

2018

Serial Murder Mysteries: Revisiting Definitional Issues, Data Challenges, Archaic Theories, and Myths Using Empirical Evidence

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**SERIAL MURDER MYSTERIES:
REVISITING DEFINITIONAL ISSUES, DATA CHALLENGES,
ARCHAIC THEORIES AND MYTHS USING EMPIRICAL EVIDENCE**

by

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A dissertation submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy
in the Department of Sociology
in the College of Sciences
at the University of Central Florida
Orlando, Florida

Summer Term
2018

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ABSTRACT

While serial killings have been the focus of much scholarly research, the definition of what it means to be a serial killer has been debated by law enforcement agencies and academics for decades. This overall lack of understanding about serial killers and the murders they commit has contributed to the numerous limitations concerning the general knowledge about this unique form of homicide. Furthermore, serial killers have typically been examined using psychological models, psychiatric approaches, or the external drives/motives of the offenders, while the development of a sociological perspective has received less attention. This current research uses arguably the most complete dataset on serial killings, the Radford database, to fill several gaps in the current body of knowledge by empirically analyzing 1,258 serial killers operating between 1985 and 2016. Data related to the killings, offenders, and victims, in addition to social structural variables, are examined to evaluate how these factors, among others, may possibly be associated with the number of victims an offender killed. Analyzing past definitions and research, this study expands sociological models examining serial murder, and contributes valuable insight into some of the myths and misunderstandings surrounding the crime, and how they likely lead to linkage blindness and decreased homicide clearance rates. Most importantly, this study provides an updated and improved understanding of serial killings that has the potential to be a tool for law enforcement professionals to increase the identity of potential offenders, can ultimately aid their efforts to address sociological origins of serial killing behaviors and attempt to prevent them in the future.

Keywords: serial killers, serial killing, homicide, sociological perspective, number of victims

*Dedicated to the girls who put in major work;
to the girls who wake up early and stay up until the job is done;
to the girls that study and grind;
to the girls who know the costs of sacrifice and discipline;
to the girls that rise above all and hold it down even when they feel like they are falling apart;
to the girls who prioritize self-love and care;
dedicated to the girls who push harder.*

Dedicated to Christopher Gene Thompson.
*Thank you for always encouraging me to be the best person I can be, to work hard but party
harder, and always reminding me to never settle for less than what makes me happy.*
Until we ride together again... #notAllHeroesWearCapes

ACKNOWLEDGMENTS

My parents, MaryJo and Darrin Vincent. Growing up, I watched you both work hard every day together as a team. I learned how to prioritize what is important and how to make the necessary sacrifices to achieve goals. You have always exemplified how to have fun and still be successful. If it wasn't for watching and learning from your unmatched work ethic, strong desire to succeed, as well as the unconditional love and support you have always provided me, I would not have been able to accomplish what I have. Thank you so much Mom and Dad. I love you.

My academic parents, Drs. Lin Huff-Corzine and Jay Corzine. I will never be able to thank you or put into words how much I appreciate all you have done for me over the past several years. The knowledge, work ethic, and unparalleled support that you have provided me helped me on this long and challenging journey. Thank you for believing in me and pushing me when I needed it. You have both been there not only as my academic advisors and mentors, but as my friends, supporting and celebrating my achievements and being there for me during some of my hardest times. I can always count on you for everything, and I cannot thank you both enough.

My professor, mentor, and committee member, Dr. Amy Reckdenwald. From being in your undergraduate classes, to being your Graduate Teaching Assistant for years during the Master's and first year of the PhD programs, to having you serve as a committee member on my undergraduate and Master's theses to now my Ph.D. dissertation committee, I have learned so much from you. Thank you for not only being a great professor, but also a great role model.

My dissertation committee member, Dr. Eric Hickey. Thank you for all the valuable insight you have provided me through my dissertation and Ph.D. Your expertise on serial murder helped to make my dissertation what it is.

My colleague, mentor, and, most importantly, my friend, Dr. D J Williams. Thank you for always being there for me and providing guidance and support. The patience and knowledge you displayed while we published manuscripts as I was also working on my Ph.D. was very appreciated. The random text messages of encouragement helped me through this process more than you know. You are amazing!

Friends & Family. Thank you for the occasional distractions and pulling me out of my office and away from my work to remind me there is always time for a little fun. I could not have done this without you. I love and appreciate you all.

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LIST OF ACRONYMS OR ABBREVIATIONS

AIC	Akaike's Information Criterion
APA	American Psychiatric Association
ASPD	Antisocial Personality Disorder
BIC	Bayesian Information Criterion
BSU	Behavioral Science Unit
B	Coefficient
CAT	Computerized Axial Tomography
CDC	Centers for Disease Control and Prevention
DNA	Deoxyribonucleic Acid
DSM-5	Diagnostic and Statistical Manual of Mental Disorders
EEGs	Electroencephalograms
Exp(B)	Exponentiated Beta
FBI	Federal Bureau of Investigation
FGCU	Florida Gulf Coast University
fMRI	Functional Magnetic Resonance Imaging
LEO	Law Enforcement Officer
MRI	Magnetic Resonance Imaging
NCAVC	National Center for the Analysis of Violent Crime
NVDRS	National Violent Death Reporting System
NGRI	Not Guilty by Reason of Insanity
OR	Odds Ratio

PCL-R	Psychopathy Checklist – Revised
PET	Positron Emission Tomography
S.D.	Standard Deviation
S.E.	Standard Error
SHR	Supplemental Homicide Report
SLP	Serious Leisure Perspective
SPSS	Statistical Package for the Social Sciences
UCR	Uniform Crime Report
U.S.	United States
ViCAP	Violent Criminal Apprehension Program
VIF	Variance Inflation Factors
\bar{x}	Sample mean

CHAPTER 1: AN INTRODUCTION

Reports of serial killings date back to the early 14th and 15th centuries. Gilles de Rais was one of the first documented serial killers who executed for the killings of about 100 children (Castle & Hensley, 2002). However, according to Stone (2001), it was not until 1888 when a killing series by Jack the Ripper caught the public's attention. However, Hickey (2016) noted the 1981 arrest of the young African-American man, Wayne Williams, increased attention to serial homicide. Furthermore, Williams was connected with several murders of African-American men and was suspected of killing over 20 people (many of whom were children), which especially heightened attention to the fact that not all offenders are white and that children may also be targeted (Hickey, 2016). In the following years, there was an increased presence of serial homicide cases featured in the media creating a new criminal typology: the serial murderer (Hickey, 2016).

Serial murder has been reported throughout the history of the United States (U.S.). But, according to Hickey (2016), it was not until 1984 when several agencies, including the Federal Bureau of Investigation (FBI), requested funding for the development of a program to precisely combat violent criminals at a hearing in front of the U.S. Senate following an increase in cases of serial murder. Later, this program became known as the National Center for the Analysis of Violent Crime (NCAVC) (Hickey, 2016). News reports from the hearing stated that each year, about 5,000 people fall victim to serial murder (FBI, 1984a, 1984b; Ninety-Eighth Congress, 1984). While this figure could not be verified, the large numbers were still very appalling and created fear among civilians and public officials alike. Funding for the program followed (Hickey, 2016).

According to Hickey (2016), social science researchers, whose duties include objectively evaluating phenomena in attempts to discover the nature, origin, and impact of various phenomena on society, began noticing the incorrect information surrounding serial murder and saw the opportunity to investigate the crime. Among research in various fields including sociology, criminology, and psychology, the murder of multiple people is one of the most dramatized topics. Yet even the most prestigious researchers face difficulties analyzing the facts of the crime without the obstructing influence from media (Hickey, 2016). Of the available literature on serial murder, the definition of the crime has been a major area of focus as researchers and law enforcement officials have not come to a consensus regarding how to accurately describe the crime and its complicated features (Adjorolo & Chan, 2014; Farrell, Keppel, & Titterington, 2011; Morton & McNamara, 2005; Muller, 2000). The wide variety of definitions has continued to be a challenge for those researching the phenomenon and the implications it had on the findings (Ferguson, White, Cherry, Loreznz, & Bhimani, 2003; Wright, Pratt, & DeLisi, 2009). Due to the numerous definitions, disagreements concerning the prevalence of serial killers also continues to exist (Gresswell & Hollin, 1994; Hickey, 1997; Holmes, 1989; Holmes, Hickey, & Holmes, 1991; Jenkins, 1994; Maxfield, 1989; O'Reilly-Fleming, 1996).

The issues related to serial murder and its conceptualization, which will be discussed in more detail throughout the subsequent chapters, provide an opportunity for research to provide empirical evidence that may aid in addressing the long-debated challenges. This study seeks to fill a gap in this literature by analyzing variables related to serial murders to expand the definition supported by empirical evidence from recent serial murder cases that have the potential to be accepted by both researchers and law enforcement professionals. Serial murder

has typically been viewed under various perspectives, such as psychological (Ellis & Walsh, 2000; Myers et al., 2008; Pallone & Hennessy, 1998; Raine, 1993), and psychiatric theories (Guttmacher, 1973; Lunde, 1975; Danto, 1982; Ressler, Burgess & Douglass, 1988), or external drives/motives of serial murderers (Holmes & DeBurger, 1988). Due to the lack of adequate attention to a sociological approach, this study aids in the development of a more sociological perspective to serial murder.

CHAPTER 2: DEFINING SERIAL MURDER

While serial murder has been a topic of academics and researchers for many years, Fisher (1997) stated that interest in the topic has increased due to the expanded media publicity on the topic (Hickey, 2012; White, Lester, Gentile, & Rosenbleeth, 2011). Criminologist James Reinhardt is believed to have coined the term “serial murder” in his book, *Sex Perversions and Sex Crimes* (1957), where he vaguely labeled killers whose victims created a chain of death and tragedy over time as “chain killers” (Newton, 2008, p. 15). However, even years later, defining “serial murder” continues to be debated by both researchers and law enforcement professionals (Farrell et al., 2011; Morton & McNamara, 2005; Muller, 2000), leading the term to be one of the least understood in the criminological literature (Culhane, Hilstad, Freng, & Gray, 2011). Even with numerous experts and authorities providing various definitions of the crime, there remains no unanimous definition (Ostrosky-Solis, Velez-Garcia, Santana-Vargas, Perez, & Ardila, 2008), partially because the term has been viewed from different angles (Adjorlolo & Chan, 2014), disciplines, or perspectives. Not having a definition of serial murder that is accepted by both academics and law enforcement officials has negative implications for the literature and research on the subject. A review of the proposed definitions and critiques follows.

Egger made an effort to generate parameters for global serial murder in his 1984 definition of the term:

Serial murder occurs when one or more individuals...commits a second murder and/or subsequent murder; is relationshipless (victim and attacker are strangers); occurs at a different time and has no connection to the initial (and subsequent) murder; and is frequently committed in a different geographical location. Further, the motive is generally not for material gain but is usually a compulsive act specifically for gratification based on fantasies. The key element is that the series of murders do not share in the events surrounding one another. Victims share in

common characteristics of what are perceived to be prestigeless, powerless, and/or lower socioeconomic groups (that is, vagrants, prostitutes, migrant workers, homosexuals, missing children, and single and often elderly women) (p. 351).

Although Egger's (1984) definition has been cited repeatedly (Gernerth & Turco, 1997; Keeney & Heide, 1994; McKenzie, 1995), some have argued that his definition of serial murder is too limiting. An article by Hinch and Hepburn (1998) reviewed Egger's definition concentrating on four components: the assumptions that the offenders are men, they kill only strangers, they do not kill for financial gain, and their victims are powerless. Each of these aspects is discussed in detail later throughout this section.

In their Crime Classification Model, Douglas, Burgess, Burgess, and Ressler (1992) included that a serial murder has a sexual motivation as the predominant reason for killing in their definition: "three or more separate events in three or more separate locations with an emotional cooling-off period in between homicides" (p. 21). Keeney and Heide (1994) simplified the definitions offered by both Egger (1984) and Douglas et al. (1992) by defining serial murder as "premeditated murder of three or more victims committed over time, in separate incidents, in a civilian context, with the murder activity being chosen by the offender" (p. 384). Soon after, in 1997, Hickey aimed to broadly define the term, suggesting a definition of serial murderers as "all offenders who through premeditation killed three or more victims over a period of days, weeks, months or years..." (p. 12). According to Castle and Hensley (2002), Hickey's (1997) expansion to include women as offenders could be the result of female reform in the 1990s, especially as Hickey (1997) found that women's motivation for committing serial murders was found to be primarily for profit.

Soon after, Egger (1998) revisited his original definition, also attempting a broader definition that encompassed disputed factors such as the number of victims, the offender's gender, the victim and offender relationship, murders occurring at various locations, and power being a motive. Finally, those working in law enforcement defined serial murder as the sexual attack and killing of young men, women, and children by a man who has a specific psychological or physical plan (Hickey, 2009); however, this definition still does not include many victims and offenders.

Although these definitions and their components are important to analyze, most of the criteria included has been shown to be insignificant (Adjorlolo & Chan, 2014). For example, despite previous definitions, women serial killers do exist (Farrell et al., 2011; Ostrosky-Solis et al., 2008; Pollock, Mullings, & Crouch, 2006) and some serial killers have been found to have had a relationship with their victim prior to the killing (Yorker et al., 2006). While including variations of these elements in the definitions of serial murder have provided insight, relying precisely on these factors has only heightened the differences in how serial murder is understood from both the academic and investigative perspectives (Adjorlolo & Chan, 2014). The components included in many of the definitions of serial homicide are thoroughly reviewed below.

Men Offenders

While some definitions specifically state that men are the offenders of serial murder (Egger, 1984), research has shown that women can be serial killers as well (Farrell et al., 2011; Ostrosky-Solis et al., 2008; Pollock, Mullings, & Crouch, 2006; Walters, Drislane, Hickey, &

Patrick, 2014). In fact, in the 1600s one of the earliest serial murderers documented was a Hungarian Countess, Erzebet Bathory, who instructed her servants to bring young women peasants to her from nearby areas for the Countess to torture and kill (Hale & Bolin, 1998; Newton, 2004). According to some research (Jenkins, 1993; Newton, 2004; Walters, Drislane, Hickey, & Patrick, 2014), women offenders make up between 12-17% of all serial murderers. Similarly, Hickey (2012) stated that between 2004 and 2011, about 10% of all serial killers were women.

Due to the small numbers of serial homicide offenders, some researchers (Egger, 1990; Leyton, 1986) have argued that analyzing serial killing women is not practical, or even possible. Others have limited their research to analyzing only men for theoretical and/or ideological purposes (Hinch & Hepburn, 1998). For instance, some radical feminists do not analyze women serial killers in an effort to display how patriarchal structures are conducive to violence by men against women (Cameron & Fraser, 1987; Caputi, 1987; 1989; 1990; Chesler 1993). Recently, a 2017 study by Fridel and Fox attempted to establish an agreement among the minimum number of victims necessary to be considered a serial killer, but they too neglected to include women serial homicide offenders in their analyses.

On the other hand, some disagree by arguing that not only are there enough women serial killers to be empirically analyzed but there are also data that allow for theorizing about women serial killers alone (Hinch & Hepburn, 1998). For instance, according to data from Hickey (1997), almost 15% of known serial killers who operated in the U.S. from 1800 to 1995 were women. Furthermore, research has found that theorizing about women as well as men serial killers can provide insight into the total social, cultural, and political frameworks in which serial murder occurs (Keeney & Heide, 1994; Cluff, Hunter, & Hinch, 1997).

By not including women in serial murder research, a lot of insight into the crime may never be discovered, especially considering that serial killers tend to kill in gender-specific ways. For example, Hinch and Hepburn (1998) stated that men are more likely to use brute force than women, and using Hickey's (1997) data, Hinch and Hepburn (1998) found that men are significantly more prone to shooting, strangling/suffocating, stabbing, or bludgeoning their victims, while only 5% of men killed their victims by poison. In comparison, women used poison only to kill in 35% of the cases and in 45% of the cases women used poison along with another method to kill their victims (Hinch & Hepburn, 1998). Other research has supported these gender differences as well: Holmes, Hickey, and Holmes's 1998 research reported that women often used non-violent methods to kill, such as poison, and usually kill in a home. Hale and Bolin (1998) similarly found that of the 184 women serial killers in their study, 59 preferred killing with poison.

Furthermore, men and women's selections of victims differ: men serial killers were more likely to kill strangers than were women serial killers, and women were more likely than men to kill family members (Hickey, 1997; Hinch & Hepburn, 1998; Holmes, Hickey, & Holmes, 1998). Motivational differences by gender for serial killing also exist; according to Hickey (1997, p. 153, 218) men claimed motives of "sex sometimes" (46%), "control sometimes" (29%), and "money sometimes" (19%), while women most commonly claimed motivations of "money sometimes" (47%), "money only" (27%), and "control sometimes" (13%). Thus, while men's motivations for killing may be sexual gratification and power (Hickey, 1997), women's motivation has been found to be primarily for comfort (Hickey, 1997; Holmes, Hickey, & Holmes, 1998). Finally, gender differences in serial murder vary in terms of the offender's race. Holmes, Hickey, and Holmes (1998) reported that 97% of women serial killers were White,

compared to Hickey's 2012 finding that White men serial killers accounted for 55% of his sample of 146 serial murders. Aamodt (2015) also reported in his independent research at Radford University that 52% of all serial killers are White and 92% are men.

In conclusion, it is clear that these differences, along with others that will be discussed later, in serial killing characteristics by gender are crucial to understanding serial murder. Excluding serial killing women from the definition and/or the research causes a major limitation. According to Hinch and Hepburn (1998), the exclusion of women has negatively impacted the body of knowledge on serial killers. Furthermore, the impacts of culture and structure could be analyzed with more precision if women serial killers were incorporated into analyses to provide more insight into the entire phenomenon without excluding some offenders.

Victim and Offender Relationship

The relationship between the victim and offender were important elements of previous definitions of serial murder, including those provided by Egger (1984) and Haggerty (2009) that stated the victim and offender had to be strangers to be considered serial murder has not been consistently supported. There is some research support for the plausible logic behind this assumption, such as Hinch and Hepburn's 1998 finding that men serial homicide offenders murder strangers more often than people they know. And more specifically, Hickey's 1997 results of research among serial killing men found that nearly one-third of the victims were people the killer knew, but on the other hand, of the women serial killers, they were found to equally kill strangers and people they knew (Hinch & Hepburn, 1998). When considered together, Hickey (1997) found that of 388 men and women serial killers, only 61% killed

strangers, while the others killed their spouses and even their children. Yoker et al. (2006) also noted that healthcare professional serial killers who killed their patients would certainly have had a relationship with them.

This evidence suggests that Egger's (1984) inclusion of a "relationshipless" component in his definition does not describe all serial killers. In response, there have been numerous categories that classify murders dependent on the relationship between the victim and offender and how killing someone is defined. Yet, similar to Egger (1984), Haggerty more recently asserted that serial murderers must not have had a previous relationship with their victims in his 2009 definition.

Hickey (1997) stated this "relationshipless" component included by Egger (1984) and Haggerty (2009) is false and deceiving as this assumption leads to speculation, not scholarly insight (Hinch & Hepburn, 1998). Because of these limitations regarding the relationship of the victim and offender, a new definition was created by Brantley and Kosky (2005) stating that serial murder is different from other homicide offenses as it is "...more often predatory, premeditated, and deliberate. Serial murderers fantasize and plan the crime and pursue and ultimately kill their victims without the interpersonal conflict and emotional provocation common in other murderer-victim interactions and relationships" (p. 28). Kraemer, Lord, & Heilbrun (2004) supported the definition offered by Brantley and Kosky (2005) but noted that "No set of empirical criteria however, is absolutely predictive" (p. 338). Depending on the inclusion of this relationshipless component, many definitions may not include all possible serial killers, hindering research on serial homicide. In addition, the relationship between victim and offender may be based on the availability of potential victims, as well as the offender's premeditated plans.

Premeditation

The premeditation aspect of serial murder has also been debated by many scholars. According to Adjorlolo and Chan (2014), while some authors state that the serial killer must have premeditated, planned, and purposely or intentionally carried out the murders (Brantley & Kosky, 2005; Harbort & Mokros, 2001; Kraemer et al., 2004; Morton & McNamara, 2005), others do not make any specifications about their inclusion (Farrell et al., 2011; Haggerty, 2009; Holmes & Homes, 2010; Homant & Kennedy, 2014). Yet serial murderers are usually acknowledged to have premeditated and planned killings (Brantley & Kosky, 2005; Leistedt & Linkowski, 2010; Miller, 2014; Morton & McNamara, 2005). While difficult to measure, these mixed claims regarding the premeditation aspect of serial murder may also play a large role in our understanding of serial killing.

Cooling-off Period

Another aspect of defining serial murder is the cooling-off period, which is difficult to measure yet still included in some definitions (Douglas et al., 1992; Homant & Kennedy, 2014; Morton & McNamara, 2005). According to Adjorlolo and Chan (2014), some researchers, such as Homant and Kennedy (2014), Osborne, and Salfati (2015), argue that the challenges arise when attempting to operationalize the “cooling-off period.” The FBI’s inclusion of a cooling-off period based on days, weeks, or months presents issues as this unspecified period of time could potentially be less than one day. In addition, other definitions include similar elements such as a “fantasy component,” which decreases the utility of the definitions (Adjorlolo & Chan, 2014).

Osborne and Salfati (2015) suggest that the 2005 definition of serial murder from the NCAVC did not include the cooling-off period due to a lack of both empirical research on possible elements that might impact the period, as well as a theoretical understanding of the term itself. Yet Homant and Kennedy (2014) argued the “main point is that the first killing has temporarily satisfied whatever motives are driving the killer, and the subsequent killings are part of a separate sequence of behaviors” (p. 313). Morton and McNamara (2005) noted the importance of including the cooling-off period as they stated it could assist in dividing serial killers from other types of multiple killing offenders. A further discussion of the cooling-off period and other differences in defining serial murder and other types of multiple victim murders will be discussed later in the chapter.

Sexual Motive

According to Adjorlolo and Chan (2014), serial murder and sexual murder were frequently analyzed closely for years in research (see Chan, Beauregard, & Meyers, 2015; Chan & Frei, 2013; Chan & Heide, 2009; Chan, Heide, & Beauregard, 2011; Schlesinger, 2007). Hinch and Hepburn (1998) stated that by focusing attention on the killer’s sexual fantasies, researchers have labeled serial murderers as “sexual sadistic killers.” Petee and Jarvis (2000) also noted this excessive attention given to the serial sexual killer has caused the terms sexual homicide and serial murder to be synonymous.

The attention given specifically to a sexual motive in serial homicide is unusual as the prevalence of sexually motivated serial killings are, and have been, historically rare. For example, Meloy (2000) reported that sexual homicides, including rape, other sex, and

prostitution, account for less than 1% of all the homicides reported by law enforcement in the U.S. for each year between 1991 and 1995. However, according to Meloy (2000), when sexual homicides did occur, either by themselves or serially, they have been sensationalized causing them to become the center of interest forensically and clinically, and these few descriptive homicides were at the center of many theoretical perspectives (see De River, 1949; Gebhard, Gagnon, Pomeroy, & Christenson, 1965; Groth & Birnbaum, 1979; Guttmacher, 1951; Henderson, 1939; Hirschfeld, 1944; Karpman, 1954; MacCulloch, Snowden, Wood, & Mills, 1983; MacDonald, 1961; Meloy, 1988; Stekel, 1929; Revitch, 1965).

This assumption that serial murder is motivated only by a sexual desire can produce issues with the construction, knowledge, and research of serial murder. Harbort and Mokros (2001) argue that it is oversimplified to call a serial killer a lust murderer. Including a sexual motive in the definition of serial murder is problematic, according to Hickey (2012), because a plethora of motivations for serial murder already exist. Focusing on other motives for serial murder such as power, control, anger, ideology, sex, and psychopathology (Myers, Husted, Safarik, & O'Toole, 2006; FBI, 2008), allow researchers the ability to examine other groups of people who kill, such as mothers who repetitively kill their babies, medical professionals who kill their patients, and serial arsonists who commonly kill for a financial gain (Hickey, 2012). In addition, Beauregard and Proulx (2002) offered evidence that discredited the dominance of sexual motivations in serial murder finding that the majority of their sample fell under the "anger" profile with these offenders not planning their acts or choosing their victims prior to the crime.

Financial Gain

Research has found that some serial killers kill for profit. For example, Hickey (1997) stated that nearly a quarter of men serial killers, a third of team serial killers (at least two people killing together), and half of the women serial killers in his data sample killed for money. Although accounting for a large portion of the serial killers, some researchers do not include cases where the offender profited from the killing in their analysis of the crime. According to Hinch and Hepburn (1998), numerous studies did not include “black widows:” women who successively kill their husbands and professional contract killers because their motives are expected to be unlike those of a “true” serial killer. The logic behind this motive assumed to be being is the notion that these “professional” serial killers are motivated extrinsically, but “real” serial killers are motivated intrinsically (Hinch & Hepburn, 1998). Similarly, Leyton (1986) stated:

This multiple murder for profit is merely one form of making a living, one in which the murder is incidental to the goal. Those who practice this “profession” would undoubtedly follow another if they were offered more money. We are concerned with those who appear to kill *for its own sake*, those for whom killing alone is the apparent goal (p. 24-25).

Interestingly, Gresswell and Hollin (1994) noted that some researchers claimed to exclude serial killers who are extrinsically motivated, yet they actually included them in their analyses. For example, Holmes and DeBurger (1988) claimed they excluded serial killers who killed for profit, but their hedonistic-comfort classification for killers implies an extrinsic motivation: for comfort. Gresswell and Hollin (1994) further stated that murders devoted to “...prevent a sexual assault victim identifying as an assailant, may also be considered extrinsically motivated acts” (p. 5). Therefore, according to Hinch and Hepburn (1998), it seems

as if those researchers (such as Gresswell & Hollin, 1994) that exclude serial killers who are extrinsically motivated is not complete and the assumption that they are not should be considered speculation. Thus, it is unwarranted to exclude these killers (such as professional assassins or *hit men*) from the research. Financial gain is one of many motivations to kill; several other motives also exist.

Other Motives/Typologies

According to Hinch and Hepburn (1998), typologies are used to interpret patterns that serial killers exhibit during the commission of their crimes. While they could be used to place killers into specific categories, typologies are commonly used to understand the serial killer's general patterns of their killings. As Hinch and Hepburn (1998) stated, attempts of the organization and classification of serial murderers have been flawed. For example, Hickey (1991) stated that the three assumed components of serial killers' characteristics impact how typologies are developed. Serial murder is psychogenic, the motivation is internal, and the reward for the killing is psychological. However, Hinch and Hepburn (1998) noted that these components described by Hickey (1991) do not include killers who are motivated externally, such as contract killers, black widows, terrorists, or killers who are motivated politically or religiously. Therefore, many serial killings do not exactly fit into a category or could even straddle several categories (Gresswell & Hollin, 1994; O'Reilly-Fleming, 1996). Hinch and Hepburn (1998) agreed noting that many killers can fall into multiple categories, and these categories may also conflict with others. For example, some categories focus on motivation, others concentrate on psychiatric diagnoses, some focus on elements of the crime scene, and

others place emphasis on the mobility of the offender (Gresswell & Hollin, 1994; Hickey, 1997; Holmes, 1989). Therefore, issues arise when attempting to classify some killers based on typologies or categories.

