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Differences in Characteristics of Criminal Behavior Between
Solo and Team Serial Killers

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A Clinical Research Project submitted to the faculty of The Illinois School of Professional Psychology at National Louis University in partial fulfillment of the requirements for the degree of Doctor of Psychology in Clinical Psychology.

Chicago, Illinois
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The Doctorate Program in Clinical Psychology

Illinois School of Professional Psychology
at National Louis University

CERTIFICATE OF APPROVAL

Clinical Research Project

This is to certify that the Clinical Research Project of

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as satisfactory for the CRP requirement
for the Doctorate of Psychology degree
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Introduction

Numerous research and theory have been published in an effort to better understand and categorize the most aberrant of pathological behaviors, those of a serial killer. This research is not only used to understand these individuals and what causes them to act out in this manner, but is also applicable when thinking about prevention and early detection of such behavior. When one can accurately understand patterns of behaviors, and the characteristics of such patterns, one can then begin to understand and trace back psychological mechanisms and etiologies of such behavior. Understanding and identifying precursors to these behavioral patterns will aid in early detection and intervention. A considerable amount of this research has focused on solo serial killers specifically, or serial killers as an entire population. Very little research is available regarding differences between different categories of killers, such as solo and team types of serial killers. The current research aimed to increase specificity of the available research and examine whether there are key differences in various aspects of criminal behavior between solo and team serial killers.

Defining Serial Murder

The Federal Bureau of Investigation (FBI; 2005) defined *serial murder* as “the unlawful killing of two or more victims by the same offender(s), in separate events” (p. 9). This definition was determined at a multidisciplinary symposium on serial murder in 2005, comprised of leading experts on serial murder from various scientific and law enforcement communities. It is worth noting that serial murder is differentiated from mass murder by the timespan between acts of murder. In mass murder situations, all victims are killed in one event whereas serial murder is committed over temporally

separate acts of violence. Historically, there has also been differentiation between serial killers and spree killers. This distinction was based on the presence of a “cooling off period,” in which the killer reaches a baseline level of psychological arousal following a crime and is compelled to commit the act again to regain psychological and physiological arousal. The previous definition distinguished spree from serial murder in that spree murders were completed over time, at various locations, but without the presence of a cooling off period (FBI, 2005). In 2005, the FBI determined that this distinction was no longer valuable to law enforcement as it did not contribute to investigative strategies or outcomes.

There is a common societal belief that serial killers are mentally ill, and this mental illness drives their aberrant behaviors, though research has suggested that this is only partially true. While some serial killers do suffer from mental illness, most do not in the form that one generally thinks, including severe and delusional thought disorders and other mental illnesses that cause altered perception of reality (Castle & Hensley, 2002). The most common psychiatric disorders seen in solo serial killers are narcissistic personality disorder and antisocial personality disorder (Castle & Hensley, 2002; Knight, 2006; Pakhomou, 2004; Simons, 2001). Psychiatric disorders involving severe mental illness, altered senses of reality, psychosis, or command hallucinations are seen less prevalently.

Serial Killers versus Single Murderers

Serial killers can be distinguished from single murderers in many ways, outside of the obvious distinction relevant to the multiple and serial nature of their offending pattern. In many cases, the crimes of serial killers resemble differences in important

details, such as motivation, victim type, method, and planning. For example, Pakkanen et al. (2015) performed a study looking to distinguish between offense behaviors and victim characteristics of single murderers and serial murderers. Their study compared 116 serial homicides to 45 single murders, including offending behaviors and victim characteristics of crimes committed by 23 serial killers and 45 single murderers in Italy. Of the 23 offenders, eight committed their offenses with another offender and one offender committed one homicide with an accomplice, while committing the rest of his offenses by himself. Of the 23 serial murderers, all were male, and their ages ranged between 18 and 72, with the mean being 37.9 years old. Single murderers tended to be male (87.5%), with ages ranging from 16 to 58, with the mean being 33 years old. Of the seven female single murderers, five killed with another offender—two of whom killed with a male while three others killed together in a group. Between the two groups, 14 variables were found to be significantly statistically different, including: murder scene in victim's home, body found outside, body found in suburb, victim was kicked or hit, victim was hit several times, kitchen knife or axe used, handgun used, weapon brought by offender, forensic awareness, victim had injuries to the hands, victim was male, victim's age, victim was a prostitute, and victim was in a relationship.

With respect to offence behaviors, single murderers were statistically more likely to display offence behaviors, such as the murder scene being in the victim's home, the victim being hit or kicked, the victim being hit several times, a kitchen knife or axe being used, and the victim having injuries to the hands. Serial murderers, however, were more likely to display the body outside; discard the body in a suburb; use a handgun in the murders; bring their own weapon; have higher display of forensic awareness, such as

covering or destroying evidence and evading arrest or detection; and leave evidence of sexual acts. With respect to victim characteristics, the victims were more likely to be female in single homicides, while they were more likely to be prostitutes and in an unrelated romantic relationship within crimes committed by serial offenders. It is important to note that while single murderers were statically more likely than serial killers to kill female victims, both groups were more likely to offend against women than men. Further, most of the victims of serial killers were strangers, while the majority of single-murder victims knew their killers.

This study used the 14 statistically significant variables to attempt to differentiate between the two groups of murderers. The results of this analysis showed that seven of the 14 variables could be used to differentiate between serial murderers and single murderers. These seven variables include: wounds to the hands, body found outside, victim's gender, victim was a prostitute, victim was hit several times, forensic awareness, and weapon brought by the offender.

Sturup (2018) performed a study comparing details of offending behavior between serial killers and single murderers in Sweden. In this study, 25 serial killers were compared against 201 single murderers. The study utilized data collected from the National Crime Register to examine whether there were differences in personal characteristics and details of offending behavior. The results of this study suggest that there were minor differences in personal characteristics of the killer. The largest of these personal differences were seen in the prevalence of the offender being diagnosed with a personality disorder or autism spectrum disorder, such that serial offenders had significantly higher rates of both. Serial offenders tended to be slightly younger than 30

years of age, were mostly White males, and had a serial killing career length of 2 years on average. While this resembles the historical image of a serial offender, it did not significantly differ from single murderers. Further, serial offenders were more likely than single offenders to be of either below-average or above-average intelligence. Serial killers tended to show more forensic awareness and planning in their offenses than did single murderers, and more commonly offended against prostitutes and had sexual motives. Also, the use of a knife as a primary method of offending was considerably more common for single offenders than serial offenders. Finally, this study also looked to use seven factors previously developed by Pakkanen et al. (2015) to differentiate single murders from serial offenders. Of the seven, four variables—female victim, prostitute victim, wounds to the hands, and forensic awareness—were significantly associated with serial offenders, and can be used to accurately distinguish between the two groups.

The results of these studies suggest important differences between these two types of killers, including differences in offending behavior, victim characteristics, and motivation for killing. These studies also showed that, when considering this data in practice, certain characteristics of these crimes can be used to propose a strong profile of the likely assailant. That said, it is important to note that within the above studies, serial killers were considered as a whole group, without important distinction between type of serial killer (e.g., solo vs. team). The current study aimed to meaningfully contribute to the existing literature by differentiating types of serial killers and their profiles from one another.

Solo Serial Killers

Many of the classic studies on serial killer profiling focused on solo serial killers, without naming them as such. Research beginning to address the topic arose from an increase in detection and coverage of these killers, in part due to advances in investigative technology and collaboration across jurisdictions. Much of this research focused on individuals' characteristics and profiles, and ignored distinctions between types. The following research focused on solo serial killers, though it did not name them as such and commonly referred to subjects broadly as serial killers.

Per Miller's (2014) review, the traditional conceptualization of a solo serial killer is that they tend to be White males between 20 and 40. They typically target intraracial victims, which tend to be young adult females. They are often social loners, but also tend to be seen by others as intelligent and charming. These killers tend to act alone, although at times they are seen in teams (Miller, 2014).

In a study by Taylor et al. (2012), 40 serial killers, 20 male and 20 female, were analyzed and tested for typologies based on crime scene criteria, and compared against a commonly used set of typologies. Within this study, frequencies of various crime scene data were reported. Of the 20 male serial killers analyzed, 35% targeted a specific group or person, 20% used a gun in their crimes, 50% used strangulation, and 80% murdered a stranger. Of the 20 female serial killers analyzed, only 10% murdered by strangulation and 10% used a gun, 25% targeted a stranger while 70% killed a known victim, and 60% poisoned their victims. In total, 58 crime scene variables were used to form clusters of male and female serial killers. These clusters were shown to be distinctly different from

one another, and were able to be used to distinguish between male and female serial killers, as well as various types of both.

Salfati et al. (2014) performed a study in which 30 serial killers, 283 victims, and 235 crime scenes from South Africa were analyzed for consistency of both victim selection characteristics and crime scene actions. The study looked at the frequency of each variable, and the consistency of these variables over the offenses of each individual series. These variables were tested for consistency across the first two, three, and four offenses. Across the first two offenses, 60% of killers maintained consistency in the type of victim selected, most commonly vulnerable victims such as prostitutes, women looking for work, and children (40%). Across the first three offenses, 42.3% of killers maintained consistency in the type of victim selected, again, most commonly vulnerable victims (30.8%). Across the first four offenses, 25% maintained consistency in the type of victim selected, with the most common victim type being vulnerable victims (20%). Further analysis of these trends suggested that these killers rarely chose male or couples as victims, and consistently targeted vulnerable populations, most commonly females. That being said, consistency of victim type decreased over the length of the series, suggesting experimentation or refining of the offense.

With regards to crime scene actions, data were analyzed for consistency of planning behaviors, both pre- and postoffense. Across the first two offenses, 53.3% of killers consistently displayed the same planning theme. Of these killers, 50% engaged in preoffense planning, 18.8% engaged in postoffense behaviors, and 31.3% did not display any planning. Across the first three offenses, 36% remained consistent in their planning themes, while 24% consistently displayed preplanning behavior, and 12% displayed no

planning. No offenders consistently displayed postoffense planning behaviors. Across the first four offenses, 37% displayed complete consistency, while 24% consistently displayed preplanning behaviors and 12% showed no planning behaviors at all (Salfati et al., 2014).

