chi square test of independence, allowed

me to cluster characteristics of the crime, victim, and offender. This also provided me with the ability to predict and associate the characteristic of the crime and any possible familial relationships that may exist, dependent upon respective characteristics associated with the crime. Furthermore, the results of this study can be used to assist law enforcement agencies with the ability to develop more accurate criminal profiles of offenders.

## Chapter 4: Results

### Introduction

The purpose of this study was to identify how the cause of death, as determined by the crime scene and the medical examiner, could assist to reveal a familial relationship between the victim and the criminal offender in homicide cases. The primary source of data in this study was initially planned to be collected utilizing case files from law enforcement agencies throughout the state of Colorado with the secondary data source being collected via preexisting data sets. I conducted cluster analysis and a cross-tabulation of clusters as the primary means of analysis in the study. As an explorative analysis, cluster analysis was conducted as the type of data analysis to identify structure within homogenous groups of cases. Secondary analysis was conducted utilizing Tukey's Post Hoc Test (to identify differences within the groups), ANOVA (to determine if the results are significant), Levene's Test of Equality of Error Variances (to test the null hypothesis that the error variance of the dependent variable is equal across groups), and the Chi Square Test (to test for significant differences between the expected frequencies and the observed frequencies in one or more categories).

In this chapter, I discuss data collection, data coding and screening for analysis, statistics of the cases, correlations among variables, descriptive statistics, and the results of these analyses. The data analyzed within the study consisted of the total of 160 cases, with 13 cases being excluded for redundancy due to multiple offenders acting together to commit the same offense. This resulted in a total number of 147 nonredundant cases that were analyzed. Familial relationships were examined between the total offender cases ( $N$

= 147) and the total number of victims ( $N = 506$ ) among several different independent variables.

### **Data Collection**

Initially during the data collection process, law enforcement agencies seemed willing to work with me in terms of being able to collect data from them for the study. However, this proved difficult during the formal process of obtaining data use agreements attempting to gain access from each of the law enforcement agencies. While maintaining continuous communications with the agencies and awaiting their data use agreements, 90% of the agencies contacted were not able to assist me due to lack of available resources to pull the case files. This resulted in the secondary source of data, the two preexisting data sets, becoming the primary source of data for data collection and analysis.

### **Data Coding and Screening for Analysis**

#### **Data Coding**

The archival data contained key information on 160 offender cases, but because some offenders acted together and were convicted of the same crime, there were 147 nonredundant cases for analysis. For the one instance of three offenders acting together and the 11 instances of 2 offenders acting together, I retained the demographic information on the primary offender. The archival data contained offender's race, sex, age at time of first capital offense, victim's sex, and victim's age range. For analysis purposes, the number of male victims and female victims were created as variables, and three variables were created to capture the number of victims in each of three age



categories (i.e., younger than 20 years old, 20 to 50 years old, and over 50 years old). Because each nonredundant offender case had two or more victims, there were instances of more than one method of death. I identified 16 unique methods, from which four methods (i.e., shoot, stab, strangle, and blunt force) had sufficient frequency to be created as dummy variables and coded for each offender case for use in statistical analysis. The data set noted whether a victim was a prostitute and contained sufficient information concerning victim characteristics to code victims of 141 offender cases as all strangers, some familiar, or all familiar. The familiarity of offender and victim could not be determined for six cases.

### **Univariate Outliers and Distribution**

I excluded three dichotomous variables from inferential analyses because of proportional splits worse than 90-10 (Tabachnick & Fidell, 2007). These include (a) offended with others (only 8.2% yes), (b) offender sex (only 2.7% female), and (c) victim prostitute (only 5.4% yes).

I calculated  $z$  scores for each participant on the key metric study variables. Cases with  $z$  scores in excess of  $\pm 3.29$  are potential outliers (Tabachnick & Fidell, 2007). As important, if not more important, is to examine jumps in values and gaps in the tails of the distribution and to assess the legitimacy of a case as part of the population (Tabachnick & Fidell, 2007). As shown in Table 2, several variables have  $z$  scores in excess of  $+3.29$ . The largest is 6.67 for number of victims under 20 years old, which is the result of 78.9% of cases with no victim in this age group and the remaining cases having a decreasing frequency from 1 to 7 victims (see Figure 1). The other victim age

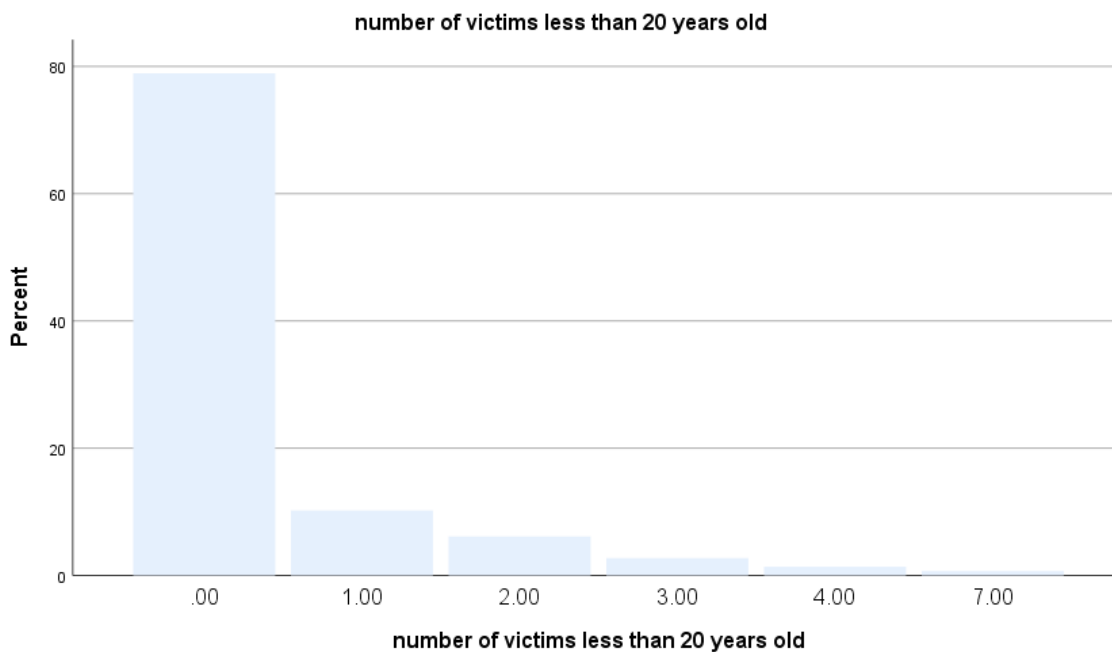
variables and the number of male and female victim variables have similar distributions. Because these cases are legitimately expected in the population and because the variables have similar skewness and kurtosis value and direction, a transformation would have a marginal effect on analysis (Tabachnick & Fidell, 2007). A preliminary comparative cluster analysis of the original variables and their square root transformations did not affect the number or interpretative nature of clusters, so I used original variables in final analyses.