Furthermore, typologies and categorizations appear less useful when situational and random elements of the killing are accounted for, as Gresswell and Hollin (1994) suggested. When serial killers are placed in categories based on a motivational focus, it is expected that the killer would always act as they planned to when in reality, unpredictable circumstances could develop that would impact the killer's plan and their environment, making them less likely to act as they had planned or had been motivated to act (Hinch & Hepburn, 1998). For example, the first attempted victim of serial killer David Berkowitz had unexpectedly yelled and began bleeding, causing Berkowitz to run away from the scene and bring a gun to future killings (Gresswell & Hollin, 1994). Similarly, serial killers can have different motives for killing particular victims. Motives could be adjusted and there could also be an evolution of the murders such as personality degeneration, less time planning with each successive killing, less time between killings, and an increase in violence with each succeeding killing (Gresswell & Hollin, 1994; Holmes, 1989). For example, serial killer Dennis Nilsen murdered a man merely because he was in his way and annoying (Gresswell & Hollin, 1994).

Gresswell and Hollin (1994) suggested typologies that have to be adaptable to allow for inclusion of both psychological and random environmental factors, while also being able to acknowledge that serial killing is a process. On the other hand, because of these issues, Hinch and Hepburn (1998) stated no typology is able to meet Gresswell and Hollin's (1994) suggestions, and instead argue that the typical serial killer does not exist; therefore, efforts to categorize serial killers are misleading and serve to perpetuate stereotypes. As previously stated,

typologies, categorizations, and motivations of serial killers may vary based on the selected victims.

Powerless Victims

The notion that victims of serial killers are powerless is a questionable aspect of some definitions, such as Egger's (1984). According to Leyton (1986), the modern killer with multiple victims is trying to level the social structure. In previous eras, multiple murderers have been in the higher strata and killed those in the lower strata, but now, modern multiple murderers are from the lower strata killing those in the higher strata (Hinch & Hepburn, 1998). Leyton (1986) wrote:

The major homicidal form of the modern era is the man who straddles the border between the upper-working class and the lower-middle class. Occasionally...they continue a metaphor from the earlier era and discipline unruly prostitutes and runaways. Much more commonly, however, they punish those above them in the system – preying on unambiguously middle-class figures such as university women (p. 297).

According to Hinch and Hepburn (1998), it is important to mention that the university women that Leyton (1986) references as representatives of powerful interests should be considered from the serial killer's perspective: some men serial homicide offenders may view them as powerful. Furthermore, serial killing men may recognize women as being capable of something they were not, were unable, or were prevented from doing, making the killer relatively disadvantaged compared to these women. For example, Leyton (1986) suggested that Theodore (Ted) Bundy's motivation to kill young women, several of whom were university students, was because they signified the forces that blocked his social mobility; he was killing

women who he believed were in a more powerful position than himself, retaliating against his failures at a university studying law (Hinch & Hepburn, 1998).

Confessing to Murders

When considering the various definitions of serial murder and how they usually require a specific number of victims for the offender to be considered a serial killer, it is also important to assess how those numbers are gathered. This leads to the next important aspect of understanding and defining serial murder who lacks attention: attribution of murders to suspects. This neglected aspect is, to a certain degree, due to serial killers often overestimating or underestimating the number of victims they killed (Fox & Levin, 2015; Haggerty, 2009; Quinet, 2007). Serial killers may overstate how many people they murdered for reasons such as gaining public attention (Schechter, 2003) or serving other concealed motivations of the killer (Adjorlolo & Chan, 2014). According to Costanzo and Gerrity (2009) and Leo (2008), many confessions by serial killers are not verified. Because of the lack of verification, this could partly account for an overestimation (Quinet, 2007) or even the underestimation (Barrett & Bouda, 1992) of the number of victims a serial homicide offender killed.

Focusing on how murders are attributed to suspects could aid in the reduction or elimination of the frequent overestimations and underestimations of the number of victims killed by offenders. Yet some, including the FBI, have remained silent on this issue although there have been some exceptions including Skrapec (2001a), Farrell et al. (2011), and the U.S. Congress in 1998 (Morton & McNamara, 2005). Some definitions such as Farrell et al. (2011) and the U.S. Congress in 1998 (Morton & McNamara, 2005) included the use of “common characteristics” in

deciding if a suspected offender killed the questionable victims, recommending that in order for all of the victims to be killed by the suspect, the “murder characteristics” are likely to be repeated and constant throughout their killings (Adjorlolo & Chan, 2014). But, the repeated and constant characteristics of criminology and psychology have been disputed over the years (Alison, Bennell, Mokros, & Ormerod, 2002). Furthermore, using “common characteristics” presents operational challenges and presents important questions. For example, these common characteristics of serial killers may not be known or not applicable to all serial homicide offenders as these killings and killers can be unique. Furthermore, killers who murder alone or with a partner or team may share different traits. According to Adjorlolo and Chan (2014), using such common characteristics is not adequate and presents numerous issues, and even more so when killers do not have similar crime scene features.

To combat these challenges, Skrapec (2001a) suggested using forensic analysis such as deoxyribonucleic acid (DNA) or fingerprints because they serve as reliable methods to attribute murders with offenders among prior killings where the offender is known (Terrance, Thayer, & Kehn, 2006; Wells & Quinlivan, 2009). While the technology for forensic evidence has greatly improved in recent years, it may not be possible in all cases (especially when there is a lack of physical evidence to be analyzed), but behavioral forensic techniques, such as linkage analysis, may also serve to be beneficial for linking victims to killers (Adjorlolo & Chan, 2014). But, as Dowden, Bennell, and Bloomfield (2007) and Snook, Cullen, Bennell, Taylor, and Gendreau (2008) suggested, using behavioral forensic techniques for investigations must be considered carefully as they are still in formative stages. A further discussion regarding the influence of forensic technologies on serial homicide is included with the biological theories of serial murder section.

Intentions

According to the Theory of Reasoned Action and the Theory of Planned Behavior, intentions are the necessary behavioral plans for the accomplishment or completion of behavioral goals (Ajzen, 1996). Intentions, according to Loewenstein, Weber, Hsee, and Welch (2001), are precisely visualized in a conscious process requiring time and negotiations, as well as attention to possible consequences. It is important to note though, that intentions do not always translate to behaviors. While they occur prior to actions, they have not always been found to be able to foresee or explain important variations in behaviors (Armitage & Conner, 2001; Sheeran, 2002). For example, a serial killer may have their next attack completely premeditated and planned with a target and methods carefully chosen, yet upon actually carrying out the murder, something may arise, such as realizing the victim possesses a firearm, which change their plans completely and cause them to not be able to carry out their attack as intended. For example, Dennis Rader, also known as “BTK” for Bind, Torture, and Kill (Henson & Olson, 2010), had planned to kill his 11th victim by hanging the woman upside down, but had to abandon his plans when city workers suddenly appeared to work outside her home (Ramsland, 2016).

It is important to note though, that among serial killing, similar to other aggressive acts, the offender’s intentions are a vital feature. As Harbort and Mokros (2001) suggest, some prior research includes the intentions of the offender as an important aspect in the psycho-criminological and legal criteria regarding serial murder (Kramer et al., 2004). Ferguson et al. (2003) stated “the critical components of serial murder exist not in broad clearly identifiable behaviors, but rather in the mind of the perpetrator himself or herself” (p. 292). Therefore, serial

homicide offenders who were able to kill several people have acted flawlessly on their planned intentions; accounting for the differences between serial murderers with higher and lower numbers of victims (Adjorolo & Chan, 2014). From a psychological viewpoint, the lack of opportunity to act upon their “killing intentions” does not excuse a person from being considered a suspect (Harbort & Mokros, 2011; Homant & Kennedy, 2014). The intentional component of serial homicide is important to consider, maybe even more so than actual actions. Mouzos and West (2007) argue that the serial killer’s state of mind or intentions are not always displayed in the number of victims they killed as offenders with two and five victims can still have commonalities. Thus, a serial killer who has less victims may fully have the intention to murder more people but lack the opportunities to kill for a variety of reasons, yet their intentions are similar to other killers who have murdered greater numbers of victims.

Nevertheless, many definitions have failed to analyze intentions of the killer and how this feature could influence how serial murder is understood. Instead, many definitions focus on the “real murder,” or the actual killings themselves (Adjorolo & Chan, 2014), even though most scholars suggest that serial killers do not stop acting on their intentions until they are caught (Homant & Kennedy, 2014). Assessing a serial killer’s intentions for future murders can be discovered by concentrating interrogations on possible methods, times, and locations on how they may be carried out (Gollwitzer, 1999). According to Adjorolo and Chan (2014), anecdotal evidence insinuates that killers frequently disclose their future intentions to security and law enforcement officials during interrogations. Furthermore, while killers have been sentenced to prison based on their commission of murders, some also are sentenced based on their intentions to kill in courts all around the world, thus making the intention of murder an important aspect in defining serial murder (Adjorolo & Chan, 2014). Including the intentions of serial killers, and

not just the number of victims killed, in a definition may be advantageous as investigators could proactively identify serial killers before they actually commit their next “real murder” (Adjorolo & Chan, 2014).

Number of Victims

Some of the previous definitions of serial murder are wide-ranging and ambiguous, especially in regard to minimum number of victims required to be considered a serial murderer. Several definitions lack consensus about the required number of victims that must be killed by the offender to be considered a serial murderer. For example, Knoll (2006) and Hickey (2012) stated an offender must kill a minimum of two victims, which coincides with the FBI’s two victim requirement (FBI, 2008). But according to Adjorlolo and Chan (2015), most researchers have agreed that a serial killer must have at least three victims (Farrell et al., 2011; Forsyth, 2015; Haggerty, 2009; Holmes & Holmes, 2010; Homant & Kennedy, 2014; LaBrode, 2007; Morton & McNamara, 2005; Skrapec, 2001a), while others have not discussed this aspect of the definition (Harbort & Mokros, 2001; Kraemer et al., 2004).

A critique of narrowly defining serial murder based on the number of killings or victims, and not other incorporated criteria that classify serial murder differently than other forms of homicide, produces conditions that would allow for many homicide offenders to likely be deemed serial killers (Adjorlolo & Chan, 2014). Definition inclusive of such disputed flaws previously discussed are not aiding the progression of the term to a consistent definition, but are only further complicating the comprehension of serial murder. As previously discussed, since the number of victims required to be considered a serial murderer has been a topic of debate in the literature for years, this study analyzes the differences in cases based on the number of victims

killed by serial homicide offenders in efforts to better understand the differences of such killings based on the number of victims. While a great deal of disagreement exists, the minimum threshold for victims is imperative to not only to the knowledge regarding serial murder, but also to differentiate serial murder from other types of multiple murders including mass and spree murder. More details regarding the aims of this study as well as the important implications are discussed later in detail.

Contemporary Definitions

Because of these problematic elements featured in various definitions of serial murder, some of the more recent definitions are less specific about the requirements and do not include many of these components. As discussed, research on serial murder has previously included factors such as the gender of the offender, relationship between the victim and offender, premeditation, cooling-off period, various motives and typologies, victim characteristics, minimum number of victims, attribution of murders, and intentions of the offenders. Still, some researchers place emphasis on certain traits of the crime claiming they are imperative to the conceptualization of serial murder, such as the cooling-off period (Homant & Kennedy, 2014; Morton & McNamara, 2005), having no previous relationship between the victim and offender (Haggerty, 2009), and sexual motivations (Kraemer et al., 2004).

In terms of the minimum number of victims, Adjorlolo and Chan (2014) argued that there may be an agreement concerning the number of victims necessary to be considered a serial murder with many researchers requiring a minimum of three victims (Farrell et al., 2011; Forsyth, 2015; Homant & Kennedy, 2014; Morton & McNamara, 2005; Skrapec, 2001a). Yet

others agree with the FBI's standards of two victims (FBI, 2008; Hickey, 2012), and finally, there are those who have remained silent on this specific aspect of the definition (Harbot & Mokros, 2001; Kraemer et al., 2004). As the minimum victim threshold continues to be debated, Adjorlol and Chan (2014) stated that there appears to be a lack of research, discussion, or rationale in this lasting debate concerning the minimum number of required victims.

Due to this lack of censuses, researchers should remain cautious with this minimum victim requirement in serial murder because, while having at least three victims may seem enough, it is imperative to note that many serial killers would continue killing until they are caught (Homant & Kennedy, 2014), killed, or simply gave up killing (Chan & Heide, 2009). Homant and Kennedy (2014) also stated that any breaks between the killer's first killing and their subsequent killings could be because the killer has not yet acted on their impulses, lacked opportunities to kill, or was caught. Furthermore, Barrett and Bouda (1992) suggested that some killers have actually murdered more people than they are charged with, but Kocis and Irwin (1998) stated it is inappropriate to assume a killer is a serial murderer if they have only been convicted of one killing. A person who only kills one victim (Egger, 1998), or even two, could be a serial killer from psychological (Homant & Kennedy, 2014; Kocsis & Irwin, 1998) and legal perspectives (FBI, 2008). However, having this requirement, among others, aids in the distinction between mass and spree murder (Culhane, Hilstad, Freng, & Gray, 2011), which will also be discussed in more detail later.

Because of these important aspects of serial murder, Adjorlol and Chan (2014), agreed with the FBI's 2006 definition by stating that a serial killer must have killed at least two victims. This requirement of a minimum of two victims ensures the offender possesses the psychological and physical abilities to carry out successive killings; Adjorlol and Chan (2014) stated this

allows researchers and law enforcement agencies to have a similar recognition of the crime. In addition, their suggested definition includes three important factors: at least two forensically linked killings, including or not including an exposed intention of another murder; the killings are discrete events by the same person over a length of time; and personal gratification is the primary motive (Adjorolo & Chan, 2014).

Adjorolo and Chan's (2014) recent definition of serial killing is different than prior descriptions as it takes into account the legal and scientific requirement for linking murders to suspects, in addition to the number of victims killed while also highlighting the intentions of the killer. In addition, it includes that these serial murders must be committed by the same person over a period of time, which is similar to other recent definitions (see Farrell et al., 2011; Santtila, Pakkanen, Zappala, Bosco, Valkama, & Mokros, 2008). Finally, by noting the serial killer's motive must be for personal gratification, it allows for less emphasis on the motivational aspect that has created challenges in the past (Beauregard & Proulx, 2002; De River, 1949; Gebhard, Gagnon, Pomeroy, & Christenson, 1965; Gresswell & Hollin, 1994; Groth & Birnbaum, 1979; Guttmacher, 1951; Harbort & Mokros, 2001; Henderson, 1939; Hickey, 1991, 1997, 2012; Hinch & Hepburn, 1998; Hirschfeld, 1944; Holmes, 1989; Holmes & DeBurger, 1988; Karpman, 1954; Leyton, 1986; MacCulloch, Snowden, Wood, & Mills, 1983; MacDonald, 1961; Meloy, 1988; O'Reilly-Fleming, 1996; Petee & Jarvis, 2000; Stekel, 1929; Revitch, 1965). Adjorolo and Chan (2014) stated motives are unnecessary to consider in a definition as they limit some murderers who may or may not be considered a serial killer because of their specific motivation for committing the murders and, furthermore, some killers may have numerous applicable motives.

Legal Definitions

The FBI, the only legal body in the U.S. with extensive influence in the definition of serial murder, also polished how they defined serial murder over the years as research and knowledge in the area has improved immensely (Adjorlol & Chan, 2014). According to Morton and McNamara (2005), the first definition by the FBI's Behavioral Science Unit (BSU) classified serial murder as a series of homicides committed by an offender who kills in at least 10 separate events. In 1998, the U.S. Congress passed a federal law; Protection of Children from Sexual Predator Act of 1998, that defined serial killings as "a series of three or more killings, not less than one of which was committed within the United States, having common characteristics such as to suggest the reasonable possibility that the crimes were committed by the same actor or actors" (FBI, 2008, p. 11).

Due to the challenges previously discussed and their impacts on the utility of various definitions, in 2006 the FBI's BSU hosted a symposium in San Antonio, Texas, at the NCAVC where experts in the fields of psychiatry, forensic psychology, law, criminal investigation, sociology, and behavioral analysis met in an attempt to formulate a more useful definition of serial murder (Adjorlol & Chan, 2014). The experts agreed that the serial murder should be defined as "the unlawful killing of two or more victims by the same offender(s), in separate events" (FBI, 2008, p. 12).

Hickey (2012) stated that this new definition includes the minimum number of murders necessary for serial murder and allows for variability among offenders who kill over a period of time. But, As Adjorlol and Chan (2014) stated, this definition is lacking the incorporation of demographic elements of serial homicide offenders who have been included in previous

definitions. It is important to note that the FBI generated this definition to create specific standards for when they could step in and assist local law enforcement agencies in their serial murder investigations, it did not intend to be the general definition of serial murder (Hickey, 2012) or to support research by scholars (Adjorlolo & Chan, 2014). Also, applying this definition can produce issues in other countries, and even between states, as what each of these regions defines specifically as “unlawful” varies greatly, resulting in major differences and variations concerning how the crime is defined and conceptualized, in addition to variations concerning trends of the crime (Adjorlolo & Chan, 2014).

Similarities and Differences between Mass, Serial, and Spree Murder

While serial and mass murders may appear similar on the surface as both criminal acts involve the killing of multiple people, the characteristics of these two types of crimes are actually more different than they are similar in numerous respects. The FBI (2008) previously considered an event a mass murder if four or more people were killed in the same incident without time between the murders. After the mass shooting in Newtown, Connecticut (Krouse & Richardson, 2015), Congress passed the Investigative Assistance for Violent Crimes Act of 2012 that lowered the minimum victim threshold by defining mass murder as “3 or more killings in a single incident” (Investigative Assistance for Violent Crimes Act of 2012). For example, James Holmes entered a movie theatre in Aurora, Colorado during the screening of *The Dark Knight* in 2012 and opened fire resulting in 12 killed and 70 injured (“James Holmes gave a ‘self-satisfying...smirk,’” 2013). This would be classified as a mass murder and James Holmes would

be considered a mass murderer because his actions resulted in the deaths of more than three people in the same incident, without any time between the killings.

The definition of serial murder differs from that of mass murder due to the timing of events, but other elements are important to consider as well. One similarity of serial and mass murders is that the offender takes total control of their victims' lives before killing them. While both types of offenders can create great fear and anxiety in a community, a reaction to a mass killer is more focused and locally limited when compared to serial killers (Hickey, 2016). In terms of the offenders, mass murderers are generally viewed as having a mental illness who may eventually explode, immediately creating a "they versus us" dichotomy (Hickey, 2016, p. 28). On the other hand, Hickey (2016) noted that when people realize that serial killers murder for "recreation" (p. 28) and are not usually insane, unlike mass murderers, it provides a new meaning to "strangers," (p. 28); thus, making serial murderers being perceived as more sinister and able to create more fear.

Another major difference is that the mass murderer kills three or more people in one singular event, which is different when compared to the serial killer who individualizes their murders and continues to kill over various periods of time (Hickey, 2016). Because of these general differences, cases in which a mass killer will kill again or when a serial killer commits a single mass murder are extremely rare (Hickey, 2016). This is due to mass murderers frequently taking their own lives, being arrested or killed by police, or turning themselves in following the commission of their crime. On the other hand, serial killers attempt to avoid being caught and apprehended by police as they continue their killings over extended periods of times before they are eventually caught, if they ever are (Hickey, 2009). According to Hickey (2016), serial and

mass murderers are also quantitatively and qualitatively different, and disagreements about the elements of each have also surfaced recently.

In addition to mass and serial murders, spree murder is another type of killing that results in the deaths of three or more people, over a period of hours or days, usually by a single offender, but the killings occur in different locations (Hickey, 2016). Hickey (2016) described these killers as acting in a frenzy, killing a victim in one location then traveling to another, without any attempts to avoid being caught. Gresswell and Hollin (1994) stated that even though these offenders kill at separate locations, there appears to be no cooling-off period between the events. In summary, unlike serial murder where a cooling-off period is an important aspect of the crime and mass murder that occurs in a single location, spree murder does not include this cooling-off period yet the killings transpire in multiple locations.

Therefore, the cooling-off period and the locations of the killings are the most important aspects when examining the differences in the definitions and conceptualizations of mass, serial, and spree murders. To clarify, for example, Charles Whitman killed over a period of several hours: he first went to his mother's apartment and shot her (first location), then returned home and stabbed his wife (second location), and about six hours later, Whitman went to the University of Texas and began shooting which resulted in the deaths of 15 additional people (third location). Whitman's killings lasted about a day, but there was not an emotional cooling-off period between the acts; therefore, it was classified as a spree murder (Aggrawal, 2005). According to Aggrawal (2005), the offender had the opportunity to control their behavior and end their series of killings during a cooling-off period but this lack of this opportunity to cool-off shows the possibility of the killer being unable to control their behavior, and thus, making them a more dangerous criminal.

Similar to Homant and Kennedy (2014), Osborne and Salfati (2015) previously mentioned discussions concerning difficulties in operationalizing the cooling-off period in serial murder, Hickey (2016) also stated that this problem extends to the classification of spree murder as there is not a consensus about how to define this cooling-off period. Therefore, as of 2008, experts decided to eliminate the spree murder classification and offenders, so offenders who would have previously been considered spree murderers would now be classified with other serial murderers (FBI, 2008). Stating the grammatical problems that distinguish the trichotomized “multiple homicide offenders” that include serial, mass, and spree murderers, Delisi and Scherer (2006), argue this will also be destructive to potential forthcoming research on these types of homicides. Issues regarding research are also evident in the literature specifically on serial homicide as those attempting to study the crime face difficulties in choosing one of the several offered definitions.

Which to Choose?

With numerous definitions of serial murder used by academics and law enforcement agencies, in addition to some close similarities to the definitions of mass and spree murders, some scholars question which definition to utilize in their research on multiple murder. However, according to Adjorlol and Chan (2014), a cursory examination of the literature on serial murder would suggest that some consistency concerning the definition has been achieved (see Allely, Minnis, Thompson, Wilson, & Gillberg, 2014; Campobasso et al., 2009; Cullhane et al., 2011; Ioana, 2013; Lester & White, 2012; Simkin & Roychowdhury, 2014; White et al., 2011).

But Adjorlol and Chan (2014) note that a detailed analysis of the same literature also reveals that three categories of serial murder research exists. The first category of serial murder research includes scholars who have remained silent on the definition of serial murder: they did not follow, suggest, or operationalize previous definitions (see Culhane et al., 2011; Keppel & Birnes, 2003; Lester & White, 2012; Myers et al., 2008; Silvo, McCloskey, & Ramos-Grenier, 2006; Whitman & Akutagawa, 2004; Yorker et al., 2006). Through remaining silent on the issue, their research may barely add to the understanding of serial murder as their results are potentially offering less usefulness as they are questioned about the definition that was used to create their sample of interest that their data originated from. A second category is composed of researchers who call upon and cite the previous definitions of serial murder that others have created (Allely et al., 2014; Campobasso et al., 2009; Gibson, 2006; Hickey & Harris, 2013; Ioana, 2013; Miller, 2014; Peck & Jenkot, 2008; Simkin & Roychowdhury, 2014). Researchers in this category would likely not face many issues, but since there is not an accepted definition of serial murder, it can be problematic (Adjorlol & Chan, 2014). Finally, the last category noted by Adjorlol and Chan (2014) consists of researchers who decided to propose or operationalize their own definition to fit the focus and interest of their research due to the lack of a uniform definition (Farrel et al., 2011; Haggerty, 2009; Harbot & Mokros, 2001; Hickey, 2012; Holmes & Holmes, 2010; Homant & Kennedy, 2014; Kraemer, Lord, & Heilbrun, 2004; Morton & McNamara, 2005; Santtila et al., 2008; Skrapek, 2001a).

Implications for Research

Without consistency in defining serial murder, some scholars claim empirical research has been hindered, leading to limitations of the knowledge and discussion on the topic (Ferguson et al., 2003; Wright, Pratt, & DeLisi, 2009). Hickey (2006) stated that this issue presents a major weakness of the statistics related to serial murder due to the differences in how it is defined and conceptualized. Quinet (2007) also wrote that a consistent definition would provide more accurate statistics that could be used to aid in the answering of questions concerning the prevalence of serial murder. A uniform definition of serial murder is necessary for both researchers and law enforcement officials to collectively understand the crime, especially as interdependence exists between the groups: a major source of data for researchers is compiled through law enforcement agencies, while law enforcement officials regularly use the results found by the researchers to better their techniques (Adjorlol & Chan, 2014).

These issues have not come without critiques. Leyton (1996) stated that criminologists have overlooked the notion that ideology is the enemy of science, "...criminological writings tend to be factious, partisan and combative" (p. 37-38). In addition, studying violence has become remarkably politicked as several interest groups are challenged to have positional dominance (Jenkins, 1994; Leyton, 1996). Leyton (1996) also suggested that scholars should avoid "turf wars," abolish self-serving politics from science, and include interdisciplinary methods in an effort to comprehend the serial killer phenomenon. Lion (1991) similarly stated that violence in humans arises from various etiologies, from organic to functional. According to Hinch and Hepburn (1998), the academic enterprise structure and lack of methodological tools

that have the ability to create accurate findings are viewed as vital to the dogmatism that plagues academia.

Considering the issues related to defining and studying serial murder, it can be challenging for those attempting to conduct valuable research on the subject. Hickey (2014) stated that “being a researcher in this area has required getting past information and sensationalism, finding others who share similar research interests, and dredging up reliable data” (p. 12). Fortunately, in response to these issues, think tanks have been created to conquer some of the barriers to researching serial murder (Yaksic, 2015). Groups such as the Atypical Homicide Research Group based at Northeastern University include a diverse set of both academic and law enforcement officials that collaborate in an attempt to better comprehend serial murder by overcoming many of the challenges and barriers (Boyne, 2014). The Cold Case Society at Western University, for example, focuses on the twenty-first century policing by merging resources and knowledge (Sher, 2013). The Homicide Research Working Group also has several members from the U.S. and other nations ranging from academics and researchers to practitioners at national, state, and local government public and private agencies who all aim to understand and reduce lethal violence (Huff-Corzine & Vincent, 2017). According to Huff-Corzine and Vincent (2017), some of the main goals of the Homicide Research Working Group include encouraging the use of high-quality data, linking several homicide data sources, promoting collaborative research from interdisciplinary fields, and sharing techniques for effectively researching homicides.

Experts involved in these groups have been attempting to contest outdated perspectives and myths related to serial murder (Fox & Levin, 1999; Sterbenz, 2015; Yaksic, 2013), as they work toward even the most seemingly basic issues, such as attempting to discover the actual

number of serial killings. Surprisingly enough, in addition to the previously mentioned issues among defining, researching, and conceptualizing serial murder, controversy also exists in identifying the actual number of serial killers and victims (Hickey, 2012; Kiger, 1990; O'Reilly-Fleming, 1996). The following chapter will examine the issues associated with finding the true number of serial killers and victims, as well as the methodological challenges that arise when attempting to accurately research the crime.

CHAPTER 3: SHOW ME THE NUMBERS

Thus far, issues associated with defining serial murder and the challenges this inconsistency has caused in research and the body of knowledge on the subject have been discussed. Acknowledging these issues, it should come as no surprise that the scope of the problem, in terms of the numbers and trends, continues to face many challenges as well. Without a uniform definition of serial murder, scholars and experts are expected to face difficulties in accurately depicting the nature of the phenomenon. These issues, among others, and how they relate to the numbers and statistics of serial murder are discussed.

While experts may use various definitions of serial murder without being able to agree on just one, they do agree that the number of serial killings and serial killers is unknown (Gresswell & Hollin, 1994; Hickey, 1997; Holmes, 1989; Holmes, Hickey, & Holmes, 1991; Jenkins, 1994; Maxfield, 1989; O'Reilly-Fleming, 1996). There have been some estimations such as that at any time in the U.S., there may be between 10 and 500 active serial murderers (Kiger, 1990; O'Reilly-Fleming, 1996), and the FBI's estimate that at any time in the U.S., there are between 35 to 100 active serial killers (Hickey, 2012). To compare, in 1996 Ratner estimated there are 5 to 30 serial killers active at any given time in Canada.