This study also looked at consistency of weapon use and wounding across the first four offenses. This analysis focused on the consistency of weapon choice and wounding pattern, classified by either process-oriented or goal-oriented, reflecting motive and point of arousal within the offense. Across the first two offenses, 37% were consistent in their weapon choice and wounding pattern. Of these killers, 64% were consistently process-oriented, while 36% were consistently goal directed in their pattern of wounding. Across the first three offenses, 32% were consistent in their wounding pattern, with an equal split of half being process-oriented and half goal-oriented. Across the first four offenses, 37% of offenders consistently displayed the same wounding pattern. Of these killers, 57% were consistently process-oriented, while 43% were goal-oriented. It is important to note that of those offenders who did not display consistency across all four offenses, they did show consistency across at least two within the series. The pattern suggests that many killers do not remain consistent between the first and second offense, but typically revert to their initial strategy during further offenses (Salfati et al., 2014).

Finally, the study by Salfati et al. (2014) compared results to a similar study conducted on a sample of U.S. serial killers. Overarching results suggest that U.S. offenders tended to be more consistent in their offending patterns than South African offenders. Comparisons showed that 79% of U.S. offenders were consistent in at least one of the two offending patterns analyzed, compared to 72% of South Africans who

showed consistency. The results of this study suggest that there is consistency in many of the aspects of criminal behavior of serial killers. Consistency in wounding patterns, victim types, and weapon choice have been shown to be fairly consistent across the first four offenses. It is worth noting that the first four offenses are commonly less planned, more erratic, and include more errors, while further offenses tend to be more planned and consistent as the killer refines their offending pattern. Researchers suggest that future research should focus on smaller subgroups of serial offenders, rather than large and inclusive samples.

Myers et al. (2006) discussed motives of sexual serial killers. While their conclusion included a set of diagnostic criteria, it reflected diagnosis of a paraphilic disorder, more specifically sexual sadism, homicidal type. Their research discussed motives such as sexual gratification, power and control over a victim, and anger. The study cited numerous theoretical articles and examined 12 case studies of sexual serial killers. These authors suggested that sexual serial killers commit their crimes primarily for sexual gratification. They stated that power and control are secondary to sexual gratification, and are necessary parts of the offending behavior, as without it, there would be no ability to commit the crime. These authors moved away from anger as a possible motive, primarily due to the simplicity of this explanation, coupled with the physiological effects that anger has on mitigating sexual function and desire. These authors suggested that this motive is mainly exclusive to serial offenders with sexual components to their crimes, and does not extend to all serial killers as a whole.

Team Serial Killers

Hickey (2002) wrote a book about his experiences of profiling, interviewing, and reviewing case data from 337 cases of serial murder in the United States. These cases occurred between 1800 and 1995, with a high majority (89.6%) occurring between 1980 and 1995. He reported that approximately 28% of serial killers operated with one or more partners throughout their career, though this team dynamic is rarely studied or acknowledged. The majority of these identified teams had two members, with the largest group containing five. Furthermore, of all female serial killers included in this study, 32% acted in a partnership. Miller (2014) added to the discussion of team serial killers by proposing four common dynamics within this classification: dominant-submissive pairs, equally dominant teams, extended family or group, and organized or ceremonial social groups. Within a dominant-submissive pair, one partner is the dominant influence on the crime and is usually male, while the submissive partner is typically female, submissive in their participation, and aids the dominant partner in the act, often acting as bait and responsible for luring victims. Within equally-dominant teams, both partners appear dominant and derive satisfaction and arousal from the crimes in which they willingly participate. Extended family/groups tend to be either biological or cult-like families (e.g., the Manson Family) who collaborate in serial murder for a range of reasons, commonly including robbery, sexual gratification, ideological or philosophical beliefs, or combined motives. Organized or ceremonial social groups tend to be similar to extended family/groups, though they typically share a common ideological or political stance, which motivates the killings. These murders also tend to involve ceremonial rituals of some kind. Distinctions such as these aid in increasing the efficacy of techniques such as

psychological profiling and generation of more accurate and differentiated serial killer typologies.

A review and theoretical analysis by Silvio et al. (2006) suggested that nearly one third of female serial killers act in teams or pairs of three types: male/female teams, female/female teams, and family teams. The authors stated that females who kill in a partnership tend to be younger, aggressive, disorganized, and lacking in planning. Furthermore, the authors reported that the male/female team is the most common subtype, and typically have careers that last about 1 year. All-female teams tend to have careers around 2 years in length, while family teams tend to have careers lasting 1 year. For all of types of teams, a variety of killing methods were used, and the average number of victims fell between nine and 15.

The review of this literature suggests that there are likely significant differences in many aspects of criminal behavior and characteristics of different types of killer. It stands to reason that while there are discernible differences between female and male serial killers, these differences may also be observed between other types of serial killers, specifically between solo and team killers. It is the hope of this study to differentiate between solo and team killers through examination of the differences between these two groups and how those differences may lend themselves to understanding, pursuing, and apprehending offenders through useful profiling methods.

Serial Killers and Victims

A study performed by Pakhomou (2004) looked at crime scene data, police reports, court documents, and transcripts from interviews pertaining to 21 serial killers (and their 97 victims) and their cases of serial murder. All killers included had closed and

finalized court cases and were selected from 15 jurisdictions in the continental United States. The study examined the various relationships between killers and their victims, and the frequencies at which they tended to occur. These results indicate that a majority of victims appeared to be of the same race as the killer, though this trend seems to be slightly shifting as interracial killings are becoming more common. Furthermore, this study found that 70% of the victims analyzed were strangers to the killer. Among the remaining victims, 25% held a rudimentary or acquaintance relationship with the killer, while only 3% of victims had an established relationship, such as a previous romantic partner. While these results reveal important information on serial killers' relationships with their victims, the small sample size and limited quantifiable data, resulting from a large amount of qualitative and case study data, call into question the generalizability of these findings to a large population of killers.

Female Serial Killers

To provide a rationale for the current study and literature focused on research differentiating between types of serial killers, a discussion of female serial killers is included, and has been used to model much of the current research. To date, female serial killers are the most commonly studied population of serial killers differentiated from the classic models of serial killers shown in historical research. This research serves to prove that there is validity and purpose in conducting research aimed at increasing specificity of the current knowledge around serial killers and criminal profiling. Research has been included on female serial killers as well as new female typologies. As previously discussed, a literature review and theoretical analysis by Silvio et al. (2006) showed that there are significant differences in the profiles and typologies of male and female serial

killers of all kinds. The results of this study suggest that the previously accepted, male-centered typologies were inadequate for describing the female serial killer, her motives, and relationship to the victim and the crime itself. The authors' review of the research suggests a distinction between female killers who acted alone versus those who acted in teams. The authors also proposed new typology categories for female serial killers, such as the black widow, angel of death, revenge killer, and profit killer. Below is further research outlining differences between male and female serial killers, outside of efforts to profile and categorize these offenders.

Harrison et al. (2015) looked at 64 female serial killers who committed their crimes in the US from 1821 to 2008, and sought to clarify data regarding demographics, means, motive, and development of the killer. Of the 64 female serial killers, 88.7% were White, 55.3% were middle class, and 54.2% were married. Of the 18 cases in which religion was indicated, 100% were Christian. The mean age was 32, with a range from 16 to 65, and a vast majority (~75%) were between 20 and 40 years of age. A large portion of these offenders held jobs in healthcare (39.2%), while many others worked in a direct caretaking role (21.6%; Harrison et al., 2015).

Data from these female serial killers were analyzed for offense and victim characteristics. With respect to method of killing, half of the offenders used poison as their primary method, with arsenic being the most commonly used poison, while 17.2% used mixed methods. With regards to number of victims, the total number of victims of the 64 killers included 267 victims, 155 male and 112 female, which was shown to be a statistically significant difference. These female killers killed 6.1 victims on average, with a range between three and 31. Interestingly, 67.3% of these killers killed both men

and women, while 20% killed male victims only, and 12.7% killed female victims only. Of the 64 female killers, 45% killed adults only, 23.4% killed children only, and 31.3% killed adults and children. Moreover, 71.9% of these victims were in a vulnerable or powerless state, consistent with the data suggesting most serial killers were in a caretaking role. Further, 92.2% of female killers knew all of most of their victims, where 62.5% killed relatives. (Harrison et al., 2015).

Motives of these 64 female serial killers were also analyzed using the commonly accepted typologies originally published by Holmes and Holmes (2010), including motives such as hedonistic, power-seeker, visionary, and missionary. Of the female serial killers considered, 49.2% fell into the hedonistic (black widow) category, 20.6% fell into the power-seeking (angel of death) category, while 3.2% fell in the visionary (psychotic) and 3.2% in the missionary (mission-directed) categories (Harrison et al., 2015).

Harrison et al. (2018) took an evolutionary approach to differentiating between male and female serial killers and discerning motives for each. The study included 55 male serial killers and 55 female serial killers, and approached motive through a lens of “hunter and gatherer” mentality. Results showed that female serial killers tended to behave more as “gatherers,” killing those close to them in familiar areas and gaining profit from their crimes. Male serial killers tended to act as “hunters,” stalking and killing targeted strangers in dispersed areas. Of the 55 female serial killers, 90.9% killed someone familiar to them, while 58.2% killed relatives, and 67.4% killed both male and female victims. The main motive of female killers tended to be for financial gain (51.9%), they rarely stalked their victims (3.6%), they used poisoning (47.3%) or asphyxiation (30.9%) methods, and they tended to commit their crimes near their place of

birth or residence. 57.1% of female killers were in the middle class, with at least some college education (53.8%). 56.6% were in a relationship at the time of the offense. The average length of career was 7.78 years, and the average number of victims were 6.02.

