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Serial Homicide Cases: Patterns in Dormant Periods

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Serial Homicide Cases: Patterns in Dormant Periods

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A THESIS

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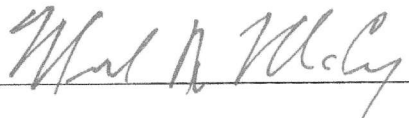
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Abstract

The study of serial homicide offenders has been extensively investigated, however, there is a significant gap in the literature with respect to the dormant period. Little information is available with regard to patterns, length, or specificity of dormant periods, specifically, pertaining to the offenders' individual/unique patterns. To investigate this topic, the length of the dormant period in serial homicide cases was assessed.

In conjunction with the Radford University Serial Killer Information Center, the dormant period of 40 serial homicide offenders was evaluated. The study hypothesized that the duration of dormant periods in serial homicide cases could potentially demonstrate a quantifiable pattern to predict future offenses. Specifically, it was hypothesized that as the number of kills for a particular killer increased, the length of the killer's dormant period would decrease and level out to a predictable pattern.

The ability to detect identifiable patterns in an offender's dormant period would allow law enforcement to assess a quantifiable dataset that could benefit them in ultimately apprehending the serial murderer. By establishing patterns in dormant periods for serial murderers, law enforcement could apply the same approach to other serial offenders such as serial arsonists, robbers, and rapists to determine the likelihood of if and when recidivism would occur.

The results were not significant in supporting the hypothesis that as kills increase, the length of the dormant period would decrease ($p=0.188$). However, whether or not the offender was incarcerated during the period since the previous kill was found to be significant ($p<0.001$). Interestingly, when the data produced from one particular killer was excluded, the overall data showed significance ($p<0.001$).

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Serial Homicide Cases: Patterns in Dormant Periods

Introduction

There is a plethora of literature pertaining to serial homicide cases and offenders. The abundance of media attention these cases receive through television, movies, and news coverage, demonstrates the acknowledgement of a universal fascination with the act of serial homicide. In addition to media attention, exploration of the topic in a research setting has contributed to its expansion into academia. While it's a clear topic of interest to the layperson, it is important for those interested in expanding their knowledge on the topic to have a basic understanding of all that the umbrella term *homicide* encompasses.

Previous literature has categorized homicide offenders into six different types and styles, including: single, double, triple, mass, spree, and serial homicides. Single homicide offenses are described as the murder of one victim in one location at one particular event, while double and triple homicides differ only based on the number of victims. Double homicide offenders kill two victims, while triple homicide offenders kill three victims. A mass murderer is categorized as an individual that kills four or more victims in one location during one particular event, while a spree murderer kills two or more victims during one specific episode at two or more locations. Finally, serial homicide offenders kill three or more victims, during three or more separate events, at three or more locations with an emotional cooling-off period. Mass, spree, and serial murderers fall into a category that is also known as multiple murder (Campbell & DeNevi, 2004). In addition, cooling-off periods are described as when the offender returns to his traditional way of life between killings, whether for personal or viability reasons (Douglass, Burgess, Burgess, & Ressler, 2006). It is this cooling-off period that distinguishes serial killers from mass and spree killers. The Virginia Tech shooting, for instance, is classified as a spree

murder because it occurred during one episode, in two or more locations, with no cooling-off period. The first attack by Seung-Hui Cho was at approximately 7:15a.m, when two individuals were shot and killed in a dormitory. The second attack occurred approximately two and a half hours later in a classroom building, leaving 31 victims (Hauser & O'Connor, 2007). The absence of a cooling-off period was the distinguishing feature that warranted the designation as a spree murder. Robert Berdella, on the other hand, was characterized as a serial murderer because his homicides occurred on 6 different occasions, constituting 6 separate cooling-off periods (Radford/FGCU Serial Killer Database). Interestingly, due to definitional problems surrounding the cooling-off period, the Federal Bureau of Investigation (FBI) decided to downgrade the significance of the term spree murder as a classification independent of serial murder (2005). The ambiguity associated with the definition is one of many reasons the cooling-off period should be explored more extensively.

Statement of the Problem

The available literature on serial homicide is focused primarily on motivations, criminal profiling, and the psychological aspects of serial homicide cases, but what the majority of the research lacks is the one consistent criterion that accurately classifies an offender as a serial killer. The cooling-off period is the one consistent standard established in almost all definitions of a serial homicide offender.

For example, in the Crime Classification Manual, Douglas, Burgess, Burgess, and Ressler (1992) identify serial homicide as “three or more separate events in three or more separate locations with an emotional cooling-off period in between homicides” (p. 21). According to Dr. Scott Bonn, a professor at Drew University, serial homicide includes the following three criterion: three murdered victims, murders that take place in separate events at different times,

and an offender who experiences an emotional cooling-off period between murders (2014). Hickey (1997) proposes that the term should include “all offenders who through premeditation killed three or more victims over a period of days, weeks, months, or years” (pg. 12) and Holmes (1998) defines serial murder as three or more murders occurring over a period of time with a cooling-off period between each murder, with the majority of victims being strangers.

While most features within these definitions differ based on the number of victims and the geographic locality, the cooling-off period remains a constant throughout all definitions.

Cooling-off periods

Since empirical research on “cooling-off periods” is scarce, research suggests viewing them as time intervals. Of the limited existing research, it is believed that cooling-off periods are a clinical construct that appear to be measured by internally based mechanisms (Osborne and Salfati, 2015). This has been previously illustrated by focusing on the behaviors, emotions and psychology of offenders, in addition to the motivation behind their actions. The downfall to this approach is that behavior is rarely predictable and fluctuates based upon positive and negative life circumstances. The FBI has downgraded the significance of cooling-off periods from a psychological and motivational perspective, but the measureable time between each kill remains critical. This measurable time interval is a key construct in serial homicide. The temporal aspect is vital in differentiating a mass murder, spree murder and serial murder. For the remainder of the study, this temporal construct will be referred to as the “dormant period” because it eliminates the implication of any separate or additional factors besides the time interval from one kill to the next.

Key Terms

The following terms have been identified and defined for the purpose of the study:

Serial Homicide: the murder of more than two victims with a dormant period between the killings and involving more than one location or crime scene (Douglass et. al., 2006).

Dormant Period: when the offender returns to his traditional way of life between killings, whether for personal reasons or viability reasons (Douglass et. al., 2006). A supplemental statement was incorporated into this definition to include “the time lapsed between the completion of one act to the initiation of the next.”

Poisson Regression: an analytical method frequently used in the social sciences, in which the data reflects non-negative whole numbers, and requires a variance (standard deviation squared) equal to the mean (Allison, 2012).

Negative Binomial Regression: an analytical method frequently used in the social sciences, in which the data reflects non-negative whole numbers, and is advantageous due to less strict requirements and the ability to be tailored to a skewed distribution (Allison, 2012).

Covariance Structure: a measure used to assess the relationship between multiple measurements on one subject whose measurements are somehow correlated (i.e.: multiple being produced by one particular killer) (Rosner, 2006).

Review of the Literature

Homicide Offenders

As previously mentioned, most research has divided the act of homicide into six different categories: single, double, triple, mass, spree, and serial. The subsequent literature will focus primarily on the similarities and dissimilarities between mass murder, spree murder, and serial murder, and then, the emphasis will shift to serial homicide as it pertains characteristics such as motivations, typologies, and criminal profiling.