Hickey (2016) stated that in general, the murder rate has been decreasing for years, although particular types of murders are occurring more frequently now than in the past. Most murders are due to domestic or community altercations, where the victim and the offender have some sort of relationship; but more recently, there has been a rise in murders that are committed by strangers (Hickey, 2016). This increase in stranger-to-stranger murders is one cause for the homicide clearance rates in many cities decreasing; for example, in Los Angeles, only about 40%

of homicides are solved and prosecuted each year (Hickey, 2016). Some experts in the field suggest that the large numbers of unsolved and unprosecuted homicides are likely the result of serial killers (Hickey, 2009).

On the other hand, Hinch and Hepburn (1998) argue that because there are not accurate numbers on serial killers, it is unwarranted to assert that serial killings have increased. Ritter (2002) noted the importance of determining the number of active serial murderers and their victims so that researchers do not simply publish and debate the estimates and walk away. Yet these wide-ranging estimations of the prevalence of serial murderers are likely due to an assortment of issues and challenges described in the previous chapter concerning the definition and conceptualization of the term and its aspects. Issues also arise in both qualitative and quantitative methodologies of researching serial murder, including the various sources of data, and small or biased samples (Hinch & Hepburn, 1998). Some of these concerns are presented below.

Qualitative Data

FBI agents began the early efforts of qualitative research by meeting with 25 serial murderers in the early 1980s in an effort to evaluate the situational characteristics of the offenders' lives by becoming deeply involved in their life histories (Beasley, 2004; Ressler & Burgess, 1985). Because the FBI did not make any of the data and information they collected available to academics, there was a lack of systematic research on serial killers, which has led to the development of many stereotypes (Arndt, Hietpas, & Kim, 2004; Jenkins, 1994; Kiger, 1990)

and myths, as well as the yearning to monetize the concept (Huff-Corzine, Marshall, & Wright, 2015).

The FBI had access to the offenders they met with in the 1980s because they were incarcerated, which allowed for the initial qualitative research. Unlike the FBI, most scholars and researchers do not have such connections and cannot as easily collect information from serial killers due to a variety of complications. Obtaining initial connections with subjects can be problematic, especially for serial murderers in particular, and requests could be denied for several reasons. Access may be blocked by penal institutions or even the killer's lawyer (O'Reilly-Fleming, 1995), or subjects could be uncooperative, perceiving the process as not being advantageous to them or their situation. There are also other general challenges with qualitative data besides obtaining connections with subjects, such as the reliability of the data from the subjects and possible bias or contamination by the interviewer (Hinch & Hepburn, 1998).

In addition to the issues with obtaining access, issues with reliability among qualitative data are also common. For example, even if the serial killers agree to participate in the interviews, Holmes (1989) stated that many killers are unwilling or unable to talk openly about the details of their crimes. As for the interviewers, Hinch and Hepburn (1998) found that researchers frequently contaminate the data or have some inadvertent bias. Hickey (1997) also noted that some extensive interviews by researchers could make the killer become too close to them: they may unintentionally add to the killer's notoriety by giving them the publicity the killer desires.

Occasionally, killers will participate in gaming: telling the interviewer what they think they want to hear (Hickey, 1997). Jenkins (1994) claimed that both Ted Bundy and Henry Lee

Lucas have engaged in such behaviors of gaming in efforts to make themselves and their stories fit the image and confess to killing more people than they actually have. If the interviewer is not aware of the killer's attempts to manipulate, the false information could be passed along (Hinch & Hepburn, 1998). Another methodological issue with qualitative interviews of serial killers is that the data collected is in retrospect as the killer is asked to provide precise information regarding their past behaviors (Hinch & Hepburn, 1998). The amount of time between the murders and the interview must be considered. Distorted thinking and information should also be expected; as Hickey (1997) stated, "Hindsight can easily distort reality and mold it to the psychological needs of the offender" (p. 231).

Fortunately, other opportunities to obtain data on serial killers exist besides qualitative interviews. Leyton (1986) used accounts from newspapers, diaries, case studies, criminal justice system reports, and other achieved information. As Hinch and Hepburn (1998) advise, these sources are not totally reliable either; newspapers will often offer broad information about specific killers and typically provide information based on testimonies, but also could be enhanced with other material acquired through investigative journalism. Furthermore, journalists are known for including hearsay in their reports; often caring more about writing a story than including factual information (Hinch & Hepburn, 1998). The news media has also been accused of focusing on sensational crimes and not including cases that do not fit a particular stereotype (Jenkins, 1994; Kiger, 1990), making information from news reports often questionable at best (Hinch & Hepburn, 1998).

Similarly, biographies, diaries, and case studies can include false information, but they are typically rich in descriptive information (Hinch & Hepburn, 1998). On the other hand, criminal records, transcripts from trials, abstracts, and information from archives may not always

contain all of the necessary information for research purposes, but they do provide reliable information (Hinch & Hepburn, 1998). According to Hinch and Hepburn (1998) a case study may be chosen based on its sensational appeal, for example, this has contributed to at least four books on the mass market that each argue they provide the *true story* of the Paul Bernardo and Karla Homolka cases (Burnside & Cairns, 1995; Davey, 1994; Pron, 1995; Williams, 1996). The major issue with having a story on a particular case study is that it is skewed in favor of the stereotypes and what the public expects from serial killers (Hinch & Hepburn, 1998), and as Ratner (1996) stated, stories on particular cases obtain attention due to their exotic features that attract the voyeur.

Quantitative Data

Similar to qualitative data and methods, there are also issues among quantitative research data and methods when analyzing criminal offenses such as serial killings. The Uniform Crime Report (UCR) is the major source of data from the FBI and includes data from law enforcement agencies throughout the U.S. The UCR also includes the Supplemental Homicide Report (SHR) that offers further material regarding victims, offenders, and situational components of homicides.

Unfortunately, data from the UCR and SHR have been viewed as unreliable or incomplete because reporting to them is voluntary (Kiger, 1990; Williams & Flewelling, 1987), but more recently, the data appears to be more inclusive. For instance, the UCR program launched in 1930 with information submitted from law enforcement agencies in 400 cities in 43 states (Martin, 2017). Currently, as the FBI reported in 2017, the UCR includes crime data

voluntary submitted from about 18,000 city, university/college, county, state, tribal, and federal law enforcement agencies in the U.S. (FBI, 2017a).

Pressure from organizations to not cause fear among the public about the possibility of a serial killer can present issues for some law enforcement agencies, which could inhibit the reporting process and impact how homicides are classified (Kiger, 1990; Williams & Flewelling, 1987). In addition, as these data sources only include crimes known to and recorded by law enforcement officials, they do not include missing persons and bodies that have not been discovered (Hinch & Hepburn, 1998), some of which may potentially be the victims of serial killers.

Furthermore, not including unidentified bodies is an important aspect of the research on serial murder. Each year many unidentified bodies are found and there are efforts to match the number of bodies to serial killings (Hinch & Hepburn, 1998). As Hinch and Hepburn reported in 1998, estimates of the number of unidentified bodies are found to be between 4,000 and 5,000 each year in the U.S., with some arguing these bodies were the people who were victimized by serial murderers. For instance, Radford (1992) argued that of the 3,500 unidentified women homicide victims every year in the U.S., most were victims of a serial murderer. But, Radford's (1992) claim did not sit well with Jenkins (1994) who, in response, stated:

The problems with this statistic were, or should have, been apparent. If, in fact, 3,500 females fell victim to serial killers each year during the mid-1980s, this would have accounted for some 70 percent of *all* murders of women and girls. Apart from being implausible as it stands, this figure would also leave little room for the domestic murders that, according to the femicide literature, are believed to be so endemic a problem (p. 142).

However, more recently, Ritter (2007) reported a higher estimate of tens of thousands of people year disappearing each year due to suspicious circumstances and also noted that on any

day there may be up to 100,000 cases of people who are activity missing in the U.S. Just as the true prevalence of serial murderers operating at any time in the U.S. is unknown, many scholars agree that the number of unidentified bodies who were victims of serial killers is also unidentifiable (Hickey, 1997; Jenkins, 1994; Kiger, 1990). It is difficult to determine this number as reporting the unidentified bodies and assigned them to a database is not mandatory in the U.S. for coroners and no formal training is even required to be a coroner (Hinch & Hepburn, 1998). Thus, the information in reports, such as the cause and time of death that the coroners submit to the FBI may be inaccurate (Kiger, 1990).

This process is further complicated as bodies that have been decomposing for extended periods of time may not provide much information or evidence. In these situations, the bodies are not usually considered victims of murders, but when they are, they are typically a victim from a murder that occurred years prior and thus would not likely be included in the UCR or SHR (Hinch & Hepburn, 1998). Kiger (1990) also stated that these victims typically are not added to the revised counts of homicide for that year. For these reasons, some claim the rates of homicides are underestimated, making analyses using these data for estimations and rates of serial killings unreliable (Jenkins, 1994; Kiger, 1990; Williams & Flewelling, 1987). Once again, the SHR data from the UCR only includes the deaths classified as homicides by the police and certainly are not capable of revealing the true number of deaths for a given year, making estimates of serial killers and their victims problematic (Hinch & Hepburn, 1998).

Also arising from issues related to data on serial murder is the inability to make comparisons across cultures or other nations. While serial killers likely operate in most countries, there have not been many efforts to compare the crimes among nations due to previously discussed issues such as inconsistent definitions, differences in reporting, and the inability to

access quality data (Hinch & Hepburn, 1998). To overcome this, O'Reilly-Fleming (1996) claimed that creating an accessible international database could produce communication networks between law enforcement agencies and researchers that would possibly aid in reporting, detecting, and apprehending serial killers.

Because of these issues related to obtaining information on serial killings, many data sources have not been valuable to social science researchers; Kiger (1990) wrote on these vulnerabilities that quantitative data present:

Although idiographic research provides useful insights into the lives and possible individual-level etiology of serial murderers, it is also important to accurately quantify the problem. Without accurate quantitative assessments of the extent of serial murder, we will be unable to develop informed typologies, theories, and policy decision. Indeed, we run the risk of creating a social problem, the magnitude of which may be greatly exaggerated (p. 35-36).

As Hinch and Hepburn (1998) stated, research on serial murder cannot provide the actual number of serial killers or the number of people who fall victim to serial killers even though it claims to, because researchers commonly use data plagued with many limitations, such as narrow definitions of the crime or research using only the small samples or the most sensational cases. Kiger (1990) also stated that it is imperative not to only use sensational cases or unreliable data that may be based on unwarranted stereotypes to restrict or provide incorrect information. Therefore, according to Hinch and Hepburn (1998), researchers should be held accountable for the murders they analyze in their analyses.

In response to the statements made by Kiger (1990) nearly three decades ago and in attempts to meet the standards that Beasley (2004) found necessary, such as including many cases and being objective and standardized, researchers began focusing on improving the methodology to analyze serial killers (Yaksic, 2015). But Petee and Jarvis (2000) claimed that the absence of

reliable data has led to the progression of serial murder research to be delayed, and Dowden (2005) agreed, further noting that this will remain a major issue in future research on the serial killing phenomenon.

To summarize, official data on serial killings are often viewed as unreliable due to use of different definitions, small samples, biased samples, and data from secondary sources, like news media and biographies. Hinch and Hepburn (1998) argue this could be the reason for the differences in the estimations of the prevalence of serial killings. Without accurate numbers on serial killings, according to Hinch and Hepburn (1998), it is unwarranted to assert that there has been an increase in the crime, as Hickey (2016) has argued, or even to connect the unknown or stranger killings and unidentified bodies to serial murders. These data and methodological limitations inhibit how serial murder is understood and the nature and extent of the problem. Inflated estimations concerning the prevalence of serial killing can trigger people becoming fearful of a serial murder epidemic (Hinch & Hepburn, 1998). Without reliable data that would allow for accurate research on serial killings, many people may perceive the phenomenon as much worse than it actually may be, which leads into the following section on public perception and fear in regard to serial killers.

Public Perception and Fear

While serial murder has been occurring all around the world for centuries, it was not until the mid-1970s and early 1980s when serious literature and media attention began to focus on the crime (Holmes & DeBurger, 1998). Increased media attention on a topic can certainly influence attitudes and perceptions about current crime trends. In a study of 1,005 participants who

watched a weekly average of 15 hours of television, with 42% stating they regularly watched shows about crime, Dowler (2003) found that those who watched crime shows regularly are significantly more likely to be fearful or worrisome about crime, even when controlling for gender, race, age, income level, level of education, marital status, and perceptions of police effectiveness and neighborhood problems. As Jenkins (1994) stated, serial murder can fuel moral panics due to the ideological campaign for law and order. Further stating that the 1970s moral panic in the U.S. occurred when there was a clear political trend to reevaluate the etiology of social issues that focused on wrong-doing and deviant behaviors being perceived as problems associated with personal sin and evil, as opposed to dysfunctions in the social or political structures (Jenkins, 1994).

According to Blumstein and Rosenfeld (1998), the rates of homicides in the U.S gradually decreased after the increase in the late 1980s to the early 1990s. Currently, even with a relatively low homicide rate compared to previous years, the public's perception of crime indicates that people think that murder is more prevalent now than in the past (Hickey, 2016). These perceptions are driven by mass murders such as Columbine, Colorado; Virginia Tech, Virginia; and Fort Hood, Texas (Hickey, 2016), as well as Aurora, Colorado ("James Holmes gave a 'self-satisfying...smirk,'" 2013), and more recently, the mass murders in Orlando, Florida (Stults, Kupprat, Krause, Kapadia, & Halkitis, 2017); Las Vegas, Nevada (Gomez & White, 2017); and Parkland, Florida. Even though these events are considered mass murders and the important differences between mass and serial murder have been discussed, the events still cause perceptions that create fears among citizens of being the next murder victim, thus increasing perceptions and fear of murder.

Public perception of murder includes influence from regular news media as well; according to Fox, Levin, and Quinet (2012), the prime-time news is more likely to feature stories about crime and events that are actually less common in society yet appear to be featured more often in the news. Furthermore, according to the Center for Media and Public Affairs (1999), more than one-third of the reports about crimes that are broadcasted on major networks include homicides. Yet FBI data indicate that homicides account for less than 1% of all violent crimes and 0.1% of all serious crimes (Fox, Levin, & Quinet, 2012). Many myths began arising in U.S. society about serial killings as they received considerable publicity and cases were sensationalized in the news and entertainment media, even though not much information was actually known about the killers (Hickey, 2016). A brief discussion of the myths related to serial killings follows. Examining these myths is important as they may have an impact on societal perceptions of serial homicide in addition to influencing investigations of serial homicide cases by law enforcement professionals.

Serial Murder Myths

Public perception, which can be powered through an increased presence of serial murder in news and entertainment media. In addition, news media reporting on examples of only the most sensational and gruesome cases can lead to an alarming panic concerning multiple murder, particularly serial killings. This panic can create myths surrounding the perceptions of serial murder, even when there is a lack of empirical evidence to support the claims. One of the most dominant myths regarding serial killing is that serial murders are all, by definition, sexual (Hickey, 2016). Hickey (2016, p. 5-6) included a review by Walters, Drislane, Hickey, and

Patrick (2014) concerning several of these established serial murder myths while also providing factual evidence about the accuracy of such claims. These myths along with factual evidence from recent research are discussed below (Hickey, 2016; Walters, Drislane, Hickey, & Patrick, 2014):

Myth 1: Most serial killers are Caucasian. In recent years, at least half of serial murderers were Black, but previously, one in five serial killers were Black.

Myth 2: All offenders are men. In fact, about 17% are women.

Myth 3: All serial killers are insane. The term “insanity” is a legal term and only about 2%-4% of all serial killers fall under this category.

Myth 4: Serial killers are lust killers. While many serial killers are lust killers, many do not sexually assault, torture, or sexually mutilate their victims.

Myth 5: They are prolific. Killers may be considered “prolific” when they killed several victims. While a few offenders have many victims, most murder less than eight people.

Myth 6: Serial killers kill alone. About a quarter of serial killers have one or more partners.

Myth 7: The killers beat, stab, strangle, or torture their victims to death. Some killers poison or shoot their victims.

Myth 8: Serial killers are very smart. In fact, most killers have average intelligence.

Myth 9: They move around the U.S. a lot. Many kill in the same, local area.

Myth 10: Because they were abused sexually as a child they are driven to kill.

Actually, many killers kill due to childhood rejection and abandonment.

Myth 11: They cannot stop killing. Some take periods of many years off before killing again or getting caught. These offenders usually switch to paraphilic behaviors or other actions as a substitute for killing. Some examples of these killers include Dennis Rader (BTK), Jeffery Gorton, Jeffery Dahmer, and Theodore Kaczynski.

Myth 12: Most offenders desire getting caught. Killers, like anyone, learn and grow more confident with more experience. Many killers who desire to be serial killers are caught after their initial killing.

Myth 13: They are psychopaths. While some killers are psychopaths, others only possess psychopathic traits. Numerous serial killers with many victims who have been evaluated by the Psychopathy Checklist – Revised (PCL-R) are not classified as psychopaths.

Myth 14: They have a specific prototype. In reality, killers vary in race, ethnicity, nationality, religion, age, sex, income, intelligence, and education (Hickey, 2016, p. 5-6; Walters, Drislane, Hickey, & Patrick, 2014).

Many of these myths surrounding serial murder still remain common in society, possibly because they are not supported by a plethora of empirical evidence. These myths may influence perceptions of serial murder. In addition, research on serial murder has commonly been guided by various theoretical approaches and perspectives from multiple disciplines in attempts to further understand the crime. These various approaches and perspectives to serial murder are discussed in the following chapter.

CHAPTER 4: APPROACHES & PERSPECTIVES OF SERIAL MURDER

Theoretical approaches and perspectives about serial murder include a wide variety of models from diverse disciplines that attempt to explain and understand why some people may choose to kill time and time again. Serial killers have generally been examined using psychological models (Ellis & Walsh, 2000; Myers et al., 2008; Pallone & Hennessy, 1998; Raine, 1993), psychiatric approaches (Guttmacher, 1973; Lunde, 1975; Danto, 1982; Ressler, Burgess & Douglass, 1988), and external drives/motives of serial murderers (Holmes & DeBurger, 1988). Other approaches have also been developed over the years: such as Lee's (1988) motivational categories including profit; passion; hatred; power/domination; revenge; opportunism; fear; contract killing; desperation; compassion; and ritual killers (Hickey, 2016). Williams and Vincent (2018a, 2018b) also recently contributed to developments of viewing serial murder as a leisure activity.

Examining the previous ways that scholars have analyzed serial killings and the strengths and limitations of each theoretical perspective can assist the current research in attempts to test how applicable previous models actually are to a large sample of serial killers. Considering the critiques of the theories regarding serial killers specifically can also aid in our current perceptions of who a serial killer really is.

Psychological Theories

From a psychological perspective, multiple murderers are often characterized as deranged psychos, but in reality, very few serial murderers have a mental illness to such an extent that they would be adjudicated as insane by the criminal justice system (FBI, 2008). According to Fox,

Levin, and Fridel (2018), less than 5% of serial killers and 12% to 15% of mass murderers are psychotic, thus, most multiple murderers know they were aware of their wrong doings and how they have broken the law (Fox & Fridel, 2016; Hickey, 2010; Litton, 2008; Warren, Hazelwood, & Dietz, 1996). Fox, Levin, and Fridel (2018) stated instead that many of these multiple killers have deficits in managing their emotions and relating to people, so they are psychopaths (psychopathic), not psychos (psychotic), or in other words, they are morally insane, not clinically insane.

To clarify, even though both terms feature “psycho,” they are two very separate disorders (Berg, Smith, Watts, Ammirati, Green, Lilienfeld, 2013). Psychosis is an umbrella term that involves losing touch with reality usually with delusions and hallucinations (Berg et al., 2013). On the other hand, researchers today describe psychopathy as a pattern of qualities including emotional, interpersonal and behavioral dimensions like insensitivity, superficial charm, guiltlessness, selfishness, deception, low control of impulses, and unmotivated antisocial behavior (Hare, 2003). Although much of the research is dated, very few criminal offenders (less than 2%) are successful in receiving a not guilty by reason of insanity (NGRI) verdict with the media and fear of crime often leading people to believe these rates are higher (Silver, Cirincione, & Steadman, 1994). Furthermore, as reported by McPherson (1999) research has found that successful NGRI pleas typically include a psychosis diagnosis, considerable prior psychiatric history, and serious criminal offenses (Packer, 1987; Pasewark, Jeffrey, & Bieber, 1987; Steadman, Keitner, Braff, & Arvanites, 1983; Stokman & Heiber, 1984). Rice and Harris (1990) also reported that a finding of psychosis soon after a criminal act was committed is significant in predicting a successfully NGRI plea. But, because psychopaths are aware of what is right and

wrong, psychopathy does not justify a NGRI defense in U.S. courts (even though some legal scholars argue it should be) (Morse, 2008).

Hare (1996, 1998a) supported Wilson and Herrnstein's (1985) claims that in the criminal justice system, psychopathy is the most important clinical construct to evaluate the risk of recidivism and violence. He and developed the PCL-R to measure the personality and case history of psychopathy (Hare, 1991, 2003). A PCL-R test result is gathered using a semi-structured interview and other documented information to score each of the 20-items on a three-point scale (0,1,2) based on the degree it can be applied to the person (Hare, 1998b). The final score may range from 0 to 40, but 30 is used as a diagnosis of psychopathy (Hare, 1998b). A 1990 study by Hare and colleagues found the original test, the Psychopathy Checklist (PCL), and the PCL-R to have the ability to reliably and validly measure psychopathy among criminal men. But, others have argued that this test of psychopathy must be used with caution; Edens (2001) and Edens Petrila, & Buffington-Vollum (2001) found that the PCL-R can be easily be applied incorrectly in legal systems. In addition, Martens (2008) found it "alarming that Hare's opinions are widely accepted and applied in the forensic psychiatric world" (p. 450).

Regardless, Hare (1993) found that only 1% of the population is psychopathic, but this 1% accounts for over 50% of criminals in the U.S. and they more inclined to recidivate. The majority of psychopaths do not murder at all, yet serial killers are frequently recognized as perfect examples of psychopathy. Examples include well-known serial killers such as Ted Bundy, Paul Bernardo, and Aileen Wuornos who all reached high scores high on Hare's PCL-R and in fact, out of a possible 40 points, these killers scored much higher than the cutoff of 30 points (Fox, Levin, & Fridel, 2018). But Stone (2001) noted that some serial murderers are psychopathic and antisocial.

Being psychopathic may be a predisposition to committing criminal acts, but people often direct these characteristics in avenues that accept manipulative and ruthless behavior; Cleckley (1941) discussed *pseudo-psychopaths*, including examples of doctors who kill as an act of playing God and businessmen who enjoy firing workers. In addition, psychopathy among corporate and financial managers and leaders have recently been investigated: research indicates that psychopathy can play a role in the dynamics of some leadership styles, and its prevalence is more common among high-level managers than the general population (Babiak, Neumann, & Hare, 2010; Coid, Yang, Ullrich, Roberts, & Hare, 2009; Mathieu, Neumann, Hare, & Babiak, 2014; Neumann & Hare, 2008). Interestingly enough, licensed clinical social worker Steve Becker refers to the current U.S. President, Donald Trump, as “the psychopathic president the clinical world won’t call out” (Becker, 2017). Obviously, this would need further investigation, especially as Hare (1998b) stated “The PCL-R can be scored on the basis of file information alone, provided that the material contained in the files is extensive and detailed, and that the rater acknowledges the limitations of the procedure. *The PCL-R cannot be scored on the basis of an interview alone*” (p. 101).

Similar to, yet distinct from psychopathy is sociopathy. As a psychologist, Cleckley (1941) found that the terms are interchangeable, yet others maintain that psychopathy is based in biology and sociopathy involves more of an environmental influence (Mealey, 1995; Poythress & Skeem, 2005). In other words, psychopaths never had empathy but sociopaths lose their ability to be empathic from traumatic circumstances (Fox, Levin, & Fridel, 2018). The differences between these two terms may seem insignificant, but they could aid in understanding multiple murderers, such as mass or serial killers.

According to Fox, Levin, and Fridel (2018), serial killers, like Ted Bundy, with high scores on the PCL-R, are likely to be true psychopaths due to their high intelligence, organizational ability, and manipulative skills; on the other hand, antisocial killers, who lack impulse control, like the numerous mass killers, are actually more inclined to being considered sociopaths. Gilligan (1997) also found that serial killers who could be considered sociopathic are more apt to have internalized humiliation and shame when they were children that altered into anger and rage later in life. Goldberg (2000) similarly stated the intentional pain that a killer causes their victims stems from their feelings of shame, the development of a negative image of themselves, accepting themselves as *bad*, and lacking empathy for others. For example, Henry Lee Lucas, who is considered a sociopathic serial killer, likely found personal pleasure that compensated for the humiliation he felt; contrary to serial murderers labeled as psychopathic that perpetuate pain and death to victims as a means to an end, such as killing a potential witness or getting revenge for injustices they are thought to have suffered from (Fox, Levin, & Fridel, 2018).

While most killers lack empathy, Gabbard claimed that possessing empathy can be important for some killers because their slayings demand cognitive empathy that allows them to manipulate their potential victims (Christie-Smith & Gartner, 2004). Because sadistic killers enjoy their victims' pain and suffering, they must have emotional empathy or they would not feel excited or sexually aroused by the suffering of their victims (Fox, Levin, & Fridel, 2018). For example, serial killer Ted Bundy commonly lured his long-haired, college-aged women victims into his car by faking a broken arm and asking for their help (LaBrode, 2007); which if they decided to assist Bundy, likely lead to their death. This concept of being able to embrace an individual's viewpoint dates back to a term coined by George Herbert Mead (1934) known as

role-taking, where serial killers commonly use role-taking to increase their enjoyment of causing their victims pain.

Due to issues of reliability and validity, the American Psychiatric Association (APA) in their most recent Diagnostic and Statistical Manual of Mental Disorders (DSM-5), does not acknowledge psychopathy or sociopathy as diagnoses (2013). But antisocial personality disorder (ASPD) frequently describes multiple murderers, likely because the APA commonly uses ASPD as a substitution for psychopathy. Edens and McDermott (2010) argue that ASPD may serve as an umbrella diagnosis for many subgroups of disorders, such as psychopathy, due to the importance placed on antisocial, violent, and criminal behavior as opposed to personality traits. Hare (1991, 2003) contended that nearly all criminals have been diagnosed with ASPD, but only 20% of those criminals could be considered psychopathic; therefore, even though nearly all serial murderers are psychopathic by nature, they may be formally diagnosed with ASPD. Similarly, according to Gabbard, about 25% of prisoners have ASPD, and of them, one-third would meet criteria for psychopathy (Christie-Smith & Gartner, 2004).

Examining serial murder through a neuropsychiatric approach, a systematic review of serial murderers by Allely et al. (2014) revealed that significant percentages have characteristics of autism spectrum disorders and, as children, were victims of severe psychological abuse, neglect, or head injuries. Other research has found that serial sexual murderers had low rates of Axis I diagnoses, although they were rejected, socially isolated, and did not have much knowledge of sexuality, but apparently coped by turning to paraphilic behaviors and masturbation (James & Proulx, 2014).

Biological Theories

Similar to the psychological approach, biological theoretical perspectives would support the concept that some killers cannot be blamed for their homicidal behaviors that originate from uncontrollable urges. In early biological theories, beginning in the 18th century, researchers noticed differences in biology, constitution, heredity, and intelligence among criminals and the general population. In an attempt to understand their behaviors, techniques included exploring physiognomy (the study of facial features) and phrenology (the study of bumps on the head) of criminals (Akers & Sellers, 2013).