Of the 55 male serial killers, 85.5% targeted a stranger, 49.1% targeted only female victims and only adult victims, while 47.1% killed both adults and children. Seventy-five percent of male killers killed for sexual motives, 65.4% stalked their victim before their offense, 67.3% committed murders outside of their place of birth or residence, and 40% committed murders across state lines. Male killers tended to be lower class (67.4%), and have a high school or less education (73.1%). Male killers also tended to use asphyxiation as a primary method of killing (47.2%), with the other most frequent methods being shooting (20.8%) and stabbing (17%). The average length of career for male killers was 8.69 years, and included an average of 8.55 victims (Harrison et al., 2018). Results of this study suggest that there are key differences in victim preference and offending behavior of male and female serial killers, and different motives can be inferred by these differences. These data also suggest the need for additional distinction between different types of serial killers, and the need for further understanding and classification of such.

Psychological Profiling and Behavioral Analysis

Schlesinger (2009) described *psychological profiling*—also commonly referred to as behavioral, criminal, or investigative profiling—as the process of examining numerous aspects of the killer’s crime scenes, and the crimes themselves, to develop a psychological profile of the criminal and to describe their modus operandi, motivation for killing, personality characteristics, and possible physical appearance and demographics.

Schlesinger broke down the process of profiling into six distinct steps, including: collecting crime scene information; arranging the information into meaningful patterns; reconstructing the crime and offender's motivations; developing specific characteristics of the offender; using the profile in investigation; and apprehending the suspect.

The most well-known agency involved with criminal profiling of serial killers is the FBI's Behavioral Analysis Unit (BAU). The BAU is utilized for a multitude of services, including analysis of crime scene data and evidence, creating offender profiles, analyzing linkages between cases, providing interview techniques and strategies, and determining strategies for prosecution (FBI, 2005). The information collected is then used to create a behavioral profile of the individual that can be applied to the criminal investigation and used as a guide to apprehension. Keppel and Birnes (2003) added that the BAU undergoes the process of behavioral analysis by factoring in possible inferred motives for the crime, the offender's "victim selection process," characteristics of the victim (e.g., relationship to the killer, physical characteristics, psychological meaning of the victim to the killer, etc.), the nature and level of organization of the crime (e.g., organized vs. disorganized), the types of injuries suffered by each victim, the choice of weapon, and any recoverable forensic evidence from the scene.

Keppel and Birnes (2003) suggested that traditional criminal profiling is only one component of what should more appropriately be called *crime assessment*. Crime assessment includes steps such as developing a criminal profile, determining postoffensive behaviors and strategies for apprehension, interviewing strategies, the offender's signature (i.e., rituals, trophies that are kept or left, or other distinct aspects of their criminal pattern), and where evidence might be located (e.g., crime scene, dumping

site, trophies kept by the killer). Keppel and Birnes then suggested that the disciplines of criminal profiling and crime assessment stem from two differently thinking communities, that of psychology and criminology, respectively. They suggested that criminal profiling is a discipline that focuses more on discerning a psychological profile of the individual of interest, to infer motive and paint a picture of who the offender might be. Crime assessment is then an expansion of this discipline, including criminal profiling as only a component of the entire investigatory approach. This would then include other processes more focused on the investigation of evidence and the search and apprehension of the offender. The ideal method is one that combines these two different schools of thought and approaches the criminal investigation from various lenses and perspectives. These two strategies ideally take into account the presence or absence of evidence, methods of operation (e.g., weapon choice, victim type), the killer's signature (e.g., consistent evidence across crimes, behaviors with the victim, posing, or taking specific trophies), the comfort zone of the killer, and inferred motive for the murder. Knabe-Nicol et al. (2011) argued that in order for profiling advice to be useful in police investigations, it must be given on the basis of data available at the crime scene, or easily inferred from the crime scene, and rely less on conjecture and assumption.

Serial Killer Typologies

The FBI began criminal profiling using their organized versus disorganized dichotomy of classifying the killer's level of psychological and criminal organization, developed by the FBI's BSU (FBI, 2005). Douglas et al. (2006) stated that the general condition of the crime scene is important and can tell investigators about the offender's level of criminal sophistication and psychological organization. This has been commonly

described on a continuum between organized and disorganized characteristics. Generally, an organized offender is an individual who thoroughly plans their murders, and displays both personal control, as well as control of the victim and crime scene. A disorganized offender is an individual who is more spontaneous and impulsive in their murders, and typically produces crime scenes that are chaotic, appear disorganized, and appear more opportunistic in nature (Morton et al., 2014). Ressler et al. (1986) originally tested the applicability of this dichotomy in their study consisting of interviews of 36 serial and sexual murders, already classified as disorganized or organized after apprehension. Their research suggests that the crime scenes of organized and disorganized killers are significantly different. The organized offender is more likely to plan, use restraints, commit sexual acts on a live victim, display control of the victim, and use a vehicle. The disorganized offender tends to leave the weapon behind, position the body, perform sexual acts on the dead victim, keep the body, depersonalize the body, and not use a vehicle. Further, this research determined that the profiling characteristics are significantly different between these groups. For instance, the organized offender is more likely to be intelligent, skilled occupationally, plan the crime, be angry or depressed during the crime, have precipitating stress, have a car in decent condition, follow crime in the media, and change jobs or leave town. By comparison, the disorganized offender is likely to be low in birth order, come from a home with an unstable working father, have been treated with hostility as a child, be sexually inhibited or ignorant, have parents with sexual problems, be frightened or confused at the time of the crime, know who the victim is, live alone, and commit the crime close to home or work. While the researchers reported data that support this dichotomy, they made a point to state that there are no

situations in which these classifications are mutually exclusive (Ressler et al., 1986). In an effort to acknowledge this shortcoming and capture the continuous nature between organized and disorganized, the BSU added an additional classification of “mixed” into this typology system in 1992. As Canter et al. (2004) suggested, even with this change, the classification system provides limited utility to law enforcement and the classification of these killers, as most killers display characteristics of both organized and disorganized and fall into the mixed category.

Holmes and Holmes (1998) introduced a new serial killer typology system in their book titled *Contemporary Perspectives on Serial Murder*. Holmes and Holmes considered case material from 110 serial murders and subsequent interviews with them. It is important to note that this classification system was derived to classify and infer the motive of the killer based on available crime scene information and psychological evidence. This typology includes types such as the visionary killer, the mission killer, the hedonistic killer, and the power and control killer. This typology generally takes into account the motivation behind the murders, as well as some characteristics of the crime scene, such as the organization level, method of killing, the killer’s habits and patterns, and the presentation of the crime itself. The visionary killer is a type of killer who kills due to messages received, either through hallucinatory or visionary experiences, that drive them to commit acts. The missionary killer is a type of killer who kills due to a belief or desire to eliminate a certain group of people. These two types of killers tend to be act-focused, in that they are more focused on completing the act and doing so swiftly and efficiently. The hedonistic killer tends to include three subcategories of killers: those who kill for sexual gratification or lust, those who kill for thrill, and those who kill for

some kind of personal gain. The power and control killer is a type of killer who kills for the power and control of “playing God,” and controls life and death. These two types of killers tend to be process-focused in that they are motivated by the process of killing, and tend to do so slowly and violently. This system has since become the most widely utilized typology within classification and profiling of serial murder cases and is frequently utilized by the FBI (Holmes & Holmes, 1998). It should be noted that the authors gave no systematic description of how the case material was analyzed and used to derive their system. This system was generally based on characteristics they have found to be consistent with the presentation of several kinds of serial killers, derived from their extensive careers in studying, interviewing, analyzing, and apprehending serial killers. Researchers also mention that background characteristics, psychological motivations, crime scene evidence like victim characteristics and methods of killing, and spatial behaviors of the offenders were all used in the development of this classification (Holmes & Holmes, 1998).

Little research has been conducted regarding the classification systems that aim to differentiate between types of serial killers, and has typically looked at serial killers as a cohort to develop overarching typologies (Holmes & Holmes, 1998). Further research into the validity and accuracy of these typologies has shown little empirical support for Holmes and Holmes’s (1998) classification system, has questioned the empiricism used to develop such categories, and reflects significant overlap in characteristics across categories, thus compromising the utility of the system (Canter & Wentink, 2004; Taylor et al., 2011).

While the profiling techniques previously described have been somewhat successful in utilizing Holmes and Holmes's (1998) typology, there has been some controversy around the accuracy of this typology and its utility, calling into question the specificity of categories and the breadth of overlap in characteristics between them. Canter and Wentink (2004) performed a study in which they analyzed 100 cases of serial murder in an attempt to empirically test the accuracy of Holmes and Holmes's typologies. The authors reported significant overlap between many of the proposed types and suggested that with this overlap, their utility is compromised. Specifically, Canter and Wentink found that over 50% of the analyzed cases showed features of the category "Power and Control," suggesting that this characteristic is likely an overarching theme and may present in many different types of serial murder, regardless of their motivation. Additionally, they found limited support for lust, thrill, and mission styles of murder, concluding that in many instances, crime scene characteristics, organization level (organized/disorganized), and ways in which the victim has been dealt with are more indicative of a typology than the motives implied by Holmes and Holmes's system.

Female Serial Killer Typologies. Silvio et al.'s (2006) literature review and theoretical analysis examined the rarely studied female serial killer and the applicability of typical profiling procedures and the Holmes and Holmes (1998) typology system. The study examined the limited literature around female serial killers and proposed various theories and motive classifications pertaining to female killers' crimes, as well as discussing their inclusion in team killing acts and the possible psychological contributors. The results of this study suggest that the previously accepted, male-centered typologies were inadequate for describing the female serial killer, her motives, and relationship to

the victim and the crime itself. The authors' review of the research suggests a distinction between female killers who act alone versus those who act in teams. The authors also proposed new typology categories for female serial killers such as the black widow, angel of death, revenge killer, profit or crime killer, team killer, sexual predator, question of sanity, unexplained, and unsolved. These typologies are primarily based on motive, and are modeled after commonly used male typologies, such as those published by Holmes and Holmes. Researchers adapted these male-centered typologies to theoretically reflect the motives of the female serial killer. The authors also took time to note that interviews and research pertaining to serial killers lack quantifiable data and elicit problematic qualitative projections that can be argued as unreliable, subjected to researcher bias, and are likely skewed by the retrospective nature of this kind of data collection.