HOMICIDE CLASSIFICATION BY STYLE & TYPE						
Style	Single	Double	Triple	Mass	Spree	Serial
Number of victims	1	2	3	4+	2+	3+
Number of events	1	1	1	1	1	3+
Number of locations	1	1	1	1	2+	3+
Cool- off period	N/A	N/A	N/A	N/A	No	Yes

(Campbell & DeNevi, 2004, p.21)

Mass Murder

As previously stated, multiple murder is categorized by mass, spree, and serial murderers. Mass murder is described as a single event when an offender annihilates four or more victims. Holmes and Holmes (2001a) developed a system of five subtypes of mass murder, which include disciples, family annihilators, set and run, pseudocommandos, and disgruntled employees. Disciples are individuals taking commands from a leader and this subtype emphasizes the influence the leader has on the behaviors and activities the killer engages in. Family annihilators represent the leader of the family, typically male, who murders his wife and children. "Set and run" murderers flee from the scene of the crime immediately after the victims have been killed, and due to an abrupt departure from the scene, the offender is not immediately caught or killed by law enforcement. Pseudocommandos are individuals obsessed with firearms who engage in

military style attacks. Lastly, disgruntled employees are employees who retaliate in the workplace for being mistreated by members of the workplace (Fox & Levin, 1998). In their book *Mass Murder in the United States*, Holmes and Holmes (2001) added three typologies: ideological mass murderer, disgruntled citizen, and psychotic mass killer. Involvement in cults surrounding religious or political beliefs represent the ideological mass murderer subtype, where victims are generally connected within the ideological belief system and/or members of the cult. Disgruntled citizens are comparable to disgruntled employees in that their intent is to retaliate based on mistreatment, however, the victims of disgruntled citizens just happen to be in the wrong place at the time of the murder. The psychotic mass murderer is in a state of psychosis and experiences delusions and hallucinations that command him to kill innocent strangers. The mass murderer is likely to either commit suicide at the end of the annihilation, or will place himself in a situation that forces law enforcement to kill him, which is also identified as suicide by proxy (Roth, 2009), or more commonly suicide by cop.

Spree Murder

Holmes and Holmes (2010) define spree murder as “the killing of three or more people within a thirty-day period and is usually accompanied by the commission of another felony” (p.35). Spree killers conduct their murders in a short period of time with little to no dormant period, and they continue to kill until they are caught. Their selection of victims is typically random, however, they prefer victims who meet their personal needs (Campbell & DeNivi, 2004). This type of offender acts on impulsivity and has intentions that can shift quickly (Morgenbesser, Burgess, & Safarik, 2008).

Serial Murder

Although the standard definition of “serial killer” is controversial and constantly

evolving, two elements remain similar throughout almost all definitions: first, the time period between each kill, or the dormant period; and second, the number of victims required for this category. An additional element that is present in most definitions is the number of separate locations the murders must occur in (Arndt, Hietpas, & Kim, 2004.) For the purpose of the current research, a serial homicide offender will be operationally defined as one offender who commits three or more murders with a dormant period (Petherick, 2009). The term was originally coined in the mid 1980's and was initially described as "lust murder" due to its sexual nature (Hazlewood & Douglass, 1980). Over the years, a variety of terms have been devised to represent the sexual serial killer; some of which include the sadistic murderer, sexually sadistic murderer, the lust murderer, and the compulsive murderer (Myers, Burgess, Burgess, & Douglass, 1999)

Prevalence of Serial Homicide

The data concerning the prevalence of serial homicide in the United States suggests serial murderers reached an all-time high during the 1980's and have subsequently decreased over time. According to James Alan Fox and Jack Levin, serial killing was relatively infrequent in the United States before the 1960's, with only 19 documented murderers. When the 1970's hit, however, the number rose significantly to 119 and by the 1980's it had stretched to 200 documented serial homicide offenders. The increase in number was partially due to the improved ability of law enforcement to better link similar cases in different geographic jurisdictions. During the 1990's, the number of serial killers reduced to 141 and in the 2000's the number dropped to 61 (2011). It was during the late 1970's to the early 1980's when the perception of a serial homicide epidemic was underway. This essentially led to construction of the FBI's National Center for the Analysis of Violent Crime (NCVAC) (Beam, 2011).

Serial Homicide Motivation

There are four primary motives involved in serial homicide cases, which include visionary murderers, mission-oriented murderers, power/control-oriented murderers, and hedonistic murderers (Vaughn, DeLisi, Beaver, & Howard, 2009). The visionary serial killer suffers from psychosis and experiences delusions and hallucinations that motivate him to kill. The visionary killer is out of touch with reality and in a court of law is almost always deemed incompetent to stand trial (Holmes & Holmes, 1996). The mission-oriented murderer believes he must eliminate individuals that are detrimental to society, such as prostitutes or certain racial groups, and believes it is his obligation to rid the world of these individuals whom he deems unworthy (Holmes & Holmes, 1998). Power/control-oriented killers find satisfaction in having significant power or control over another human being's life. They kill for power, rather than to fulfill their sexual appetite. A prime example is Ted Bundy, who explained in a personal interview that he found no pleasure greater than seeing the helplessness in his victims' eyes, knowing he had complete control and power over their lives (Holmes & Holmes, 2001b). When a killer believes he has the power to determine whether his victim lives or dies, he believes he has successfully gained the undeniable control he craves (Holmes & Holmes, 1998). Finally, the hedonistic murderer involves three subgroups: lust killers, thrill killers, and comfort killers, and they kill solely for the pleasure the act of murder produces (Petherick, 2009). The lust killer kills exclusively for sex and receives gratification even when the act is performed after the victim has died, an act also known as necrophilia (Bartol & Bartol, 2013). Thrill killers thrive off provoking terror or pain in their victims. Both lust and thrill killers kill to receive sexual gratification, but differ in whether their fantasy requires a live or dead victim (Petherick, 2009). Lust, thrill, and power/control-oriented killers incorporate sexual mutilation in their kills, which categorizes them

as sexually sadistic killers (Petherick, 2009). Comfort killers kill for material gain, such as wealth or corporate interest, in order to obtain a comfortable or luxurious lifestyle. The victims of comfort killers are individuals the offender believes are “standing in his way” and the offender prefers to kill quietly, drawing as little attention to the act as possible (Bartol & Bartol, 2013).

In addition, there are times when the act of murder is not the initial intent, but inevitably becomes the outcome. Douglass, Ressler, Burgess, and Hartman (1986) propose a typology that examines intent of offenders in homicide cases, which involve: criminal enterprise, emotional, selfish, cause specific, or sexual. When the offender engages in crimes related to criminal enterprise the motive is business related, typically regarding money; however, death can result from the encounter as well. Emotional, selfish, or cause-specific intent typically involves self-defense or mercy killings. This subtype is comprised of “angel of death” killers, which involve doctors’ euthanizing patients to show them compassion or put them out of their misery; paranoid killings where the offender believes he is taking orders from a higher power; or family disputes or violent outbursts which involve heightened emotions that lead to the offender losing control. When sexual intent is the focus of an offender, he is usually looking to satisfy a sexual need that is gratified through mutilation and/or dismemberment that is significant to the individual offender (Douglass et al., 1986).

Criminal Profiling

Investigative profilers have been analyzing crime scenes and generating criminal profiles since the 1970’s (Douglass et al., 1986). Petherick (2009) described criminal profiling as “an attempt to provide personality and behavioral clues about offenders based on their behavior and the evidence they leave behind” (p. 68). The process criminal profilers utilize to generate an offender profile contains six steps. Stage one, profile inputs, includes all elements of known

material related to the case. Examples of documents incorporated in stage one involve photographs, autopsy reports, police reports, etc. The second stage, decision process models, assesses the homicide type and style, intent, victim and offender risk, escalation, time factors, and location factors. Stage three is the crime assessment stage where profilers attempt to reconstruct the crime scene to make an educated guess about the behaviors present at the scene and the sequence of events. In stage four, the profile is created and offender characteristics are noted. Stage five occurs when the profile is distributed to law enforcement and incorporated into the investigation. The sixth and final stage is the hope of apprehending the offender (Ressler, Burgess, & Douglass, 1988).