Influenced by Charles Darwin's book, *The Origins of Man* (1871), in the late nineteenth century, Cesare Lombroso presented the most important biological theory that virtually all other biological theories are based on (Akers & Sellers, 2013). According to Akers and Sellers (2013), Lombroso studied Italian prisoners in his quest to find born criminals and published his findings in the famous book, *The Criminal Man* (1876), which he argued criminals were throwbacks to a more primitive evolutionary period. He called their noticeable differences in features, or stigmata, atavistic characteristics, which included brains similar to inferior animals, sloping foreheads, longer arms, and extended jawlines. While Lombroso's work has been discredited, he still became known as the father of modern criminology because of his innovative research during this time period that inspired researchers in Europe and the U.S. (Fox, Levin, & Quinet, 2012).

While biological roots to criminal behavior have been considered for years, during the 20th century, criminologists shifted their attention to analyzing environmental causes of crime including those found in society, the economy, and families (Fox, Levin, & Fridel, 2018). But

more recently, a new form of criminology with an emphasis on biology began to develop in the final decades of the 20th century (Rose, 2000) which can most likely be attributed to technological advancements. Although various forms of media, including news reports, books, television and films, have made a simple form of biological criminology popular, several researchers and experts do not support that a person is criminal due to a specific deficient “gene for crime” (Rose, 2000). Instead, according to Rose (2000), these biological criminologists focused more broadly on particular behaviors that were anti-social, aggressive, and violent by arguing that through descriptive systems from molecular genetics, neurochemistry, and neurobiology that were backed by results from family and twin studies and immediate differences are noted from the results of various tests, including electroencephalograms (EEGs), computerized axial tomography (CAT) scans, positron emission tomography (PET) scans, and magnetic resonance imaging (MRI) scans.

While contemporary research has yet to find that genetics are directly linked to multiple murder, research has suggested that some psychopathic and antisocial qualities are common in many killers and may be genetic. For example, empathy, a psychopathic trait, was found to be connected to 14 genes and thus, is somewhat hereditary (Chakrabarti et al., 2009; Zahn-Waxler, Robinson, & Emde, 1992). Raine (2008) also found seven genes to be associated with antisocial behaviors. These technological advancements have also shifted the way courts may determine a person’s mental state. For example, according to Rose (2000), 1992 marks the year that a U.S. court first permitted findings from a PET scan to decide a defendant’s fate. The interpretations of the results by experts in the 1992 case of *People v. Weinstein* were found to be a reasonable measure to determine sanity, but the courts opted to instead reduce the murder charge to manslaughter and avoid a trial.

Even with the criticisms and concerns regarding biological criminology, researching the biological influences on crime is not likely to go away anytime soon. Kent Kiehl, a neuroscientist at the University of New Mexico, has used functional magnetic resonance imaging (fMRI) to collect data on more than 1,000 inmates in New Mexico prisons (Hughes, 2010). According to Hughes (2010), Kiehl found that people who are psychopaths have brains that display distinctive deficiencies in the paralimbic system, a region of the brain responsible for memory and emotional regulation.

While genetic factors may be linked to criminal behavior, biologists stress the importance of considering the intricate connections of genes, the environment, and actions (Raine, 2008, 2014). Similarly, Moffit (1993, 2005) suggested that DNA can impact behaviors, causing an individual to search for a situation that reinforces the effect of the genetics; therefore, the situation can have its own outcome on actions besides the influences of the genetic predisposition. Thus, it is important to consider the environments that those with genetic dispositions live in and how they may impact behaviors.

Sociological Theories

Unlike psychological approaches that argue that criminals have distinct psychological problems and biological theories that assert criminals are born or have genetic differences, sociologists have long argued that criminals are created and formed through the social circumstances in their lives. Sociological theories assert that a person's encounters and strategies for coping with the struggles and difficult circumstances of daily life can result in criminal behaviors.

In developments by Merton (1938), Cloward and Ohlin (1960), and Cohen (1995), strain theory suggests that U.S. culture and society stresses success but does not place equal importance on the necessary opportunities and means that are required to acquire such success, which commonly results in people committing crimes to be successful. Merton (1938) described how citizens are conditioned to work hard and take the necessary actions to attain financial prosperity (the example that he uses to explain his theory), but many people do not have access to society's structural means to obtain this success. Thus, Merton (1938) found that some citizens "innovate," or strive to reach financial success through illegitimate means such as committing criminal acts like drug dealing, robbery, or embezzling.

Desire for economic success is not the only cause of frustration and strain in society. Robert Agnew (1992) extended upon Merton's theory by introducing General Strain Theory. Agnew (1992) stated that a variety of negative interactions or disheartening experiences in social contexts exist that can cause frustration, anger, anxiety, and depression, which can eventually lead to criminal behaviors. These unique individual circumstances can aid in determining which people may react to strain by engaging in violent crimes; many killers have come from broken homes, suffer physical or sexual abuse, or have a parent with a criminal background (Langman, 2009).

For example, strain was evident in serial killer Charles Manson's childhood; Manson never met his father, and his mother, who was a promiscuous teenager who gave birth to him when she was just 16 years old, was convicted of a robbery and had abandoned him, leaving Manson to live with many relatives (Atchison & Heide, 2011). In 1947, when Manson was just 13 years old, he was sent to a Roman Catholic boarding school where he was punished for many seemingly minor crimes, which led him to run away and sleep in the woods and under bridges

(Hunter, 2015). When analyzing his younger years, Manson had been commonly known as a liar who blamed others for his failings (Smith, 2013). When he reached 21 years of age, his criminal career had advanced from petty crimes to traveling to other states in stolen cars, escalating the most during the mid-1960s when he began to form his “family” or murdering youths (Smith, 2013).

Similar to strain theory are theories of control. According to Travis Hirschi (1969), control theories argue that criminal acts occur when a person has weak or broken attachments to conventional individuals and institutions. Specifically, Hirschi (1969) stated that criminal behavior is frequently controlled by a person’s attachments and commitments to conventional institutions, beliefs, activities, and groups. When an individual devotes time, energy, and themselves, to a certain activity, such as receiving an education or developing a business, they will deliberate about the costs of a deviant act and how the behavior would risk losing what they have invested (Hirschi, 1969). On the other hand, if someone does not have such strong social connections and lacks the motivation of being a law-abiding citizen, or in other words, if someone has nothing to lose (lacking attachments to others, commitments to conventional behaviors, and beliefs in laws), they are more likely to behave in a deviant manner. Hirschi (1969) also wrote that an individual who is attached to conventional citizens has a higher likelihood of participating in conventional activities themselves and to accept conventional ideologies of appropriate behaviors. More recently, in their book, *A General Theory of Crime*, Gottfredson and Hirschi (2003) emphasize parental love, supervision, and consistent discipline in forming self-control. Similarly, Sampson and Laub (1993) argued that young people are less likely to be criminals if they form connections by developing informal bonds and have relationships with people from their work.

Social learning theory suggests that people learn to commit crimes through interactions and reinforcements from others who behave criminally, and through these interactions, people are taught and acquire values and beliefs that support criminal behaviors and even view them as positive (Akers, 1998). In 1947, Sutherland presented his theory of differential association, which argues that criminal behaviors develop from interactions and communications through interactions with intimate others (usually family members) that teach criminal behaviors as well as reinforce positive attitudes about crime. Extending upon Sutherland's ideas regarding the theory of differential association, Akers (1998) added that the effects of these associations can differ based on the frequency, duration, intensity, and priority of the relations but, in addition to family, having delinquent friends or peers serve as the greatest risk factor for delinquency. Akers and Sellers (2013) further suggested that social learning can be stronger when they believe they will be rewarded for their behaviors, as opposed to being punished. Furthermore, crimes that are widely publicized in the media can serve as sources of models for criminal behavior (Akers & Sellers, 2013).

Under social learning theory, it would be no surprise that those with military experience could possibly be influenced by their training into becoming a serial killer from the violent nature of the environment that teaches them to be violent and kill, the inevitable desensitization to violence, and being verbally or physically abused (Fox, Levin, & Fridel, 2018). In fact, Castle (2001) found that of her sample of 354 serial killers, about seven percent had experience in the military. Beasley (2004) reported that of the seven serial homicide offenders in his study, two had military experience but did not elaborate on how this may have impacted the perpetrators and their killings. According to data from the 2000 Census, 1,152,137 (.53%) people aged 16 years and older were employed by the armed forces and 26,403,703 (12.69%) people aged 18

years and over were considered civilian veterans (U.S. Census Bureau, 2002). Combining these figures, 27,555,840 (12.69%) of the total U.S. population in 2000 had military experience. Thus, while Castle reported in 2001 that 7% of serial killers had military experience, the general population in 2000 had a higher rate of people with military experience at 12.7%. As research directly analyzing military training and serial murder remains scarce (see Beasley, 2004; Castle, 2001), claims of heightened rates of serial killers with military training need to be interpreted with caution and warrant further investigation.

While many of the interactions that are essential to social learning theory form through intimate relationships (Akers & Sellers, 2013), stories in the media can also serve as role models for multiple murderers (Levin & Madfis, 2009; Madfis & Levin, 2013; Williams & Vincent, 2018b). While Murray (2017) found mass murderers commonly create fantasies that aid in the development of their killings, Williams and Vincent (2018b) found this approach can also be applicable to serial murder as some serial murder offenders also create fantasies that outline their crimes. For example, Nathaniel White was influenced by a film, *Robocop*, murdering his first woman victim similar to a scene from the film; he stated “I seen him cut somebody’s throat then take the knife and slit down the chest to the stomach and leave the body in a certain position. With the first person I killed I did exactly what I saw in the movie” (Garbarino, 1992; McPadden, 2017).

In a recent case report by Williams and Vincent (2018b), the authors described a case in which two teenage homicide offenders found inspiration to murder after viewing the popular horror film, *Scream*. The juvenile offenders filmed several videos of themselves deliberated their strategies to commit murder in efforts to create their own horror movies. These teen offenders also documented by film how they planned on killing so many people that other serial killers,

like Ted Bundy, The Hillside Strangler, and The Zodiac Killer would be considered amateurs relative to how many people they were going to murder. Fortunately, they never reached their desired high number of victims like their idol serial killers; they were caught and received life sentences after they committed their first murder of their 16-year-old friend and classmate (Williams & Vincent, 2018b). Furthermore, this case report by Williams and Vincent also analyzed this case through a leisure science perspective, reporting that the offenders murdered their victim as an intentional leisure activity, one of the offenders even stated “It’s going to be extra fun!”

Leisure science has origins in sociology and social psychology and includes expertise from various related fields yet has specific perspectives and theories (Williams & Vincent, 2018b). Leisure science concentrates on what activities individuals may do for fun and pleasure, why they choose such behaviors, and the perceived costs and benefits from these activities (Williams & Vincent, 2018b). While the concept of leisure does not have an exact definition, it is conceptualized as an activity or behavior, time, setting, or mental state (Kleiber, Walker, & Mannell, 2011). Literature on the influence of leisure on serial killers has been lacking in the field, but it provides significant understanding into serial killings (Williams & Vincent, 2018a). According to Williams and Vincent (2018a), the Serious Leisure Perspective (SLP) was developed by Robert Stebbins who classified the several diverse types of leisure experience as appearing on a continuum with one side including casual leisure and serious leisure on the other; Stebbins later added project-based leisure as a third type of leisure (Stebbins, 1997, 2001, 2005). Leisure themes provide important insights into various elements of serial killing cases that appear to function as a leisure activity for the murderer(s). Applying SLP and the casual-to-serious leisure continuum (and project-based leisure) proves beneficial in determining the

possible elements that may have added to the temporal dimension of particular killings (Williams & Vincent, 2018a).

As many theories focus on the actions of the killers, there are other theories that instead look at the victims and their behaviors and how they influence their chances of being victimized. Shifting focus away from the killers themselves, routine activity theory, according to Cohen and Felson (1979), contends that daily experiences could provide opportunities for victimization that can be more important compared to causal elements compared to social circumstances such as poverty and inequality. Cohen and Felson (1979) stated that for a violent crime to occur, three elements must exist: there must be a lack of a capable guardian, an available target, and a motivated offender. In this theory, the motivation of the offender is assumed, and it is through the lifestyle and behaviors of the victim that may make them more likely to be victimized by a serial killer.

Serial killers frequently target specific victims while taking into consideration their routines that may place them in a vulnerable position to be easily captured and killed. Cohen and Felson (1979) developed this routine activity theoretical framework that stressed the importance of the situations that offenders carry out their criminal acts, such as serial murder while less attention is given to the individual characteristics of the offenders. They described that most crimes need three main components to occur: motivated offenders, suitable targets, and the absence of capable guardians. Thus, the theory argued that a motivated offender is assumed, but when time and situational components are beneficial to an offender, a crime will likely occur (Cohen & Felson, 1979). Routine activities theory is grounded in two basic concepts (Cullen, Agnew, & Wilcox, 2014). First, for a crime to occur, the motivated offender must be in the presence of a suitable target without a capable guardian. Second, the likelihood of the crime

occurring is influenced by the “routine activities” such as work schedules, leisure, family, and other activities.

Considering this approach, it is to no surprise that many serial murderers (motivated offenders) frequently target prostitutes due to their vulnerability and willingness to go with a stranger (available targets), and the high likelihood of isolation from family and friends because of their choice of illegal occupation (lack of capable guardians). Gary Leon Ridgway, commonly known as the “Green River Killer,” currently holds the U.S. record for the most convictions for a serial murder case for the killings 48 women, all whom were prostitutes (Quinet, 2011).

Ridgeway discussed his selection of victims at sentencing:

I picked prostitutes as my victims because I hate most prostitutes and did not want to pay them for sex. I also picked prostitutes as victims because they were easy to pick up without being noticed. I knew they would not be reported missing. I picked prostitutes because I thought I could kill as many of them as I wanted without getting caught. (*State of Washington v. Gary Leon Ridgway*, 2003, p. 7).

Besides his hatred for prostitutes, Ridgeway clearly selected his victims because he believed it would reduce his chances of being caught. Thus, through routine activities theoretical approach, it was the victim’s lifestyle, behaviors, and habits that increased their chances of being The Green River Killer’s next victim.

In 2015, Craig Forsyth, an investigator and expert on the case of serial killer Ronald Dominique, a gay man responsible for the deaths of at least 23 men in Louisiana, reported the results from his analysis of the case using multiple theoretical approaches and his experience to discuss a sociological routine of Dominique. According to Forsyth (2016) Dominique struggled financially, reported several medical health issues, and lived in two distinct worlds; in one

aspect, Dominique was a helpful neighbor while in another dimension, he was cross-dresser and did impersonations at a gay club close to his residence.

When analyzing other important features of Dominique's life, Forsyth (2015) claimed difficulty in concluding what exactly influenced him into serial killing; but Dominique himself claimed that over the years, there were several occasions that influenced his behaviors, such as being bullied for his sexual orientation that made attending school challenging for him as he felt powerless in the situation. Forsyth (2015) noted Dominique's anger when he discussed these issues and noted that it could have contributed to his crimes. In addition, Dominique was his mother (who was still married to his father) having sex with her brother and later raped two men prior to his serial killing series (Forsyth, 2015). While Forsyth (2015) only examined a single serial murder case in his manuscript addressing a sociological perspective on serial homicide, he interviewed Dominique and his family on multiple instances in addition to experiencing with over 300 cases of violent crimes.

Theoretical Integration

While Wille (1974) developed a multiple disciplinary perspective by presenting a model integrating a bio-social-psychological approaches that identified 10 various types of killers: depressive; psychotic; afflicted with organic brain chemistry; psychopathic; passive aggressive; alcoholic; hysterical; juvenile; mentally retarded; and sex killers, some scholars still argue for the need to expand theories to include more factors that influence the offender's decisions to commit homicide (Hickey, 2016). Lee and Choi (2014) argued that serial homicide would be better understood with more theoretical integration. Both Elliot Leyton (1986) and Eric Hickey (2016)

suggested that explanations based on psychiatric research are not adequate to explain the entire phenomenon of serial murder. Meloy and Felthous (2004) noted that studies of serial homicide would be the most beneficial if they included various types of nomothetic and idiographic research methods. These scholars believe that research should extend past only the individual by accounting for the society, culture, and social structures in which the offenders live to better understand serial murder.

Considering the previous critiques, DeFronzo, Ditta, Hannon, and Prochnow (2007) conducted a study and found that culture and social structure are vital to cases of serial murderers. The authors found that variables related to structure and culture have significant associations with serial homicides committed by men at the state level based on where they killed the most victims and the places these killers were socialized. Similarly, Lunde (1975) suggested that the development of psychopathic and sexual sadist mental illnesses may stem from mistreatment during the killer's childhood, stating that the development starts when the child experiences trauma.

Hickey (2002) also examined the impact of trauma on serial murderers by creating a trauma control model for serial killers. This model included trauma during the formative years of the killer's life, in addition to potential predisposition elements such as biology, which are at the origins of the development, socialization, and interaction processes that play a large role in the production of serial murderers. This multifaceted model presented by Hickey (2002) illuminates the important roles that cultural and social structural variables have on serial murder. Other researchers have also suggested the importance of including cultural and social structural variables in addition to the psychiatric and biomedical factors to measure and decrease serial murder (DeFronzo, et al., 2007).

Haggerty (2009) also noted that by only analyzing the offender's etiology and biology is leaving a large piece of the serial murder phenomenon out, writing that "broader social, historical, and cultural context have been largely ignored" (p. 168). Haggerty (2009) further stated that opportunity structures can provide offenders with the abilities to kill certain people, such as women, who are now more likely to work outside of their homes. Including characteristics that relate to social structures and culture, allows for significant improvements about how homicides could be detected, investigated, sentenced, and categorized (Haggerty, 2009).

Theoretical Critiques

With the numerous theoretical approaches and perspectives to serial killings, many academics and law enforcement officials may face challenges when attempting to understand the nature of serial homicide. Despite the variety of disciplinary approaches, Messori (2016) stated that the FBI's typology of the organized or disorganized killer (Ressler, Burgess, & Douglas, 1988) and Holmes and DeBurger's (1988) typologies (visionary type, mission-oriented type, hedonistic type, and power/control-oriented type) continue to be the primary typologies applied in research on serial murder. Each of these typologies aims to assist in the classification of serial murderers that provide assistance in investigating, profiling, and apprehending killers (Messori, 2016).

But, as Messori (2016) noted, while much research on serial killers was conducted to produce typologies, motivation categories, and attempts to determine etiology, this same research has focused solely on White men serial homicide offenders. Some of this research analyzed

individual case studies (Kraus, 1995; Martens, 2011; Silva, Ferrari, & Leong, 2002), used a small sample size (Beasley, 2004; Martens & Palermo, 2005; Wright & Hensley, 2003), but also some studies included larger samples of serial killers (McKenzie, 1995; Warren, Hazelwood, & Dietz, 1996) but these samples have proven to not be representative of actual serial killers.

Some larger research analyses did include African-American serial killers, but at a limited percentage. For instance, Arndt, Hietpas, and Kim's 2004 study that examined a sample of 285 serial killers with 16% of cases having an African-American offender, as well as the study by Salfati and Bateman (2005) that included eight African-American cases in their sample of 22 serial murderers (Messori, 2016). Also, an FBI study conducted by Burgess, Hartman, Ressler, Douglas, and McCormack (1986), that was used by law enforcement officials to develop a typology for profiling serial killers and developing a model, included only three African-American cases out of their sample of 36 killers (Messori, 2016). While the majority of serial killers are men (Hickey, 1997; Jenkins, 1993; Newton, 2004; Walters, Drislane, Hickey, & Patrick, 2014), analyzing men alone does not aid in the development of motivations by other demographic characteristics, such as women, African-American, and Hispanic serial killers (Messori, 2016). Thus, the structural, cultural, and individual differences that each of these particular groups have could influence their behaviors and it is imperative that these variations are accounted for. Serial killers are commonly believed to fit a specific profile or type, neglecting the fact that many of these murderers vary greatly in numerous aspects. To better understand serial killings, these differences must be accounted for.

Moving Forward

Although numerous scholars across multiple disciplines have developed ways to identify, classify, and theoretically explain serial killers, it is evident that more analytical research is necessary to provide a better understanding of these serial murders and their offenders. While many theoretical approaches offer insight into the lives of serial killers, significant gaps still exist. As previously discussed, some theories were developed using small samples of killers that did not correctly account for all races or sexes. This could partially be the reason, result, or a combination of both, for the common myths regarding serial killing mentioned earlier. These issues create important challenges, not only for researchers, but also for law enforcement agencies. Without having an accurate understanding or theoretical basis, law enforcement may be restricted in their attempts to identify, apprehend, and combat serial killings. It is imperative that theoretical approaches are based upon the empirical examinations of entire populations of serial killers.

It is important to note that many of these theoretical perspectives were developed to broadly explain various criminal acts such as drug dealing, robbery, and theft. Considering these theories were not created for serial murder explicitly, and serial murder is a unique crime that varies significantly from other criminal behaviors in many respects, scholars should exercise caution before simply justifying their application and extension to serial murder, especially if little or no proven empirical evidence can support their claims. It is imperative that the commonly applied theories to explaining and understanding serial murder are periodically reconsidered, empirically tested, and updated using analyses of large and inclusive samples of recent serial killings.

In addition, with several theoretical perspectives and explanations for killing offered by multiple disciplines, it is important to note that not every killer would ever fit perfectly in any one theory. Many serial killers are unique and kill for a variety of reasons. As technology is becoming increasingly more engrained into our society and people's lives, it is also critical that these approaches are periodically revised. This would also provide opportunities to see how trends and factors related to serial killing may have changed over the years. Through the integration of multiple theoretical perspectives, from disciplines including psychology, biology, and sociology, an improved understanding of serial killings is possible.

Current Study

After thoroughly reviewing serial murder and the challenges associated with the research, including the disagreement among the components comprising some definitions of the crime, the strengths and weaknesses among various data sources utilized to study the crime, and the numerous theoretical approaches, it is clear why Culhane and colleagues (2011) referred to serial murder as the least understood among the literature in criminology. In efforts to address some of the barriers associated with the regarding serial murder, this study aims to combat several of these challenges using a quantitative approach.

This study serves multiple purposes: first, using the multinomial logistic regression results that allow for the comparison of serial killers with two victims to killers with three victims, four or five victims, and those with six or more, can provide more insight into the enduring debate among the minimum numbers of victims necessary to be considered an instance of serial murder. Many of the myths surrounding serial murder previously discussed still remain

common in society, possibly because they are not supported by a plethora of empirical evidence. Because of this, the second goal of this current study uses a large quantitative database containing information on 1,258 recent serial killers in the U.S. (operating between 1985 and 2016) to provide valuable empirical evidence that can be used to assess many of the long-standing myths surrounding serial murder. Next, these myths are compared to prior research findings and an assessment of how these myths may play a role in linkage blindness and heightened homicide clearance rates is also offered.

Fourth, from the results of this study as well as consideration of prior research, a recommended definition of a serial is offered. Research on serial murder has commonly been guided by various theoretical approaches and perspectives from multiple disciplines in attempts to further understand the crime. As previously discussed, of the research and literature on serial murder, there is little research employing a sociological approach. Following a review of previous theoretical perspectives and the results of the empirical analyses, the fifth and final goal of this current study aims to begin to fill a gap in the literature by expanding upon a sociological perspective that directly relates to serial killings by accounting for structural and social aspects that have an impact on people's lives and their decision to commit murders. This expansion upon a sociological model of serial killing is also necessary as a basis to later integrate with various theories from diverse disciplines.

This study, unlike much of the previous research on serial killings, uses a large dataset that allows for the examination of over 1,200 recent serial killers operating in the U.S. The design, data, and method of this study are explained in the following section. Furthermore, this study is important for several reasons, but most importantly, it provides improved insight for academics and researchers into serial homicide that has the ability to ultimately aid law

enforcement professionals to be able to better understand, recognize, and identify possible cases of serial murder and offer suggestions for future research. More information regarding the methodology and data are discussed in the following chapter.

CHAPTER 5: METHODOLOGY

This study explores various categories of the numbers of victims killed by a serial homicide offender and their associations of various sociological variables and case information from serial homicide offenders operating between 1985 and 2016. From these analyses, an improved definition of the crime is offered and a more sociological theoretical perspective is expanded and developed, which provides important information regarding the various fundamentals aspects of serial murder. In addition, myths surrounding the crime and how such myths may impact linkage blindness and clearance rates are discussed. These findings have the potential to be used to develop essential tools for law enforcement agencies working to identify and resist serial murder. Finally, suggestions for future scholarly research are included that would likely yield other important empirical findings that may provide significant implications for future policies.

Data

This study utilizes data from a secondary database titled the *Radford University/Florida Gulf Coast University Serial Killer Database* (hereinafter referred to as the “Radford database”) (Aamodt et al., 2016). This dataset was the result of a collaborative project by Radford University and Florida Gulf Coast University (FGCU) that was designed to compile various datasets on serial killings dating as far back as the 15th century from all around the world. The data were collected through public documents such as websites, novels, documents from the courts, and government agencies, creating the largest non-governmental source of data on serial homicides in the world (“Radford/FGCU Serial Killer Database Research Project,” n.d.). This

dataset is reliable, flexible, and peer-reviewed (“Radford/FGCU Serial Killer Database Research Project,” n.d.), allowing for a variety of analyses based on the particular interests of the researcher. It was organized by Michael Aamodt, James Alan Fox, Eric Hickey, Ronald Hinch, Gerard Labuschagne, Jack Levin, Janet McClellan, Bryan Nelson, Michael Newton, Kenna Quinet, Cloyd Steiger, John White, and Enzo Yaksic. The original Excel database consists of each authors’ contributions, creating an abundance of data on victims and offenders of serial killings both in the U.S. and internationally, as well as some brief reports from the included data. According to Yaksic (2017), when citing the Radford database, it is referred to as *The Consolidated Serial Homicide Offender Database*.

These data were selected for the analyses for several reasons. Not only does is there not an official dataset on multiple murderer, the Radford dataset is the largest non-governmental source of data on serial homicides in the world (“Radford/FGCU Serial Killer Database Research Project,” n.d.), including variables that provide a plethora of information on serial killers and their cases. In addition, these data are reliable, the data includes the sources for each data point; flexible, as data can be easily filtered to customize the data to match the specific aims of the study; and peer-reviewed, with suggestions for improvements to the data being encouraged and reviewed by a team of graduate students with advanced skills in researching (“Radford/FGCU Serial Killer Database Research Project,” n.d.). While this dataset is arguably the best dataset on serial murder as it contains an abundance of information on many serial killings and cases (“Radford/FGCU Serial Killer Database Research Project,” n.d.), there were many cases and variables that did not contain enough information to be empirically analyzed in the current analyses.

Insufficient Data

As the Radford database serves as the first collaborative effort to create a database containing data on multiple murderers (“Radford/FGCU Serial Killer Database Research Project,” n.d.), issues among the data are expected. The dataset included many variables that have the potential of providing valuable knowledge to the literature among serial killings. Unfortunately, many of these variables were missing data, which resulted in some variables being considered insufficient to use in these analyses and, therefore, could not be included in this current study. Brief descriptions of these variables follow.

Worked as a Cop. The original “WorkedCop” variable measured if the serial killer ever worked as a law enforcement officer (LEO) and was coded as 0=No, 1=Police, 2=Corrections, 3=Security Guard, 4=Military Police. I recoded this variable to “LEO” with dichotomous values of 0=No and 1=Yes (for any type of LEO), as I am attempting to see the differences in those who may have worked in law enforcement or security. But, after realizing only 16 (1.27%) serial killers in the data worked in law enforcement, I deleted this variable from the analyses as there is not enough information to make any conclusions based on these few cases. But, of the 16 serial killers who worked in law enforcement, six had killed two victims, three killers took the lives of three people, three had killed either four or five people, and four law enforcement officers were responsible for the deaths of six or more people.