Table 2

*z Scores, Skewness, and Kurtosis of Key Study Variables*

| Variable            | <i>z</i> minimum | <i>z</i> maximum | Skewness | Kurtosis |
|---------------------|------------------|------------------|----------|----------|
| Offender start age  | -1.76            | 3.55             | 1.10     | 1.77     |
| # of male victims   | -1.12            | 5.67             | 1.57     | 6.03     |
| # of female victims | -1.06            | 3.74             | 1.17     | 1.83     |
| Victim age          |                  |                  |          |          |
| # victims < 20      | -0.41            | 6.67             | 3.42     | 15.14    |
| # victims 20-50     | -1.53            | 5.48             | 1.56     | 5.97     |
| #victims > 50       | -0.60            | 4.01             | 1.91     | 3.72     |
| Method              |                  |                  |          |          |
| Stab                | -0.52            | 1.90             | 1.38     | -0.09    |
| Strangle            | -0.45            | 2.21             | 1.78     | 1.17     |
| Shoot               | -1.46            | 0.68             | -0.82    | -1.35    |
| Blunt force         | -0.35            | 2.86             | 2.54     | 4.50     |

*Note.* *N* = 147.



*Figure 1.* Common distribution of several key study variables.

### **Multivariate Outliers**

I examined multivariate outliers following Tabachnick and Fidell's (2007) procedure of regressing a random variable on the set of key study variables to examine the Mahalanobis values. For the 10 key study variables, the alpha = .001 critical chi-square Mahalanobis value is 29.59. Seven cases exceeded that value. A stepwise binary logistic regression was conducted to examine the key variables that distinguished the outliers from all other cases. The outlier cases were older, had more male victims, more victims younger than 20 years old, and more victims older than 50 years old, which could form the basis for a cluster profile (i.e., the primary purpose of the study), so the cases were retained.

## Collinearity

Collinearity is a concern when two variables are correlated at greater than about .70 (Tabachnick & Fidell, 2007). The largest absolute value bivariate correlation of key study variables shown in Table 3 was .554. The number of male victims was negatively correlated with the number of female victims, negatively correlated with strangling, and positively correlated with number of victims aged 20 to 50 years old; a pattern that makes sense if victims are middle-aged males, strangulation is likely not the most efficient method. Strangling was also highly negatively correlated with shooting, which also makes sense.

Table 3

### *Correlation Matrix of Key Study Variables*

| Variable               | 1   | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   |
|------------------------|-----|------|------|------|------|------|------|------|------|------|
| 1. Offender start age  |     | -.11 | .19  | -.10 | .03  | .19  | -.04 | .08  | -.08 | -.05 |
| 2. # male victims      | .20 |      | -.55 | -.01 | .51  | .04  | -.07 | -.41 | .34  | -.08 |
| 3. # female victims    | .02 | <.01 |      | .32  | .09  | .10  | -.02 | .33  | -.35 | .04  |
| 4. # victims age < 20  | .23 | .86  | <.01 |      | -.30 | -.12 | .03  | -.06 | -.17 | .03  |
| 5. # victims age 20-50 | .77 | <.01 | .28  | <.01 |      | -.33 | -.09 | -.05 | .10  | -.19 |
| 6. # victims age > 50  | .03 | .63  | .21  | .14  | <.01 |      | -.02 | -.03 | .06  | .21  |
| 7. Stab                | .66 | .44  | .79  | .70  | .28  | .80  |      | -.11 | -.11 | -.03 |
| 8. Strangle            | .32 | <.01 | <.01 | .48  | .53  | .68  | .20  |      | -.55 | .02  |
| 9. Shoot               | .33 | <.01 | <.01 | .04  | .24  | .51  | .20  | <.01 |      | -.24 |
| 10. Blunt force        | .54 | .32  | .65  | .70  | .02  | .01  | .76  | .85  | <.01 |      |

*Note.*  $n = 147$ . Upper diagonal contains Pearson correlation coefficients; lower diagonal contains  $p$  values.

## Descriptive Statistics

I recorded the descriptive statistics of offenders and the victims by both the frequencies within categorical variables (see Table 4) and by the quantitative variables (Table 5). Frequencies of total offenders ( $n = 147$ ), identified in Table 4, were categorized by offenders who offended with others, offender's race, offender's sex, whether the victim was a prostitute, the relationship to the victim, and the method of

murder of each victim. The vast majority of offenders ( $n = 135$ ; 91.8%) committed murders on their own, while only 12 offenders (8.2%) committed offenses with another offender. As it pertains to the offender's race, the two most prominent were Black ( $n = 69$ ; 46.9%) and White ( $n = 60$ ; 40.8%), while 12.2% ( $n = 18$ ) of offenders were of another race. Male offenders made up 97.3% ( $n = 143$ ) of the participant population, with only four (2.7%) offenders being female. Only 8 of 147 (5.4%) offenders attacked a victim who was a prostitute. The relationship between the victim and the offender were recorded by whether the offender was a stranger to the victim ( $n = 53$ ; 36.1%), was known by some familiar ( $n = 33$ ; 22.4%) or was familiar ( $n = 55$ ; 37.4%). In the study, 4.1% of the cases ( $n = 6$ ) indicated that a relationship between the victim and the offender was unknown.