Goals of Criminal Profiling

There are three fundamental goals of criminal profiling which include (1) providing possible behavioral characteristics of an unknown offender to the investigation, (2) recommending investigative and interview strategies, and (3) providing investigators with an idea of the types of belongings which may be found in possession of the unknown offender (Holmes & Holmes, 2009). Offering potential behavioral characteristics of an unknown offender assists the investigation by narrowing the suspect pool, and when there are no suspects, it directs the investigation to the type of offender that law enforcement should be looking for.

Investigative and interview strategies are significant to criminal profiling because not all individuals respond to interrogation in the same way. It is important to cater these strategies to each unique and individual situation. Investigating the belongings possessed by an unknown offender can assist in understanding the subject's "M.O" or modus operandi, which is a learned behavior that represents the offender's actions while committing a crime, and can be modified and/or refined based on the offender's confidence and experience (Douglass & Munn, 1992).

Offender mobility

Research has also examined the mobility of serial killers in regards to disposal site location and two typologies have emerged: the geographically stable killer, who lives, kills, and disposes of the body all in the same general vicinity; and the geographically transient serial killer, who is less uniformed in the process and lives, kills, and disposes of the body in completely different areas (Lundrigan & Canter, 2001).

Period of offending

For cases involving abduction, the period of offending can be characterized into three parts. The first is the time of abduction, which is the time in which the victim is seized and taken into the control of the assailant. The second phase occurs when the victim is assaulted and murdered. The process concludes with the disposal of the body. The amount of time between the first and last stage in the process will vary significantly based on the type of offender. Some offenders leave multiple scenes, like geographically transient killers, so it might take days or weeks for them to complete the process. Others, like geographically stable killers, may be more likely to complete the process in a shorter period of time. Most offenders experience an emotional high during this process, so the disposal of the body is deemed as the indicator that the dormant period has begun.

Serial Homicide Method of Killing

There are a variety of methods homicide offenders use to commit their crimes. According to the Uniform Crime Report (Federal Bureau of Investigation [FBI], 2011) the most common methods include firearms, knives or cutting instruments, blunt force objects, and personal weapons such as hands, fists, or feet (Expanded Homicide Table 9). A study conducted by Dietz, Hazlewood, & Warren (1990) demonstrated that serial homicide offenders, however, prefer

asphyxia as their weapon of choice. The study included a 130-person sample and the results suggested 61% of deaths were caused by asphyxia, while gunshot wounds caused only 25% of deaths. An additional 3% of deaths were caused by beating and blunt force trauma. Holmes and Holmes (2009) explain that serial killers prefer hands-on weapons for three reasons: “to touch the victim, because the touch terrorizes the victim, and because the touch degrades the victim” (p. 141). As shown above, there are some serial killers, such as David Berkowitz and Thomas Dillon, who prefer firearms (White, Lester, Gentile, & Rosenbleeth, 2011) but due to the relatively small proportion of serial killers that favor the use of firearms, the literature relating the two is slim. Additional explanations as to why personal weapons are the weapon of choice for serial killers could be attributed to guns making too much noise, while knives and instruments that produce blunt force trauma are messy, and increase the possibility of carrying evidence away from the scene. When killers utilize knives and blunt force trauma, there is a possibility they will carry blood away from the scene, coupled with a heightened probability of them leaving their own blood at the scene. As previously stated, deaths by asphyxia appear to occur most frequently in forensic settings; therefore, asphyxia will be the focus of this portion of the current review.

Asphyxia occurs when the body experiences a deficiency of oxygen inside functioning cells, and the forensic definition is characterized by this taking place in a forensic setting (Sauvageau & Boghossian, 2010). According to a study by Azmak (2006), deaths due to asphyxia are one of the most prominent causes in violent death. This is demonstrated through research conducted from January 1984 to October 2004, where deaths by asphyxia encompassed 15.7% of all forensic autopsies. The most frequent method of asphyxiation death suggested

hanging at 41.8% and more violent approaches, including manual or ligature strangulations, represented 2.9% and 2.3% of all deaths by asphyxia.

Recent forensic literature states that the four primary categories of asphyxia used in this setting include suffocation, strangulation, mechanical asphyxia, and drowning (Sauvageau & Boghossian, 2010). Strangulation is the type of asphyxia that involves external pressure on the neck that produces closure of blood vessels and/or air passages within the neck; and it includes three subtypes: hanging, manual strangulation, and ligature strangulation. Hanging is described as an external object applying pressure to the neck, which becomes tightened by the victim's body weight. Manual strangulation occurs when there is external pressure on the neck from an offender's hands or limbs, whereas ligature strangulation is caused by external pressure on the neck by an object or force besides the offender's body weight (Stapczynski, 2010). Ligature strangulation may employ a variety of objects such as cords, ropes, scarves, ties, towels, etc., and in order to establish the source, a thorough crime scene investigation must be completed to examine the type of ligature, the number times it wrapped around the neck, and the shape of the knot (Demirci, Dogan, Erkol, & Gunaydin, 2009).

Myers et al. (2008) conducted a study that implied a relationship between serial sexual murder and autoerotic asphyxiation, and also suggested that the offender's M.O. reflect paraphilia disturbances in those who commit serial sexual homicide. Autoerotic asphyxiation is a subtype of paraphilia, which is defined by the DSM-5 as "a sexual desire or behavior that involves another person's psychological distress, injury, or death, or a desire for sexual behaviors involving unwilling persons or persons unable to give legal consent" (American Psychiatric Association, 2013, p.685).

Serial Homicide Victimization

Fantasy, symbolism, ritualism, and compulsion are the four features that encompass the victimization process in serial homicide cases (Holmes & Holmes, 1998). The fantasy is sexual in nature, and involves ritualistic behaviors that feed the killer's sexual appetite. The literature has compared this sexual fantasy to an addiction requiring an unobtainable amount of violence to receive the gratification the offender longs for. The cooling-off period in cases concerning serial homicide offenders fulfilling a fantasy encompasses the time in which the offender is sexually gratified. When the offender no longer feels gratified and needs sexual stimulation, the cooling-off period will conclude and they will re-offend. Two types of symbolism are involved with serial predators, including fetishes and partialisms. Holmes (1991) describes a fetish as an inanimate object that sexually arouses the offender, such as bras or underwear, but can also be more obscure. Partialisms represent specific body parts the offender is aroused by and these body parts become part of the ritual within the offender's fantasy. The key component in ritualism is gratifying the aforementioned addiction and in doing so, all aspects of the ritual must be completed in a specific sequence and technique. If every step is not completed the way the offender originally intended, it must be restarted or terminated entirely. The element of compulsion represents a time when the predator craves killing and his fixation on how and when to strike again. Former case studies have demonstrated that compulsions tend to increase after offender's experience incarceration, or time away from killing in general, and when they finally return to their routine of killing, their cravings are satisfied and they are returned to what Holmes and Holmes (1998) refer to as "psychological peace."

Holmes and Holmes (1998) illustrated the categories of victim selectivity, which involve visibility factors, typology of the offender, and occupation of the victim. Visibility factors

incorporate physical characteristics such as hair color and stature, and behavioral characteristics, such as level of vulnerability, confidence, and awareness. An example of a visibility factor is when an offender stalks his victim. If the victim regularly altered her routine, the likelihood of her victimization would have been minimized. The type of offender also contributes to the preferred victim typology. The four primary serial offenders- visionary; mission-oriented; power/control-oriented; and hedonistic, will crave different types of victims. There are certain cases, however, in which the victimology is meaningless and the offender chooses his prey based solely off of opportunity. As long as the victim satisfies the offender's fantasy, the murder will meet his needs and be fulfilling. A prime example of the element of occupation is when prostitutes become a primary target. Egger (2003) indicated that 65% of victims involved in serial homicide cases are female and approximately 78% of these victims are prostitutes (p. 49). Research has suggested several reasons serial killers victimize prostitutes and the most common are hatred and eradication, accessibility, and a reduced likelihood of being apprehended (Egger, 2003). In Gary Ridgway's confession, documented by Keppel (1995), Ridgway explained why he chose prostitutes. He stated "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 my victims because they were easy to pick up without being noticed. I knew they would not be reported missing right away and might never be reported missing. I picked prostitutes because I thought I could kill as many of them as I wanted without getting caught." (p. 516)

Results from a study conducted by Kraemer, Lord, and Heilbrun (2004) revealed most serial homicide offenders were Caucasian males who killed with sexual intent, and their victims were primarily female. Further data indicated that serial homicide offenders most often killed strangers as opposed to family or friends, used strangulation rather than guns and used various

and secluded disposal sites. These results differ from those of single homicide offenders in that homicide offenders typically kill with emotional intent, do not discriminate based on victim gender, and family members and acquaintances are killed more frequently than strangers.