Killed with Gun. The “Gun” variable contains information about the use of a gun with original codes of 0=The offender did not use a gun, 1=Handgun, 2=Rifle, and 3=Shotgun. As I initially planned to analyze the differences in serial murderers who used a firearm, regardless of the specific type, I recoded the variable to “Firearm” with values of 0=No, a firearm was not

used and 1=Yes, a firearm was used to kill the victims. Due to the high number of missing cases (402), this variable was removed from the analyses and warrants further investigation. But of the 856 cases that included this information, 546 (63.79%) did not use a firearm while 310 (36.21%) did use a firearm to kill their victims.

Offender's Education. There are three variables included in the dataset that measure education: "Educ" (continuous variable ranging from 3 to 21 years of education, N=256), "Degree" (a variety of specific degree and certifications, N=290), and "Educ Level Prior to Killing" (simple break down by possible degrees, N=290). To best assess the education of the serial killer, I had selected the education prior to killing variable because it had the largest amount of data for the offenders. It also measured the education level of the offenders before they began their killings, so it did not include the degrees that some offenders obtained while in prison as the Degree variable included. Of the offenders with education information, 112 (38.62%) had no education, 19 (6.55%) had a GED, 121 (41.72%) had a Diploma, 8 (2.76%) had an Associate's Degree, 9 (3.10%) had a Nursing Degree, 15 (5.17%) had a Bachelor's Degree, 1 (.34%) had a Master's Degree, and 5 (1.72%) had a Doctorate Degree. This was recoded to a variable named "OffenderEducation" with values of 0=None, 1=High School or Equivalent (Diploma, GED), and 2=College (Nursing, Associate's, Bachelor's, Master's, or Doctorate Degrees). Due to the high number of missing cases (968), this variable was removed from the analyses and warrants further investigation.

Offender's Job. The "Occupation" variable included in the dataset originally included a string variable containing the job the offender held during their killing series. The variable originally had a variety of specific job titles for 427 offenders. This was recoded this into a new variable titled "OffenderJob" with categories of 0=White-Collar Work (includes business owners

and police officers), 1=Blue-Collar Work, 3=Illegal Work (including prostitutes, drug dealers, gang leaders, contract killers, and escaped inmates) and 4=Unemployed (includes homeless and transient). An article titled “Blue-Collar and White-Collar” from the *International Encyclopedia of the Social Sciences* (2008) was used as a reference guide to properly assign each of the occupations into the correct category. Blue-collar work is defined as involving manual labor and physical tasks for jobs like construction, truck driving, maintenance, assembly, and carpentry, and is usually paid at an hourly rate. On the other hand, white-collar work is defined as requiring some formal schooling including acquiring a college degree and is usually performed sitting at a desk in an office for well paid jobs such as engineering, bookkeeping, architecture, and is usually a paid a salary (“Blue-Collar and White-Collar,” 2008). From the sample of 427 (33.94%) offenders with information about their occupation during their killings, 51 (11.94%) were white-collar workers, 246 (57.61%) were blue-collar workers, 54 (12.65%) worked in illegal occupations, and 76 (17.80%) were unemployed. Due to the high number of missing cases (N=831; 66.06%), this variable was removed from the analyses and warrants further investigation.

Each of these variables discussed above were initially planned to be used in the analyses. But, due to the high numbers of missing data and information, they had to be excluded for the final analyses. Yet, these variables, among others, are important to the body of knowledge concerning serial murder. Hopefully, as the Radford database continues to be a work in progress, these limitations will be addressed in the future that would allow supplemental evaluations.

Analytic Sample

The Radford database is an Excel file that includes several separate sheets of data compiled by each of the authors. After carefully examining each of the sheets and the data they contained, I created a sheet containing a subsample of the serial killing data using only the sheet labeled “Data,” that included the most information on serial killers at the individual level. I then converted this single Excel sheet into a Statistical Package for the Social Sciences (SPSS) file using IBM SPSS Statistics 25 (IBM Corp, 2017) to allow for statistical analyses. These data originally included 4,802 cases of serial killers, but after removing the 1,585 offenders who killed outside of the U.S., 3,217 cases remained. I also excluded the 37 cases in which killers had victims in the U.S. and abroad as I wanted to focus strictly on serial killings only in the U.S., leaving the dataset with 3,180 cases.

After eliminating the killings that occurred outside of the U.S., I created a new data file compiled of only the killings that occurred between 1985 and 2016 (N=1,654). I decided to only examine offenders who completed their first killing after 1984 because in 1985, the FBI’s BSU created its Violent Criminal Apprehension Program (ViCAP) in an attempt to tackle the linkage blindness issues that were causing difficulties to law enforcement agencies in detecting serial murder cases (Fox, Levin, & Quinet, 2012). According to Fox, Levin, and Quinet (2012), ViCAP is a computerized database that is used to collect and compare information related to unsolved homicides around the U.S. by flagging similar characteristics in these homicides.

As mentioned previously, many variables were missing a lot of data, making them insufficient for the current analyses. In addition, many of the cases were also missing information for the dependent variable. For the cases that were missing data on only the

dependent variable (the number of victims killed), I initially began using Google.com and other search engines to enter the name of the killer in efforts to locate the missing information. There were nine offenders missing information on their race, but after an online search, I was able to locate information on the race for five of the offenders. The other searches for missing information of cases were unsuccessful. For example, a particular case was missing information on the dependent variable (the number of victims killed). After researching the killer, Alan Michael Stevens, and finding that Stevens received a sentence of 25 years to life in prison sentence for being convicted of one account of first-degree murder, I realized he was probably included in the database because he was *suspected* to be the killer in three additional cases (Newton, 2004). Similar to the case of Stevens, the few searches resulted in questionable information. In an attempt to keep the data included in the analyses as accurate and reliable as possible, I decided to exclude any other cases where information for the variables were missing. This resulted in the final dataset including just over one thousand cases of serial homicide offenders (N=1,258). A more detailed discussion of the variables and the methodology is included below.

Dependent Variable

Number of Victims. The dependent variable used in this study is the number of known victims each serial homicide offender killed. The original continuous variable, labeled “NumVics,” included values that ranged from 2 to 37 victims. As previously mentioned, I am focusing on analyzing killers with two victims compared to killers with three victims, four or five victims, and those with six or more victims. Therefore, I computed a new variable labeled

“VictimCount” with values of 0=2 Victims, 1=3 Victims, 2=4 or 5 Victims, and 3=6 or More Victims. For the number of victims, serial killers who murdered two victims serve as the reference category.

Independent Variables

A variety of independent variables were used to analyze the serial killers, including those related to the life of the killer, demographic information about the victims, and the methods the offender used to murder their victims. A discussion and a further breakdown of each of the variables included in the model follows.

Span of Activity. Labeled “SpanofActivity” in the original dataset, this continuous variable accounts for the years between the first and last kill in series. The years ranged from 0 to 28.

Gender of Victims. The “VicSex” variable accounts for the gender of the victims and was originally coded as 1=Men, 2=Women, and 3=Both (for killers who killed both men and women). I recoded this variable and labeled it as “VictimGender” with new values of 0=Men, 1=Women, and 2=Both. This variable was then computed into two dummy variables to allow for the proper statistical analyses, which will be discussed in more detail later. From the “VictimGender” variable, I created the “WomenVictims” variable, with new values of 0=Men and Both Victims and 1=Women Victims, and the “BothVictims” variable with new values of 0=Men and Women Victims and 1=Both Victims. Victims who were men serve as the reference category.

Race of Victims. This variable labeled as “RaceofVictim” accounts for the race of the victims with original codes of 1=White, 2=Black, 3=Hispanic, 4=Asian, 6=Native American, and 7=Mixed. After realizing only 67 victims were included in the “Other” category that included Hispanics, Asians, and Native Americans, I decided to combine them with Blacks and create a new variable. I recoded this variable to “VictimRace” and made new values of 0=White, 1=NonWhite, 3=Mixed (for offenders who killed victims from more than one racial group). This variable was then computed into two dummy variables to allow for the proper statistical analyses. From the “VictimRace” variable, I created the “VRNonWhite” variable with new values of 0=White and Mixed Victims and 1=NonWhite Victims, and the “VRMixed” variable with new values of 0=White and NonWhite Victims and 1=Mixed Victims. White victims serve as the reference category.

Rape. The “Rape” variable measures if the offender raped their victims with codes of 0=No and 1=Yes. Offenders who did not rape their victims serve as the reference category.

Hands. The “KillwithHands” variable measures if the offender killed victims with their hands. I recoded this variable to “Hands” with new dichotomous values of 0=No and 1=Yes. Offenders who did not use their hands to kill their offender serve as the reference category. The codebook for the dataset did not elucidate what exactly this variable meant besides that it allowed for a distinction between a killer’s methods that involved their hands and killers who used other methods to kill. This variable was included in the analysis to see provide updated information on the methods serial murderers used to kill, especially strangulation. Prior research has shown that, unlike other murders, strangulation is the most common method serial murderers used to kill their victims (Dietz, Hazelwood, & Warren, 1990; Hickey, 1991). Because these studies are both dated and use small samples of killers, there is a need for the research regarding

strangulation to be updated using a larger sample of more recent serial killers to ensure the results can be generalized to all serial killers.

Control Variables

The control variables in this current study include the gender, race, and age of the serial killer, as well as the locations the killer left the bodies.

Gender of Offender. This variable accounts for the gender of the offender and was originally labeled as “Sex” but was renamed to “OffenderGender” with codes of 0=Men and 1=Women. Men serial homicide offenders serve as the reference category.

Race of Offender. The original “Race” was coded as 1=White, 2=Black, 3=Hispanic, 4=Asian, 5=Native American, and 6=Aboriginal. Of the killers, 530 (42.13%) were White, 592 (47.06%) were Black, 112 (8.90%) were Hispanic, 15 (1.19%) were Asian, and 9 (.72%) were Native American (also known as American Indians). Due to a large number of White and Black serial murderers and low numbers of Hispanic, Asian, and Native American (there were no serial killers of Aboriginal race), I recoded this variable to “OffenderRace” with values of 0=White, 1=Black, 2=Other. The new combined racial category for offenders included Whites and Blacks remaining the same at 530 (42.13%) and 592 (47.06%), respectively, but the “Other” category now includes 162 (12.88%) killers. This variable was then computed into two dummy variables. From the “OffenderRace” variable, I created the “ORBlack” variable with new values of 0=White and Other Offenders and 1=Black Offenders, and the “OROther” variable with new values of 0=White and Black Offenders and 1=Other Offenders. For the race of offender, White offenders serve as the reference category.

Age of Offender. The variable “AgeKill” is a continuous variable used as a measure for the age of the offender when they committed their first killing, which could be prior to their killing series. Ages of the offender’s first kill ranged from 13 to 72 years old. This was renamed to “OffenderAge.”

Locations. This variable was initially included as an attempt to analyze the differences in killings that occurred in metropolitan or micropolitan counties designated by the U.S. Census Bureau report according to the 2000 data (U.S. Census Bureau, 2003). The report from 2000 was selected because it is the midpoint of the years of study (1985-2016). Using the “City” variable in the data, I manually looked up the county in which the city was located and added a variable that measured if the county was considered metropolitan or micropolitan in 2010. After analyzing the data and realizing many serial killers had killed in multiple cities, or even states, the codes included 0=Micropolitan, 1=Metropolitan, 2=Multiple Cities, and 3=Multiple States. There were 41 (3.26%) killers who killed in micropolitan areas, 596 (47.38%) who killed in metropolitan areas, 397 (31.56%) killers who operated in multiple cities, 224 (17.81%) who killed in multiple states. Due to the small number of killings that occurred in micropolitan areas, I recoded this variable “Locations” to measure if the killer had operated in a single area or multiple locations with codes of 0=One Location and 1=Multiple Locations. Offenders who killed in one location serve as the reference category.

Analytic Strategy

IBM SPSS Statistics 25 (IBM Corp, 2017) was utilized to run all of the necessary analyses for this study. Again, this research explores the differences between serial killers who

killed two victims and those who murdered three victims, four or five victims, and six or more victims. The dependent variable is categorized to compare killers with two victims and those who killed more to analyze if and how the offender killing different numbers of victims is associated with their span of activity, the gender and race of their victims, if they raped their victims, and if they killed with their hands. The analyses also contained control variables including the offender's gender, race, age, and the locations of killings.

To properly complete the analyses, I began by running *Descriptive Statistics* on all the variables, which will allow for a review of the features included in the sample to see if any errors may be present in the data (Table 1). Along with the results of the descriptive statistics, Table 1 also includes the coding of the variables included in the model. I then honed in on the *Frequencies Statistics* by the number of victims to compare characteristics by the number of victims killed by the serial murderer (Table 1). I also created a histogram to visually see how the victims counts of the serial homicide offenders (Figure 1).

As multicollinearity could potentially be a concern among the predictor variables, I analyzed the *Variance Inflation Factors* (VIFs), which provide information regarding how severely the variance is inflated if multicollinearity exists. VIFs under 10 are typically deemed as acceptable (Neter, Wasserman, & Kutner, 1990), but Fisher and Mason (1981) suggest that VIFs above four reflect an issue with multicollinearity. I then examined the results of the results of the *Chi-Square Tests of Associations* of the variables in the analyses to examine which independent variables had a significant impact in the model (Table 2).

To assess the *Goodness-of-Fit* for the model, I examined the results of the *Pearson* and *Deviance Chi-Squares* (Table 3). The *Pseudo R-Squares* are also presented and discussed (Table 3). I then examined the *Model Fitting Criteria* and the *Likelihood Ratio Tests* to assess how well

the model fit (Table 3). To assess the relationships between the variables, I used *Multinomial Logistic Regression* because the dependent variable has multiple categories and there are several independent and control variables (Table 4). As previously discussed, for the independent and control variables with more than two categories, they were changed into dummy variables to allow for proper statistical analysis. Finally, I examined the *Classifications* of the predicted and observed probabilities in the data (Table 5).

CHAPTER 6: RESULTS

The current study analyses the number of victims as the dependent variable to compare how serial homicide offenders who killed two victims are different from those who killed three victims, four or five victims, and six or more victims. Results from the descriptive statistics and frequency statistics (Table 1) are presented and discussed, as well as a histogram for a visual representation of the categorized number of victims killed by the serial murderer (Figure 1). Findings regarding the multicollinearity among the predictor variables (VIFs) are reviewed. Then, Chi-Square Tests of Associations of the variables are considered (Table 2). The Pearson and Deviance Chi-Squares are deliberated as a measure of the Goodness-of-Fit of the model as well as the results and limitations of the Pseudo R-Squares and the Model Fitting Criteria (Table 3) are considered. Then, the results of the Multinomial Logistic Regression are discussed (Table 4). Finally, the Classifications of the predicted and observed probabilities are presented and discussed (Table 5).

Descriptive Statistics

Table 1 below includes the coding or ranges and the results of the descriptive statistics for all variables included in the analyses. The coding schemes are provided for all the categorical variables while the ranges are provided for the continuous variables included in the analyses. The values underlined in the table serve as the reference categories of the variables in the multinomial logistic regression in Table 4.

Descriptive statistics displayed in Table 1 include The sample means (\bar{x}), standard deviations (S.D.), and frequencies for the dependent variable, the average number of victims

killed by the 1,258 serial homicide offenders. Table 1 is the only table that uses the original continuous variable before it was recoded into a categorical variable for the following analyses. This continuous variable ranges from serial killers having between 2 and 37 victims with a mean of 3.66 (S.D.=2.83). Once again, Table 1 is the only analysis that includes the original continuous variable measuring the number of victims before it was recoded for use as the dependent variable in each of the succeeding analyses with values of 0=2 Victims, 1=3 Victims, 2=4 or 5 Victims, and 3= 6 or more Victims. As shown in the histogram featured in Figure 1 below, when broken down into categories for the analyses, the dependent variable included 41.18% (N=518) of offenders who had killed two people, 25.04% (N=315) of serial murderers who took the lives of three victims, 20.91% (N=263) of killers who slayed four or five victims, and 12.88% (N=162) of the sample who killed at least six victims.

The results of the independent variables incorporated in the analyses include span of activity with years ranging from 0 to 28. The mean span of activity was 3.27 years (S.D.=5.25), with the highest average span of activity among killers with at least six victims (\bar{x} =4.13 years). Gender of the victims revealed a mean of 1.07 (S.D.=0.84), with 31.56% (N=397) of the sample killing only men; 29.73% (N=374) of the serial killers murdering only women; while 38.71% (N=487) of serial homicide offenders killed both men and women. For the race of the victims, the average was 0.87 (S.D.=0.82), with most victims being White at 40.86% (N=514) of the sample; followed by NonWhite victims at 30.84% (N=388), then, finally, Mixed victims who compromised 28.30% (N=356) of the sample. The variable accounting for if the offender raped their victims displayed a mean of 0.28 (S.D.=0.45) as the majority did not rape their victims (72.10%; N=907). If the offender used their hands to kill resulted in a mean of 0.56 (S.D.=0.50) with most offenders using their hands to kill their victims (56.44%; N=710).

The control variables included in the model resulted in the gender of the offender having a mean of 0.07 (S.D.=0.36) as the majority of the serial killers were men (92.85%; N=1,168). The race of the offender had a mean of 0.69 (S.D.=0.66) as most serial killers were Black (47.06%; N=592), followed by White offenders (42.13%; N=530), then killers in the Other category (10.81%; N=136). The age of the offender ranged from 13 to 72 years old with a mean age of 27.43 years (S.D.=9.15) with little variation among the ages of offenders based on the number of victims they killed. The descriptive statistics for the location variables, measuring if the offender killed in a single location or multiple locations resulted in a mean of 0.49 (S.D.=0.50) with nearly an even split between killers that murdered their victims in one location (50.64%; N=637) and those that killed in multiple locations (49.36%; N=621).

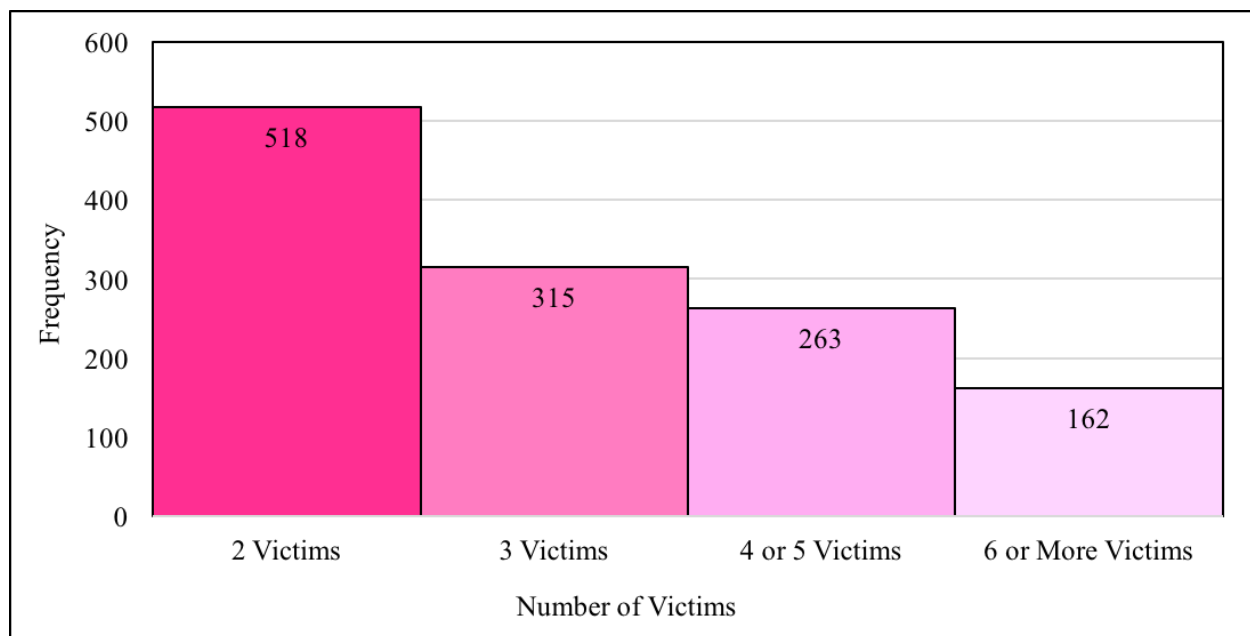


Figure 1: Histogram with Categories of the Number of Victims Killed (N=1,258)

Table 1 below provides more detailed information regarding the case characteristics by the number of victims murdered by the sample of 1,258 serial killers operating between 1985 and 2016. The table also includes arrows to indicate the category of each of the variables that will be used as the reference categories in the multinomial logistic regression in Table 4. While only the categorical variables in the analyses were included in Table 1, the continuous variables are discussed.

The dependent variable measured the number of victims killed by the serial homicide offender and was converted from the original continuous variable to create the categorized variable used in each of the following analyses. Of the 1,258 serial killers included in the sample, the most had killed only two victims (41.18%; N=518), followed by those who killed three people (25.04%; N=315), and then killers with four or five victims (20.91%; N=263). The smallest number of cases appeared in the category of killers with six or more victims (12.88%; N=162). Insight about the serial murderers is realized through the examination of the number of victims each serial killer murdered and the other variables used in the analyses.

The first independent variable in the analyses, span of activity, was a continuous measure of the years between the offender's first and last kill in their series. This variable had values ranging from 0 to 28 years, with 498 (39.59%) offenders who killed their first and last victim within the same year and 270 (21.46%) killers having one year between their first and last kill. The years between the first and last killing generally, with few exceptions, decreased to finally the three offenders (0.2%) who had a 28-year span between their first and last killings. The average span of activity by the number of victims killed included the 518 offenders who killed two victims in an average of 3.22 years, the 315 killers who killed three victims in an average of 3.20 years, the 263 killers who murdered four of five victims over an average of 2.91 years, and

the 162 serial murderers who had an average span of activity of 4.13 years for the deaths of six or more people.

For the total number of victims, in terms of gender, the plurality of killers murdered both men and women at 38.71% (N=487) of the total sample, followed by those with only men victims compromising 31.56% (N=397), and only women victims at 29.73% (N=374). But, when broken down by the categorized dependent variable, the serial homicide offenders who killed only two victims most often killed only men at 44.59% (N=231), followed by only women at 31.47% (N=163). Finally, the killers who murdered both men and women, thus implying they killed one male and one female, compromised 23.94% (N=124) of the sample of killers who killed only two victims. For the killers who murdered three victims, the race of the victim is actually the total opposite of the killers with two victims. Killers who murdered three people had killed victims of both sexes in 41.59% (N=131) of these cases, followed by those who had only women victims at 29.84% (N=94), then those who killed only men at 28.57% (N=90) of the sample with three victims. Killers with four or five victims follow a similar pattern as those with three victims with the majority of killers murdering both sexes (54.37%; N=143), then those who killed only women (25.48%; N=67), and finally those with only men victims (20.15%; N=53). Similarly, serial homicide offenders who killed at least six victims most often killed victims of both sexes (54.94%; N=89), followed by those who killed only women (30.87%; N=50), then the killers who killed only men (14.20%; N=23).

In terms of the race of victims, a majority of the victims in the total sample killed by the 1,258 serial murderers were White (40.86%; N=514), followed by Non-White victims (30.84%; N=388), and those who selected victims from a variety of races (28.30%; N=356). Analyzing the racial differences of the victims based on the categorical dependent variable measuring the

number of victims the killer murdered provides more insight into the serial homicide. The killers with only two victims commonly murdered White victims (46.53%; N=241), followed by Non-White victims (31.08%; N=161). For those with two victims, those who killed mixed victims, thus implying they killed one White and one Non-White victim was the least common scenario (22.39%; N=116). Killers with three victims follow the same pattern as those with two victims as White victims were the most common (43.81%; N=138), followed by those with Non-White victims (31.75%; N=100), then those who killed victims from more than one racial category (24.44%; N=77). Differences in the race of victims appear in those killers with four or five victims as mixed victims (34.98%; N=92) are more often killed than Non-White victims (28.52%; N=75), but White victims are still the most common victims (36.50%; N=96). Serial homicide offenders with six or more victims also exhibit differences among the race of their victims from killers with smaller victim counts. Killers with six or more victims most commonly killed victims from multiple racial categories (43.83%; N=71), followed by those who killed Non-White victims (32.19%; N=50), then those who killed White victims (24.07%; N=39). Thus, White victims were most commonly the selected victims in each of the categories based on the numbers of victims, with the only exception being killers with six or more victims where Whites are the least likely victims.

Table 1 also presents that of the overall sample of serial killers, the majority did not rape their victims (72.10%; N=907). But for the offenders who did rape their victims, it appears as they were more common among those with lower victims counts. Of the 351 (27.90%) offenders who did rape their victims, most had only killed two people (33.33%; N=117), followed by those with three victims (25.36%; N=89), then the killers with four or five victims (22.51%; N=79), then, finally, those who slayed six or more victims (18.80%; N=66).

But, it is important to look at the prevalence of rape in cases based on the categorical measure of the number of victims each killer had because there are more cases in the lower victim counts, thus, creating more victims who would have the potential to be raped. When doing so, interesting patterns are realized; rape is actually committed more often in cases of serial killers with higher numbers of victims. Specifically, rape, as a percentage, was most commonly an aspect of the murder in cases of killers with six or more victims (40.74%; N=66), followed by those with four or five victims (30.04%; N=79), then those with three victims (28.25%; N=89), then finally, those killers with only two victims (22.59%; N=117). Therefore, while more cases include rape among serial killers with fewer victims, the number of cases in each of these categories must also be considered. When these differences are accounted for, rape is actually more prevalent among killers with higher numbers of victims.

On the other hand, among the entire sample, the majority of offenders used their hands in their killings (56.44%; N=710); unlike rape that was only found in 27.90% (N=351) of cases. In addition, these killings that involved the offender using their hands to kill did not follow a similar linear pattern as murderers who raped their victims did. As discussed, percentages of offenders who raped their victims increased as the numbers of victims the offender killed also increased. For offenders who used their hands, a consistent pattern was not found: the highest percentages appeared among those with six or more victims (59.26%; N=96), followed by offenders who killed two victims (57.34%; N=297), then killers with three victims (56.83%; N=179), and finally those who murdered four or five victims (52.47%; N=138). Furthermore, while these percentages are not displayed in Table 1, the killers who used their hands most commonly had two victims (23.61%; N=297), followed by those with three victims (14.23%;

N=179), then killers with four or five victims (10.97% N=138), then, finally, those with six or more victims (7.63%; N=96).

Similar to analyzing the prevalence of rape among cases based on the number of victims killed, it is also important to note these differences among killers who used their hands to kill even though the offender using their hands to kill was more common in each of the number of victims killed by the offender categories. More specifically, based on the number of victims, killers used their hands to kill most often in cases with murderers accounting for the deaths of at least 6 victims (59.26%; N=96), followed by killers with only two victims (57.34%; N=297), then those with three victims (56.83%; N=179), and finally, killers using their hands to kill was least common among murderers with four or five victims (52.47%; N=138).

The control variables were also included in Table 1 to compare the differences among them based on the number of victims killed by the offender and also provide insight into the serial murderers who will be used in later analyses. In terms of the gender of the offender, of the entire sample of 1,258 serial killers, the majority were men (92.85%; N=1,168) with only 90 (7.15%) being women. Once again, by breaking down the gender of the offender by the number of victims killed by the offender, important differences are noted. Of course, men offenders are more prevalent in each of the categories of number of victims killed; they account for 91.70% (N=475) of killers with two victims, 94.29% (N=297) of murderers with three victims, 91.25% (N=240) of those with four or five victims, and 96.30% (N=156) of the serial homicide offenders with six or more victims. While these numbers are not displayed in Table 1, when examining just the 90 women serial homicide offenders by number of victims killed, there are some interesting aspects to note. Women most commonly appear among the killers with two victims (47.78%; N=43). Followed by two victims, women serial homicide offenders are the most common among

those with four or five victims (25.56%; N=23), then among those with three victims (20.00%; N=18), then finally among the women who killed six or more victims (6.67%; N=6).