The total number of victims ( $n = 196$ ) were categorized by the method of murder by the offender: asphyxia, beat, blunt force, bomb, dismember, grenade, injection, mutilation, overdose, shake, shoot, smother, stab, strangle, suffocate, and by vehicle. Victims who were shot ( $n = 101$ ) accounted for 51.5% of the murders, victims who were stabbed ( $n = 32$ ) accounted for 16.3% of the murders, victims who were strangled ( $n = 25$ ) account for 12.8%, and victims who suffered blunt force ( $n = 16$ ) accounted for 8.2%, victims who were beaten ( $n = 7$ ) accounted for 3.6%, while the remaining methods of murder account for only 7.6% of cases, providing no importance of correlation.

The descriptive statistics of quantitative variables identified in Table 5 depict the variables of the offender's age at the time they began committing murders; number of male victims; number of female victims; and the victims' ages broken down into 3

separate categories (i.e., less than 20 years of age, between 20 and 50 years of age, and more than 50 years of age), resulting in a median age at which offenses began to be 28 years of age.

Table 4

*Descriptive Frequencies of Categorical Variables*

| Variable                           | <i>n</i> | %    |
|------------------------------------|----------|------|
| Offended with others               |          |      |
| No                                 | 135      | 91.8 |
| Yes                                | 12       | 8.2  |
| Race                               |          |      |
| White                              | 60       | 40.8 |
| Black                              | 69       | 46.9 |
| Hispanic                           | 13       | 8.8  |
| Other                              | 5        | 3.4  |
| Offender sex                       |          |      |
| Female                             | 4        | 2.7  |
| Male                               | 143      | 97.3 |
| Victim prostitute                  |          |      |
| No                                 | 139      | 94.6 |
| Yes                                | 8        | 5.4  |
| Relationship to victims            |          |      |
| All strangers                      | 53       | 36.1 |
| Some familiar                      | 33       | 22.4 |
| All familiar                       | 55       | 37.4 |
| Unknown                            | 6        | 4.1  |
| Method of murder ( <i>N</i> = 196) |          |      |
| Asphyxia                           | 2        | 1.0  |
| Beat                               | 7        | 3.6  |
| Blunt force                        | 16       | 8.2  |
| Bomb                               | 1        | 0.5  |
| Dismember                          | 1        | 0.5  |
| Grenade                            | 1        | 0.5  |
| Injection                          | 1        | 0.5  |
| Mutilation                         | 1        | 0.5  |
| Overdose                           | 2        | 1.0  |
| Shake                              | 1        | 0.5  |
| Shoot                              | 101      | 51.5 |
| Smother                            | 3        | 1.5  |
| Stab                               | 32       | 16.3 |
| Strangle                           | 25       | 12.8 |
| Suffocate                          | 1        | 0.5  |
| Vehicle                            | 1        | 0.5  |

*Note.* *n* = 147.

Table 5

*Descriptive Statistics of Quantitative Variables*

| Variable            | <i>M</i> | <i>SD</i> | Min | Mdn | Max | <i>S</i> | <i>K</i> |
|---------------------|----------|-----------|-----|-----|-----|----------|----------|
| Offender start age  | 29.7     | 10.5      | 11  | 28  | 68  | 1.1      | 1.8      |
| # male victims      | 1.8      | 1.6       | 0   | 2   | 11  | 1.6      | 6.0      |
| # female victims    | 1.5      | 1.5       | 0   | 1   | 7   | 1.2      | 1.8      |
| # victims age < 20  | 0.4      | 1.0       | 0   | 0   | 7   | 3.4      | 15.1     |
| # victims age 20-50 | 2.4      | 1.6       | 0   | 2   | 11  | 1.6      | 6.0      |
| # victims age > 50  | 0.5      | 0.8       | 0   | 0   | 4   | 1.9      | 3.7      |

Note.  $n = 147$ .  $S$  = skewness,  $K$  = kurtosis.

### Results

I conducted the statistical analysis in the study using a cluster analysis, which resulted in a three-cluster solution, with a sufficient number of cases per identified cluster. Cluster 1 ( $n = 74$ ) accounted for the largest number of male victims, the least number of female victims, the most victims between 20 and 50 years old, and 73.3% of all victims who were shot. Cluster 2 ( $n = 44$ ) had the least number of male victims, the highest number of female victims, the highest number of victims younger than 20 years old, all victims who were strangled, and the vast majority (i.e., 87.5%) of all victims killed by blunt force. Cluster 3 ( $n = 29$ ) had the fewest number of victims by sex and age group and accounted for 90.6% of all stabbing victims. Additionally, a chi square analysis was used to determine offender-victim relationship, resulting in a statistical significance associated between offender-victim relationship and clusters that were not independent.

### Cluster Analysis

A cluster analysis was conducted to answer the first research question concerning the number and nature of clusters profiling cases with common characteristics of the



cause of death, characteristics of the crime, and characteristics of the criminal offender. Standardized versions (i.e.,  $z$  scores) of the six metric variables were used so that cluster solution would not be influenced by differences in variance (Norusis, 2005).

The IBM SPSS TwoStep Cluster Analysis procedure was used because it easily handles large data sets made up of a mixture of categorical and metric variables and automatically selects the number of clusters based on the Schwarz Bayesian Criterion (Norusis, 2005). The procedure yielded a three-cluster solution with an adequate number of cases in each cluster (see Table 6).

Table 6

*Distribution of Offender Cases Across a Three-Cluster Solution (n = 147)*

| Cluster | <i>n</i> | %    |
|---------|----------|------|
| 1       | 74       | 50.3 |
| 2       | 44       | 29.9 |
| 3       | 29       | 19.7 |

As shown in Figure 2, two variables - age at first capital offense and number of victims over 50 years old - were identified as least important. Variables that do not substantially contribute to any of the cluster profiles are irrelevant and can adversely affect how clusters are formed (Hair & Black, 2000). ANOVAs confirmed both variables as not statistically significant between clusters and a second run was conducted without these variables that improved the cluster quality index from the middle of the “fair” range to just short of the “good” range (see Figure 3). The improvement did not change predictor importance or the cases in each cluster, but it did decrease within-cluster variance (i.e., increased cohesion) and increased between-cluster variance (i.e., separation).