The Present Study

3.1 Significance of the Study

The study of serial homicide offenders has been extensively investigated, however, a comprehensive review of the current literature identified a significant gap with respect to the importance of the dormant period. Although the term is well defined, little information is available with regard to patterns, length, or specificity of dormant periods, specifically, pertaining to the offenders' individual or unique patterns. Due to the lack of research surrounding the dormant period, a compilation of valid research might assist officials in making accurate and feasible predictions to develop investigative strategies to apprehend serial killers. This analysis would allow law enforcement to assess patterns of former offenders and apply them to new or unsolved cases the agency receives. The new offender's dormant pattern may be consistent with those of previous offenders which would allow law enforcement to determine whether the cessation is simply a dormant period from which the offender is expected to re-emerge, or whether the offender has ceased all together, as demonstrated in the BTK killer case. Dennis Rader, also known as the BTK killer, murdered 10 victims on 7 different occasions, and had dormant periods lasting as long as 8 years before ceasing completely in 1991 (Gibson, 2005). His apprehension in 2005 was attributed only to his self-initiated interaction with police and media, rather than a subsequent attack (Hansen, 2006). This study would also assist law enforcement in narrowing and/or prioritizing the suspect pool, interpreting the variations in offenders' dormant periods, and potentially determining the motivation behind the cessation of

activity. This research is necessary and would give law enforcement the ability to assess a quantifiable dataset that could benefit them in ultimately apprehending the serial murderer. The focus of the current research will examine the dormant period, as its own separate and quantifiable entity.

A study characterizing dormant periods may also have other and more far-reaching benefits to law enforcement. By establishing patterns in dormant periods for serial murderers, the same approach could possibly be applied to other serial offenders such as serial arsonists, robbers, and rapists to determine the likelihood of if and when recidivism will occur.

Purpose of the Study

The implementation of the proposed study will address the lack of sufficient and reliable information concerning dormant periods in the literature. It will enhance the existing literature by adding an innovative and comprehensive analysis that will independently and quantitatively evaluate the dormant period in serial homicide cases. The results will provide assistance to law enforcement in developing investigative strategies based on predictable patterns. To investigate this topic, the length of the dormant period in serial homicide cases will be assessed.

Hypotheses

After completing a thorough exploration of the available literature, this study will address one research question and one hypothesis will be tested.

Research Question: Can the duration of cooling-off periods in serial homicide cases accurately demonstrate a quantifiable pattern to predict future offenses?

Hypothesis: As number of kills increase, the cooling-off period decreases and levels out to a predictable pattern.

Method

The present study employs an exploratory research design that takes a quantitative approach to analyze the timelines of serial homicide offenders. This quantified research will assist law enforcement in determining predictive patterns in dormant periods to aid in formulating investigative strategies to increase the chances of early detection of serial homicide offenders.

Operational Definitions

For the purpose of the study, serial homicide was operationally defined as the murder of “more than two victims with a cooling-off/dormant period between the killings and involving more than one location or crime scene” (Douglass et. al., 2006). An offender’s dormant period was operationally defined as when the offender returns to his traditional way of life between killings, whether for personal reasons or viability reasons (Douglass et. al., 2006). In several cases, the victim is killed shortly after being abducted. In these circumstances it is difficult to account for the time lapsed between the actual murder and the time of the abduction. For this reason, the study will code the date of abduction as the conclusion of the dormant period. Therefore, “the time lapsed between the completions of one act to the initiation of the next” will be added to the operational definition of dormant period to control for this potential extraneous variable.

Sample/ Participants

The study obtained its sample through the Radford University Serial Killer Information Center (RUSKIC.) The RUSKIC is a database generated by Radford University students for the purpose of providing accurate and current information on serial killers, granting access to both the media and academia. The database relies on prison records, court transcripts, and media

sources to establish the database (Radford/FGCU Serial Killer Database). The sample size for this study contains 40 male serial homicide offenders from the RUSKIC that meet the requirements for the current study. The RUSKIC contains 199 male and female multiple homicide offenders, however, the current study immediately eliminated female offenders and murders committed by healthcare providers from the sample. This study focused solely on murders committed to fulfill a sexual need, so murders not meeting this requirement were also eliminated. Due to the discrepancy regarding the term serial homicide offender, the sample group was limited to offenders with greater than 3 offenses to ensure the sample conforms to the operational definition of a serial homicide offender. The sample was not randomly selected.

Data and Procedures

The data was collected from the Radford University Serial Killer Information Center under the section labeled “timelines.” The data was originally analyzed using an excel spreadsheet to determine the possibility of identifying general patterns, however, a more detailed approach was warranted in order to delve deeper into understanding and investigating these patterns. For this reason, variables were coded into SAS v.9.3. The primary focus of data collection was: (1) offender’s identification number (2) the kill sequence number, which refers to the number of each kill (3) the killer’s first and last name (4) the total number of victims (5) victim’s gender (6) date of each murder (7) the dormant period in days (number of days to next kill) (8) the last kill, which was coded with the number one (9) the offense month, day, and year (10) offender’s age at his first episode (11) geographic location of first kill. Attempts were made to account for any missing information by utilizing additional references or documentation containing relevant information. Data collection also controlled extraneous variables by coding for: (12) time in which the offender was incarcerated (13) events in which the homicide date is

unknown (unspecified kill date) and (14) by eliminating offenders with motives satisfying something other than a personal or emotional need. The reason being that in cases such as serial robberies that result in murder, the offender kills in order to “get the job done” rather than to satisfy a personal need. The motivation of that individual is not the kill but rather obtaining money or items of value. These discrepancies in the motive would produce less reliable results because motive plays such a critical role with regard to dormant periods. All variables related to each serial homicide case will be coded for using the form included in Appendix A.

Data Analysis

A data set containing information on 40 serial killers was analyzed. For each killer, the data set contained information on each of that killer’s victims (348 victims in all). Among other variables, the data set included the number in the sequence for that killer, the kill date, and whether or not the killer had been incarcerated during the period since the previous killing. For each killer, the kill dates were subtracted to determine the number of days between consecutive killings. If more than one victim was killed on the same day, the number of days since the previous killing was recorded for each victim. For example, the sixth and seventh victims of Baumeister were both killed on July 15, 1993. The fifth victim was killed on May 28, 1993, 48 days before the sixth and seventh victims. Consequently, 48 days was recorded as the number of days since the previous killing for both the sixth and seventh victims. In all, there are 42 duplicate kill dates in the data set.