For the variable accounting for the race of the offender, overall, the plurality of serial killers were Blacks (47.06%; N=591), followed by Whites (42.13%; N=530), then finally those in the other category (12.88%; N=162). Once again, it is important to break down the race of the offender by the number of victims they killed. In doing so, it is evident that killers who were Black accounted for the most serial killers with two victims (44.59%; N=231), with White killers being just behind (43.44%; N=225), and finally, those in the other category accounted for the fewest serial killers with only two victims (11.97%; N=62). When examining killers with three victims, Blacks are most commonly the offenders (48.25%; N=152), followed once again by Whites (42.54%; N=134), and those from other races being the least common (9.21%; N=25). Killers with four or five victims also follow this same pattern with the plurality of killers being Black (49.81%; N=131), followed by White (40.68%; N=107), and those in the other category (9.51%; N=25), respectively. Finally, this pattern is also exhibited in offenders who killed six or more people with Blacks being the most common offenders (48.15%; N=78), then Whites (39.51%; N=64), then Other (12.35%; N=20).

An examination of the age of the offender by number of victims killed included the 518 offenders who killed two victims at an average of 27.24 years old, the 315 killers who killed three victims at an average of 27.32 years old, the 263 killers who murdered four or five victims were an average age of 27.92 years old, and the 162 serial murderers who killed six or more people had an average age of 27.46 years old. Finally, the last variable in the analyses accounted for the locations that the serial killer operated in, the overall totals were very similar with 50.64% (N=637) of killers remaining in one location, while 49.46% (N=621) took the lives of their

victims in multiple locations. Breaking these figures down further by victim count, is it evident that the only instance of serial homicide offenders killing in one location was when they only killed two victims; killers murdered in one location in 54.63% (N=283) of the 518 cases where two victims were killed. For every other category of number of victims killed, the murders more commonly occurred in multiple locations. Analyzing the locations based on the numbers of victims specifically, killing in multiple locations was more common among those with three victims (51.75%; N=163), four or five victims (51.33%; N=135), and six or more victims (54.32%; N=88).

This information regarding the case characteristics and the variables used in this study based on the number of victims killed can be found in Table 1 below. Now, after understanding more details about the data used in this study, additional analyses are performed and discussed in the following sections.

Table 1: Descriptive Statistics of Sample Characteristics by Number of Victims (N=1,258)

	Number of Victims				
	2	3	4 or 5	6 or More	Total
	% (N)	% (N)	% (N)	% (N)	% (N)
Dependent Variable					
Number of Victims	(x̄=3.66; S.D.=2.83)				
	41.18 (518)	25.04 (315)	20.91 (263)	12.88 (162)	100.01 (1,258)
Independent Variables					
Span of Activity	(x̄=3.27; S.D.=5.25)				
	x̄=3.22	x̄=3.20	x̄=2.91	x̄=4.13	x̄=3.27
Gender of Victims	(x̄=1.07; S.D.=0.84)				
> 0=Men	44.59 (231)	28.57 (90)	20.15 (53)	14.20 (23)	31.56 (397)
1=Women	31.47 (163)	29.84 (94)	25.48 (67)	30.87 (50)	29.73 (374)
2=Both	23.94 (124)	41.59 (131)	54.37 (143)	54.94 (89)	38.71 (487)
Race of Victims	(x̄=0.87; S.D.=0.82)				
> 0=White	46.53 (241)	43.81 (138)	36.50 (96)	24.07 (39)	40.86 (514)
1=NonWhite	31.08 (161)	31.75 (100)	28.52 (75)	32.10 (52)	30.84 (388)
2=Mixed	22.39 (116)	24.44 (77)	34.98 (92)	43.83 (71)	28.30 (356)
Rape	(x̄=0.28; S.D.=0.45)				
> 0=No	77.41 (401)	71.75 (226)	69.96 (184)	59.26 (96)	72.10 (907)
1=Yes	22.59 (117)	28.25 (89)	30.04 (79)	40.74 (66)	27.90 (351)
Hands	(x̄=0.56; S.D.=0.50)				
> 0=No	42.66 (221)	43.17 (136)	47.53 (125)	40.74 (66)	43.56 (548)
1=Yes	57.34 (297)	56.83 (179)	52.47 (138)	59.26 (96)	56.44 (710)
Control Variables					
Gender of Offender	(x̄=0.07; S.D.=0.26)				
> 0=Men	91.70 (475)	94.29 (297)	91.25 (240)	96.30 (156)	92.85 (1,168)
1=Women	8.30 (43)	5.71 (18)	8.75 (23)	3.70 (6)	7.15 (90)
Race of Offender	(x̄=0.69; S.D.=0.66)				
> 0=White	43.44 (225)	42.54 (134)	40.68 (107)	39.51 (64)	42.13 (530)
1=Black	44.59 (231)	48.25 (152)	49.81 (131)	48.15 (78)	47.06 (592)
2=Other	11.97 (62)	9.21 (29)	9.51 (25)	12.35 (20)	10.81 (136)
Age of Offenders	(x̄=27.43; S.D.=9.15)				
	x̄=27.24	x̄=27.32	x̄=27.92	x̄=27.46	x̄=27.43
Locations	(x̄=0.49; S.D.=0.50)				
> 0=One Location	54.63 (283)	48.25 (152)	48.67 (128)	45.68 (74)	50.64 (637)
1=Multiple Locations	45.37 (235)	51.75 (163)	51.33 (135)	54.32 (88)	49.36 (621)
Total	100 (518)	100 (315)	100 (263)	100 (162)	100 (1,258)

> Denotes the reference categories of the variables used in the multinomial logistic regression.

VIF's were analyzed for each of the variables in the model to assess if multicollinearity among the variables exists (results not displayed). The findings show that for the variables included in the model, the VIFs ranged from 1.027 to 1.319. As previously mentioned, according to Neter et al. (1990), who argued VIFs must be less than ten, and Fisher and Mason (1981), who stated VIFs must be less than four, issues of multicollinearity are not found to exist in this current study. Thus, multicollinearity among the variables in the model is not an issue in the analyses.

Chi-Square Statistics

Table 2 below presents the results of the Chi-Square Statistics and the degrees of freedom of the variables in the analyses to test which variables had a significant effect on the model. Based on these results, there were four significant variables. The first being the serial killers who killed victims of both sexes, compared to having only men victims ($\chi^2=112.79$; $p=.000$). Compared to serial murderers who killed White victims, Non-White victims ($\chi^2=23.81$; $p=.000$) and mixed victims ($\chi^2=55.61$; $p=.000$) were statistically significant. Finally, murderers who raped their victims was also statistically significant ($\chi^2=24.12$; $p=.000$).

Table 2: Chi-Square Test of Associations (N=1,258)

	χ^2	<i>df</i>
Independent Variables		
Span of Activity	3.27	3
Women Victims^a	4.41	3
Both Victims^a	112.79***	3
Non-White Victims^b	23.81***	3
Mixed Victims^b	55.61***	3
Rape	24.12***	3
Hands	3.84	3
Control Variables		
Women Offenders	3.25	3
Black Offenders^c	5.99	3
Other Offenders^c	3.96	3
Age of Offender	1.27	3
Multiple Locations	5.74	3

*p<.05; **p<.01; ***p<.001

^a This data is compared to only men victims.

^b This data is compared to White victims.

^c This data is compared to White offenders.

Model Fitting Information

Table 3 below includes the results of the Pearson and Deviance chi-square statistics. Both of these chi-square statistics test how well the model fits the data based on expected and actual values. The Pearson chi-square is 3,413.91 (p=.483). While the Pearson chi-square value is high, it is not statistically significant, and therefore, based on this measure, there is a good fit between the model and the data. The second row of the table displays another chi-square statistic to test how well the model fits the data, the Deviance chi-square statistic, with a value of 2,582.10 (p=1.000). Since the Deviance chi-square value is not statistically significant, it suggests that the

model fits the data well. Therefore, both the Pearson and Deviance chi-square suggest the the models are a great fit.

The results of the Pseudo R-Squares are presented in Table 3. They include the Cox and Snell ($R^2=.164$), Nagelkerke ($R^2=.177$), and McFadden R-Square ($R^2=.069$) statistics. These statistics are typically used in linear regression to measure effect size with larger values representing a better fit of the model. But these statistics are limitations of the R-squared that is not commonly calculated for logistic regression, and therefore, according to De Laurentis, Maino, and Molteni (2013), they must be interpreted carefully and should not solely be used when analyzing logistic regression models. The results of the likelihood ratio tests presented in Table 3 are much more important.

The results from Table 3 indicate the model fitting information and are included below. The model fitting criteria includes results from the AIC (Akaike's Information Criterion), the BIC (Bayesian Information Criterion), and the -2 log likelihood. The AIC and BIC are both information theory-based statistics that measure how well a model fits as it when compare the model without any independent variables (intercept-only) and the model with the variables included (final). Serving as a useful way to compare models, the models with lower AIC and BIC values indicate a better fit than models with higher values (Field, 2009). The values of the AIC and BIC for the intercept only model (no independent variables) are 3,175.37 and 3,190.78, respectively. The values of the AIC and BIC in the final model (including the independent variables) are 3,021.79 and 3,222.15, respectively. As the AIC has the lowest values in the final row, it indicates that the final model is better than the intercept-only model. On the other hand, the BIC statistics are higher in the intercept only row, so further analyses are necessary to test the model fit.

The last statistic incorporated in Table 3 below with the Model Fitting Criteria includes the -2 log likelihood which is computed for the intercept only model (the model without any independent variables) and the final model (the model including all independent variables). The -2 log likelihood for the intercept only model is 3,169.37 and 2,943.79 for the final model. Similar to the AIC and BIC, the -2 log likelihood allows for the comparison of the intercept only to the final model to examine if the variables added to the model significantly improve the model. By subtracting these two numbers, the result produces the chi-square statistic ($3,169.37 - 2,943.79 = 225.58$). Having a large amount of change between the intercept only and final models indicates a greater improvement in the model fit. The chi-square statistic of 225.58 is statistically significant ($p=.000$), indicating that the final model, including all the independent variables, predicts the number of victims killed by serial killers better than the intercept only model.

Table 3: Model Fitting Information (N=1,258)

Goodness-of-Fit						
	χ^2	<i>Df</i>	<i>Sig.</i>			
Pearson	3,413.91	3,411	.48			
Deviance	2,852.10	3,411	1.00			
Pseudo R-Squares						
			χ^2			
Cox and Snell	.164					
Nagelkerke	.177					
McFadden	.069					
Model Fitting Information						
Model Fitting Criteria				Likelihood Ratio Tests		
Model	<i>AIC</i>	<i>BIC</i>	<i>-2 Log Likelihood</i>	χ^2	<i>df</i>	<i>Sig.</i>
Intercept Only	3,175.37	3,190.78	3,169.37			
Final	3,021.79	3,222.15	2,943.79	225.58	36	.000

Multinomial Logistic Regression

Because the dependent variable has multiple categories and there are several independent and control variables in the model, multinomial logistical regression was selected as the best statistical test to offer more insight into serial murder. To properly run the Multinomial Logistic Regression, I created “dummy” categories for variables for those that had multiple categories. Once again, the “VictimGender” variable measured victims as men, women, or both (for killers who murdered both men and women). From this variable, two dummy variables were created, women victims and both victims, with men victims serving as the reference category for each. From “VictimRace,” measuring if the victims were White, Non-White, or mixed (for offenders who killed from more than one racial group), I created two dummy variables, Non-White victims

and Mixed victims, with White victims as the reference category for each. For the variable accounting for the race of the offender, “OffenderRace,” with values of White, Black, and Other, two dummy variables were also created for Black offenders and offenders categorized as Other, with White offenders serving as the reference category for each.

The dependent variable measures the numbers of victims killed and consists of categories of 2 victims, 3 victims, 4 or 5 victims, and 6 or more. As the current definition of serial killing by the FBI is “the unlawful killing of two or more victims by the same offender(s), in separate events” (2008, p. 12), I aimed to analyze the current legal victim threshold compared to other categories with various numbers of victims. Because of the ordered nature of the dependent variable, it may appear that an ordinal logistic regression would be the analysis of choice, but multinomial logistic regression was determined to be the best test for this particular study. By doing this, it allows for the differences among the individually categorized groups of the number of victims to be compared and analyzed against the current FBI’s two victim threshold. Therefore, in an effort to analyze the differences among killers who had murdered two victims with killers who killed three, four or five, or six or more people, multinomial logistic regression is the best statistical test to allow for a comparison across each of the individually categorized number of victims.

The results of the Multinomial Logistic Regression are displayed in Table 4 below. Serial homicide offenders who killed two victims serve as the reference category and are compared to offenders who killed three people, killers who murdered four or five victims, and serial killers who are responsible for the deaths of at least six people. The results of the multinomial logistic regression are discussed, including the intercepts and the statistically significant estimated coefficients and the odds ratios (OR). The intercept is the estimate for the killers with the

particular number of victims relative to killers with two victims when the independent variables are evaluated at zero. The coefficients (B) represent the estimated coefficients of the variables are displayed in Table 4 in addition to the standard errors (S.E.) and the values of the exponentiated beta ($\text{Exp}(B)$). Values of the $\text{Exp}(B)$ provide what the risk of the outcome being in the comparison category compares to the risk of the outcome being in the reference category differs with the variables in question and can be converted to ORs. An OR greater than 1.0 signifies a higher change for the variable of interest, while an OR less than one signifies a lower chance for the variable of interest.

The results in the first column of Table 4 compare serial killers with three victims to those with two victims using the variables in the model. The only statistically significant variables are killers who have murdered victims who were both men and women and killers who raped their victims. For the sex of the victims, a person who killed both male and female victims has .362 ($p=.000$) times the odds of killing three victims rather than two victims, holding all other variables constant. A killer who raped their victims has .633 ($p=.036$) times the odds of killing three victims rather than two, holding all other variables constant.

The next column of the analyses includes the serial homicide offenders with four or five victims in comparison to those who killed two victims based on the variables in the model. The variables that were statistically significant when three victims were compared to two remained significant, but when analyzing killers with four or five victims, race of the victims also becomes significant. For the sex of the victims, a person who killed both male and female victims have .183 ($p=.000$) times the odds of killing four or five victims rather than two victims, holding all other variables constant. In terms of race of the victims, both Non-White victims and Mixed victims were statistically significant; a serial murderer who killed Non-White victims has .551

($p=.027$) times the odds of killing four or five victims rather than two victims and killers who murdered Mixed victims have .365 ($p=.000$) times the odds of killing four or five victims rather than two victims, holding all other variables constant. A killer who raped their victims has .450 ($p=.001$) times the odds of killing four or five victims rather than two, all other variables held constant.

The final column of the Table 4 displays the results of the multinomial logistic regression with killers who murdered six or more victims compared to those who killed two victims using the independent and control variables in the model. Similar to serial homicide offenders who murdered four or five victims, killers with six or more victims have the same statistically significant variables with the exception of the race of the offender, which become statistically significant when analyzing homicide offenders who killed six or more victims. For the gender of the victims, a person who killed both male and female victims have .128 ($p=.000$) times the odds of killing at least six victims rather than two victims, holding all other variables constant. In terms of race of the victims, both Non-White victims and Mixed race victims were statistically significant; a serial murderer who killed Non-White victims has .206 ($p=.000$) times the odds of killing six or more victims rather than two victims, and killers who murdered Mixed victims has .150 ($p=.000$) times the odds of killing at least six victims rather than two victims, holding all other variables constant. A killer who raped their victims has .299 ($p=.000$) times the odds of killing six or more victims rather than two, all other variables held constant. Finally, the only control variable that is statistically significant appears when analyzing killers with six or more victims. For the race of the offender, a Black serial homicide offender has 1.885 ($p=.023$) times the odds of killing six or more victims rather than two victims, holding all other variables constant.

Table 4: Multinomial Logistic Regression (N=1,258)

	3 Victims		4 or 5 Victims		6 or More Victims	
	<i>B(S.E.)</i>		<i>B(S.E.)</i>		<i>B(S.E.)</i>	
Intercept	.641(.608)		1.967(.645)**		2.302 (.842)**	
	<i>B(S.E.)</i>	<i>Exp(B)</i>	<i>B(S.E.)</i>	<i>Exp(B)</i>	<i>B(S.E.)</i>	<i>Exp(B)</i>
Independent Variables						
Span of Activity	-.008(.015)	.992	-.018(.016)	.982	.014(.018)	1.014
Women Victims^a	-.213(.238)	.808	-.378(.276)	.685	-.655(.347)	.519
Both Victims^a	-1.016(.183)	.362***	-1.697(.204)	.183***	-2.053(.272)	.128***
NonWhite Victims^b	-.288(.239)	.750	-.595(.270)	.551*	-1.581(.337)	.206***
Mixed Victims^b	-.291(.220)	.747	-1.008(.235)	.365***	-1.898(.282)	.150***
Rape	-.457(.218)	.633*	-.798(.236)	.450**	-1.206(.268)	.299***
Hands	.125(.176)	1.134	.338(.191)	1.402	.325(.236)	1.385
Control Variables						
Women Offenders	.284(.306)	1.328	-2.65(.302)	.767	.340(.479)	1.405
Black Offenders^c	-.013(.217)	.987	.098(.235)	1.103	.634(.279)	1.885*
Other Offenders^c	.320(.287)	1.378	.411(.313)	1.508	.641(.356)	1.898
Age of Offenders	.001(.009)	1.001	.009(.009)	1.010	.007(.012)	1.007
Multiple Locations	-.272(.153)	.762	-.277(.167)	.758	-3.91(.203)	.677

*p<.05; **p<.01; ***p<.001

Note: Serial killers with 2 victims serves as the reference category for all models.

^a This data is compared to only men victims.

^b This data is compared to White victims.

^c This data is compared to White offenders.

Classification

Finally, the results of the classification are displayed below in Table 5. These results indicate how well the predictive model performed, or how well the model accurately classified the cases, and is an additional indicator to test the usefulness of the final model. By adding the

numbers across the rows, it provides the number of cases in the actual data in each category. On the other hand, adding the numbers down the columns displays the number of cases as they were classified by the full model in each category. As Multinomial Logistic Regression usually produces the best predictions for the largest group (Hosmer & Lemeshow, 2000), it should be no surprise that the group of killers who had two victims had a much higher percentage of accurately predicted cases compared to the other groups with fewer cases. The important statistic in the classification model is the overall percentage displayed in the bottom right corner that indicates that the model, with all the variables, accurately predicted 43.9% of the cases. The results of this classification table can serve as a benchmark for interpreting the effectiveness of future research.

Table 5: Classification (N=1,258)

Observed	Predicted				Percent Correct
	<i>2 Victims</i>	<i>3 Victims</i>	<i>4 or 5 Victims</i>	<i>6 or More Victims</i>	
2 Victims	422	31	57	8	81.5%
3 Victims	216	33	53	13	10.5%
4 or 5 Victims	136	28	76	23	28.9%
6 or More Victims	71	23	47	21	13.0%
Overall Percentage	67.2%	9.1%	18.5%	5.2%	43.9%

The results of the differences in the number of victims killed by the offender and how they relate to serial murder have been examined. From these results and findings, many important aspects of serial murder warrant discussion, especially how the results of this study

relate to the prior research. In addition, these findings and results yield important implications for practitioners and researchers alike.

CHAPTER 7: DISCUSSION AND CONCLUSIONS

Studying serial homicide has been a challenge for researchers and academics over the years for several reasons. Not only are the data extremely limited but there are also disagreements in the field about what the definition of a serial killer and a serial murder event should be. Much of the previous research are based on small or biased samples of killers that do not provide an accurate and complete representation of serial killings. In addition, elements present in society are constantly changing and could have an impact on serial killings that may not be discovered for years after, making research findings quickly outdated. Although difficult and challenging, it is imperative that serial killings continue to be analyzed in an attempt to provide better insight into the crime in efforts to combat it. Luckily, the results of these current analyses from this study were able to address and tackle many of these issues known to the subject of serial homicide.

These challenges in researching serial murder impact not only the general field of multiple murder, and serial murder in particular, but law enforcement agencies as well. It is imperative that law enforcement agencies have accurate and updated information regarding the crimes, as they are responsible for identifying and detaining these dangerous killers to keep society safe. Without having empirical evidence to allow for information regarding the nature of serial killing and the other factors surrounding the crime, it can be difficult for law enforcement officials to properly fulfill their job duties and responsibilities to society. With that being said, it should be to no surprise that many serial killers can operate for extended periods of time and avoid apprehension. In addition to the issues discussed in the previous chapters above, killers may be on the loose for years due to the many myths surrounding serial homicide that can impact

linkage blindness and clearance rates, each of which are discussed in detail below. Furthermore, based on the results of this current study that utilizes a large sample of recent serial killers, a new definition of the crime is offered to better assist the disagreement among and between academics and law enforcements agencies. Finally, this study aimed to expand upon a sociological perspective of serial homicide using the results of these empirical analyses in this current study. Also, while this current study provides several valuable insights to the field of serial homicide, it is important to note some of the limitations.

Myth Busting

As mentioned previously in Chapter 3, there are numerous myths surrounding serial murder that lack considerable empirical evidence to support their claims. A major goal of this current study was to use the results of these current analyses to offer factual information in regards to some of these myths surrounding serial murder, as well as examining how these results compare to some of the previous findings. Fortunately, the empirical evidence discovered from these analyses of several recent serial killings provide an abundance of data that can be used to provide information regarding these myths.

As discussed previously, Hickey (2016) claimed that one of the most dominant myths regarding serial murder is that all offenders are sexual murderers. If that were true, and all serial murderers had a sexual motive, it would be expected that the killers would have raped their victims. Similar to Walters, Drisland, Hickey, and Patrick (2014), who stated that several serial killings do not involve sexual assault, torture, or sexual mutilations, these current analyses also found that few cases involved rape. A study of 23 serial killers who murdered between 1970 and

2001 in Italy also found that only one third of cases included sexual violence (Santtila et al., 2008).

The results of this study coincide with the previous research on sexual elements in serial homicides; of the 1,258 serial killers, only 351 (27.90%) had raped their victims. This suggests that the majority of serial killers had not raped their victims, and thus, were most likely not sexually motivated. Furthermore, of the 351 serial killers who did rape their victims, most (33.44%; N=117) had only killed two victims, followed by 89 (25.36%) killers with three victims, then the 79 (22.51%) killers with four or five victims, and finally the 66 (18.80%) serial killers with six or more victims.

So, of the serial killers who raped their victims and may be considered to have some type of sexual motivation, most had killed fewer people. These findings suggest that sexually motivated serial killings only account for a small percentage of serial homicide and, when they do occur, these killers typically murder fewer people. This could be due to these killers being apprehended sooner compared to other killers who did not rape their victims. It is important to note that by raping a victim, there is a much greater chance of the killer leaving physical evidence, such as blood or semen, at the scene and on the victim that can be linked back to the killer and eventually aid in their capture.

It is important to note that while there are more cases of killers raping victims among the categories with lower numbers of victims, such as two and three, compared to four or five and six or more, the overall numbers in each of those categories must also be considered. As mentioned previously, of the 1,258 serial killers included in the analyses, there were 518 (41.18%) killers with two victims, 315 (25.04%) who murdered three victims, 263 (20.91%) who killed four or five victims, and 162 (12.88%) who were responsible for the deaths of at least six

people. Therefore, as there were more killers in the smaller victim categories, there were more chances for the offenders to rape their victims, which would provide a higher count. But when analyzed as a percentage of the total cases in each of the categories of the number of victims killed, the percentages provide a better overall picture of rape by number of victims, thus the making it essential to be analyzing rape by the percentages of the cases in each category and not just the actual counts. For example, the highest counts of rape appeared in those who had two victims (117), with the lowest counts of rape in killers with six or more victims; when analyzed as a percent of the total cases in the category, the number tell a different story. Of killers with two victims, 22.59% (N=117 of 528 cases) of victims were raped compared to the 40.97% (N=66 of 162 cases) of killers who killed at least six victims.

In doing so, it is evident that of the killers who raped their victims, they were actually represented more among those with higher numbers of victims. To clarify, when examining the rapes by the categorical dependent variable measuring the number of victims, it is evident that killers who raped their victims actually represented larger percentages of the total offenders in each category among those who killed higher numbers of victims. So, of the 162 killers who had at least six victims, 66 (40.74%) raped their victims, while of the 263 killers with four or five victims, 79 (30.04%) raped their victims, and of the 315 offenders who killed three victims, 89 (28.25%) raped their victims. Finally, the lowest number of rapes by total kills was found among killers with only two victims; 117 (22.59%) killers raped their victims of the 518 total killers with two victims. This is important as it provides evidence that rape is more common among cases with serial killers who have higher numbers of victims.

Even with these differences in how the rape data are displayed and discussed, they still reveal that serial killings with a sexual motivation are relatively rare and most killers who rape

stop killing or are apprehended before they can continue on to their next killing. But, of the killers who have murdered multiple people (four or more), rape is more common when expressed as a percentage of all killings. Thus, killers with higher victim counts are likely to rape victims more than killers with fewer victims. The relationship between serial killers who rape and how they are able to achieve high victims counts needs to be further investigated.

All things considered, the notion that serial murderers are all sexually motivated cannot be supported by the results of these analyses. This myth, like many others, may have developed based on particular case studies or high-profile cases with many victims who received wide media attention. Noting that the results of this study reveal that 40.74% of the killers who murdered at least six people did, in fact, rape their victims, suggests that the influence of the media or the focus of previous research on specific case studies do not reflect the true nature of a sexual motivation when analyzing several serial homicide offenders with various numbers of victims.

As previously mentioned, a sexual motivation has previously been the focus of much attention in serial homicide research, with a few cases that quickly became the center of interest forensically and clinically, which also contributed to the development of certain theoretical perspectives (Meloy, 2000). It is imperative that research concerning motivations and other factors are periodically updated with new data. Having an inaccurate view that serial killers are sexual murderers is not only incorrect, it can create challenges for law enforcement agencies when attempting to solve cases of serial homicide. A further discussion regarding linkage blindness is included in a later section.

Noting that a killer who raped their victims would leave behind more physical evidence than murders without rapes, thus increasing the chances of the killer being apprehended, it is

surprising that the variable measuring if the offender killed with their hands was not significant in the multinomial logistic regression in Table 4. Similar to killers who raped their victims, those who killed with their hands frequently had lower numbers of victims, possibly because, similar to a rape, the killer is leaving more physical evidence at the scene and on the victim.

Interestingly, more killers used their hands in their murders than those who did not. Of the 1,258 killers in the sample, 710 (56.44%) used their hands to commit the murder, and of those killers, the majority, 476 (67.04%), had three or fewer victims.

But, when broken down by the number of victims killed, of each of the categories, killing with hands was more common than killings that did not involve the offender using their hands. Unlike rape, that becomes more common in killers with more victims, using hands to kill does not follow a steady trend based on the numbers of victims killed. To elaborate, the highest percentage of killers who used their hands had six or more victims (59.25%; N=96), followed by those with two victims (57.34%; N=297), then three victims (56.83%; N=179), and finally, the lowest percentage of killers who used their hands was found among murderers who took the lives of four or five people (52.47%; N=138). Therefore, when analyzing only the results of the frequency statistics of this variable, there are key differences in the trends of offenders using hands to kill when compared to killers who raped their victims. Those who raped their victims commonly murdered more people, but those who killed their victims with their hands generally killed fewer people, with the exception of those with at least six victims.

As mentioned briefly previously, the prior research on strangulation as a method of killing is dated and based on small samples of killers and their victims. For example, Dietz, Hazelwood, and Warren (1990) used the 30 cases of suspected sexually sadistic criminals submitted to NCAVC between 1984 and 1989 and found strangulation (either ligature or

manual) to be the cause of death for 76 of their 130 victims (58%). Hickey (1991) also reported that 33% of the sample of 159 serial killers had used strangulation/suffocation as a way to kill their victims, the second most common method only to mutilation at 55%. As their findings are extremely dated and based on small samples of killers, the findings cannot be generalized to all serial killers.