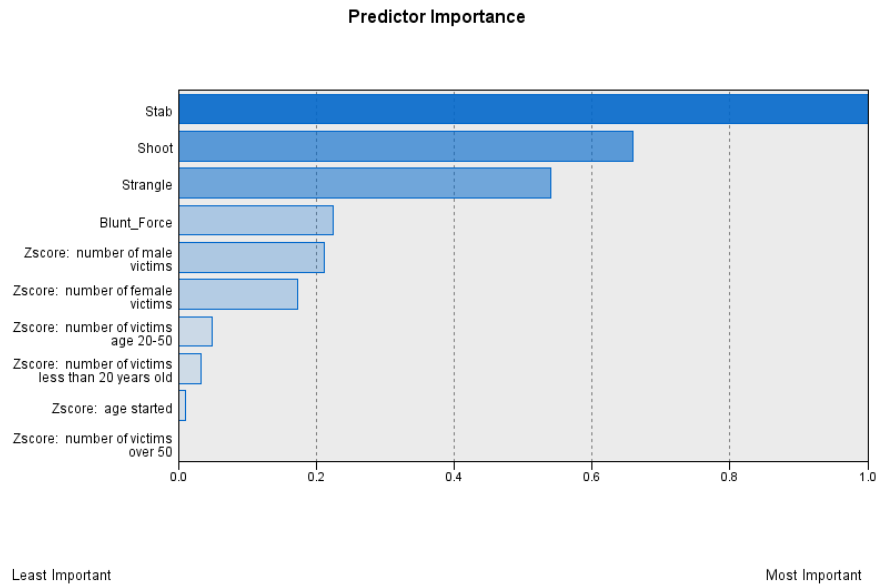


Figure 2. Predictor importance in initial cluster solution.

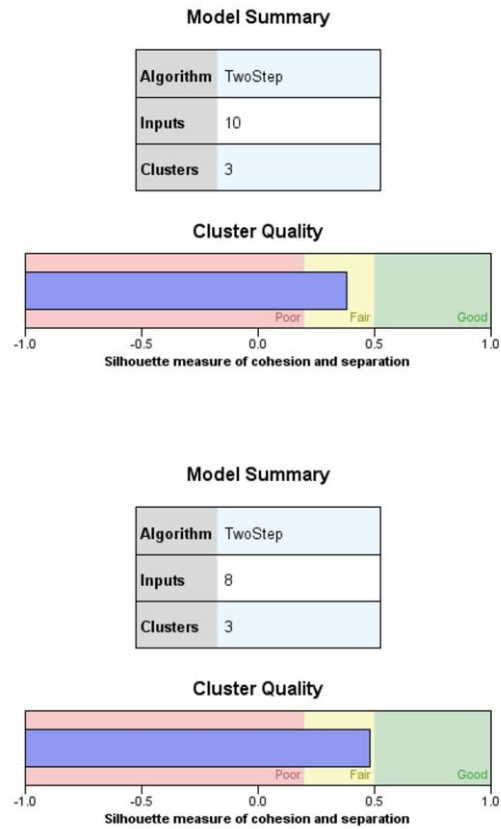


Figure 3. Initial and final cluster quality.

Figures 4 and 5 visually summarize the profiles distinguishing the three clusters. The 74 offender cases in Cluster 1 accounted for the majority of male victims, the least number of female victims, the least number of victims younger than 20, the most victims between 20 and 50 years old, and 73.3% of all victims who were shot. The 44 offenders in Cluster 2 had the least number of male victims, the highest number of female victims, the highest number of victims younger than 20, all victims who were strangled, and the vast majority (87.5%) of all victims killed by blunt force. The 29 offender cases in Cluster 3 accounted for 90.6% of all stabbing victims.

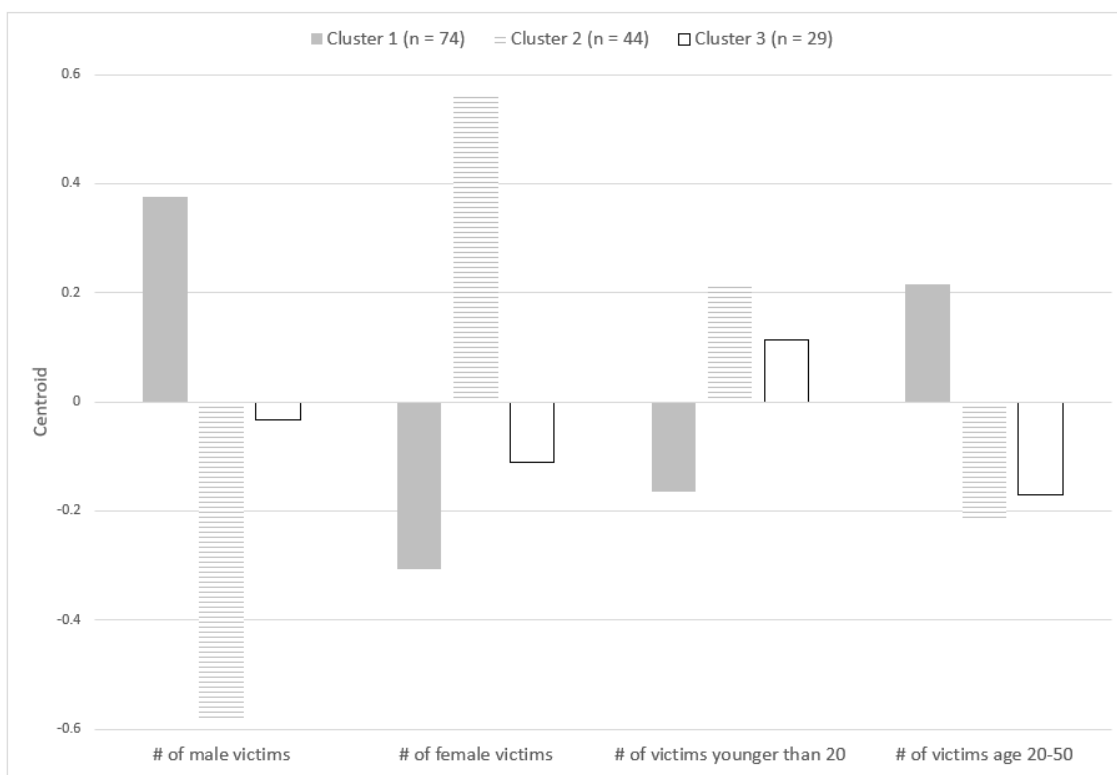


Figure 4. Cluster profiles on sex and age of victims.

