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Sociological and Psychological Predispositions to Serial Murder

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Abstract

This paper looks specifically at the true definition of a serial killer, attempting to clarify the misleading depiction that has come from the media influence. Twenty-one people, including infamous murderers such as Ted Bundy and Jeffrey Dahmer, as well as more obscure killers, such as Carl Panzram, were studied in depth. Data was gathered from a variety of published sources on each convicted serial killer focusing on his/her life prior to the beginning of the killing spree. Unlike previous research on the topic, this investigation looked at a larger sample of serial killers, as well as a more complete set of personal characteristics, to determine whether a sample of serial killers share any characteristics. These common traits lend support for the idea that predispositional factors in serial killers exist and can be identified. While no single trait was found to be present in every serial killer studied, some of the predispositional factors that were found to have predictive value included: being of the male gender, being employed in a blue-collar job, and having some type of abandonment issues. Some other characteristics stereotypically associated with serial killers were not found to be reliable predictors, including: exposure to physical, mental, or sexual abuse as a child; being in his/her late twenties or early thirties; and having abused animals as a child. Future researchers and practitioners might utilize this work in hopes of building better predictive profiles of individuals with tendencies toward serial murder.

Sociological and Psychological Predispositions to Serial Murder

Why do people do what they do? Specifically, why do people lie, cheat, steal, and kill? These are intriguing and complex questions that philosophers, scientists, and psychologists alike have been working to answer for hundreds of years. Recently new light has been shed on this question in the form of new criminal definitions, such as serial killer and mass murderer as well as new investigative methods, such as criminal profiling (Hazelwood et al., 1987; Canter, 2003). While these terms and techniques are fairly new – only perfected and published in the late 1980s – the media and the American pop-culture especially have latched onto these new expressions as their long awaited answer.

Canter (2003), in his article entitled "Offender Profiling and Investigative Psychology," discusses how even the developers of criminal profiling explain the technique as being based on the investigator's or profiler's knowledge and experience rather than a systematic social science (Canter, 2003). Regardless of the technique's scientific soundness, criminal profiling quickly achieved celebrity through the media and the American pop-culture in general. Along with criminal profiling, the term serial killer also quickly gained recognition and infamy. Like the development of criminal profiling, the true definition of the term serial killer has also progressed through two separate paths of development – one through the media and pop-culture, the other through investigators, researchers and social scientists.

Popular movies and books such as "Silence of the Lambs," "Kiss the Girl," and "Taking Lives" have dramatically portrayed and over-emphasized certain characteristics of the killers which have influenced the general public's idea of the definition of serial killer. Today, popular culture defines serial killers as white males in their mid twenties to early

thirties, who have blond hair and a charismatic demeanor. However, a body of research to support these ideas does not exist. Instead, a basic definition generally accepted by the scientific and investigative worlds defines a serial killer as someone who has confirmed involvement in "three or more forensically linked murders committed as discrete events by this same person(s) over an extended period of time, where the primary motive is personal gratification." This definition also includes a period of "cooling down" time between each kill, as well as death of the victim as the primary goal of each attack (Skrapec, 2001). It should be noted that no physical or personal characteristics were included in this scientific definition of a serial killer.

This definition directs the other path through which the term serial killer has progressed and developed – the scientific and investigative research done on specific serial killers. Many investigators, including the now famous John Douglas and Robert Ressler (for their pioneering use of profiling techniques in criminal investigations) have spent a great deal of time and energy trying to extract which characteristics of these serial criminals led them to commit their heinous crimes by looking at a sample of convicted serial killers (Hazelwood et al., 1987; Canter, 2003). Ressler, in particular, studies abuse and neglect during childhood and focuses on the child's relationship with his/her mother and the presence of (or lack thereof) a father figure (Ressler, 2000). Holmes & De Burger (1985) have also found that child abuse and neglect may have a strong causal relationship with the child's later behavior. Other factors that have been studied include the mental health of serial killers and the existence of psychological disorders ranging from schizophrenia to depression (Gacono, 1991). Whitman and Akutagawa (2003) combined the previous studies and looked at the mother-child relationship, its effect on later development of aggression and mental health,

and its potential as a predispositional factor to serial killing. Another factor that has been studied is the killer's IQ (Egan et al., 1999). Finally, DeFronzo, Ditta, Hannon, and Prochnow (2007) attempted to determine the influence of cultural and structural variables on serial killers by comparing the state in which the serial killer spent most of his (only males were investigated in their study) childhood – therefore where he was socialized - with the state in which he did the majority of his killing. They were specifically concerned with three variables: the percentage of the state's population living in an urban setting, the percentage of the state's population that is divorced, and the percentage of the population living in one-person households (DeFronzo et al., 2007).