Since there are no victims prior to the first victim, the number of days since the previous killing was left blank for each of the killer’s first victims. Five of the killers had more than one victim on the same day as the first victim. In these instances the number of days since the

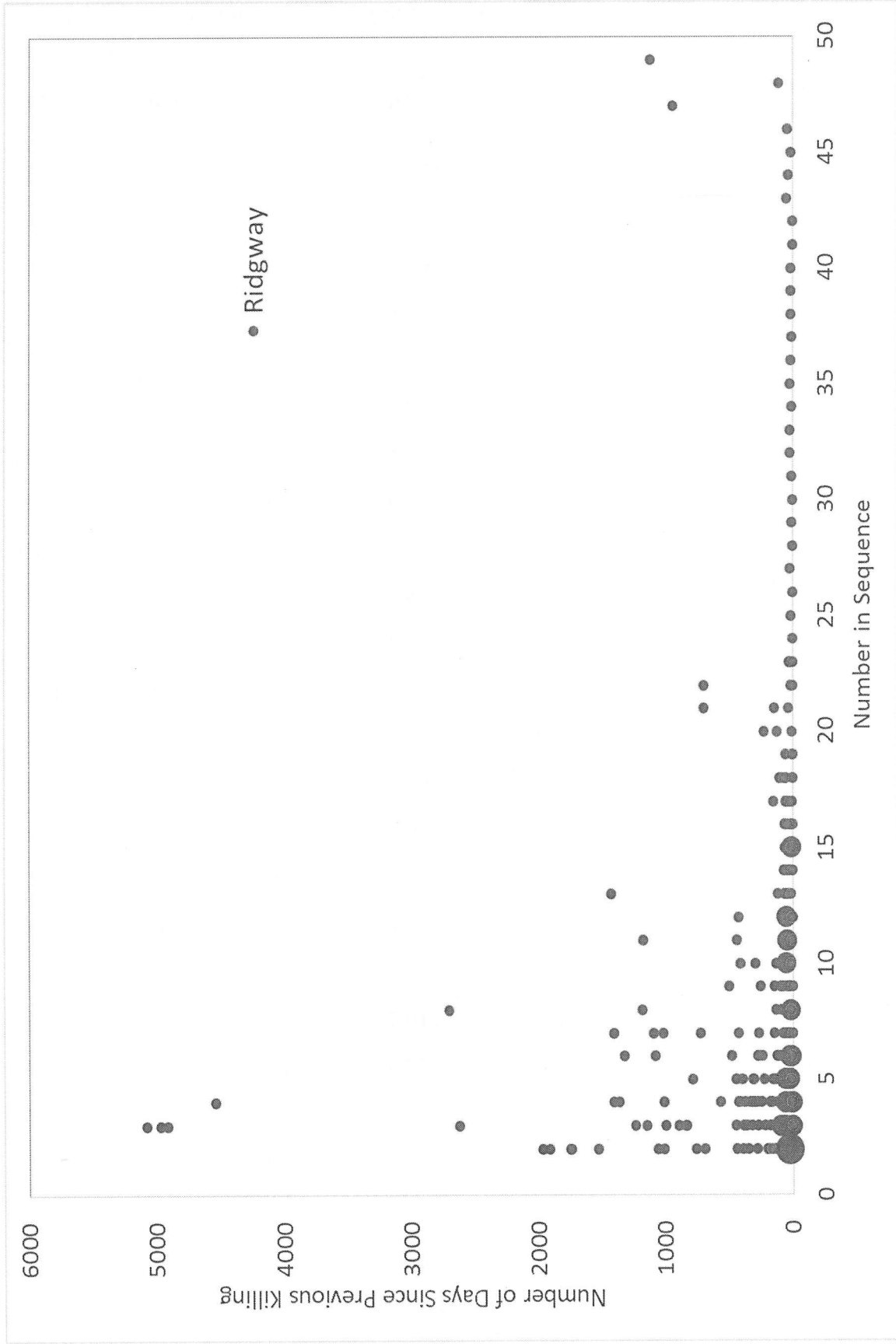
previous killing was left blank. These adjustments resulted in a sample size of 301 victims for which the number of days since the previous killing was recorded.

The shortest sequence in the data set was that of William Lee Cody Neal, who killed three victims over a span of 5 days in June and July of 1998. Under previous definitions, it could be argued that this pattern constitutes a spree murder due to the lack of a cooling-off period; however using the operational definitions provided for the current study, the author has considered William Lee Cody Neal a serial homicide offender. The longest sequence was that of Robert Lee Yates who killed 18 victims over a span of 8,395 days (approximately 23 years) from 1975 to 1998. The killer with the most victims is Gary Leon Ridgway who killed 49 victims over a span of 2,965 days (approximately 8 years) from 1982 to 1990. The killers with the second highest number of victims were John Wayne Gacy and Ted Bundy who each killed 23 victims. Summary statistics for the number of days between consecutive killings by sequence number are presented in Table 1. Since the data is skewed, meaning the data does not form a normal distribution (bell-curve), the median is a better measure of center than the mean, but both are presented in Table 1. Summary statistics are only presented through a sequence number of 23 since only one killer in the data set killed more than 23 victims. A plot of the number of days between consecutive killings by sequence number is presented in Figure 1. In this plot, the size of the dot is directly proportional to the number of points plotted in the same location.

Table 1. Summary statistics for the number of days between consecutive killings

Number in Sequence	<i>n</i>	Mean	Std. Dev.	Median	Min	Max
2	35	438.3	622.6	125.0	3	1968
3	39	687.8	1357.3	112.0	1	5082
4	30	419.8	862.9	170.5	4	4543
5	27	126.8	181.4	48.0	3	783
6	24	186.9	334.9	49.5	3	1325
7	19	287.1	438.8	50.0	1	1407
8	15	299.9	727.5	47.0	13	2704
9	11	113.1	147.4	74.0	1	499
10	9	115.7	141.1	52.0	16	410
11	9	203.8	388.9	46.0	5	1176
12	7	88.0	149.4	54.0	2	421
13	7	249.7	521.1	60.0	12	1429
14	6	30.3	29.6	22.5	1	69
15	6	28.3	23.7	17.0	10	64
16	6	34.8	22.5	36.5	4	64
17	5	54.8	57.2	41.0	7	152
18	5	59.2	37.0	62.0	3	106
19	3	22.3	31.8	5.0	3	59
20	3	119.3	110.7	127.0	5	226
21	3	291.0	357.4	141.0	33	699
22	3	238.3	399.0	12.0	4	699
23	3	15.7	11.7	18.0	3	26

Figure 1. The number of days between consecutive killings by sequence number



It was hypothesized that the number of days between consecutive killings would be significantly inversely related to the sequence number; meaning as the kill number increased, the time interval between the kills (dormant period) decreased. Due to the repeated nature of the data (multiple victims per killer) and the non-linear shape of the scatterplot shown in Figure 1, simple linear regression is not an appropriate method to address this hypothesis. Since the number of days between consecutive killings is count data, and the data does not form a normal distribution (bell-curve), either Poisson or negative binomial regression could be applied. Simply stated, the current study examines the number of days between kills which are reflected in whole numbers. The use of whole numbers (rather than the inclusion of fractions or negative numbers) is what is referred to as “count data.” Poisson and negative binomial regression are two regression methods that can be used when assessing count data. One assumption of regular regression is the use of continuous data; which means that every number on the number line, including fractions, would be a possibility. Since the current study employs only count data, or whole numbers, there are only two regression methods that would be applicable to analyzing the data provided.

While a normal distribution forms a bell curve, the Poisson distribution and the negative binomial regression form their own individual shapes. Additionally, the Poisson distribution requires a variance equal to the mean. This is illustrated in Table 1. When comparing the mean to the standard deviation, which is the variance squared, the variance appears much larger than the mean. For example, on the first line the mean is reflected as 438.3 and the standard deviation is 622.2. Since the variances are considerably larger than the means (see Table 1) for most sequence numbers, negative binomial regression is the better application for analysis. The negative binomial regression is less strict in its requirements, as the only requirement is the use of count data. This can be viewed as a process of elimination. Once it has been determined that

the Poisson distribution does not meet the requirements of a particular dataset, the negative binomial regression is applied.