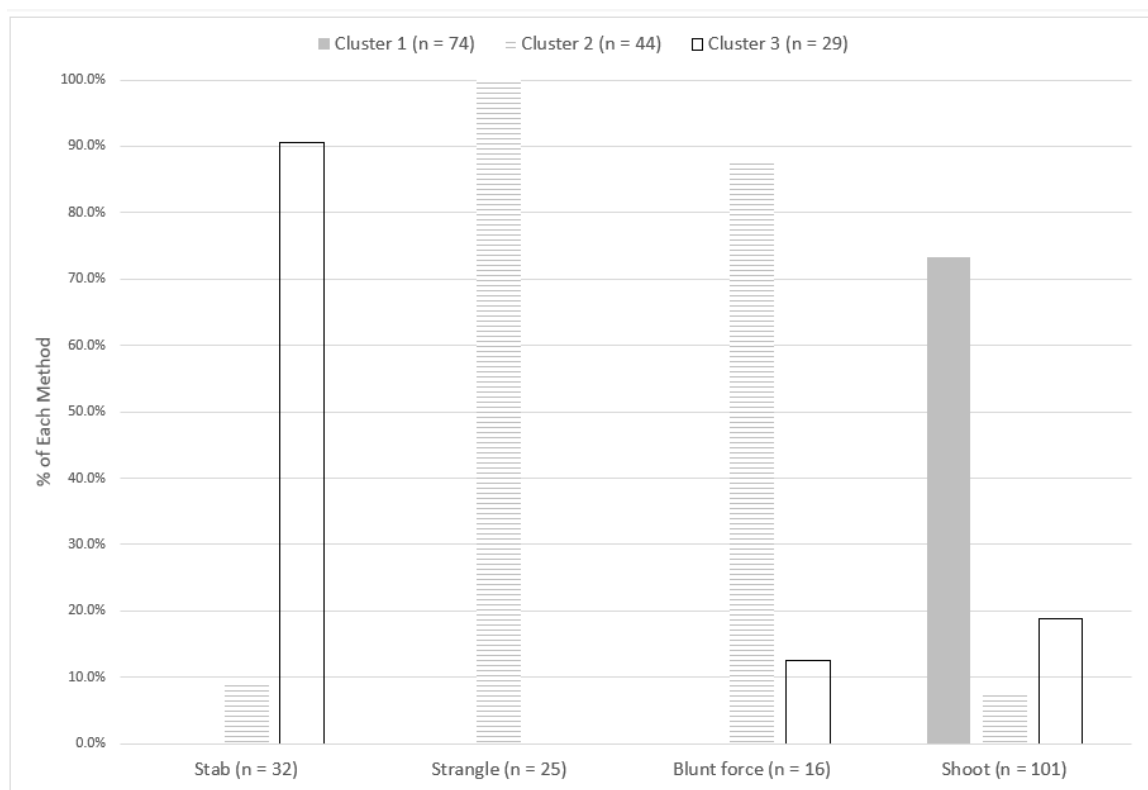


Figure 5. Cluster profiles on method of murder.

Table 7

Cluster Centroids, Means, ANOVA and Pairwise Comparisons on Victim Sex and Age

| Statistic   | Cluster | # of male victims | # of female victims | # victims age < 20 | # victims age 20-50 |
|---|---------|-------------------|---------------------|--------------------|---------------------|
| Centroid ( <i>SD</i> )  | 1       | 0.37 (0.99)       | -0.31 (0.84)        | -0.16 (0.64)       | 0.22 (1.09)         |
|   | 2       | -0.58 (0.82)      | 0.56 (1.12)         | 0.21 (1.42)        | -0.21 (0.90)        |
|   | 3       | -0.03 (0.83)      | -0.11 (0.85)        | 0.11 (0.96)        | -0.17 (0.79)        |
| <i>M</i> ( <i>SD</i> )  | 1       | 2.42 (1.61)       | 1.09 (1.22)         | 0.24 (0.64)        | 2.74 (1.70)         |
|   | 2       | 0.86 (1.32)       | 2.36 (1.63)         | 0.61 (1.40)        | 2.07 (1.40)         |
|   | 3       | 1.76 (1.35)       | 1.38 (1.24)         | 0.52 (0.95)        | 2.14 (1.25)         |
| <i>F</i> (2, 144)   |         | 15.22             | 12.28               | 2.18               | 3.28                |
| <i>p</i>  |         | < .001            | < .001              | .117               | .041                |
| $\eta^2$  |         | .174              | .146                | .029               | .044                |
| Least significant difference <i>p</i> values of post hoc pairwise comparisons |         |                   |                     |                    |                     |
| Pair  | 1-2     | < .001            | < .001              | .050               | .023                |
|   | 1-3     | .044              | .340                | .206               | .074                |
|   | 2-3     | .013              | .003                | .683               | .850                |

Table 8

*Cluster Observed and Expected Frequencies and Chi Square Results for Method of Murder (n = 147)*

| Method         | Category | Statistic <sup>a</sup> | Cluster |      |       | $\chi^2(2)$ | <i>p</i> | Cohen's<br><i>w</i> |
|----------------|----------|------------------------|---------|------|-------|-------------|----------|---------------------|
|                |          |                        | 1       | 2    | 3     |             |          |                     |
| Stab           | No       | O                      | 74      | 41   | 0     | 132.1       | < .001   | .943                |
|                |          | E                      | 57.9    | 34.4 | 22.7  |             |          |                     |
|                |          | R                      | 6.4     | 2.9  | -11.4 |             |          |                     |
|                | Yes      | O                      | 0       | 3    | 29    |             |          |                     |
|                |          | E                      | 16.1    | 9.6  | 6.3   |             |          |                     |
|                |          | R                      | -6.4    | -2.9 | 11.4  |             |          |                     |
| Strangle       | No       | O                      | 74      | 19   | 29    | 73.9        | < .001   | .693                |
|                |          | E                      | 61.4    | 36.5 | 24.1  |             |          |                     |
|                |          | R                      | 5.5     | -8.4 | 2.7   |             |          |                     |
|                | Yes      | O                      | 0       | 25   | 0     |             |          |                     |
|                |          | E                      | 12.6    | 7.5  | 4.9   |             |          |                     |
|                |          | R                      | -5.5    | 8.4  | -2.7  |             |          |                     |
| Shoot          | No       | O                      | 0       | 36   | 10    | 103.6       | < .001   | .765                |
|                |          | E                      | 23.2    | 13.8 | 9.1   |             |          |                     |
|                |          | R                      | -8.2    | 8.6  | 0.4   |             |          |                     |
|                | Yes      | O                      | 74      | 8    | 19    |             |          |                     |
|                |          | E                      | 50.8    | 30.2 | 19.9  |             |          |                     |
|                |          | R                      | 8.2     | -8.6 | -0.4  |             |          |                     |
| Blunt<br>force | No       | O                      | 74      | 30   | 27    | 31.6        | < .001   | .447                |
|                |          | E                      | 65.9    | 39.2 | 25.8  |             |          |                     |
|                |          | R                      | 4.3     | -5.3 | 0.8   |             |          |                     |
|                | Yes      | O                      | 0       | 14   | 2     |             |          |                     |
|                |          | E                      | 8.1     | 4.8  | 3.2   |             |          |                     |
|                |          | R                      | -4.3    | 5.3  | -0.8  |             |          |                     |