The previous studies looked at a few specific factors first and attempted to find them in a small sample of known serial killers; however, there also have been many case studies which focus on one particular serial killer; for example, the case study of Ted Bundy (Rule, 2000) or that of Jeffrey Dahmer (Davis, 1991). A third and final type of study – an investigation of several factors (including those already explored in the above studies) over a large sample of serial killers – has been done only once before. This study examined 99 biographies of murderers, both those who met the scientifically accepted definition of serial killer and those who did not, comparing them across several biological, psychological, and sociological factors (Stone, 2001). While Stone's (2001) research highlighted several potential predispositional factors of serial killers, his broad definition of murder and the way in which he confounded the terms serial sexual murderer and serial killer make reaching any significant conclusions difficult.

As can be seen, extensive research has been done investigating individual serial killers, as well as pairs and small groups of serial killers to compare and contrast the

characteristics seen in each. While Stone's (2001) study comes close, no research, to my knowledge, has been done across all possible characteristics of people and across a large sample of known but narrowly defined serial killers. Clearly, there is need for a comprehensive, empirically based review of historical and biographical data on all serial killers and their characteristics. This more general study would allow the researcher to consider a larger picture of those characteristics that truly are present in all serial killers and also to what extent those traits are present.

Based on classic profiles of serial killers, as well as past research, a number of traits were hypothesized to be present in a large majority of the sample of serial killers. It was predicted that many of the killers analyzed would have experienced either physical, mental, or sexual abuse, or perhaps a combination of all forms of abuse sometime in their childhood. Secondly, it was hypothesized that a majority of the killers in the sample were reared in broken families. It was also predicted that many serial killers have suffered from significant abandonment issues possibly brought on by the desertion – both intentional and unintentional (death) – of a family member or close friend during their youth or young adulthood.

Several traits were also analyzed comparatively for their potential predictive values. Specifically, it was hypothesized that a serial killer's level of completed education may explain the age at which the serial killer commits his/her first murder; perhaps the more education a person attains, the longer he/she progresses through his/her life without resorting to violence. The sexual orientation of the serial killer was also analyzed specifically in association with the gender of his/her first victim. It is proposed that the killer will lean toward his/her sexual preference (male or female) as his/her first victim. Lastly, in keeping with Robert Ressler's (2000) theories, it is suggested that the serial killer's exposure to

physical, mental, and/or sexual abuse as a child will affect the violence that the killer later uses in attacking and murdering his/her later victims. Specifically, it was predicted that the killers who experienced abuse as children will kill with more violence during the period of time in which they are active serial murderers.

Although it was predicted that a number of predispositions and characteristics would be shown to be common among known serial killers, no single characteristic would be present in all such cases. As demonstrated through careful review and analysis of the predispositions of known serial murderer case histories, it was predicted that no single characteristic would be both necessary and sufficient for the prediction of serial murder tendencies in other individuals.

This research was designed to better define which characteristics are actually present in serial killers and to help work to extinguish any false beliefs regarding serial killers. The results of this study should also facilitate practitioners in the prediction of serial murders and allow trained individuals to identify characteristics or situations in individuals' lives which may be significant, potentially, toward leading them to a life of serial murder. Most importantly, though, is the basic understanding that comes from a broad study such as this, which can be used by other researchers to help to focus their investigations on those traits and characteristics that have proven potentially predictive in the life and development of a serial killer.