Unfortunately, the results of this current study regarding serial homicide offenders using their hands to kill certainly needs further investigation. Firstly, the coding of the variable in the dataset needs clarification to ensure it is measuring strangulation and suffocation, and if other killing methods are also including. As serial homicide varies greatly from other types of homicide, serial murderers using their hands to kill may provide for valuable insight into these criminals and their killings.

While leaving physical evidence behind at the scene from a rape or the offender using their hands may contribute to a killer being apprehended, there are still distinct differences in the types of physical evidence is left behind and how it influences the number of victims they killed. As discussed, an offender raping their victims compared to killers who used their hands to murder show differing results. These results have various implications for the physical evidence that is left behind and how that may influence their apprehension. Much more research is needed on both of these case characteristics before any conclusions can be made regarding the impact of rape and using hands to kill in terms of leaving physical evidence at the scene of serial murder cases. Another common serial murder myth is that most serial killers are White. According to Walters, Drisland, Hickey, and Patrick (2014), one in five serial murderers are Black, but more recently, they represent at least 50% of serial murderers (Hickey, 2016). Similarly, the results from this study suggest that of the racial categories (Whites, Blacks, and Other), Black offenders

represented the highest number of killers among the serial murderers. In particular, the current study found that of the 1,258 serial killers included in the analyses, 592 (47.06%) were Black compared to the 530 (42.13%) White serial killers and the 162 (12.88%) in the Other category (including Hispanic, Asian, and Native American). Furthermore, not only did Black offenders have the highest counts in each of the categories of numbers of victims by race, they also represented nearly half (48.15%) of the serial killers among the category with the highest numbers of victims (six or more).

The myth that all, or even most, serial killers are White is even more troubling as Blacks are overrepresented among serial homicide offenders based on their total representation in the entire U.S. population. Based on a 2000 Census report, Whites accounted for 75.1%, Blacks (or African Americans) accounted for 12.3%, while those included in the Other category accounted for 16.2% of the total U.S. population (Grieco & Cassidy, 2001). The 2000 Census Report was selected for the comparisons as it is the closest year to the midpoint of the years included in the analyses for this study (1985-2016). Based on the 2000 Census Report, prior research by Walters and colleagues (2014), and the findings from this current study, Blacks are vastly overrepresented among serial murderers.

This study contributes to the literature on serial homicide as it is one of the first to use a variable that accounts for more than just a simple binary measure of the race of the offender; therefore, the results of these current analyses must be compared to previous findings with caution. Moreover, it is important to note that much of the prior research measured race with a dichotomous variable that compared White offenders to NonWhite offenders (compromised of all other racial groups besides White). Thus, when comparing the results of this study to prior research that used a dichotomous variable measuring the race of the offenders as White and Non-

White racial variable, it is evident that Whites represent the minority racial group of serial killers. From these analyses, as displayed in Table 1, Whites accounted for 530 (42.13%) of all the serial killers while the serial killers that would be included in the Non-White racial category such as Blacks, Hispanics, Asians, and Native Americans accounted for 728 (57.87%) of the total serial killers.

Even noting this limitation of the difference in the measurement of the variables used in other studies, the results are consistent with findings reported by Hickey (2016) and Walters et al. (2014) who claimed at least half of serial murderers were Black in recent years. On the other hand, Forsyth (2105), claimed that African-Americans are less represented among serial murders relative to other types of homicides. While Forsyth (2015) may be correct in his statement that compares serial homicide offenders to other homicide offenders, Blacks are still very common perpetrators of serial homicide cases. Still, more research to provide additional insight into the racial differences among more specific racial and ethnic groups is necessary.

Upon investigating the possible reasons why Blacks are not usually perceived as serial killers suggests the media and academia have important roles. Various mass media outlets, such as books, movies, and television shows, seldom depict serial murderers as Black (Branson, 2013), and few scholars actually specifically research Black offenders in their work (see Branson, 2013; Jenkins, 1993; Hickey, 2016; Walsh, 2005). Considering the lack of media and scholarly attention to Black serial killers, it is no wonder that the myth regarding serial killers as only being White is still common among society. According to Branson (2013), if this ideology of serial killers only being White remains, Black serial killers will likely continue to go unnoticed and be a danger to society.

Additionally, research among Blacks in general has indicated that compared to Whites, racial minorities are overrepresented as criminals in the media, and this media bias has contributed to the public hostility toward these groups (Chiricos & Eschholz, 2002; Dixon, 2006; Dixon & Linz, 2000; Dukes & Gaither, 2017; Entman, 1992; Russell, 1998; Tukachinsky, Mastro, & Yarchi, 2015). Based on results of content analyses, Blacks are also less likely to be portrayed as victims when compared to their White counterparts (Bjornstom, Kaufman, Peterson, & Slater, 2010; Dixon, 2017; Dixon, Azocar, & Casas, 2003). The media's inaccurate portrayals of the archetypal roles of Whites and Blacks have the ability to influence viewers' understanding of reality, which can lead to delegitimizing victims that are racial minorities and normalize Whites as the typical victims of crimes (Dukes & Gaither, 2017). The media portrayals may also be influencing criminal justice personnel as research has also suggested that racial and ethnic minorities receive harsher punishments than Whites in the criminal justice systems (Bobo & Johnson, 2004; Dukes & Gaither, 2017; Russell, 1998). But, these findings should be further investigated to identify the how these media portrayals may impact law enforcement officials in particular, which could provide additional insight into criminal investigations.

Regardless, the dangers that stem from the law enforcement personnel's inaccurate ability to profile serial killers based on race have been observed. For example, in the case of the "D.C. Sniper," the killers went undetected for months as profilers advocated that the offenders were White males (Branson, 2013). Moose and Fleming (2003) claimed that because serial killers are rarely Black, the suspects were never thought to not to be white men. Walsh (2005) questioned how a group that is found to commit every other type of homicide at highly disproportionate rates can maintain a reputation that they cannot be a serial homicide. This remains another serial murder mystery.

Yet this myth regarding the exclusivity of White serial homicide offenders is damaging to not only criminal investigations, but also has negative implications for the victims of Black serial killers. Like other types of homicides, serial homicide is usually intra-racial, with offenders and their victims being the same race (Godwin, 2000; Hazelwood & Douglas, 1980; Pakhomou, 2004; Walsh, 2005). Therefore, based on the results regarding the race of the offender from this study, because Black serial homicide offenders are often overlooked, the victims are also regularly forgotten as well. According to Jenkins (1998), one of the reasons why the media disregards or downplays their coverage of Black serial killers is due to law enforcement agencies only recently considering crimes committed by Blacks seriously, unless they were victimizing Whites. This was evident in the case of serial killer Albert Fish, who was able to take the lives of several Black children for 25 years until he was arrested after he murdered a White girl in 1928 (Ward & Waddell, 2002).

Unfortunately, if this myth remains common among society, it will continue to have damaging impacts. As Blacks were among the killers with the highest victim counts in this current study, the results provide evidence to support the claim by Branson (2013) that Black serial killers will continue to be unnoticed and a danger to society if this damaging myth continues. Thus, the longer these Black serial killers are able to kill before being apprehended, the more likely Blacks will also be victimized. The empirical evidence from this current study that also supports prior research, suggests that Blacks can in fact be serial killers and should be considered as possible suspects by investigators.

Another common myth is that all serial killers are men. While Hickey (2016) reported that Walters, Drisland, Hickey, and Patrick (2014) found that 17% of serial murderers were women, this current analyses found that only 90 (7.15%) of the total 1,258 serial killers were

women. In regards to the fifth myth discussed in Chapter 3, that stated most killers are prolific, or kill many victims, the results of this study suggest that the majority of killers are not prolific as the majority (66.22%) of serial killers murdered three or fewer victims, which could be the result of the killer being apprehended before they kill again. Therefore, using the current definition of serial murder offered by the FBI, it is not uncommon for most serial killers to be considered a serial homicide offender based off the minimum number of victims.

In regards to location, the ninth myth stated above noted that serial killers move around the country a lot to kill their victims. Hickey (2016) noted that Walters, Drisland, Hickey, and Patrick (2014) stated that most killers actually kill in the same areas that are local to the killer. Yet these current analyses found almost an even split between those who killed in one location (50.64%) and killers who murdered in multiple locations (49.36%). Prior to this location variable being dichotomized, frequency statistics revealed that 41 (3.26%) killed in only a single micropolitan statistical area, 596 (47.38%) murdered in only metropolitan statistical areas, while 397 (31.56%) killed in multiple cities, and 224 (17.81%) had victims in multiple states (not displayed). Myth 14, the final myth discussed in Chapter 3, stated that most serial killers have a specific prototype. Similar to previous findings from Walters, Drisland, Hickey, and Patrick (2014) that were also reported by Hickey (2016), the serial killers in these current analyses did not have a specific profile, with many variations between the offenders, the victims, and other case characteristics of serial killer cases.

Clearly, as research has previously found and also supported by these current analyses, there are distinct differences between the myths surrounding serial murder and the factual evidence from cases. These myths may develop as journalists commonly include hearsay, and the news media coverage frequently reporting only the most sensationalized cases while

excluding the cases who do not fit a specific stereotype (Hinch & Hepburn, 1998; Jenkins, 1994; Kiger, 1990).

As discussed briefly in terms of Black serial homicide offenders, the mass media can also impact perceptions about serial murder generally. For example, Showtime's *Dexter*, earned five Emmy nominations (Jensen, 2008) as audiences appreciated the "loveable" serial killing social worker (Donaghy, 2007). Besides creating false perceptions in society about crime, another damaging impact of the media, according to Akers and Sellers (2013), concerns the media functioning as a model for criminal behavior. This also aligned with research by Williams and Vincent (2018b) who argued that individuals who have a strong desire to become serial killers may use the media to serve as a role model, and imitate their behaviors by following the examples exhibited in films.

These factors can eventually lead to ideologies that do not accurately represent the characteristics of actual cases of serial murder, as revealed up examining the numerous myths regarding serial murder. This mass media coverage as a form of entertainment, in addition to the common expression "If it bleeds, it leads" used in news outlets, can have damaging impacts to the wide-spread understanding of serial murder through its coverage of only specific cases that would support the deceptive myths about the crime that develop and are widely believed. In addition, it can create issues and difficulties among law enforcement officials who may also view the various entertainment and news media and act as if these myths are factual, not acknowledging or understanding factual evidence about serial homicide. Even though law enforcement officials likely have specialized training regarding particular crimes, such as serial murder, the media, in addition to other factors, can play a large role in issues associated with apprehending criminals, which may also have an influence on linkage blindness.

Linkage Blindness

Recognizing that many of the myths regarding serial murder either lack supportive empirical evidence or are found to be the exact opposite is true, it is not surprising that criminal investigators may face difficulties in solving these serial homicide cases. Thus, these myths are likely to have an impact on criminal homicide investigations, possibly influencing linkage blindness among some murders. Coined by Steven Egger in 1984, “linkage blindness” refers to an underlying issue among law enforcement agencies in their investigations of serial murder, as well as other criminal acts (Egger, 1984, 2003). The policing system in the U.S. is the most decentralized of the entire world, which often results in a lack of information sharing concerning continuing investigations between various law enforcement agencies; thus, linkages among similar patterns relating to crimes, modus operandi, or crime signatures can be overlooked (Egger, 2003). Because of this lack of data sharing and collaboration among law enforcement agencies, early identification or detection of an active serial murderer may be constrained (Egger, 2003).

Linkage blindness may also be referred to as “crime linking,” which describes a type of offender profiling that uses details and characteristics of a crime that can assist in an investigator’s realization that some crimes may have also been committed by the same offender(s) suspected in other criminal cases (Grubin, Kelly, & Brunsdon, 2001). Crime linking commonly uses physical evidence, such as DNA and fingerprints, as they serve as dependable methods of attributing a crime to a perpetrator (Grubin, Kelly, & Ayis, 1997; Yokota & Watanabe, 2002). But this process may be challenging; as Craik and Patrick (1994) noted, crime

linking through physical evidence can be a lengthy and expensive process. In addition, forensic evidence is not always discovered or present at every crime scene (Grubin, Kelly, & Ayis, 1997; Yokota & Watanabe, 2002), or unidentified bodies could be buried without attempting to collect and preserve DNA (Ritter, 2007).

Because physical evidence may be scarce at some crime scenes, it is important to be able to identify murders that were committed by the same offender using other methods, such as by linking crimes behaviorally through analyzing apparent characteristics of the crimes (Santtila et al., 2008). For example, Santtila and colleagues (2008) analyzed differences among criminal behaviors in his sample of Italian serial killers and found that the behaviors of the offenders were consistent during the offender's killing series, but each of the offenders in his sample acted in different ways from the others, validating the notion that behaviors can be consistent to the offender yet vary greatly from one offender to the next. Therefore, linking cases using documented characteristics and features of the crime scene can also provide enough insight that can aid in linking potential murders to suspects, even without the presence of physical evidence at the scene.

Ted Bundy, for example, was found guilty of two counts of first-degree murder, three counts of attempted first-degree murder, and two counts of burglary; in his trial, there were two key pieces of evidence that aided in his conviction (*Bundy v. State*, 1984). The first consisted of the identification testimony of a witness who claimed Bundy had been at the scene of the crime right before the killing occurred (Chi Omega sorority house), and the second included the expert analysis of the teeth marks that were found on the body of a victim that matched Ted Bundy (*Bundy v. State*, 1984). The outcome of Bundy's case suggests that a unique identifying piece of evidence, such as teeth marks, from a crime scene has proven to be extremely important and

thus, information and evidence collected and documented can play a key role in criminal investigations.

Globally, the number of cases with bite marks was relatively low prior to the 1950s but surged in the 1970s with many cases being in the U.S (Kennedy, 2011). Prior to the formal recognition of bite mark analysis, evidence from bite marks was not viewed as valuable to cases, but when Bundy's and other high-profile cases emerged, their importance was realized and law enforcement agencies, coroners, pathologists, and dentists became trained to include detailed information about bite marks to be analyzed (Kennedy, 2011). Hinchliffe (2011) noted that due to some difficulties, bite mark analysis should be used with caution as it rests on the assumptions that every person had a unique bite mark and that these records can be transferred and recorded accurately on human flesh. Considering the limitations of bite mark analysis, examining Bundy's case suggests the importance of providing investigators with proper training on how to recognize, document, and consider key pieces of evidence when attempting to solve and link crimes.

Other serial murderers have also managed to include uncommon and diverse elements in their crimes by killing using unique methods. For example, beginning in 1971, Randy Kraft murdered approximately 67 young men between the ages of 13 and 30, dumping many of their bodies on the side of freeways in California (Schechter, 2003). Kraft had subjected his victims to extreme torture, such as biting the nipples off many of his victims, in addition to using other torture methods including shoving swizzle sticks or other pencil-sized objects up his victim's penises, sodomizing them with random objects from toothbrushes to tree branches, and even burning the eyes of one of his victims with a cigarette lighter (Schechter, 2003). According to Schechter (2003), Kraft was not apprehended until 1983 when two California Highway Patrol

officers suspected Kraft of drunk driving and instructed him to pull over. Once pulled over, the officers discovered a young boy in his passenger seat and 47 Polaroid photos of naked boys who looked dead or unconscious (Schechter, 2003).

Kraft's ability to kill over 50 victims across the span of nearly 13 years without apprehension is certainly worrisome, especially considering the similarities in each of his murders. As Myers, Reccoppa, Burton, and McElroy (1993) wrote, victims of serial sexual homicide offenders tend to be mutilated, which is generally unusual in other types of homicides; with Brittain (1970) further stating mutilation usually occurring on the breasts, genitals, rectum, and/or the abdomen of victims. As these findings are dated, they need to be updated using more recent data to test if these trends still hold true. Regardless of the past research though, linkage blindness was evident and a central problem in this case. But as Newton (1990) noted, the majority of killings by Kraft were in California, with some occurring in Oregon, and two other murders taking place in Michigan, which may have led to some difficulties in discovering and finding the suspect. Regardless, by tracking and documenting these unique important aspects of Kraft's murders and his victims, such as the similar torture methods found among the similar victims, in addition to data sharing and collaboration across multiple law enforcement agencies, it could have aided in investigative efforts to catch and apprehend Kraft. In cases such as this one, where linkage blindness hinders efforts to apprehend a killer, the unfortunate outcome tends to be the loss of additional victims that could have been potentially saved if better procedures were in place.

According to Forsyth (2015), identifying serial killers can be exceptionally challenging as they tend to live relatively normal lives and can go about their daily activities without creating any suspicions from friends, family, or law enforcement. In addition, as serial homicide

offenders tend to vary greatly in several respects, it is important that these unique elements of each murder and crime scene are observed and taken into consideration during investigations. Specific characteristics of cases should be documented and noted because they could be beneficial in identifying, linking, and prosecuting criminals. If other seemingly minor elements of cases were analyzed more thoroughly, some criminals may be identified and prosecuted before they would have the opportunity to kill again. Through such practices, the ability to solve homicides and positively impact homicide clearance rates could be extremely beneficial. Yet, even considering the numerous case examples that were plagued by linkage blindness that could potentially be used as examples or training mechanisms for future cases, the clearance rates of crimes have not improved.

Clearance Rates

With many myths surrounding serial killings and issues related to linkage blindness possibly plaguing several unsolved homicide cases, it should be no surprise that homicide clearance rates are at an all-time low. “Clearance rates” are used to measure the ability of police departments to hold offenders responsible for criminal acts they committed. According to the FBI’s UCR, a case may be cleared or “closed” by law enforcement agencies through either arrest or by exceptional means (FBI, 2017b). According to the FBI (2017b), clearing a case by “exceptional means” refers to situations where factors that are outside the control of law enforcement agencies prevent the arrests and formal charging of offenders. A case may be cleared exceptionally when the agency has identified the perpetrator; collected sufficient evidence to support their arrest, charge, and prosecution; and have located the perpetrator, but

experienced a situation outside of their control that prevented the agency from carrying out their regular procedures, such as the perpetrator committing suicide or killed justifiably by a LEO (FBI, 2017b).

When calculating clearance rates, the FBI's UCR includes how many crimes have been cleared, not the number of people arrested, because one individual who was arrested may have committed several crimes or, on the other hand, a crime could not be cleared even with multiple arrests (FBI, 2017b). It is important for law enforcement agencies to clear crimes as they are responsible for holding offenders accountable and providing justice to society. In addition, according to Akers and Sellers (2013), the main function of criminal law is deterrence, and therefore, in order to prevent crimes from occurring in the future, laws must have fair punishments to urge people to obey laws and not break them. As Beccaria (1963) famously wrote, the greater the severity, certainty, and speed of legal repercussions of criminal acts, the less likely individuals will commit crimes.

The ability of law enforcement agencies to identify and apprehend criminal offenders plays a large role in this theory of deterrence. Even with the great improvements in technology that would be expected to yield higher homicide clearance rates, many experts remain doubtful that an ideology that suggests such improvements have translated into enhanced methods that have been found to improve the outcome of investigations by holding offenders responsible for their crimes (Bayley, 1994; Lum & Nagin, 2017).

Their doubts are certainly not unwarranted, especially as clearance rates have not changed dramatically in the previous four decades, even with the large changes in the crime rates over this same time (Braga, Flynn, Kelling, & Cole, 2011); furthermore, the homicide clearance rates have remained around two thirds since 2007 (Braga & Dusseault, 2018). As noted by Braga

and Dusseault (2018), the FBI's UCR reported that the homicide clearance rate in 1965 was 83% but diminished to 61% in 2007; more recently, the rates have remained stable, ranging from 63% to 66% between 2008 and 2014.

Various explanations for the decrease in homicide clearance rates have been suggested by scholars. Cassell and Fowles (1998) claimed that the increased number of legal procedures, such as Miranda warnings and search and seizure rules, which police investigators must abide by, may be somewhat to blame for the declines. Other researchers have argued that the changing nature of homicides has also been a factor in the decline as homicides among intimate partners that are easier to clear have decreased, while more difficult to solve homicides including strangers and their involvement in criminal activities have increased (Dugan, Nagin, & Rosenfeld, 2003; Gilbert, 1983; Ousey & Lee, 2010).

Examining the impact of citizens and the community on clearance rates, Greenwood, Chaiken, and Petersilia (1977) stated many years ago that clearance rates have remained stable because most criminals are apprehended at the crime scene by LEOs or through eyewitness testimony. More recently, Jarvis and Regoeczi (2012) examined important changes among society and noted that the declining homicide clearance rates may be due to the decrease in support of efforts to solve crimes in communities, as well as higher tolerance and desensitization of violence. So, considering the decrease in support of law enforcement efforts that Jarvis and Regoeczi (2012) argued, there would likely be fewer eyewitnesses willing to testify if they saw a crime, a major factor that Greenwood and colleagues (1997) found to impact homicide clearance rates. Yet others take a more critical approach of the law enforcement agencies themselves, such as Wellford and Cronin (1999), who stated that homicides clearance rates could increase by

providing the necessary resources, training, and through adopting enhanced methods to investigating crimes (Braga & Dusseault, 2018).

Regardless of the possible explanations, focus must remain on the evidence that suggests the clearance rates of homicides by arrest have decreased. Currently, according to the Murder Accountability Project, about a third of homicides have not been solved (“Why We Exist,” n.d.). Furthermore, since 1980, more than 229,000 people have fallen victim to an unsolved homicide case, which is a higher count than the total number of people who died in all U.S. military actions since World War II (“Why We Exist,” n.d.). According to Braga, Flynn, Kelling, and Cole (2011), even with the recent findings from research and practice, there are only a few law enforcement agencies in the U.S. that are testing new methods to manage investigators and their work regarding solving homicide cases. Additionally, findings from a survey sponsored by the National Institute of Justice of 1,746 law enforcement agencies in the U.S. suggested that the basic work of criminal investigators has had limited significant changes (Horvath, Meesig, & Lee, 2001).

On the other hand, as Braga and Dusseault (2018) noted, there have been improvements in certain areas of investigations, for instance there have been developments of more successful methods to interviewing people possibly related to a crime; executing appropriate methods to conducting lineups of offenders; and improved practices of managing physical evidence of a crime. In addition, developments in forensic technology have aided investigators’ capabilities of linking perpetrators to crimes, yet these improvements do not appear to be increasing the chances of arresting criminals, especially considering clearance rates for violent and property crimes have not changed significantly in the past 40 years.

With such vast forensic and technological advancements in recent years, it may be expected that these tools are used to aid in efforts of solving and clearing homicide cases, but unfortunately, that has not been observed. However, there have been exceptions, such as the case of Joseph James DeAngelo, commonly known as the “Golden State Killer.” While the Golden State Killer has only been charged with two murders, he is the suspected perpetrator of 12 murders, more than 40 sexual assaults, and 70 burglaries in California from the mid-1970s until he apparently went inactive following his last known murder in 1986 (O’Toole, 2018). Even though his last known killing was in 1986, it was not until 2018 that the suspect was identified, located, and arrested for these violent crimes (Pitts, 2018). A major factor in his arrest can be attributed to the advancements in DNA techniques and databases that allowed for law enforcement to finally solve the case several years later (Pitts, 2018).

The process of catching the Golden State Killer involved investigators inserting DNA from the crime scenes that was stored for several years into an online genealogy database and found the Golden State Killer’s distant relatives, allowing for the crimes to be traced back to DeAngelo (Fuller, 2018). GEDmatch.com, one of the genealogy databases, claimed credit for the information that lead to his apprehension, stating that their database was used by law enforcement to solve the case of the Golden State Killer with results confirming more than ten of the California murders (Fuller, 2018). Commercial DNA testing, including popular services such as 23andMe and AncestryDNA, allow for people to mail their saliva to them and obtain their genetic profile as well as search for their relatives (Fuller, 2018). Until recently, before several smaller genealogical websites have emerged, law enforcement agencies have typically encountered challenges when they attempted to upload a genetic profile to one of the sites (Fuller, 2018).

The use of a genealogy site, such as GEDmatch, for criminal investigative purposes has been a cause for concern regarding ethics, especially if people did not consent to their genetic profiles being used by law enforcement agencies attempting to solve crimes. Although, GEDmatch provided a warning to those who may use their services, stating that the genetic information they collect from users may be used for other purposes (Fuller, 2018). Furthermore, according to MacDonald (2018), experts stated that websites such as 23andMe and AncestryDNA may require law enforcement agencies to obtain a court order before gaining access to the genetic information, but databases that are open sources, such as GEDmatch, do not feature any expectations of privacy.

If genealogy websites, particularly ones like GEDmatch, did not exist, the numerous violent crimes committed by the Golden State Killer would have likely remained unsolved. Police had very few details about the appearance of the offender and law enforcement failed to identify any suspects in the cases (Sanchez, Johnson, Almasy, & Orjoux, 2018). Furthermore, Monica Miller was in charge of the FBI field office Sacramento, California between 2013 and 2017 and claimed the case of the Golden State Killer was cold when she retired (Fuller, 2018). Recently the case took a dramatic turn, and Miller credited Sacramento District Attorney Ann Marie Schubert as a key person in solving the case mainly due to her efforts such as teaching classes about cold cases and advocating for DNA technology, she was even successful in developing a unit to continue the efforts in solving other cold cases in the district attorney's office in Sacramento (Fuller, 2018).

Regardless of the ethical issues, the case of the Golden State Killer provides great insight into the influence of technological advancements in criminal investigations. With technology constantly changing and impacting the lives of people in society in various ways, it is essential

that law enforcement agencies are regularly learning and attempting to test and use these new developments. But, not all unsolved cold cases of homicide may have the same outcome as the Golden State Killer case. Ritter (2007) noted that attempts to solve the numerous cases of missing persons are hampered as many of the unidentified bodies are buried without any efforts to collect and preserve the DNA; in addition, labs may not be properly equipped to use the DNA from remains when samples degrade or become dated. Thus, it is imperative that investigators are continually trained on the best practices to gather, conserve, and document evidence that may be imperative to a case being solved. Perhaps criminal investigators should be required to attend classes about new technological and forensic advancements and attempt to test these methods in future investigations.

For example, referring back to the Golden State Killer case, creators of genealogy websites and databases could provide training specifically for law enforcement regarding how to use their services. Considering there was a \$50,000 reward for any information leading to an arrest and conviction of the Golden State Killer (Pitts, 2018), it would be beneficial in the business aspect as these various service providers could be able to potentially earn additional money for their business, while also assisting in keeping citizens and society safer. More importantly, this would allow for law enforcement agencies to become aware and learn of recent developments and gain practice and guidance in employing them. In addition, it would also support the development and fostering of relationships between law enforcement agencies and private organizations, helping to mend a possible disconnect among communities and law enforcement agencies, an influential factor in the declining homicide clearance rates that Jarvis and Regoeczi (2012) claimed. Eventually, this may prove to be essential to the success of criminal investigations, especially as Richardson and Kosa (2001) suggested that creating

relationships with agencies outside of criminal justice would aid in clearing more homicide cases.

Recent developments have been found to have the ability to solve crimes that were once considered cold cases. Looking ahead, these technological and forensic advancements may be a significant factor in clearing even more homicide cases in the near future. Yet, it is important to evaluate the previous attempts that have been made to track and solve homicide cases, as these past efforts can provide valuable insight into what future methods may benefit the most from. In doing so, both advantages and disadvantages of these earlier systems can be recognized and taken into consideration when attempting to create and develop other fresh and innovative methods to investigating and solving crimes.