*Note.* Chi square and *p* values based on likelihood ratio. Cramer's *V* = Cohen's *w* when one variable has only two levels.

<sup>a</sup> O = observed frequency, E = expected frequency, R = adjusted residual (values greater than  $\pm 1.96$  statistically significantly contribute to the chi square value).

### **Analysis of Offender-Victim Relationship**

A chi square analysis was used to answer the research question concerning the association between clusters and offender-victim relationship, which was categorized as either victims were all strangers, some of the victims were familiar, or all victims were familiar (six offender-victim relationship cases could not be classified). The overall chi square was statistically significant indicating the association between clusters and offender-victim relationship was not independent, likelihood ratio  $\chi^2(4, n = 141) = 9.88$ ,  $p = .049$ , Cohen's  $w = .25$ , a medium-sized effect (see Table 9).

Cells with adjusted standardized residual exceeding  $\pm 1.96$  statistically significantly contributed to the overall chi square value. There were fewer than proportionally expected "all familiar" victims of Cluster 1 offenders, more than proportionally expected "all familiar" victims of Cluster 2 offenders, and fewer than proportionally expected "some familiar" victims of Cluster 2 offenders. The observed and expected proportions of "all strangers" victims were consistent across all three clusters. These results with respect to each cluster profile are discussed in chapter 5.

Table 9

*Cluster Observed and Expected Frequencies and Chi Square Results for Relationship to Victim (n = 141)*

| Relationship to Victim | Statistic <sup>a</sup> | Cluster |      |      |
|------------------------|------------------------|---------|------|------|
|                        |                        | 1       | 2    | 3    |
| All strangers          | O                      | 29      | 16   | 8    |
|                        | E                      | 26.7    | 15.8 | 10.5 |
|                        | R                      | 0.8     | 0.1  | -1.1 |
| Some familiar          | O                      | 20      | 4    | 9    |
|                        | E                      | 16.6    | 9.8  | 6.6  |
|                        | R                      | 1.3     | -2.5 | 1.2  |
| All familiar           | O                      | 22      | 22   | 11   |
|                        | E                      | 27.7    | 16.4 | 10.9 |
|                        | R                      | -2.0    | 2.1  | 0.0  |

*Note.* Likelihood ratio  $\chi^2(4, n = 147) = 9.79, p = .044$ , Cramer's  $V = .178$ , Cohen's  $w = .252$ .

<sup>a</sup> O = observed frequency, E = expected frequency, R = adjusted residual (values greater than  $\pm 1.96$  statistically significantly contribute to the chi square value).

### Supplemental Analysis

The archival data sets included the race of the offender categorized as White, Black, Hispanic, or other. The number of Hispanic and other race offenders was too small for statistical analysis, so exploratory chi square analyses of the association of race (Black and White) with cluster composition and with offender-victim relationship were conducted.

The chi square analysis of Black and White offenders with offender-victim relationship was not statistically significant, Likelihood Ratio  $\chi^2(2, n = 123) = 1.31, p = .521$ , Cohen's  $w = .10$ , a small-sized effect (see Table 10). None of the six cells had an adjusted standardized residual greater than  $\pm 1.0$ , indicating observed and expected frequencies were consistent.

The chi square analysis of BLack and White offenders with cluster membership approached statistical significance, likelihood ratio  $\chi^2(2, n = 129) = 4.87, p = .087$ , Cohen's  $w = .19$ , a small-to-medium effect (see Table 10). Cluster 1 offender cells had adjusted standardized residuals of -2.2 (White) and 2.2 (Black). There were less than proportionally expected White offenders and more than expected Black offenders in Cluster 1. In Cluster 2, though the adjusted standardized residuals were only  $\pm 1.5$  ( $p = .13$ ), the pattern reversed with more than expected White offenders and less than expected Black offenders.

Table 10

*Cluster Observed and Expected Frequencies and Chi Square Results for Race of Offender (n = 147)*

| Race  | Statistic <sup>a</sup> | Relationship to victim <sup>b</sup> |      |      | $\chi^2(2)$ | $p$  | Cohen's $w$ |
|-------|------------------------|-------------------------------------|------|------|-------------|------|-------------|
|       |                        | 1                                   | 2    | 3    |             |      |             |
| White | O                      | 20                                  | 16   | 24   | 1.31        | .521 | .103        |
|       | E                      | 22.4                                | 13.7 | 23.9 |             |      |             |
|       | R                      | -0.9                                | 1.0  | 0.0  |             |      |             |
| Black | O                      | 26                                  | 12   | 25   |             |      |             |
|       | E                      | 23.6                                | 14.3 | 25.1 |             |      |             |
|       | R                      | 0.9                                 | -1.0 | 0.0  |             |      |             |
|       |                        | Cluster                             |      |      |             |      |             |
|       |                        | 1                                   | 2    | 3    |             |      |             |
| White | O                      | 24                                  | 23   | 13   | 4.87        | .087 | .194        |
|       | E                      | 30.2                                | 19.1 | 10.7 |             |      |             |
|       | R                      | -2.2                                | 1.5  | 1.1  |             |      |             |
| Black | O                      | 41                                  | 18   | 10   |             |      |             |
|       | E                      | 34.8                                | 21.9 | 12.3 |             |      |             |
|       | R                      | 2.2                                 | -1.5 | -1.1 |             |      |             |

*Note.* Chi square and  $p$  values based on likelihood ratio. Cramer's  $V =$  Cohen's  $w$  when one variable has only two levels.