Also, since the outcomes are correlated (i.e. more than one victim for each killer), the covariance structure must be specified. In laymen's terms, one assumption of regression is the prerequisite of independent data, meaning, each individual point on the plot is unrelated to any other point on the plot. A covariance structure is used when there are multiple measurements on the same subject whose measurements are somehow correlated. With regard to the current study, the correlated measurements are illustrated through the number of kills. For instance, Gary Ridgway killed approximately 49 victims. All 49 of those points are related because they were all produced by the same killer. All of this analysis can be completed using a generalized estimating equation in "Proc Genmod" using SAS v. 9.3. "Proc Genmod" reflects code language used in the SAS v. 9.3 data analysis software. "Proc" stands for "procedure" and the SAS software utilizes a variety of procedures such as t-tests, ANOVA, and Genmod depending on the data provided. The current study employs the use of "Proc Genmod" for its analysis.

All Data:

Parameter estimates for the model based on all of the data are shown in Table 2. These estimates result in the model

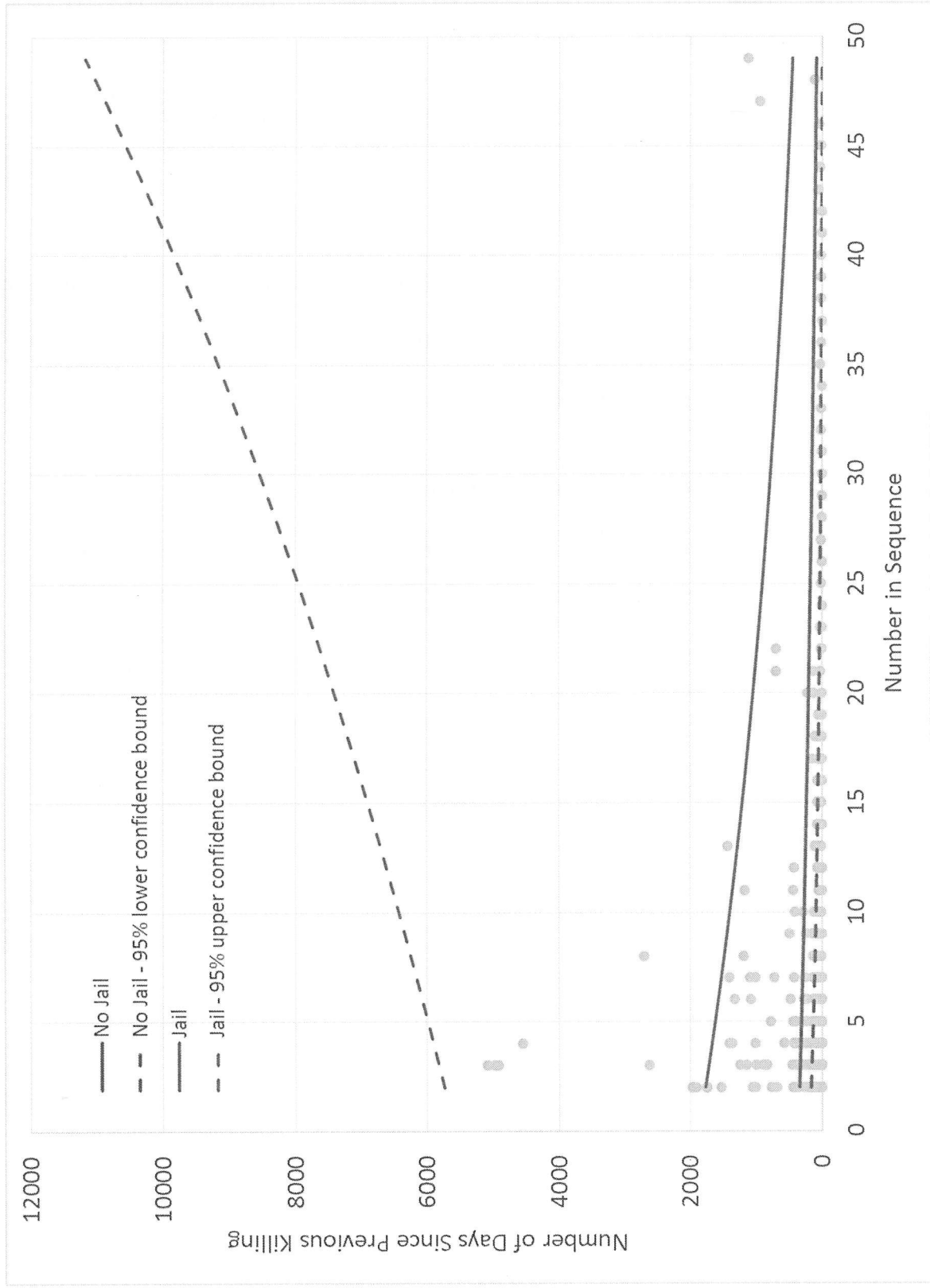
$$\hat{y} = e^{5.892 - 0.029(seq.num.) + 1.646(jail)}$$

This model is also plotted along with 95% confidence bounds in Figure 2. In this plot, the 95% confidence bounds overlap. Consequently, only the lower bound for the “No Jail” plot and the upper bound for the “Jail” plot are shown.

Table 2. Parameter estimates based on all data ($n=301$)

Parameter	Estimate	Std. Error	95% CI	<i>p</i> -value
Intercept	5.892	0.337	(5.232, 6.553)	<0.001
Sequence number	-0.029	0.022	(-0.073, 0.014)	0.188
Jail during sequence	1.646	0.218	(1.219, 2.074)	<0.001

Figure 2. Model (with 95% confidence bands) for all data ($n=301$)



The sequence number is not significantly related to the number of days since the previous killing ($p=0.188$), but whether or not the offender was incarcerated during the period since the previous killing is ($p<0.001$). Diagnostic plots indicate that the sequence of killings by Gary Leon Ridgway is an outlier. Generally, an outlier is viewed as a point that has deviated from the other points and falls outside of the expected range (Gliner et al., 2009). In this case, “points” are reflected in kills. However, the points in Ridgway’s sequence have not fallen considerably outside of the other points; meaning Ridgway was not considered an outlier solely because he killed substantially more often than the other killers. It was actually because his pattern contradicted the hypothesis in that as his kill number increased, the length of his dormant period decreased. It appears the final three kills in his sequence were responsible for skewing the dataset. In Figure 1, Ridgway’s sequence is plotted with red dots. It can be seen in Figure 1 that Ridgway’s pattern is similar to the others until kill number 47 when the number of days prior to the kill spikes. This spike occurs again for kill number 49. This is likely attributed to the fact that he realized he was being pursued by police around that time (Radford University Serial Killer Information Center). To investigate the effect of the removal of Ridgway’s sequence the analysis was performed again without the data concerning Ridgway’s killings.

Data Without Ridgway:

Parameter estimates for the model based on the data excluding Ridgway are shown in Table 3. These estimates result in the model