Taylor et al. (2011) performed a cluster analysis of the four accepted types (visionary, missionary, hedonistic, and power/control) and found no empirical support for the classification of killers in this way. This study also analyzed differences in characteristics of male and female killers using cluster analysis, and did report significant differences between the clusters derived from their study for male and female killers. In this study, 40 serial killers were analyzed by the presence or absence of 50 typifying crime scene criteria and 10 motive-based crime scene criteria. This was a two-part study, first aiming to test the validity of the organized/disorganized typology and its application to both male and female killers, and then seeking to investigate if similar patterns of the Holmes and Holmes (1998) typology (visionary, mission, hedonistic, power/control) arise for male and female serial killers. This study used agglomerative hierarchical cluster analysis to test these aims. For male serial killers, four distinct clusters were seen, with

results suggesting some limited support for the organized/disorganized typology. However, the presence of rogue crime scene criteria in each group suggested that there was not enough support for this classification, but an altered system might be more useful. For female serial killers, three distinct clusters were observed, but crime scene criteria were mixed between organized and disorganized almost equally in each cluster. The authors concluded that the results of this study suggest a difference in the applicability of the organized/disorganized dichotomy for male and female killers, and that the dichotomy is not useful for either as it stands.

The results of the second study, using the same four clusters for male killers and three clusters for female killers, aimed to determine the applicability of the Holmes and Holmes (1998) typology system to both male and female killers. In each of the four male clusters, there were crime scene criteria across all of the four types, suggesting little support for the accurate use of this system. For female serial killer clusters, crime scene criteria also overlapped between all of the clusters, offering little support for the use of this typology with females. Further, there was a difference in the applicability noticed between the male and female clusters, suggesting that there was not a similar pattern between males and females, and the applicability of this system is different between populations. The researchers then proposed that the typologies for female serial killers suggested the need for alternative typology systems, different from the male systems. These results suggest a possibility of a need for different typology systems for other types of serial killers as well.

These findings have informed the methodology of the current study and have, in part, shaped the characteristics chosen within this analysis. Given the frequent use of the

Holmes and Holmes (1998) typology, and its focus on motives of offenders, motive was incorporated into the current design. To increase specificity of the proposed typology, a new classification for motive was adopted for this study, in part due to its direct tie to the data set being used. Within this study, the Aamodt Classification of Motives Code (Aamodt, 2012) was utilized to code the motivations of the serial killers being analyzed. This classification system is separated into motives such as: financial gain, attention, enjoyment, anger, mental illness, cult, avoid arrest, organized crime, convenience, wildwest outlaw, and multiple motives. These motives are already coded into the data set, making analysis more manageable. The codes are included as an Appendix.

Serial Killer Database

In the early 1990s, information on serial killers was gathered in a forensic psychology course taught by Dr. Mike Aamodt at Radford University, in which students were asked to create a timeline for an assigned serial killer using biographies, newspaper articles, and publically available court documents and prison records. In the mid-1990s, the information from the class assignments was entered into an Excel file and continually updated with new information. By 2008, the database had contained over 1,900 serial killers (Aamodt et al., 2018).

In 2008, the database administrators collaborated with Florida Gulf Coast University (FGCU), who agreed to host the database and dedicate resources to continually update and fact check information. FGCU also created a program that put into place a process by which researchers could apply for access to the database. In addition, graduate students and researchers continue to review information in the database to ensure accuracy and document sources of information (Aamodt et al., 2018).

In 2010, an independent research team titled the Serial Homicide Expertise and Information Sharing Collaborative (SHEISC) was created to bring together an interdisciplinary team of researchers and practitioners to share data on serial homicide. Each member of this collaboration shared their dataset with the Serial Killer Database (SKDB), further expanding the size and comprehensiveness of the database (Aamodt et al., 2018).

When deciding what information to include in the dataset, database administrators wanted to make the information sharable and accessible to all researchers. They decided to only include information that was publically available. Any information gleaned from confidential resources, such as psychiatric reports or law enforcement files that were not made public, was not included in the data. Great care was taken by this team to ensure that all information was factually accurate. Information was taken from resources such as: online prison records, state records (birth, death, marriage, divorce records), social security information, census data, journal articles, newspaper articles, books (scholarly and popular), dissertations and theses, and other internet sources. As new information arose, they revised, deleted, or added information to the database. When conflicting information arose, they used their best judgment and research to determine which source was most accurate. Also, to ensure the most accurate information they used five safeguards when determining factual evidence. These five steps are as follows: using multiple sources for each piece of information; relying more on official sources when debating conflicting information; corroborating data using graduate students at FGCU; requiring researchers to update and provide new information as a condition of having access to the database; and having any federal law enforcement agencies with access to

the database notify them of any errors they encountered as a condition of having access to the database (Aamodt et al., 2018).

At the time of the current study, the database contains 5,003 serial killers of all types and over 175 variables per subject. This database continues to be updated and improved through the processes discussed above (Aamodt et al., 2018). Through contact with Dr. Mike Aamodt and the SKDB administrators, permission was granted for use in the current research project.

Summary, Specific Aims, and Hypotheses

Serial murder can be defined as “the unlawful killing of two or more victims by the same offender(s), in separate events” (FBI, 2005, p. 9). The most prominent application of serial killer research is that of criminal profiling: the process of examining numerous aspects of the killer’s crime scenes, and the crimes themselves, to develop a psychological profile of the criminal and to describe their modus operandi, motivation for killing, personality characteristics, and possible physical appearance and demographics. This discipline called for organization and classification of these systems of classification, to exact their science and categorize these killers to better prevent their crimes and apprehend such individuals. Holmes and Holmes (1998) introduced the most widely utilized typology system consistent with the presentation and motive of several kinds of serial killers, including the visionary killer, the mission killer, the hedonistic killer, and the power and control killer. While these are widely accepted and used in psychological profiling, more recent research has called into question the validity and accuracy of this typology, as well as the methods used to develop these categories, and has raised the importance of developing new typologies that account for motivation,

treatment of and relationship to the victim, crime scene characteristics, and crime patterns and methods. As a result, this study aimed to examine a few of these variables to determine if there are key differences between solo serial killers and team serial killers. These groups were chosen due to the limited research about the differences between these groups, and in an attempt to provide the scientific community with information regarding whether these differences are meaningful.

This was an exploratory study looking into the key differences between solo serial killers and team serial killers. The specific aim of this study was to examine whether there are significant differences between solo serial killers and team serial killers in the number of victims, length of career, method of killing, motive for killing, and relationship to the victim. For this study, motive and relationship to victim were included due to being commonly used in serial killer profiling research, and due to their large involvement in classic serial killer research and the formation of classic typologies. Method of murder was included to reflect recent research calling for profiling techniques that include crime scene data, and hard evidence that can be found at a crime scene, early in an investigation. Number of victims and length of career were included for similar reasons, and are likely to be known or estimated by investigative agencies throughout their investigation and profiling efforts. It was hypothesized that there would be significant differences in the clusters generated for solo serial killers and team serial killers.

Methods

Study Design

This study used an archival dataset. It examined differences in relationship to the victim, method of killing, motive for killing, number of victims, and length of career between individual serial killers and those who killed in teams, pairs, or groups. This study contained one dichotomous independent variable (solo killers vs. team killers) and five categorical or continuous dependent variables (mentioned above).

Participants

Participants were part of an archival dataset of the SKDB created by Dr. Mike Aamodt, affiliated with Radford University and FGCU (Aamodt, 2012). The database contains 5,002 serial killers of all types and over 175 variables per subject. This database was initially created by Dr. Aamodt's research team at Radford University and FGCU students in 1992, in an effort to provide students, researchers, and the media with accurate data on serial murder. The information in the data set has been collected from a variety of sources, including prison records, court transcripts, media sources, true crime books, and other internet sources. All data within the dataset have been fact checked and verified for accuracy by the research team and the administrators of the database. From this database, a total of 4,865 serial killers were analyzed. Of the total, 3,806 killers were included in the "Solo Killer" group, while 1,059 killers were included in the "Team Killer" group. Within the database, individuals who were positively indicated as having a partner or team were included in the "Team Killer" group, while those who were positively indicated as acting alone were included in the "Solo Killer" group. Those within the database who had no positive indication of either having or not having a

partner or team ($n = 137$) were excluded from the analysis, as it is uncertain as to which group they belong. Those within the database with more than one missing data point pertinent to the main study variables were also excluded.

Measures

No measures were created for this study. All data collected were preexisting and have been collected and documented by Dr. Aamodt and his research team, and compiled into the SKDB. The numerical value of the number of victims and length of career were coded into SPSS and analyzed for descriptive statistics before conducting the cluster analysis. Number of victims was defined as the number of individuals murdered over the length of career. Length of career was defined as the number of years between the killer's first and last kill. Demographic variables were also collected from the SKDB and included: age, race, gender, and country of origin.

The Aamodt Classification of Motives Code (Aamodt, 2012) was utilized to code the motives of the serial killers. This classification system was separated into the following motives: financial gain, attention, enjoyment, anger, mental illness, cult, avoid arrest, organized crime, convenience, wildwest outlaw, and multiple motives. Most of these motives contain various subcategories, which increase specificity, though these subtypes were not included in the data analysis.

The Aamodt Classification of Victims Code (Aamodt, 2012) was utilized to code the relationship to victim variable. This classification system is separated into relationships such as: street people (homeless individuals, prostitutes, drug addicts, etc.), hitchhikers, johns/sexual encounters, patient/wards, family, employees/customers, home invasion, street (a member of the general public who does not fit other categories),

convenience, criminals, and multiple victim types. Again, most of these categories include various subtypes which increase specificity, though these subtypes were not included in the data analysis.

The method of killing variable was classified into either intimate or nonintimate methods. This was done to reduce the overall number of methods within the analysis, consistent with prior profiling research suggesting that the intimate versus nonintimate style of murder is more useful than the specific method used. This distinction is defined in the SKDB under the variable “kills with hands.” Intimate methods of murder included: bludgeon, stabbing, strangulation, suffocation, drowning, shaken, and axed. Nonintimate methods of murder included: gun, poison, pills, bomb, gassed, fire, starved/neglect, hanging, ordered the killing, staged accident, ran over, pushed from height, abandoned, alcohol poisoning, drug overdose, electrocution, broken neck, withdrew treatment, buried alive, and unknown. This variable was coded in a dichotomous fashion, indicating the presence or not of intimate methods of murder.