<sup>a</sup> O = observed frequency, E = expected frequency, R = adjusted residual (values greater than  $\pm 1.96$  statistically significantly contribute to the chi square value).

<sup>b</sup> 1 = all strangers, 2 = some familiar, 3 = all familiar.



## Summary

There was no statistical significance among clusters regarding race or age of the offenders at the time of offense against the victims. Additionally, no statistical significance was found with victims over the age of 50. The data did find significance in four of the methods of death to be prominent: stab, shot, strangled, and blunt force. The number and nature of clusters profiling cases with common characteristics of the cause of death, characteristics of the crime, characteristics of the victim, and characteristics of the criminal offender were identified within the study and therefore Research Question 1 was successfully answered and common characteristics within the study were found.

The study showed that statistical significance was achieved in rejecting the null hypothesis for Research Question 2 and establishing a familial relationship of victim and offender associated with the clustered profiles of cases. There are several recommendations that could offer in order to improve upon for future research even though statistical significance was achieved in rejecting the null hypothesis. Chapter 5 will address potential improvements that could be made to this study in efforts of revisiting this research and gaining better results.

## Chapter 5: Discussion, Conclusions, and Recommendations

### **Introduction**

I conducted this study to identify how characteristics of offender and victim as well as cause of death could assist in revealing a familial relationship between the victim and the criminal offender. The data for this study came from two preexisting data sets that contained recorded homicide cases from 2011–2017 comprised of serial murderers across the United States (see Hickey, 2014, 2017). Across the data set of cases, 147 offenders and 506 victims were analyzed. Cluster analysis resulted in three distinct profiles and chi square analyses were used to examine associations between these three clusters with race of offender and relationship to the victim. The results presented in Chapter 4 are discussed in this chapter with respect to the research questions, the theoretical framework, study limitations, recommendations, and implications for positive social change.

### **Interpretation of Findings**

The development of psychological or criminal profiles of criminal offenders provide a means to correlate a crime to the offender. Forensic psychologists use criminal profiles as a psychological tool that can provide an analytical function to law enforcement agencies. Bartol and Bartol (2012) stated that a psychological profile requires the intricate detailing of significant cognitive, behavioral, demographic, and emotional features of an individual who is believed to have committed a crime. I first discuss the results with respect to the research questions, then to classical conditioning theory and social learning theory.

## Research Questions

In this study, I intended to answer two research questions: One regarding the number and nature of clusters profiling serial killer cases on characteristics of offender and victim as well as cause of death, and the other regarding any familial relationship association with the clustered profiles. Supplemental analyses were conducted to examine whether the race of the offender was associated with relationship to victim or cluster membership. Table 11 summarizes the combined findings and distinguishing profiles of Clusters 1 and 2. The 29 cases in Cluster 3 were distinguished from the other two clusters only by having accounted for 90.6% of all victims who were stabbed, but no other associations with variables in the data set were discovered to explain this finding.

Table 11

### *Distinguishing Characteristics of Two Serial Killer Profiles*

| Characteristic         | Cluster 1 ( <i>n</i> = 74)                                    | Cluster 2 ( <i>n</i> = 44)   |
|------------------------|---|--|
| Victims                |   |  |
| Sex                    | More than twice as many male than female victims.             | Nearly three times as many female than male victims.                                   |
| Age                    | Cluster with least # age < 20 and most age 20-50              | Cluster with highest # age < 20  |
| Offender               |   |  |
| Race                   | More Black than statistically expected.                       | More White than statistically expected.  |
| Relationship to victim | Cluster with fewer “all familiar” than statistically expected | Cluster with more “all familiar” and fewer “some familiar” than statistically expected |
| Method of murder       |   |  |
| Shot                   | 73.3% of all victims who were shot                            |  |
| Strangled              |   | All victims who were strangled.  |
| Blunt force            |   | 87.5% of all victims   |

Cluster 1 offenders tended to be Black and unfamiliar with their victims who they typically shot. Cluster 1 victims tended to be male between 20 and 50 years old. Cluster 2 offenders, by contrast, tended to be White and familiar with typically female victims who they typically murdered by use of blunt force or strangulation. Cluster 2 victims tended to be female and younger than Cluster 1 victims.

Because of the small number of female offenders in the data set, the cases used for cluster analysis were all male offenders whose average age at first capital offense was about 30 years old. It makes sense if victims tended to be unfamiliar males aged 20 to 50 years old that they would be shot compared to use of blunt force or the strangulation of familiar female victims. This difference in profile may relate to premeditation. Cao et al. (2008) found that acquaintance homicide was associated with premeditation, but intimate partner homicide was not. Having a gun at the ready requires some degree of planning, while relying on a nearby blunt object or strangulation suggests an impulsive act.

Additional profiling insight can be gained from the available variables that were excluded from analysis or failed to substantially contribute to the clusters. To the extent that the cases in Dr. Hickey's (2014, 2017) 2011–2017 homicide cases of multiple or serial victims represent all such homicide cases, the fact that only 2.7% of cases were female offenders indicates that regardless of victim characteristics or method of murder that the offender is likely to be male. In multiple or serial victim cases, the victim was rarely a prostitute, suggesting the murder of a prostitute is by an offender that does not go on to commit additional murders. Only 8.2% of the homicide cases were committed by multiple offenders, providing law enforcement with some confidence in searching for one

individual in multiple or serial victim cases. Finally, at least in this data set, knowing the age of an offender's first capital offense was not helpful in associations with offender or victim characteristics or method of murder.

### **Theoretical Framework**

I grounded this study in classical conditioning theory and social learning theory to explain the connection of behavior to psychological profiles. Pavlov's classical conditioning theory sets the premise that behavior is a reflexive response that is provoked by the presence of stimuli (Bitterman, 2006). Regarding the mindset of a criminal offender, stimuli, such as victim mannerisms or characteristics and social situational cues, can be an emotional trigger that cause a response based off associations in the mind of the offender. Fear itself can be a Pavlovian conditioning stimulus due to the events that led to create the fear and provide an emotional reactive response.