It should be noted that while many limitations regarding clearing homicide cases exist, there have been attempts to be able to better track, link, and solve homicides, such as ViCAP. While ViCAP was created in 1985 to assist in linkage blindness challenges faced by law enforcement agencies (Fox, Levin, & Quinet, 2012), the successes of the program are questionable. According to Witzig (2003), in 1996, just over ten years after ViCAP was created, an analysis of ViCAP presented by Arthur Meister at Quantico, Virginia revealed that 3-7% of the total number of cases were reported to the computerized database. Therefore, according to a report by the FBI, on average, of the 21,000 murders reported each year in the 1990s, only roughly 1,500-1,800 of these cases were submitted to ViCAP (Witzig, 2003). Furthermore, even though most homicides were committed in large cities, these cities were not submitting their information to the database, with many ViCAP users stating the 189-question ViCAP submission form was challenging and complicated, especially as several agencies remained understaffed (Witzig, 2003).

Sometime after the creation of ViCAP, President Bush ordered the Centers for Disease Control and Prevention (CDC) to allocate \$1.5 million to develop the National Violent Death Reporting System (NVDRS) in 2002 after the public was in favor of creating a better way to collect data (Schindler, 2007). The head of the NVDRS projected the program would take up to ten years to create (Marchione, 2002). According to the CDC, NVDRS is the only state-based reporting system that combines information from multiple sources to create the useable and anonymous database on violent deaths (“National Violent Death Reporting System,” 2017). But a major limitation of the NVDRS is its limited capabilities to link serial murders, particularly if the murders occurred in more than one state, which was found to be a result of the system not including a measure that would identify if a homicide was part of a series committed by the same suspect, unless specific notes regarding the case were also included (Smith, Basile, & Karch, 2011). Because of this issue alone, the NVDRS has not been found to aid in the apprehension of serial killers.

Fortunately, an alternative to ViCAP and NVDRS was developed to aid in the improvement of data collection efforts. Beginning in 2015, the *Murder Accountability Project*, a non-profit group who claim unsolved homicides are not tracked and accounted for adequately, is dedicated to educating people about the significance of correctly tracking, accounting, and measuring the unsolved homicides in the U.S. (“Why We Exist,” n.d.). Their Board of Directors includes homicides experts, such as retired law enforcement investigators, investigative journalists, and criminologists, that seek to acquire and publish information relating to unsolved homicides from federal, state, and local governmental agencies (“Why We Exist,” n.d.). While the Murder Accountability Project claims there are 5,000 or more murderers that are not charged with their crimes each year (“Why We Exist,” n.d.), it is important to note that some of these

unsolved cases of killings may be linked together and could potentially be committed by the same person, especially considering Hickey (2016) found that there has been increased rates of homicides involving strangers.

When considering the plethora of unsolved homicide cases and the multiple attempts to track and document them, it would appear logical for law enforcement agencies to utilize a system that would allow for information about these unsolved crimes to be posted and viewed on a national level that could aid in linkage blindness and assist in investigative efforts to solving these killings. Considering some archaic definitions of serial murder included a location aspect, stating that a serial murderer must have committed the killings in different geographical locations (Douglas et al., 1992; Egger, 1984, 1988), it is imperative that this feature was evaluated using numerous recent cases.

Fortunately, the location variable included in this current study measured if the offender killed in a single location (such as a single city or county) or multiple locations (such as multiple cities, counties, or even states). The results reveal an almost perfect split between serial murderers who killed in one location (50.64%; N=637) and those who killed in multiple locations (49.36%; N=621). Even considering the near equivalence among killers who murdered in a single location and those who killed multiple locations, it is still evident that a considerable amount of serial killers murdered victims in more than one location. If law enforcement agencies collaborated or shared information regarding their unsolved homicide investigations more effectively, it could prove beneficial to all agencies involved in their efforts of catching these killers before they take the lives of even more victims.

As Egger (2003) noted, when crimes occur in small geographic areas, the offender is much more likely to be realized and apprehended. Thus, the importance of collaboration among

various agencies is imperative. While the Murder Accountability Project has made remarkable efforts to creating a system containing this information that will likely eventually lead to the enhancement of investigative methods to solving serial homicide cases, there are still other major facets among law enforcement agencies that need attention.

Furthermore, while further developments to methods of investigating crimes, training and use of advancements among forensic and technological advancements, the development and maintenance of relationships between law enforcement and private organizations, and the correct and intended use of national databases may sound great in theory, the actual application would be difficult. Recognizing these challenges, Dorothy Guyot (1979) famously compared generating change in law enforcement agencies to “bending granite.” As Witzig (2003) reported, ViCAP was hindered due to the understaffing of law enforcement agencies and how this issue led to new cases not being able to be addressed in a timely fashion. To combat these challenges and make the important necessary changes in practice that would likely aid in increasing homicide clearance rates, efforts must also include law enforcement agencies considering issues regarding clearance rates as more of a priority, as well as the presence of significant political willpower and determination.

Even acknowledging these difficult challenges facing the future of law enforcement, the task should not be considered impossible. According to the FBI (2010), as of 2010, law enforcement agencies submitting to the UCR which represented more than 300 million people in the U.S. and covered 98.4% of the population in metropolitan statistical areas, 92.3% that lived in cities outside metropolitan areas, and 92.7% that resided in nonmetropolitan counties. Considering the majority of agencies already report their crime information to the UCR system, including this information in a supplemental database should not be considering impossible or

demanding of neither labor nor other resources. Alternatively, having the FBI report their UCR data to another supplemental dataset would also aid in the creation of a national database to assist in efforts of linking and solving homicide cases. But, while challenges associated with linkage blindness and clearance rates are problematic, the issue may stem back to the disagreement regarding the long-debated definition of serial homicide. From a consensus on a definition of serial homicide, a mutual understanding of serial murder by all parties could allow for a better relationship between law enforcement professionals and academics to better understand the crime itself.

A New Definition of Serial Murder

After thoroughly reviewing the literature on serial homicide and completing the above analyses, it is evident that not only is there disagreement about how the term “serial murderer” should be defined, but this enduring debate has created and perpetuated several issues regarding this unique crime. Other difficulties have been realized as researchers wanting to study this phenomenon have been hindered and not able to properly study trends of serial homicide due to challenges in accessing data that is both complete and accurate as well as some researchers not even knowing how to address and handle these challenges in their research. After acknowledging and evaluating many of these issues, there still remains no clear and definitive answer to “Who is a serial killer?” that both researchers and law enforcement professionals can agree upon. This question may continue to haunt researchers and law enforcement professionals for years to come, further obstructing and creating confusion among the research on serial homicide and the offenders.

In an effort address and combat some of the numerous serial murder mysteries, I planned on using the findings of this current study that analyzed a large sample of recent serial killers. Noting prior challenges other scholars have encountered in their research, upon interpreting the results of this current study, it is evident that there are clear distinctions between serial killers based on the number of victims they killed. One of the main goals of this current study was to offer a suggestion for a new definition of serial murder based on careful consideration of the results. Thus, the definition should state that a serial killing is the killing of three or more people, with at least two killings being on separate occasions, and include an emotional cooling-off period between each of the killings.

In regards to the minimum victim threshold, compared to the current legal definition offered by the FBI (2008), this suggested definition would increase the current minimum victim threshold by the killing of one victim. This definition would be very similar to the FBI's definition offered in 1998 that included in minimum number of three victims and agree with prior scholars such as Farrell et al. (2011), Haggerty (2009), Holmes and Holmes (2010), Homant and Kennedy (2014), LaBrode (2007), Morton and McNamara (2005), and Skrapek (2001a).

This change may prove to be important for several reasons. Firstly, the FBI (2008) created their definition of serial murder to include killers with only two victims that also serves a method to set a standard regarding when they can intervene and assist local law enforcement agencies in collaborative efforts to identify and apprehend a suspected serial killer; this definition was not designed for use with researchers in mind (Hickey, 2013; Adjorlo & Chan, 2014). Considering just under half (41.18%) of the serial killers included in this analysis had

only killed two victims, these murderers deplete many valuable resources of criminal justice agencies to aid in their apprehension.

When considering the results of this current study suggest that there are still a majority (58.82%) of serial killers that have three or more victims, these resources could be better attributed to the investigation and apprehension of killers who have murdered more victims and may be a larger threat to society. In addition, as killers with more victims would likely leave behind more physical evidence that can be used in the investigations, the FBI should only step in when it is evident that there is a killer menacing society that has successfully carried out at least three murders and would likely have the capability and intentionality of committing future murders. Furthermore, looking at the results of the average span of activity of the serial homicide offenders included in the analyses, it is evident that killers who had murdered two victims had a similar average span of activity to those who killed three victims (3.22 years and 3.20 years, respectively). Interestingly enough, the killers who murdered four or five victims had an average span of 2.91 years, indicating these murderers with four or five victims are a more dangerous threat to society because they are able to kill more people in less time than killers with three or less victims.

With this definition and the implications, the victims of killers that murdered only two people may appear as less important or less worthy of in-depth investigations by multiple law enforcement agencies, at the same time, it is imperative that the most resources are utilized for the worst killers with several victims. At the same time, even though FBI efforts may not be used in these cases with less victims, through the implementation of other strategies to address the issues among linkage blindness and clearance rates, these killers could be caught without the help of these outside agencies. Of course, an important and perhaps debatable limitation of this

definition is the fact that a killer would have to kill their third victim before the FBI may intervene. The third death would have to occur before the FBI steps in, and if the current definition remained that stated only two victims were necessary before intervention by the FBI, the life of this third person could have been saved. At the same time, on average, compared to killers with two victims, the killers with four or five victims actually complete their killings in less time based on the results of this study.

If the law enforcement agencies made solving cases and increasing the homicide clearance rates an extreme and immediate priority, they may be able to investigate and apprehend serial homicide offenders without the FBI intervening. Currently, the clearance rates are viewed as a priority in criminal justice agencies, but there remains room for improvement that could be achieved by providing more attention and training regarding these efforts is desperately needed. For example, besides law enforcement agencies being mandated to submit to the FBI's UCR (as opposed to the current voluntary use), clearing homicide cases could be accomplished through the use of an additional national database that would allow for agencies to submit information regarding unsolved cases. This could also offer law enforcement agencies to view other unsolved crimes in various jurisdictions, which could ultimately aid in issues related to linkage blindness. Similar to the efforts by the Murder Accountability Project, the creation and use of such a database would require significant training, though, to have the ability to yield the best results. Therefore, law enforcement agencies should be mandated to provide regular training on how to locate, document, and preserve important elements of a crime scene or other information that may be imperative to solving a homicide case. If these suggestions could be achieved, intervention by the FBI may not be needed and the life of a potential third victim could be spared.

This suggested definition is inclusive of the long-debated cooling-off period, which is imperative to distinguish it from the other types of multiple murder. Under the suggested definition, serial murder, the killing of at least three people on at least two separate occasions with a cooling-off period between, would differentiate from mass murder, which is defined as three or more deaths in a single incident. It also differs from spree murder that does not include a cooling-off period at all, although homicides resulting from a spree murderer may be committed in multiple locations. By noting that this cooling-off period must be an *emotional* cooling-off period, it further helps to separate serial murder from spree murder as serial murderers would likely have periods between their killings where they can perform their daily activities and live their seemingly normal lives. Examining past literature, Holmes and Holmes (1998) stated that 30 days should be the minimum time in a series of killings. Among more recent research, such as Osborne and Salfati (2015), who found the median interval length of time between murders in a series was 34.5 days, but their results were based on a small sample of only 90 killers. Thus, what exactly this emotional cool-off period should be defined as and considered based off the temporal aspect of serial homicide needs further empirical research.

The definition does not include that serial homicide offenders must have premeditated their killings. If a person has the ability to be responsible for the deaths of three people that occur on at least two separate occasions, the premeditation aspect should not be considered. Other types of homicides might take into account the premeditation aspect, such as to distinguish between first and second-degree murder, but in serial homicide, that is not as important because the killer would have still been responsible for at least three murders. In addition, once a killer begins their killing series, they may become so desensitized to killing others, that it might not take much or any provocation to murder their next person. This was evident in a one of the

murders committed by serial killer Dennis Nielsen, who killed a man just because he was annoying and in his way (Gresswell & Hollim, 1994). Thus, even though Nielsen did not premeditate this particular killing, the death should still be considered when identifying if he is a serial killer; if the premeditation aspect was included, this killing may not be included when categorizing Nielsen.

Finally, this suggested definition of serial homicide makes no requirements regarding the sex of the offender, their relationship with their victims, the specific motivations of the killer, and if the killings were premediated. Therefore, women serial homicide offenders would be included, as well as killers who may or may not have known their victims prior to killing them, contract killers, and people who kill within the scopes of their occupation (such as doctors and nurses).

The adoption and use of this suggested definition of a serial homicide offender as the killing of three or more people with at least two killings being on separate occasions, and include an emotional cooling-off period between each of the killings, could allow for consensus between scholars and law enforcement professionals regarding serial murder. As discussed, much research on the phenomenon is plagued by the current disconnect between valuable stakeholders involved in serial homicide and the issues that are influenced from this divide. But, from a mutual understanding of serial homicide, better research regarding the crime would likely result. The numerous serial murder mysteries discussed could be investigated further to provide empirical evidence regarding this unique form of homicide. The results of this future research could aid in the inquiry about serial murder and the offenders in hopes to identify and apprehend killers, as well as develop methods to understand them to prevent people from killing in the first place.

Expanding a Sociological Perspective to Serial Homicide

A major purpose of this current study was to utilize the results of to allow for an expansion upon a sociological perspective to serial homicide. As previously discussed, much of the prior research on serial homicide has been examined through psychological and biological theoretical approaches, with much less attention given to sociological approaches. Sociological approaches focus specifically on how daily experiences regularly shape the lives of people based on how they cope and handle these often difficult encounters, all which can be influential on their decisions to commit criminal behaviors. In addition, these previously applied archaic theories, especially the limited sociological approaches that attempt to explain and understand serial homicide, were not created nor developed to explain this specific and unique type of homicide in particular.

Even recognizing that serial killers are not able to fit a specific profile due to their variation from one another, scholars have still attempted to understand these offenders (Forsyth, 2015; Fox, Levin, & Quinet, 2012; Masters, 1985; Schechter & Everitt, 1997; Skrapec, 2001b). While extremely limited, some researchers, such as Forsyth (2015), have attempted to explain serial murder through a sociological approach that provided some insight into serial killing. In particular, Forsyth (2015) detailed in his single case study that the socialization and experiences of a person can play a large role in what someone may find enjoyable or pleasurable, which contributed to the offender in his case killing at least 23 men.

Yet while Forsyth's (2015) study offered great insight into serial killing from a sociological perspective, it only included a single offender in his analysis and application of a

“sociological routine” to this serial killer. Forsyth (2015) did note that his experience has provided him with valuable insight into this criminal offender as he has interviewed more than 300 murderers, yet he knows that even with the numerous serial killers, they do not share common characteristics. So, while Forsyth may be one of the few academics who is very knowledgeable on homicide offenders due to his applied experience, the end result is the same: this sociological approach only examined a single killer and thus, cannot be generalized to other serial homicide offenders.

Considering the literature among serial homicide is in desperate need of a sociological approach, certain steps must first be taken to allow for this sociological expansion to be both insightful and accurate to ensure there is progression. As the limitations of past research using small or biased samples have been documented, research among serial murder should attempt to make efforts to be inclusive of several serial killers. The results of such research would have hoped to allow for a better overall picture of serial homicide offenders to provide insight into how these offenders may differ amongst each other. Using the results of a large dataset on serial homicide offenders, the findings were intended to have the ability to address and combat this major limitation common in past research to expand upon a sociological approach.

Unfortunately, as common in most prior research on serial homicide, the data used in this study was insufficient. Many of the sociological variables that were initially intended to be included in this current study, such as the occupation and education of the offender as well as the specific methods used in their killings, were lacking sufficient data that would allow for empirical analyses in a sociological manner.

On the other hand, this current study and the results of the analyses can serve as an initial attempt at sociologically examining serial homicide offenders using a large quantitative dataset

that proved to be fruitful in providing a better overall picture of several serial homicide offenders. In the future, this large dataset can still be utilized to create smaller sub-samples that would allow for more detailed investigations among the variables that could not be analyzed in this current study due to the large amount of missing cases. For example, if the 968 cases that were missing information regarding the education of the offender were removed, the data would still include information regarding the education of 290 serial killers, in addition to the data analyzed in this current study. From those results, important insights could be provided about the education of a relatively large sample of serial homicide offenders. The same could be done for the occupation of the killer: as 831 cases were missing this information, 427 recent serial homicide offenders could still be analyzed to assess if and how their occupation may have influenced their criminal behaviors relating to serial killing. Considering past research on these subjects generally used smaller samples, the results would still be important to the field of serial murder, and especially in regards to a sociological perspective.

Using smaller samples of the larger data may assist in the issues regarding the insufficient data, but it must be noted that the database itself is still in its early stages. The Radford database project continues to be a work in progress so there are possibilities for the included data to improve by retroactively adding more information on the cases with missing data that would allow for richer further investigation. Still, the Radford database remains the richest dataset on serial homicide but there is currently, and will always be, additional research to be performed that would allow for greater insight among serial murder in hopes to better understand more of the mysteries surrounding this unique form of homicide.

Strengths and Limitations

The results of this study are important to the literature on serial murder for several reasons. Previous research has reported wide variations in the estimates of the crime, due to the numerous issues with the sources of data including varying definitions of the crime, small or biased samples, and data collected through biographies and newspapers (Hinch & Hepburn, 1998). This current study utilized data from the Radford database (Aamodt et al., 2016) that originated as part of the Radford University and FGCU serial killer database research project. The data, gathered through a variety of reliable and validated sources, is the largest non-governmental source of data on serial homicides in the world (“Radford/FGCU Serial Killer Database Research Project,” n.d.) with the flexibility allowing for a variety of analyses based on my particular interests.

Because the dataset includes several variables, such as number of victims killed by the offender, the current analysis was possible to compare the differences of serial killers to provide more insight into the definitional challenges of serial homicide. Using this database allowed for a quantitative approach not typically found in research among serial homicide. Thus far, the use of the Radford database has been scarce, with the exceptions of recent scholarly research by Fox, Levin, and Fridel (2018), Fridel and Fox (2017), and Leary, Southard, Hill, and Ashman (2017). In addition, using the Radford database allowed for this study to overcome major challenges previously outlined by Petee and Jarvice (2000) and Dowden (2005) who stated the lack of reliable data on serial murder has impeded past research and would likely continue to hinder future research.

Because of the abundance of data on serial killings included in the Radford database, this study included women serial homicide offenders in the analyses. According to Keeney and Heide (1994) and Cluff, Hunter, and Hinch (1997), theorizing about women serial killers can yield important insight into social, culture, and political frameworks that serial murder occurs in. Even though they are rare, many research studies do not include women offenders at all. Hinch and Hepburn (1998) noted that the exclusion of women has negatively impacted the body of knowledge on serial killers. Thus, these analyses, which included 90 women serial homicide offenders is important not only because there are women who commit serial murder, but also because much of the prior research, such as Fridel and Fox's 2017 study on the definitional issues among serial murder, completely ignore women by leaving them out of the analyses. Yet, it is important to note the reasoning why many studies leave women out. For example, Fridel and Fox (2017) argued that they excluded women based on past research that found issues related to the availability of data and because women only represent a small percentage of the total serial killers. Even though Fridel and Fox (2017) excluded females, their research still provided great insight related to the definition of serial killing, which they argued should include a minimum victim threshold of at least three.

While issues related to the availability of data and the prevalence of women serial homicide offenders are known to exist and create barriers to research, the differences between men and women serial killers are still imperative to analyze. The results of research that either focus or simply include women serial homicide offenders can provide further understanding into the differences among the killings based on the gender of the offender. For example, from this current research, findings include that among the 90 women, a plurality only had two victims (47.78%; N=43) while men serial murderers killed two victims 40.67% of the time. Although not

significant in the Chi-Square Test of Associations in Table 2, findings suggest that men are more capable of killing more people compared to women, or following social control theory, researchers may question why women do not commit serial murder at the same rate as men. More research on other differences among serial killers based on gender would likely yield other valuable insight into the field.

While this study offers several significant contributions to the literature on serial murder, there are some limitations that warrant discussion. For starters, the dataset used in these analyses, the Radford database (Aamodt et al., 2016), was a recent collaborative project by several professional academics working toward a better understanding of serial murder. Although these current analyses were conducted using arguably the most complete dataset on serial killings, the results should still be interpreted with some caution. Due to the overall nature of serial killing, the true number of victims killed by each offender may not be accurate due to linkage blindness and, as Costanzo and Gerrity (2009) and Leo (2008) stated, many confessions from killers are not verified. As these data are collected from public documents, including websites and books (“Radford/FGCU Serial Killer Database Research Project,” n.d.), the accuracy of the data may be questionable. Furthermore, some important data may not be included in the analyses, which could be the result of an ongoing investigation of the case, offenders never disclosing the accurate or complete information, or supplementary data being released after it was initially imputed in the dataset. Even with these issues, the dataset is beneficial and adequate for many studies of serial murder.

In addition to issues with the dataset in general, issues were also discovered among many of the variables included in the dataset. Numerous variables of interest and importance to understanding serial murder could not be included in these analyses due to their high percentages

of missing data. As discussed previously in Chapter 5, these variables and their missing data included variables about the life of the killer, if they were employed as a law enforcement officer, if the offender killed their victims with a gun, and the education and occupation of the offender. These variables are essential to the study of serial homicide in general and, if included, would likely provide more understanding of serial murder.

Furthermore, of the variables included in the study, several of their categories had to be combined or simplified due to the low levels of data in certain categories. For example, when analyzing the variable that accounted for the race of the victim, as discussed earlier in Chapter 5, the categories were combined to categories of White, NonWhite, and mixed. Future analyses should incorporate more specific racial categories to account for differences in victims who are Black, Hispanic, Asian, and Native American. Also, to measure the locations of killings, a variable was originally created to assess differences in offenders who killed in metropolitan or micropolitan counties designated by the U.S. Census Bureau. But, due to the missing and incomplete data for this variable, the location variable had to be categorized dichotomously by murderers who killed in one location and those who killed in multiple locations to allow for analyses. Researching the locations of killings would likely be fruitful to the literature on serial murder.

Regardless of these limitations, serial murder research is necessary for several reasons. To better understand the crime, research must focus on the differences in the number of victims killed to better define the crime, updating older statistics to combat myths about serial killings, the expansion of theoretical models to better understand and conceptualize this unique form of homicide, and to provide an improved understanding of the crime to allow for sharing of important and needed information with law enforcement officials working to identify and

apprehend serial killers. Considering that much of the prior research has focused on qualitative studies, this research allowed for 1,258 cases of serial homicide between 1985 and 2016 to be examined using quantitative methods. Even with the empirical analyses in this study filling many important gaps in the literature and providing an improved understanding of serial homicide, there is still much more research needed on the subject.

Future Research

Understanding and acknowledging the numerous strengths and limitations of previous research, including this study, on serial homicide, there are several improvements that should be recommended for those pursuing research in this field. In the future, research should investigate other important factors related to serial homicide. As briefly mentioned in the sections above, several other important variables should be analyzed to further our understanding of serial homicide.

This current study compared serial killers with two victims to those with three, four or five, and six or more, to provide information and suggest several important implications. Future research should investigate the differences among serial homicide offenders based off of various categories of independent variables. As this current study includes a suggestion for the definition of serial murder to revert back to the FBI's prior definition concerning a minimum victim threshold of three victims, the differences between serial killers with three victims to those with at least four should be investigated. In regards to the emotional cooling-off period, the killings by serial homicide offenders should be evaluated in more detail to assess what should constitute an emotional cooling-off period. While this study was very rich due to the dataset that contained

quantitative data on numerous cases of serial homicide offenders, it should be used to analyze several specific cases to measure not only the time intervals between killings, but also how the killer lived their lives during those breaks to provide more information that could be used to better differentiate between serial and spree murders. This could be accomplished by taking a random sample from this dataset of cases that contain adequate information about the life of the killer.

Besides the limitations associated with some of the variables discussed prior, other important variables should be examined in future analyses. These include: the relationship between the victim and offender; if the offender operated alone or with others; the killer's marital and family statuses; the sexual orientation of the offender; if the serial killer targeted victims of a specific age; if the killer tortured, bounded, mutilated, used excessive force and methods (overkill) on their victims; if the offender took a totem from the victim or crime scene; and if the killer left, moved, or hid the bodies of the victims. Each of these variables would likely provide more insight into serial killings.

In addition, the occupation of the victim should be examined to see if there is an association between the victim's occupation and being selected as a target of a serial killer. In particular, the occupation of the victim should be examined through a routine activities theoretical perspective to investigate how the routine activities of the victim related specifically to their occupation, such as their work schedule, leisure activities, and the people they associate with may influence their vulnerability to becoming a target of serial killers. Unfortunately, there were 831 (66.06%) missing cases in the dataset regarding the occupations of the victims, so it could not be accurately analyzed. Nevertheless, the unit of analysis in this study was the offender, so it is very unlikely that the majority of serial killers murdered only victims who

worked in one particular occupation. Gary Leon Ridgway (“Green River Killer”) is an exception; he had killed 48 women, who were all prostitutes (Quinet, 2011). Furthermore, Forsyth (2015) claimed that serial killers typically seek victims that are strangers and young women by themselves such as female college students, prostitutes and travelers, likely because these types of victims are vulnerable and would not be familiar with the area. In particular, killers commonly target prostitutes because they do not find difficulty in meeting and accompanying strangers and usually less people attempt to locate them if they were suspected of being missing (Forsyth, 2015). With that being said, prostitution and other high-risk occupations should also be examined to identify if there are possible associations between the routine activities of these high-risk occupations and being targeted.

Yet once again, the current study provided valuable and updated insight into serial homicide that combatted many of the challenges faced by previous research. As expected, some results of this research were inconsistent with findings from some prior studies that likely used small or biased samples in their analyses. Therefore, future research should also re-examine some of the findings that this study found inconsistent with previous research. For example, Walters, Drisland, Hickey, and Patrick (2014) reported that at least 16% of serial murderers are women. But this current study found that only 7.15% of the serial killers were women, which is similar to Hickey’s (2016) findings that between 2005 and 2014, 8% (21 of 270 serial killers) were women. While these variations in findings may be due to sampling bias or issues with the availability of data, these figures are very different and warrant future investigation to better estimate the true prevalence of serial homicide offenders who are women, especially considering including women in research on serial murder has been debated.

Walters, Drisland, Hickey, and Patrick (2014) also noted that most serial killers murder in the same locations that are local to the killer, but these current analyses suggest that about half of the killers operated in a single location while the other half operated in multiple locations. Research related to the locations of killings warrant further analyses before any definite conclusions can be made. More understanding regarding the locations of serial murderers would also be very beneficial to law enforcement agencies. For example, there could be a serial killer operating in an area, and due to issues with linkage blindness, the police do not realize the multiple murders were all actually committed by the same offender. By addressing these issues, combined with new technological advancements and better understanding of serial murderers, the clearance rates of homicides may also eventually increase.

As discussed in this study and previous research, serial homicide offenders vary greatly from other homicide offenders and also among each other. Because of the differences among these diverse killers, no single theory should be expected to adequately explain all serial murderers. Therefore, it is imperative that aspects of various theories are integrated to provide the best possible understanding of serial killers using psychological, biological, and sociological theoretical perspectives. As biological influences on crime have recently begun to surface among the research on serial killers, more insight is necessary to understand the potential links among biological roots and criminal acts. Future research should combine classic criminological theoretical approaches while also considering recent advancements in biological technologies (such as EEGs and CAT, PET, and MRI scans) to provide greater insight into if and how a serial killer may be influenced through the reciprocal nature of their environment and individual genetics. In conclusion, while this current study research has allowed for significant contributions to the literature on serial murder in several respects, more research is needed to

better understand serial murders and the repeat murderers who commit the serial murder mysteries explored in this research.

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