Procedures

All subjects within the current study were accessed through the SKDB. Access to this database was obtained with permission of Dr. Mike Aamodt and his research team at FGCU. This database was initially created in 1992 and its development is ongoing, with new information being added as obtained by users of the database, which is then fact checked by the research team. Data that are input into the dataset must be fact checked by the database administrators and verified by record before being published. Subjects were accessed from the database using the advanced search function to identify those killers who worked in a team or individually. Individuals in these categories were given a code

and entered into SPSS. Data reflecting each individual's number of victims and length of career were entered into SPSS with the numerical value. Data reflecting the method of killing (Intimate vs. Nonintimate), relationship to the victim, and motive for killing was input into SPSS using a numerical code reflecting the number of options within that descriptor, (e.g., "0" or "1"). The classifications regarding motivation for killing and relationship to the victim have been obtained from the Aamodt Classification of Motives Code and the Aamodt Victim Code (Aamodt, 2012) as described above. Offenders with "possible" data, reflecting uncertainty about their classification of serial killers or the details of their crimes, were excluded from the study. Those killers with incomplete data were included in descriptive analyses, but excluded from the cluster analysis due to the incomplete profile and dataset.

Statistical Analysis

Data were first coded and entered in SPSS data analysis software. Data for number of victims and length of career were entered using their numerical value, while data for method of murder, relationship to victim, and motive were given a numerical code and entered into the software. Simple descriptive statistics such as median, interquartile range, frequencies, and percentages were calculated for demographic variables such as sex and race, as well as for primary variables of interest (e.g., primary motive, relationship to victim, time between kills, length of career). For primary motive and relationship to victim, dichotomous (yes/no) variables were created for each factor of these variables. Correlations between continuous variables (length of career and number of victims) were analyzed via Spearman correlations, due to the skewness of the variables, to determine whether both could be included in modeling. Differences between

the two groups (solo vs. team killers) were analyzed via Wilcoxon ranked sum tests for continuous variables and via Chi-square tests for categorical variables. Relationships between type of serial killer (solo vs. team) and motive (11 motives), method of murder (kills with hands yes/no), relationship to victim (11 relationships), length of career, and number of victims were examined using hierarchical cluster analysis to see which variables clustered together. Continuous variables were centered and scaled, and Euclidean squared distances were used to determine distances between variables. Cluster analyses were run separately for solo and team killers. Clusters were created separately for both solo and team killers, and were compared for differences between groups. Clusters were organized and compared visually and theoretically, as the cluster analysis method used does not offer statistical comparison between groups. Only complete cases were included (complete, nonmissing data for team/solo, number of victims, kills with hands, years between first and last kill, prime motive variables, and relationship with victim variables). Hierarchical cluster analysis in SPSS used Ward's clustering method. Clusters were then compared to one another to examine differences in clusters between the two groups.

Results

From a dataset of 5,002 killers, 48 were excluded for awaiting confirmation ($n = 36$), type of killer (perhaps mythical [$n = 4$], status in doubt [$n = 2$], sold poison [$n = 2$]), or invalid time between kills (negative time [$n = 2$], > 1000 years [$n = 2$]), leaving 4,954 records to be included. The majority of serial killers in this study were male (90%), White (55%), and solo killers (78%). Solo serial killers were slightly more likely to be male compared to team killers (90% vs. 86%), $\chi^2(1, N = 4818) = 12.41, p = 0.0007$. There were also significant differences between solo and team killers in the distribution of race, $\chi^2(5, N = 4782) = 58.92, p < 0.0001$. Of the solo killers, 58% were White, 29% were Black, and 13% were other race. Of the team killers, 46% were White, 35% were Black, and 19% were other race.

Solo and team killers differ with regard to a few key variables. Solo killers have slightly fewer victims than team killers (median [IQR]: 3[2,5] vs. 4[3,7], $p < 0.0001$), a longer length of time between first and last victims (median [IQR]: 3[1,10] vs. 1[0,2] years, $p < 0.0001$), and were more likely to kill with their hands (68% vs. 47%, $p < 0.0001$). Most common motives for solo killers included enjoyment (42%), financial gain (25%), and anger (19%), while the most common motives for team killers were financial gain (45%), organized (19%), and enjoyment (18%). Solo and team killers had significantly different distributions of motive, $\chi^2(10, N = 4465) = 892.88, p < 0.0001$. Solo killers more commonly killed for enjoyment (42% vs. 18%), $\chi^2(1, N = 4465) = 195.73, p < 0.0001$; anger (19% vs. 8%), $\chi^2(1, N = 4465) = 68.10, p < 0.0001$; and multiple motives (10% vs. 5%), $\chi^2(1, N = 4465) = 24.91, p < 0.0001$. Team killers more commonly killed for financial gain (45% vs. 25%), $\chi^2(1, N = 4465) = 149.13, p < 0.0001$,

and were organized (19% vs. 1%), $\chi^2(1, N = 4465) = 512.08, p < 0.0001$. There were no significant differences between groups for attention, mental illness, cult, avoiding arrest, convenience, or wildwest outlaw motives. See Table 1.

Table 1*Motives for Killing in Solo vs. Team Killers*

Motive	Solo Killers 3438 (76.99%)	Team Killers 1027 (23.01%)
Financial Gain	856 (24.90%)*	459 (45.69%)*
Attention	20 (0.58%)	0 (0.0%)
Enjoyment	1427 (41.51%)*	181 (17.62%)*
Anger	652 (18.96%)*	83 (8.08%)*
Mental Illness	26 (0.76%)	0 (0.0%)
Cult	7 (0.20%)	31 (3.02%)
Avoid Arrest	29 (0.84%)	20 (1.95%)
Organized	35 (1.02%)*	192 (18.70%)*
Convenience	41 (1.19%)	10 (.97%)
Wildwest Outlaw	1 (0.03%)	0 (0.0%)
Multiple Motives	344 (10.01%)*	51 (4.97%)*
Total N (4465)	3438	1027

* $p < 0.0001$

Relationship to the victim(s) also varied for solo and team killers. Most common relationships for solo killers were street (29%), multiple victim types (21%), family (16%), and home invasion (11%). For team killers, the primary relationship to victim was also street (34%), followed by multiple victim types (20%), criminals (13%), and employees/customers (12%). Solo and team killers had significantly different distributions of victim type, $\chi^2(9, N = 4170) = 428.90, p < 0.0001$. Solo killers more commonly targeted street people (9% vs. 5%), $\chi^2(1, N = 4170) = 20.19, p < 0.0001$, and family victims (16% vs. 3%), $\chi^2(1, N = 4170) = 102.73, p < 0.0001$. Team killers more commonly targeted employees (12% vs. 5%), $\chi^2(1, N = 4170) = 60.69, p < 0.0001$; street victims (33% vs. 29%), $\chi^2(1, N = 4170) = 6.31, p = 0.01$; and criminal victims (13% vs.

1%), $\chi^2(1, N = 4170) = 260.58, p < 0.0001$). There were no significant differences between groups for hitchhikers, johns, patients, home invasion victims, convenience victims, or multiple relationships. See Table 2.

Table 2

Relationship to Victim in Solo vs. Team Killers

Victim Type	Solo Killers 3248 (77.89%)	Team Killers 922 (22.11%)
Street People	306 (9.42%)*	44 (4.77%)*
Hitchhiker	21 (0.65%)	7 (0.76%)
Johns/Sexual Encounters	70 (2.16%)	14 (1.52%)
Patients/Wards	120 (3.69%)	33 (3.58%)
Family	522 (16.07%)*	30 (3.25%)*
Employees/Customers	161 (4.96%)*	112 (12.15%)*
Home Invasion	372 (11.45%)	76 (8.24%)
Street	942 (29.0%)	307 (33.30%)
Criminals	41 (1.26%)*	118 (12.80%)*
Multiple Victim Types	693 (21.34%)	181 (19.63%)
Total (4170)	3248	922

* $p < 0.0001$

Spearman correlation coefficient for time between first and last kills and number of victims was nonsignificant for the overall group ($\rho = 0.04$), but when viewed separately by solo and team killers, there was a moderate, positive relationship for team killers ($\rho = 0.3$) and no significant relationship for solo killers ($\rho = 0.03$).

The cluster analysis performed does not offer statistical comparison of the clusters generated from the analysis. Clusters were grouped and examined for similarities and differences between variables clustering together. Arriving at the clusters included determining the appropriate rescaled distances on the dendograms for both groups. For solo killers, rescaled distances yielding three, five, and six clusters were considered. The clusters were examined for theoretical and conceptual fit, and it was determined that the

six-cluster solution offered the most distinct clusters and would serve to better distinguish between clusters and their content. For team killers, rescaled distances yielding two, seven, and 21 clusters were considered. A rescaled distance yielding seven clusters was chosen, as those yielding two or 21 were deemed over- and underinclusive, respectively.

The analysis revealed similar patterns for both solo and team killers. The solo killers had six distinguishable groups: (a) multiple motives/multiple victims; (b) killing for convenience and anger with family victims with a larger time between first and last kill; (c) organizational killings with criminal victims; (d) killing for enjoyment, with their hands, with street and street people victims; (e) killing for financial gain with employee/customer and home invasion victims; and (f) a larger more diverse cluster. The team killers have seven distinguishable groups: (a) killing street victims for enjoyment; (b) number of victims and length between first and last kills clustered with patient victims; (c) killing family members and for convenience; (d) killing employees/customers and for financial gain; (e) multiple motives and multiple victims; (f) organized killings with criminal victims; and (g) a larger more diverse cluster. See Figure 1, Figure 2, and Table 3.