The second theoretical framework, Bandura's social learning theory, states that behavior is learned by being simply observed from the actions of others and replicated (Garcia et al., 2014). Violent or aggressive behavior observed as a youth can cause an individual to perceive behavior incorrectly, providing them with the assumption that the observed behavior and the reactions are normal. This form of learning is done through the act of observing the actions and behaviors of others, learning those behaviors, then reproducing them (Bartol & Bartol, 2011).

The results of this study failed to provide a connection to either theory, not because the frameworks did not apply, but due to the lack of background data on the

offenders. This was a result of my inability to gain access to homicide case files within separate law enforcement agencies.

### **Limitations of the Study**

There were three main factors that contributed to the lack of significance in the results of this study: a small sample size, lack of access to conduct case file review, and the lack of access to conduct interviews with criminal offenders and/or law enforcement professionals. There were four main limitations of this study: (a) a small sample size, (b) limited range of variables in the archival data set, (c) lack of access to conduct case file review, and (d) lack of access to conduct interviews with criminal offenders and law enforcement professionals.

#### **Small Sample Size**

Although there is no rule of thumb for minimum sample size for cluster analysis (Siddiqui, 2013), the number of cases in Cluster 3 ( $n = 29$ ) was much smaller than the number of cases in Clusters 1 and 3 ( $n = 74$  and  $44$ , respectively). Cluster 3 was distinguished only as having accounted for 90.6% of the 32 victims who had been stabbed to death. A larger sample of cases who had stabbed their victims might allow for the detection of other distinguishing aspects.

The overall chi square test of independence between cluster membership and relationship to victim was statistically significant, and some proportional differences between clusters were found. The sample size in even the largest cluster was insufficient for follow-up analysis of within-cluster proportional differences on the three types of victim relationship. For example, Cluster 1 had fewer than proportionally expected “all

familiar” victims, so there was insufficient power to statistically determine if there was a difference between all three types of victim relationships within Cluster 1.

### **Limited Range of Variables**

Insights based on analysis of archival data are limited to the range of variables in the data set. Offender characteristics were limited to age at first capital offense, race, sex, and whether the offender acted alone or with others. Victim characteristics were limited to sex, three broad categories of age range, and whether they engaged in prostitution. Although 16 distinct methods of murder were recorded, only four methods had sufficient frequency for analysis, and the data set contained no other crime or crime scene variables.

### **Lack of Case File Review and Interviews**

Case studies can explore real life cases, a contemporary bound system, and multiple cases over time; therefore, they require an in-depth collection of data via multiple means (Creswell, 2013). As alluded to in the previous section, a key component of reliable profiling is background information on offenders. Access to homicide case files from law enforcement agencies would have provided this information, which could have led to the detection of other distinguishing features between clusters and familial relationships. Additionally, this access would have allowed for the identified themes and similarities across cases to be organized into a chronology and analyzed across several cases for differences and similarities among each case or displayed as a new theoretical model.

Using structured interviews would have also provided significant value to this study. Though both case file review and interviews were intended to be conducted, my

inability to gain access to offenders or their files limited potential insights. Interview information from offenders or investigators could have assisted in building the offender-victim relationship data in finer detail, rather than three broad categories, and helped develop future associations with the method of murder conducted by the offender.

### **Recommendations**

To attain successful results in this type of study, background information is paramount. Such information may pertain to how a capital offender was raised; trauma that may have occurred as a child, young adult, or adult; and significant deviant behavior displayed by the individual at any time throughout their life prior to committing the offenses. Background information would also provide insight on the parents, what their behaviors were, and how they treated their child or other children. It is important to understand the medical, psychological, and emotional history of the offender. These pieces of information also are pertinent to the victim since the information may assist forensic psychologists and law enforcement to be able to draw inferences between the victim and the offender. Additionally, background data on both the victim and the offender also provides evidence to support the theoretical frameworks of social learning theory and classical conditioning theory. Dependent upon the offender, either framework may apply, and in some cases both frameworks may apply, but this cannot be achieved without understanding the background of the offender and the victim.

In order to have the ability to gain the required background information on both the victim and the offender, a researcher must be able to have access to individual case files or have the ability to conduct interviews if necessary. The researcher, knowing the



information that is pertinent to their research, can then filter through each of the cases using an established instrument to identify and record the pieces of information needed for their study. The only way that this can be achieved is to gain access to sensitive law enforcement criminal files. This is a difficult process because it involves oversight by each law enforcement agency involved due to the sensitive nature of the personal information of both the victim and the offender. Statements of agreement must be signed by each agency and the researcher, and the researcher must take into account ethical considerations and take appropriate steps to ensure that there are not ethical violations during the study. Coordinating with each law enforcement agency is a time-consuming process and due to the nature of it, it is believed that such access will not be given to a student. However, future research by forensic psychologists may have a better opportunity to gain access to such data.

### **Implications**

The potential social change implications that the results of this study could have on the forensic psychology and law enforcement communities is paramount in providing them with an added tool in apprehending offenders who commit murder or violent crimes. The ability to derive relationships between the victim and offender based on the method of homicide can assist in building criminal profiles and reducing the time that homicide cases go unsolved. The ability for forensic psychologists and law enforcement to establish a relationship between the victim and the offender will also provide further validity and credibility to the efforts of criminal or offender profiling and its relevance to forensic psychology and law enforcement. The outcomes of this study suggest certain

offender and victim characteristics and method of murder may be associated with the extent of familial relationship between offender and victim.

### **Conclusion**

I achieved statistical significance in this study through rejecting the null hypothesis and establishing a familial relationship of victim and offender associated with the clustered profiles of cases, establishing a baseline for conducting future research. I also identified additional data needed to improve the reliability and validity of profiling results. Establishing a future working relationship with law enforcement agencies in order to be able to conduct a comprehensive case review study is recommended. Such a case study and the additional data it would result in will better be able to determine the relevance of classical conditional theory and social learning theory in understanding the behavior of multiple or serial victim offenders. Despite its limitations, the results of this study could be built upon to provide a greater benefit to forensic psychologists and law enforcement agencies by providing more insight on the offender and victim characteristics and method of murder association with victim-offender familial relationship.

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