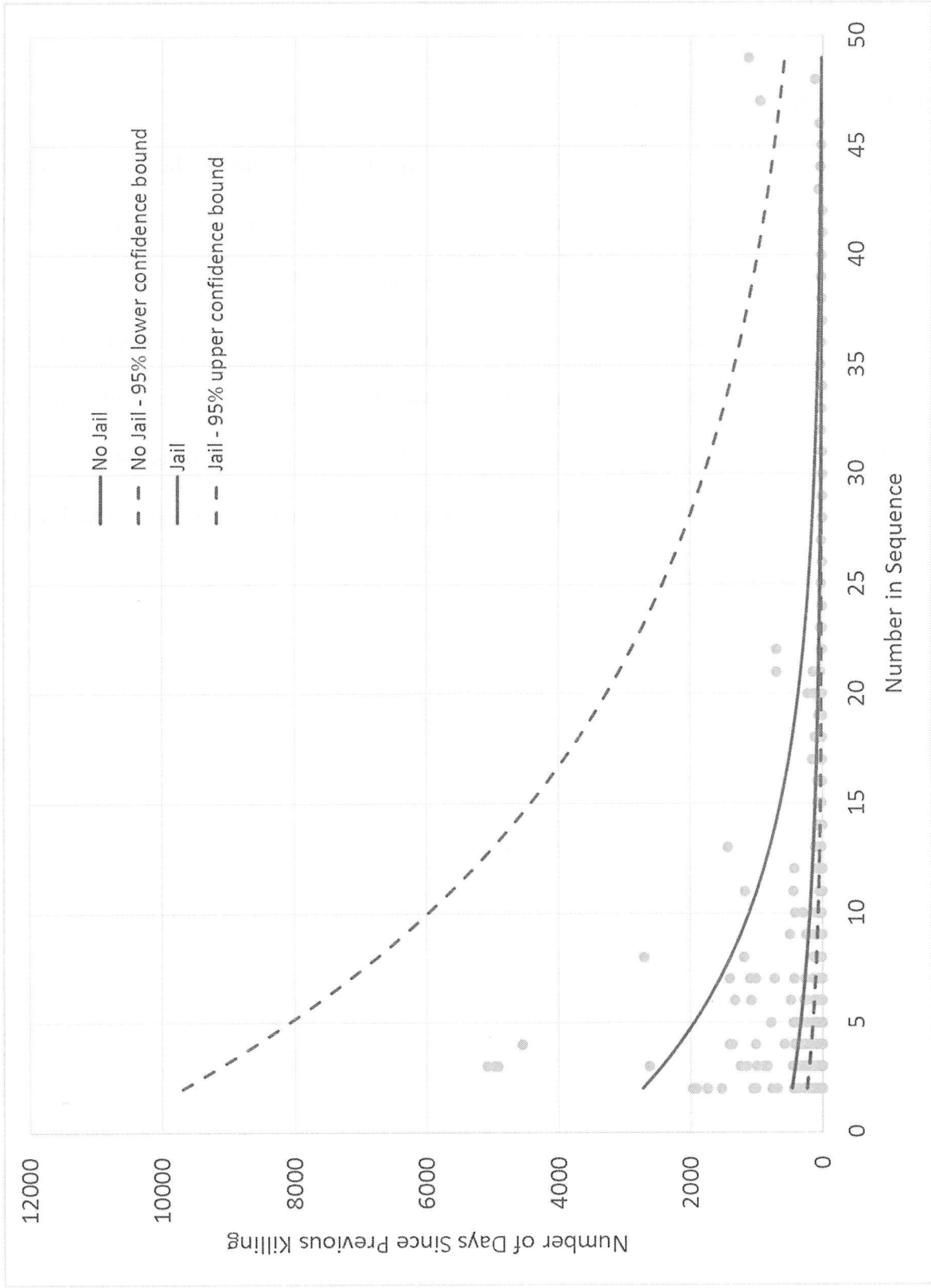
$$\hat{y} = e^{6.363 - 0.112(seq.num.) + 1.771(jail)}$$

This model is also plotted along with 95% confidence bounds in Figure 3. In this plot, the 95% confidence bounds overlap. Consequently, only the lower bound for the “No Jail” plot and the upper bound for the “Jail” plot are shown.

Table 3. Parameter estimates based on all data ($n=253$)

Parameter	Estimate	Std. Error	95% CI	p -value
Intercept	6.363	0.285	(5.804, 6.921)	<0.001
Sequence number	-0.112	0.026	(-0.164, -0.060)	<0.001
Jail during sequence	1.771	0.310	(1.163, 2.379)	<0.001

Figure 3. Model (with 95% confidence bands) for data without Ridgway ($n=253$)



In this model, both the sequence number and whether or not the killer was incarcerated during the period since the previous killing are significantly related to the number of days since the previous killing ($p < 0.001$).

Data including Demographics

Age at first kill was analyzed but was not significantly related to the dormant period ($p = 0.397$). However, geographic locality of first kill revealed some significance. Independently, location 5 (West Geographic Region) was significantly related to the dormant period ($p = 0.012$). Specifically, the length of the dormant period was significantly shorter for killers in the west region (location 5). However, when the variable for location 5 was combined into one model with the variables for kill sequence and jail during series, the variable for location 5 did not remain significant. The best overall model for analysis contained only the variables for kill sequence and jail during series.

Discussion

While there is an abundance of literature surrounding the phenomenon of serial homicide, empirical research is deficient with regard to the dormant period. The dormant period represents the time interval between killings; when the offender returns to his traditional way of life, whether for personal reasons or viability reasons (Douglass et. al., 2006). A supplemental statement was incorporated into this definition to include “the time lapsed between the completion of one act to the initiation of the next”, in order to control for incidents in which the victim isn’t killed immediately after their abduction. The dormant period is the key element that discerns serial homicide offenders from mass and spree murderers, and is the one consistent standard recognized in almost all definitions of a serial homicide offender.

Through the utilization of an exploratory design, the purpose of this quantitative study was to independently and quantitatively evaluate the dormant period in serial homicide cases. To accomplish this, the dormant period of 40 serial homicide offenders was evaluated. Among other variables, the data set included the number in the sequence for each killer, the kill date, and whether or not the killer had been incarcerated during the period since the previous killing. For each killer, the kill dates were determined by calculating the number of days between consecutive killings.

It was hypothesized that as the number of kills for a particular killer increased, the length of the killer’s dormant period would decrease and level out to a predictable pattern. The investigation also sought to determine whether any level of predictability would be attainable, and hoped the results would provide assistance to law enforcement in developing investigative strategies based on these predictable patterns.

Discussion of the Findings

The results were not significant in supporting the hypothesis that as kills increase, the length of the dormant period would decrease ($p=0.188$). However, whether or not the offender was incarcerated during the period since the previous kill was found to be significant ($p<0.001$). This indicates that the number of days between kills (dormant period) was significantly longer for offenders who were incarcerated at some point during the sequence, than for those who were not incarcerated.

Additionally, it was interesting to note that when the data produced from Gary Ridgway was excluded, the overall data showed significance ($p<0.001$). Gary Ridgway was seen as an “outlier” for the current study. When behavior is involved, this kind of outlier is not abnormal. Not all offenders fit neatly into a model for analysis. Likewise, not all kills within a given offender’s sequence fit neatly into a model for analysis.

Ridgway’s pattern was different than the other offenders in the sample in that as his kill number increased, his dormant period decreased (as seen through his last three murders). Ridgway killed at a fairly predictable rate until his last three kills (47-49). The RUSKIC indicated the time between kills may have been altered by numerous variables. Ridgway’s timeline revealed his 47th kill occurred on 3/21/1984. He then successfully completed two polygraph examinations in 1984 and 1986. It is possible that when he recognized he was being pursued by police, his actions reflected more awareness and caution. He did not kill again until 10/17/1986 and his third kill occurred on 2/7/1987. On 4/7/1987 a search warrant was obtained to collect hair and saliva samples from him. Then in 1988 he married for the third time. The time between his 47th and 49th kill was approximately 3 years which displayed longer cooling off periods as his kill number increased.

The idea that one offender can alter the entire study's significance is the perfect illustration of why behavior is a challenging variable to predict. The patterns and common themes that present themselves in the majority of these cases have little applicable value because there are so many exceptions within human behavior and so many variables that can elicit this desire to kill. Positive life events such as marriage and children, and negative life events such as incarceration, affects behavior; which in turn, can alter an offender's dormant period. Research has indicated that generally when offenders are incarcerated, they are really "on hold" due to the physical restraint of incarceration. In the same way, research indicates that positive life events can also shift an offender's focus. Unfortunately, the results did not provide adequate accuracy for the utilization of a predictive model for law enforcement agencies

Limitations

This study was conducted both precisely and thoroughly, however, inevitable limitations existed due to some limitations on the specificity of data available in the crimes' documentation. In serial homicide cases, there may be inconsistencies regarding the time the victim was abducted and the time the victim's body was recovered. As previously stated, the author attempted to control for this extraneous variable by including a supplemental statement to include "the time lapsed between the completion of one act to the initiation of the next." However, it would be nearly impossible to conclusively ascertain specific kill dates because no one would have the exact information except the serial killer and the deceased, unless the killer confessed and included explicit details. The study's results were influenced by this discrepancy.