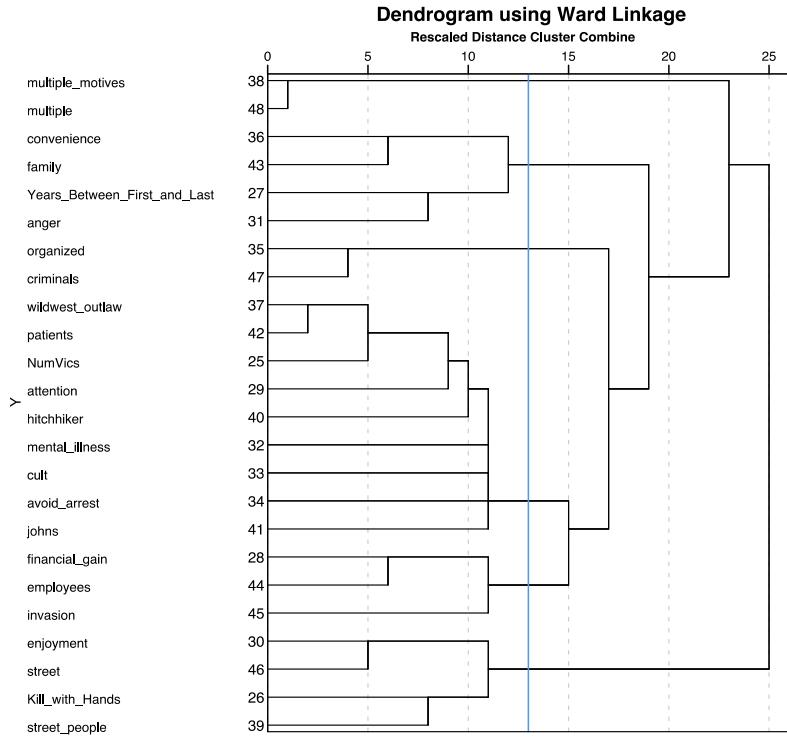
Figure 1*Solo Dendrogram*

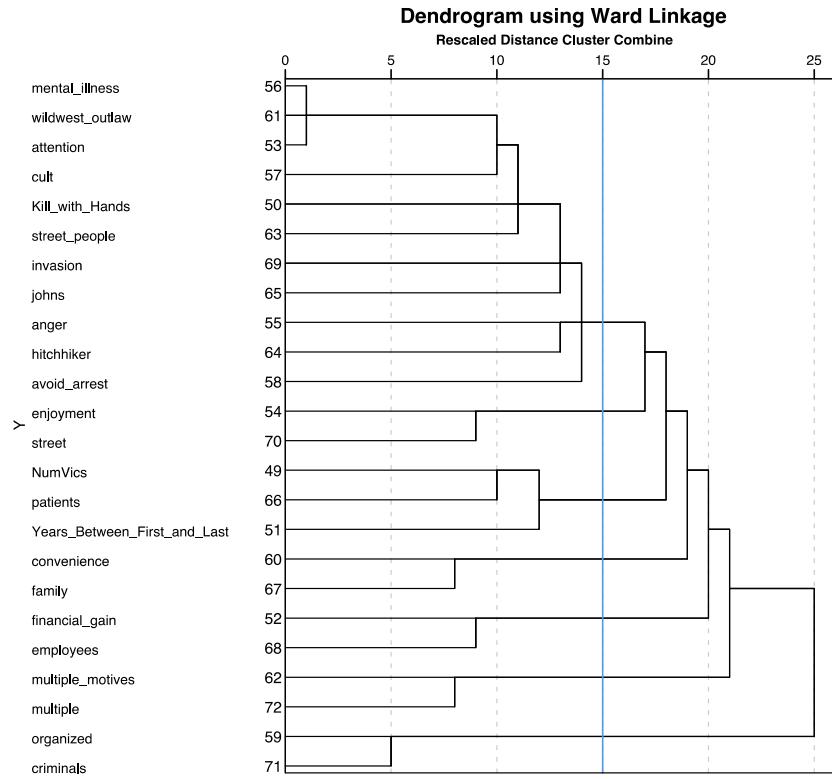
Figure 2*Team Dendrogram*

Table 3*Solo and Team Clusters*

Clusters	Solo Killers	Team Killers
Cluster 1	Multiple Motives Multiple Victims	Mental Illness Motive Wildwest Outlaw Motive Attention Motive Cult Motive Intimate Methods Street People Victims Home Invasion Johns Victims Anger Motive Hitchhiker Victims Avoid Arrest Motive
Cluster 2	Convenience motive Family Victims Length of Career Anger Motive	Enjoyment Motive Street Victims
Cluster 3	Organized Motive Criminal Victims	Number of Victims Patient Victims Length of Career
Cluster 4	Wildwest Outlaw Motive Patient Victims Number of Victims Attention Motive Hitchhiker Victims Mental Illness Motive Cult Motive Avoid Arrest Motive Johns Victims	Convenience Motive Family Victims
Cluster 5	Financial Gain Motive Employee Victims Home Invasion	Financial Gain Motive Employee Victims
Cluster 6	Enjoyment Motive Street Victims Intimate Methods Street People Victims	Multiple Motives Multiple Victims
Cluster 7	None	Organized Motive Criminal Victims

While most clusters between solo and team killers were similar, there were some distinguishable characteristics between the solo versus team clusters. For solo killers, anger motive clustered with convenience motive and family victims, whereas anger was not a part of the similar team kill cluster. Killing with hands clustered with the enjoyment motive for solo killers, but was part of the larger cluster for team killers. Home invasion victims were also included in the cluster for financial gain motive and employee/customer victims for solo killers, but did not cluster with those variables for team killers. While the clustering revealed some possibly distinctive patterns, the lack of variables clustering together earlier for the team killers could be a function of smaller sample sizes for some of the motives and relationships to victims.

Discussion

Current research has called for further organization and classification of criminal profiling, expanding upon previous literature typifying serial killers. The most prominent and widely used is the typology system introduced by Holmes and Holmes (1998), which organizes serial killers into types based on motives and features of the offenders' crimes. Recent research has questioned the validity and accuracy of this typology, as well as the methods used to develop these categories. Recent research has also stressed the importance of developing new typologies that account for motivation, treatment of and relationship to the victim, crime scene characteristics, and crime patterns and methods. The aim of this study was to examine whether there are differences between solo and team serial killers in the number of victims, length of career, method of killing, motive for killing, and relationship to the victim. It was hypothesized that there would be significant differences in the clusters generated for solo serial killers and team serial killers. As previously stated, the results of this study revealed clusters for solo and team serial killers that are both similar and distinct from one another.

Preliminary descriptive statistics showed significant differences in the distribution of race and sex between solo and team killers. These results showed similarities in the distribution of sex between solo and team killer, while solo killers were slightly more likely to be male. There were also statistical differences in the distribution of race between groups, such that solo killers tended to be White, with a smaller proportion of solo killers that were Black or other. Team killers yielded a more even distribution of race, though still tended to a majority of White offenders. This is supported by previous research, such as that reported by Miller (2014), which found that solo serial killers tend

to be White males, but did not explain the difference in the distribution of race within the team killer group.

These results also showed significant differences between solo and team serial killers in number of victims and length of career. These results suggest that team killers tended to have shorter killing careers, but more victims. This is consistent with research by Silvio et al. (2006) suggesting that team killers tend to have a length of career between 1 and 2 years, and tend to have an average number of victims between nine and 15.

Results from preliminary statistics showed that solo killers were much more likely to kill with intimate methods of murder when compared to team killers. This is likely explained by the differences in the distribution of motives between solo and team killers. For example, the most prominent motive for solo killers was enjoyment, while the most prominent motive for team killers was financial gain. This difference in motive could suggest a difference in method of murder, such that quick, nonintimate methods, such as a gun or poisoning, might be more suitable to a goal of financial gain, while intimate methods, such as stabbing, bludgeoning, or strangulation, would contribute to the offender's sadistic enjoyment of the act. Research by Harrison et al. (2015) on differences between male versus female serial killers also found methods of murder to be an important distinguishing characteristic.

These results further suggest a difference in the distribution of motive and relationship to victim, and significant differences in the frequencies of such variables between solo and team serial killers. With regard to motive, the most common motives for solo killers were enjoyment, financial gain, and anger, while the most common motives for team killers were financial gain, organized, and enjoyment. Solo killers were

significantly more likely to kill for enjoyment, anger, and multiple motive, while team killers were significantly more likely to kill for financial gain and organized motives. There seemed to be similar distributions between groups of killers who killed for attention, mental illness, cult, avoiding arrest, convenience, and wildwest outlaw motives, suggesting that killers who kill out of these motives are likely less common and are less influenced by whether or not a partner is present. For these motives, the presence of a partner has less of an impact on the crime being committed. While there are commonalities between these most common motives, the difference in distribution suggests meaningful differences in the psychological motivation for serial murder, as well as the purpose, which should also indicate differences in the way the crimes are committed. Research by Harrison et al. (2015) on differences between male versus female serial killers also found motive to be an important distinguishing characteristic. This research found that female serial killers tend to use less intimate methods of murder, suggesting that there may also be differences in method between other types of serial killers.

There were also significant differences in relationship to victim between solo and team killers. The most common relationship for solo killers were street, multiple victim types, family, and home invasion, while the most common for team killers were also street, multiple victim types, criminals, and employees/customers. Solo killers were significantly more likely to target street people and family victims, while team killers were significantly more likely to target employees, street victims, and criminal victims. Again, this seems to be consistent with the differences in the distribution of motive, as motive would heavily influence victim selection. It stands to reason that one killing for

enjoyment or anger would more likely select street people who are less detectable and commonly transient. Relatives may also be more likely to be included in the anger motive given the increased emotion that may be associated with close interpersonal connections. Also, it would stand to reason that one killing for financial gain would target victims with known wealth, such as employees or customers, criminals, or the general public on the street. Again, research by Harrison et al. (2015) on differences between male versus female serial killers also found relationship to victim to be an important distinguishing characteristic.

Solo Killers

Cluster analysis of solo serial killers yielded six distinct types. The first of the solo types reflected a cluster of those who killed with multiple motives, and chose multiple victims. This could be interpreted as a group of solo killers with no particular profile, and a tendency towards random acts with random victims. It also seems likely that this type indicates those killers who significantly altered their modus operandi, and likely engaged in experimentation throughout their offenses. This is consistent with previous research suggesting that 40% of serial killers display inconsistency in criminal behavior between even the first two offenses, and more so after three or four (Salfati et al., 2014).

The second typology indicated a profile of solo killers who killed family members out of anger and/or convenience, which also included a longer length of career. This profile can be interpreted as a type of killer that may kill impulsively, or kill for the sake of killing, and chooses family members either out of pure anger or the convenience of proximity, opportunity, and access. This cluster does not seem to be supported by

previous research, but is likely loosely associated with process-focused killers who may kill for gain or the thrill of killing (Holmes & Holmes, 1998).

The third typology indicated a profile of killers who were organized and killed other criminals. This profile can be interpreted as a killer who is practiced, methodical, plans ahead, and is possibly a hitman for a crime organization or kills based on vigilantism. This is consistent with a missionary style killer, who tends to kill with the goal of eliminating a group of people (Holmes & Holmes, 1998). That being said, there are historical cases of killers within crime organizations who are used as hitmen due to their tendency to kill for thrill and power.

The fourth typology indicated a profile in which killers offended against patients, hitchhikers, or johns, and did so to avoid arrest, to get attention, due to mental illness, or as part of a cult. These killers also showed a tendency towards the wildwest outlaw motive, and tended to be clustered with a higher number of victims. This could be interpreted as a cluster that includes multiple types of offenders, but likely contains multiple clusters within. For the various motives within this cluster, the victim type is similar throughout, and reflects a tendency towards choosing victims who are either helpless, such as patients, or who are transient and less identifiable when missing. These killers seem to choose victims out of motivation to avoid arrest and detection, which is likely to allow for an increased number of victims throughout their career. This cluster likely represents a mix of hedonistic, missionary, and power and control killers. Those who kill to avoid arrest or for attention would fall into the hedonist or power and control category, while those who kill patients or as part of a cult may fall into the missionary category (Holmes & Holmes, 1998).

The fifth typology indicated a profile in which killers offended against employees through invasion for financial gain. This could be interpreted as a type of killer who is primarily motivated by financial gain and who achieves this goal by targeting individuals with whom they are familiar, whose estimated wealth and socioeconomic status are identified, and whose residence, location, habits, and probability of significant financial gain are known. This is consistent with the hedonistic killer outlined by Holmes and Holmes (1998).

Finally, the sixth typology indicates a profile of killers who kill street people, such as random people from the community, prostitutes, homeless individuals, or transient travelers, and do so intimately out of enjoyment of the act. This may be interpreted as a sadistic killer who is likely to target random victims to which they have easy access, who is able to kill without much notice or attention, and who is able to do so violently and up close for thrill. This is consistent with process-focused killers, who kill for enjoyment and power. It is difficult to distinguish whether these killers would fall into the hedonistic or power and control types (Holmes & Holmes, 1998).

Team Killers

Overall, the analysis of team serial killers described seven distinct typologies, many of which are identical or similar to those of the solo serial killers. The first of these clusters reflects killers who killed due to mental illness, attention, for cult motivations, anger, and to avoid arrest. These killers primarily killed with their hands, and targeted street people, johns, and hitchhikers. These killers also clustered with the wildwest outlaw motive and invasion. Again, this can be interpreted as a mix of multiple clusters of killers, and includes various types of killers who target similar victims for a variety of

reasons. This cluster seems to represent killers who would fall into various types, such as hedonistic, visionary, missionary, and power and control, but who tend to target similar victim types due to ease of access and opportunity (Holmes & Holmes, 1998).

The second team cluster reflects killers who killed street people out of enjoyment. Again, this can be interpreted as a sadistic killer who targets victims who will not be missed by society and who are not easily detected or traceable, and who does so out of sadistic enjoyment of the act. This is also consistent with process-focused killers, specifically power and control killers (Holmes & Holmes, 1998).

The third team cluster reflects a type of team that targets patients, and clustered with number of victims and length of career. It can be interpreted that these teams of individuals work in or have access to healthcare facilities, target patients out of easy access, have limited detection, and may use undetectable methods. This also explains the increased number of victims and length of career. This cluster represents a type of act-focused killer (Holmes & Holmes, 1998) who may believe they have a mission to permanently rid their patients of pain and suffering.

The fourth of the team clusters reflects a type of team that kills family for convenience. It can be interpreted that these individuals tend to be teams, or groups of family members, that target other family members out of ease of access, opportunity, and familiarity with the victim, their daily routines, and proximity. This cluster is consistent with a hedonistic killer, who kills for thrill or possibly gain by killing family members (Holmes & Holmes, 1998).

The fifth team cluster reflects team killers who target employees for financial gain. This can be interpreted as a type of killer who is primarily motivated by financial

gain and who achieves this goal by targeting individuals with whom they are familiar, whose estimated wealth and socioeconomic status are identified, and whose residence, location, habits, and probability of significant financial gain are known. This cluster is a clear representation of a hedonistic team, killing for the sake of financial gain only (Holmes & Holmes, 1998).

The sixth team cluster reflects a team that kills multiple victims for multiple motives. This can be interpreted as a cluster of team killers with no particular profile, and a tendency towards random acts with random victims. It also seems likely that this typology indicates those killers who significantly altered their modus operandi, and likely engaged in experimentation throughout their offenses. This is consistent with previous research suggesting that 40% of serial killers display inconsistency in criminal behavior between even the first two offenses, and more so after three or four (Salfati et al., 2014).

Finally, the seventh cluster reflects killers who engage in the organized killing of criminals. Again, this can be interpreted as teams affiliated with criminal organizations or groups of vigilantes that target criminal victims. This is consistent with a missionary killer, who likely kills out of a desire to eliminate criminals (Holmes & Holmes, 1998).

Similarities and Differences Between Solo and Team Clusters

There are two typologies that are identical between team and solo killers. These typologies reflect killers who are organized and kill criminals, such as those affiliated with criminal organizations, are hitmen, or are vigilantes, and those who kill multiple victims for multiple motivations. The first of these identical clusters can be seen in Solo Cluster 1 (multiple victims, multiple motives) and Team Cluster 6 (multiple victims, multiple motives). The second can be seen in Solo Cluster 3 (organized motive, criminal

victims) and Team Cluster 7 (organized motive, criminal victims). There seem to be no differences within these clusters between solo and team serial killers.

Similar clusters between solo and team killers include clusters related to Solo Clusters 2 (convenience, family, career length, anger), 4 (wildwest outlaw, patients, number of victims, attention, hitchhiker, mental illness, cult, avoid arrest, johns), 5 (financial gain, employees, home invasion), and 6 (enjoyment, street, intimate methods, street people), previously discussed. The team clusters that pair with these solo clusters are Team Clusters 4 (convenience motive, family victims), 1 (mental illness, wildwest outlaw, attention, cult, intimate methods, street people, home invasion, johns, anger, hitchhiker, avoid arrest), 5 (financial gain, employees), and 2 (enjoyment, street victims), respectively. These comparisons of these clusters suggest similarity with minor differences between the clusters of solo and team serial killers.

Solo Cluster 2 (convenience motive, family victims, length of career, anger motive) and Team Cluster 4 (convenience motive, family victims) show similar clusters relevant to those killers who kill family for convenience. However, the solo cluster includes variables such as length of career and anger, whereas the team cluster does not. This suggests that while these clusters are similar, those solo killers who operate under this profile tend to do so out of anger and have a longer length of career than team killers.

Solo Cluster 4 (wildwest outlaw, patient victims, number of victims, attention motive, hitchhiker victims, mental illness motive, cult motive, avoid arrest motive, johns victims) and Team Cluster 1 (mental illness, wildwest outlaw, attention, cult, intimate methods, street people, home invasion, johns, anger, hitchhiker, avoid arrest) show similar clusters reflecting multiple types of motives and victim types. However, the team

cluster includes intimate methods of murder, for anger and invasion motives, and targeting street people, whereas the solo cluster includes patient victims and a longer length of career. These differences are likely accounted for by the inclusion of multiple, smaller clusters within these larger clusters. It is likely that the differences between these clusters are due to one different and smaller cluster mixed in with similar or identical clusters.

Solo and Team Clusters 5 (financial gain motive, employee victims, home invasion; financial gain motive, employee victims) show similar profiles reflecting a killer who targets employees for financial gain. However, the solo cluster includes the invasion motive, while the team cluster does not. This indicates nearly identical clusters, with the difference being that team killers of this profile tend not to partake in invasions for financial gain through employee victims.

Solo Cluster 6 (enjoyment motive, street victims, intimate methods, street people victims) and Team Cluster 2 (enjoyment motive, street victims) show similar profiles in that these killers tend to target random victims for enjoyment. However, the main difference in these profiles are that solo killers tend to target random victims in the community, as well as “street people,” such as prostitutes, the homeless, and transient travelers, whereas team killers seem to exclusively target random community members within this profile. Further, solo killers tended to use intimate methods whereas this variable did not cluster with the team killer profile.

Finally, there is one team killer profile that is distinct and exclusive from the solo killer profiles. This cluster reflects a type of team that targets patients, and clustered with number of victims and length of career. It is likely that these teams of individuals work in

or have access to healthcare facilities, and target patients out of easy access, have limited detection, and may use undetectable methods. This also explains the increased number of victims and length of career. While this profile can be seen within a larger profile of solo killers, it seems to be more distinct and specific within the team killer typologies. It seems possible that this profile is more common in teams, and is more mutually exclusive than solo killers. This seems to make sense conceptually, given that a solo killer is free to experiment and change their modus operandi at will, whereas those in teams are less likely to make drastic changes or kill outside their dyadic methods.

Many of the clusters described tend to describe killers who fall into various categories of the typology described by Holmes and Holmes (1998). This is consistent with previous research by Canter and Wentink (2004) and Taylor et al. (2011) that suggests significant overlap in crime scene characteristics or the types proposed by Holmes and Holmes. The results from the current study support these previous claims that the typology developed by Holmes and Holmes has minimal applicability to commonly used profiling techniques, as they tend to have overlapping characteristics derived mainly from inferred motive.