In addition, some source references used in the study (e.g. RUSKIC) contained ambiguous data pertaining to the dates of each offense. There were several instances in which the database incorporated the month and year of a kill, but did not include the specific day. Although

this extraneous variable was coded for, the discrepancy may also have affected the results of the study.

Furthermore, the Radford University Serial Killer Information Center included comprehensive accounts of serial killer timelines and utilized the most reliable references available. However, some references the database offered were not empirically supported. After several attempts to acquire empirically supported documentation, the author experienced difficulty obtaining legal documents pertaining to such high profile and highly sensitive serial homicide cases from law enforcement agencies. This understandably resulted in less specificity than what was originally intended. The Radford University Serial Killer Information Center (RUSKIC) was utilized because it was accessible through public record and compiled in an academic setting.

Recommendations for Future Research

This study presented several implications for future research; the first of which, involves the general need for additional empirical research on dormant periods. The literature on the topic is limited, so in order to accurately investigate unique patterns and specificities within the dormant period, a better, more comprehensive, understanding of the concept is warranted.

Once a more exhaustive foundation has been established, future research could observe whether the results remain consistent in cases that are not sexual in nature. It could also assess serial killer motivation and psychology to determine if the length of the dormant period is at all correlated, and if there are specific patterns within the dormant period that could lead to earlier detection. An evaluation of the influence that both positive and negative life events have on the dormant period would also be worth exploring.

Future research could also involve an expansion into the female serial killer population, to determine if the research remains consistent with the results from this all male sample.

While the present study hypothesized that as the number of kills increased, the dormant period would decrease, it would be fascinating to investigate whether offenders with a smaller number of kills would have longer dormant periods as they escalate towards a set comfort zone.

Finally, a deeper investigation into Gary Ridgway's sequence and unique patterns would be significant, in order to determine whether there is any particular reason that his data conflicted with the data from the other killers in the present study's sample.

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Note (coding from the date the victim was abducted to the date the next person was abducted)*

General

1. Offender ID
2. Kill Sequence number
 - a. Chronological number
3. Number of victims
 - a. Chronological number
4. Was the offender incarcerated at any point during the killing spree?
 - a. 1 = yes
 - b. 2= no
5. If yes, what was the year of incarceration
 - a. 1=1960-1970
 - b. 2=1971-1980
 - c. 3=1981-1990
 - d. 4=1991-2000
 - e. 5=2001-2010
 - f. 6=2011- present
6. If yes, what was the month of incarceration
 - a. 1=January
 - b. 2=February
 - c. 3= March
 - d. 4=April
 - e. 5=May
 - f. 6=June
 - g. 7=July
 - h. 8=August
 - i. 9= September
 - j. 10= October
 - k. 11=November
 - l. 12= December

Offense Characteristics

7. Unspecific kill date:
 - a. 1= month and year were offered but no exact day
 - b. 2= only year was offered
 - c. 3= only month was offered
8. Year of offense
 - a. 1=1960-1970
 - b. 2=1971-1980
 - c. 3=1981-1990

- d. 4=1991-2000
 - e. 5=2001-2010
 - f. 6=2011- present
9. Month of offense
- a. 1=January
 - b. 2=February
 - c. 3= March
 - d. 4=April
 - e. 5=May
 - f. 6=June
 - g. 7=July
 - h. 8=August
 - i. 9= September
 - j. 10= October
 - k. 11=November
 - l. 12= December
10. Day of Month of Event
- a. 1=1
 - b. 2=2
 - c. 3=3
 - d. 4=4
 - e. 5=5
 - f. 6=6
 - g. 7=7
 - h. 8=8
 - i. 9=9
 - j. 10=10
 - k. 11=11
 - l. 12=12
 - m. 13=13
 - n. 14=14
 - o. 15=15
 - p. 16=1
 - q. 17=17
 - r. 18=18
 - s. 19=19
 - t. 20=20
 - u. 21=221
 - v. 22=22
 - w. 23=23

- x. 24=24
- y. 25=25
- z. 26=26
- aa. 27=27
- bb. 28=28
- cc. 29=29
- dd. 30=30
- ee. 31=31

11. Location of First Kill:

- a. 1=Northeast
- b. 2= Southeast
- c. 3= Midwest
- d. 4= Southwest
- e. 5=West

12. Age at first episode

- a. 1=Under 20
- b. 2= 21-25
- c. 3=26-30
- d. 4=31-35
- e. 5=36-40
- f. 6=41-45
- g. 7=46-50
- h. 8= Over 50

Victim characteristics

13. Victim gender

- a. 1=male
- b. 2=female

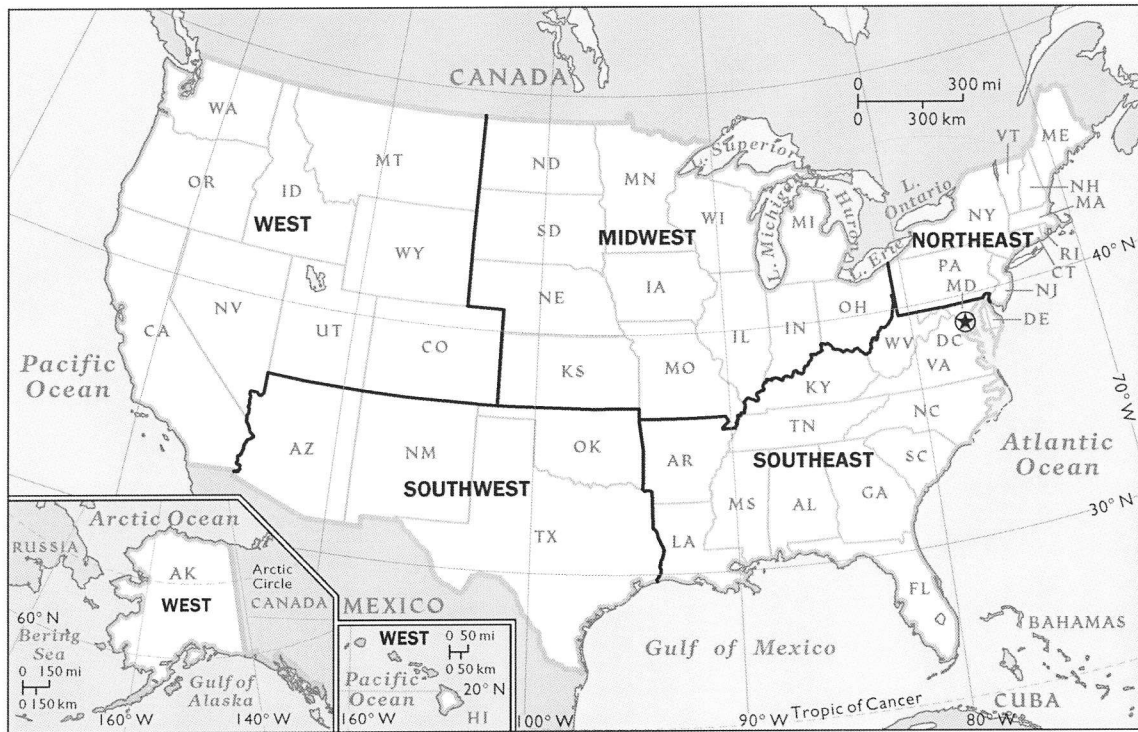
14. Number of victims per event

- a. 1=1
- b. 2=2
- c. 3=3 or more

15. Total number of victims (fatalities only)

- a. 1 = 3-4 victims
- b. 2 = 5-6 victims
- c. 3= 7-8 victims
- d. 4 = 9 or more victims

Appendix B: Geographic Locations of First Kill



NATIONAL GEOGRAPHIC
education

**UNITED STATES
REGIONS**

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(O'Connor, 2012).