Overall, the analysis showed that, while many of the profiles are either identical or similar between groups, there are some differences between the profiles of solo and team serial killers. There seem to be differences in motives, victim types, number of victims, and length of career in many of the clusters. This suggests the likelihood that there may be more differences between team and solo serial killers that were not found in this study. Further research is required to fully understand the differences between these groups, and the opportunity for a broader and more inclusive analysis of all pertinent

profiling and crime scene data might provide a clearer picture of the complete differences between these two types of serial killers. Data reflecting how the victim was treated, staged, tortured, or disposed of may serve to expand the current data on relationship to victim. More specific data on method of murder may be useful in providing a more detailed look at the data reflecting the method of murder. Finally, other psychological data, such as whether the killer was organized or disorganized, mentally ill, or the level of planning prior to and following the crimes, may provide more data supporting distinguishable criminal and psychological profiles.

While the results of this study do not show stark differences between these two groups, the research contributes meaningfully to the scientific literature by increasing the understanding of these two groups and providing additional insight into variables worth further examination and analysis. Moreover, the results of this study suggest that motive, relationship to victim, and method of murder are viable variables to utilize in further research on differentiating between solo and team serial killers. It does not seem that length of career or number of victims add to the ability of this research to distinguish between these two groups, nor do they provide helpful information pertaining to the development of the typology.

This current research aimed to increase specificity of the available research on serial killers and examine whether there are key differences in various aspects of behavior between two very different and specific types of killers, serial killers who act alone versus those who act in teams. The study allowed the analysis of a large and extensive sample of serial killers, and one of a magnitude rarely seen in previous

research, such as those previously discussed that include much smaller sample sizes and commonly from more specific geographical locations.

Another strength of the current study has to do with the external validity. Given that this study considered a vast majority of all historically documented serial killers, it theoretically should be generalizable to serial killers as a whole. However, as previous research has shown that the culture of serial killers and their methods are changing, the generalizability of the results of this study to future populations of serial killers, and its applicability to future cases of psychological profiling, requires further research.

This study raised few ethical considerations as the methodology did not require a human subjects design and all data included are public record, accessed through permitted access to a private database. Credit for the archival data used in this study is given to Dr. Mike Aamodt, the founders of the SKDB, and the research team at FGCU. All information retrieved from this database is thought to be factual and supported by public record and police reports.

The methodology of the current study carried some inherent risks that threaten the validity of results. Firstly, the wide range of demographic variability within each group of killers introduced the possibility of confounding variables influencing the results. For example, given that research suggests that female serial killers are more prevalent in teams than those who act alone, this group difference could have caused differences between team and solo killers by the disproportionate gender representation in the groups. Further, given the research discussing differences in criminal behavior and consistency of serial killers in various geographical locations, it is possible that the inclusion of a majority of documented serial killers from around the globe has introduced

an additional confound to detecting mutually exclusive types. It is thus possible that the differences in the dependent variables between groups are attributable to working in a team versus individually, but may in fact be attributable to outside variables.

Summary and Conclusion

This study was conducted to contribute to the expanding research on different types of serial killers, and to add to the existing literature on criminal profiling. The study aimed to detect meaningful differences between solo and team serial killers, and attempted to generate a typology for each using cluster analysis. It was hypothesized that there would be differences between the clusters of solo and team serial killers.

Descriptive statistics showed that there were significant differences between solo and team serial killers in the distribution of race and sex, such that solo killers tended to be more likely to be male and had a more skewed distribution of race. Further, preliminary statistics indicated that there were significant differences between groups in number of victims, length of career, method of murder, their tendencies towards motives, and the distribution of relationships to their victims. More specifically, team killers tended to have more victims, over a shorter length of career, and were much less likely to use intimate methods of murder. These results showed different distributions of relationship to victim and motive between the solo and team groups, and included statistical differences in the frequencies of these variables within this distribution.

Finally, the clusters yielded for solo and team serial killers showed limited support for the differentiation of these two groups. Many of the clusters yielded were either identical or highly similar between groups, and showed limited support for developing differentiating profiles as a result. However, one cluster was found for team

killers that was not present in solo killers, suggesting the potential for further differences that may be detectable with the inclusion of different or additional crime scene variables and offender behaviors. Further research is required to fully determine whether there are meaningful differences between these two groups, and whether distinguishing between these types of killers aids in criminal profiling and investigative techniques.

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Appendix A

Aamodt Classification of Motives Code

AamodtCode

- **Financial Gain (1.00):** Subject killed for financial gain.
- **Robbery (1.10):** Subject killed in order to rob their victim at unspecific or mixed locations.
- **Robbery-Home Invasion (1.11):** Subject killed as a result of financial gain through home invasion.
- **Robbery-Retail (1.12):** Subject killed as a result of financial gain through retail theft.
- **Robbery-Street (1.13):** Subject killed as a result of financial gain through robbery of the general public in a public forum.
- **Robbery-Acquaintance (1.14):** Subject killed as a result of financial gain through robbing people the subject knew casually.
- **Robbery- Drug Dealer (1.15):** Subject killed as a result of financial gain through robbing those who sell, traffic or by illegal drugs.
- **Robbery-Sexual Encounter (1.16):** Subject killed as a result of financial gain through robbing those who the subject had a sexual relationship with. The relationship could be professional/prostitution or personal.
- **Robbery- Old West Outlaw (1.17):** Subject killed as a result of financial gain through robbing others. Subject must meet the Historic Killer Type.
- **Financial Gain-Body Farming (1.20):** Subject killed as a result of financial gain through selling dead bodies. The bodies could be from fresh graves or have been killed by the Subject.
- **Financial Gain-Black Widow (1.30):** Subject killed a spouse in an attempt to collect insurance or an inheritance.
- **Financial Gain-Lethal Caretaker (1.40):** Subject killed a person in their care in an attempt to collect insurance or an inheritance.
- **Financial Gain-Cost Cutter (1.50):** Subject killed a person in an attempt to save money.
- **Financial Gain-Contract Killer (1.55):** Subject killed because they were contracted and paid to kill.
- **Financial Gain-Family (1.60):** Subject killed a family member in an attempt to collect insurance or an inheritance.
- **Financial Gain-Romantic Relationships (1.70):** Subject killed a lover in an attempt to collect insurance or an inheritance.
- **Financial Gain- Acquaintances: Scams (1.80):** Subject killed as a result of financial gain through scamming people the subject knew casually.
- **Financial Gain- Acquaintances: Insurance (1.90):** Subject killed as a result of financial gain by committing insurance fraud on people the subject knew casually.
- **Attention (2.00):** Subject killed to gain attention.
- **Munchausen (2.10):** Subject slowly poisoned a loved one to gain attention from the medical community, friends and other family members.
- **Enjoyment (3.00):** Subject killed because they enjoyed killing. Financial gain must be a bonus, not the main goal of killing.
- **Enjoyment-Rape (3.01):** Subject killed because they enjoyed killing. Subject must have raped the victim.
- **Enjoyment- No Rape (3.02):** Subject killed because they enjoyed killing. Subject must have shown sexual gratification during the murder without raping the victim.
- **Enjoyment-Thrill (3.10):** Subject killed because they enjoyed killing. Killing not sexual in nature but still excites them.

Appendix B

Aamodt Victim Code

- | VicCode |
|--|
| - Street People (1.00): Victims who are high-risk due to their occupation and/or habits.
Excludes hitchhikers. |
| - Street People- Prostitute (1.10): Victims participated in sexual activities for monetary compensation. Victims included both male and female prostitutes or gender of the victim was unknown. |
| - Street People-Female Prostitutes (1.11): Victim was a female prostitute. |
| - Street People-Male Prostitutes (1.12): Victim was a male prostitute. |
| - Street People-Homeless (1.20): Victim was a transient or lived in the streets. |
| - Street People-Junkies (1.30): Victim abused substances to such an extent to make the victim high-risk. |
| - Street People-Exotic Dancers (1.40): Victim disrobed or posed sexually for monetary compensation. |
| - Street People-Refugees/Immigrants (1.50): Victim was an undocumented alien. |
| - Street People-Migrant Workers (1.60): Victim moved from place to place to get work. |
| - Street People- Cult Followers (1.70): Victim was a follower of a religious order that is considered abnormal by the standards of the local culture. |
| - Hitchhikers (2.00): The victim traveled by asking strangers for rides. |
| - Johns/Sexual Encounters (3.00): The victim was paying the subject for sexual favors and/or participating in one-night stands. |
| - Johns (3.10): The victim was paying the subject for sexual favors. |
| - Sexual Encounters (3.20): The victim was participating in one-night stands with the subject. Victims included both males and females. |
| - Sexual Encounters-Straight (3.21): The victim was participating in one-night stands with the subject. Victim was opposite gender. |
| - Sexual Encounters-Gay (3.22): The victim was participating in one-night stands with the subject. Victim was same gender. |
| - Lonely Hearts/Dating Ads (3.30): Victim answered relationship ads by the subject. |
| - Lovers-Current (3.40): Victim was having a continual, consensual sexual relationship with the subject at the time of the victim's death. Relationship was purely sexual or non-monogamous. |

Appendix C

CITI Training Certificate of Completion

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)
COMPLETION REPORT - PART 1 OF 2
COURSEWORK REQUIREMENTS*

* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

▪ Name:	Matthew Woster (ID: 5974155)
▪ Email:	mwoster16@stu.argosy.edu
▪ Institution Affiliation:	Argosy University (ID: 1381)
▪ Phone:	7348125189
▪ Curriculum Group:	AU Students
▪ Course Learner Group:	Same as Curriculum Group
▪ Stage:	Stage 1 - Basic Course
▪ Report ID:	21500129
▪ Completion Date:	20-Nov-2016
▪ Expiration Date:	19-Nov-2021
▪ Minimum Passing:	75
▪ Reported Score*:	80

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
History and Ethical Principles - SBE (ID: 490)	20-Nov-2016	4/5 (80%)
Assessing Risk - SBE (ID: 503)	20-Nov-2016	4/5 (80%)
Informed Consent - SBE (ID: 504)	20-Nov-2016	4/5 (80%)
Argosy University (ID: 12866)	20-Nov-2016	No Quiz

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

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Phone: 888-529-5929
Web: <https://www.citiprogram.org>