Method

The study was based on a content analysis of published biographical case studies of known serial killers in a retrospective investigation of their lives and personal characteristics. To begin, certain criteria were established to define a serial killer. As noted earlier, the

scientific definition used as the standard for serial murder was, “three or more forensically linked murders committed as discrete events by the same person(s) over an extended period of time, where the primary motive for killing is personal gratification; including a general period of ‘cooling down’ time between each kill, as well as death of the victim as the primary goal of each attack” (Skrapec, 2001). This means that in order for a convicted murderer to be deemed a “serial killer” and therefore be eligible for further examination in this study, he or she had to have killed three or more people in three or more separate settings with a substantial period of time between each murder. He or she also had to have intended to kill the victim from the onset of the attack, as well as have gained some personal satisfaction or enjoyment from the kill. This final condition potentially poses a problem as to how one discerns what constitutes personal gratification. For this study, the personal satisfaction criterion was considered to be met if the killer reports having experienced sexual or psychological arousal from the kill or if it seems apparent to the investigators and researchers studying the killer that an element of addiction, especially addiction to the stimulation that is achieved through killing, drives the serial killer to continuously murder (Lowenstein, 1992). Monetary gain does not constitute personal gratification for the purposes of this analysis; although, some serial killers in the sample did profit monetarily from their multiple murders, their financial gains were only a coincidental benefit to the arousal or excitement they achieved from the kills themselves.

Another criterion was also established based on the killer’s place of birth and murders. Only serial killers from the United States and Western Europe were considered for the final sample. Many of the potentially predictive factors examined in the study are inseparably linked to the lifestyle and basic ways of a certain culture, and this author needed

to stay within the cultural scope that was most familiar to both her and her audience. Additionally, while serial killers may well exist in Eastern Europe and Asia, most – if not all – have gone unreported, and little to nothing has been documented about their lives or murders in general, at least not within documents available for study. As such, even if they do exist, data on such serial murders were not available for this sample. Finally, narrowing the serial killer population to this group also helped ensure that enough published and reliable data would be available for study such that all data regarding a particular individual would be locatable within the published sources.

Three sources containing compiled data on a large variety of both convicted and suspected murderers were used to choose the sample of serial killers for the study. These sources were written by three different authors in three separate years (2000, 2004, and 2007), and were published by different companies so as to further guarantee a large variety of killers (Newton, 2000; Fido, 2004; Cawthorne, 2007). This sampling procedure also ensured that the most infamous and notorious killers were included in the final sample. If a killer appeared in more than one source and fit the criteria, he/she was added to the sample. The final criterion established for inclusion in the sample specified the time periods from which the serial killers were chosen. Serial killers were included in the final sample only if they were active in the 19th, 20th, and 21st centuries to allow for a wide range of killers while still ensuring that sufficient information would be available on each killer.

While many different figures have been used to describe the number of serial killers who have been active in the past three centuries, it is difficult to determine a precise number. This is largely due to the multiple definitions in use today and the unknown conviction rates of this type of killer. Margaret Cheney (1992) reports that the FBI estimates between 500 and

3000 serial killers have been active in the last three centuries; however, this number represents the extreme end of the approximation. Most researchers, using a more restrictive definition similar to the one used for this study, estimate the number to be around 100, ranging from 70 to 150 (Candice, 2001; Hazelwood et al., 1987; Lowenstein, 1992). In reality, an exact number of serial killers who existed and killed any number of victims may never be known. Many killers throughout time have undoubtedly committed multiple murders of which they were never convicted or suspected. Infamous serial killers, such as the Zodiac Killer and Jack the Ripper, have yet to be identified and likely never will be named. Others have killed multiple people with no connection ever being made between each of their victims – or worse, their victims were never found or even missed (Fido, 2004). This average approximation (100), combined with the count found in the three original sources (67), was used to determine a desired sample size of at least 20. This sample size likely comprises twenty to thirty percent of the estimated active serial killers in the past 300 years. The sample was considered to be representative of the type of person who is likely to commit serial murder and to provide a reliable enough data set to analyze statistical trends.

An original sample of 24 killers was assembled to allow for exclusion of serial killers due to insufficient data or other potential issues with acquiring data. In the end, the final sample used in the study consisted of 21 serial killers. Three of the 24 serial killers were excluded for several reasons, most notably for lack of detailed information about their lives and murders. The first serial killer eliminated from the sample was Colin Ireland, known as the “Gay Slayer,” who killed five men in London. While his name appeared in two of the three original sources and he met the criteria for the study, no further published biographical data was found; therefore, too little information about his life and murders was available

from which to code the relevant categories. Belle Gunness, a Norwegian immigrant who lived in the late 1800s, was also eliminated from the sample. Ample information was available about her adult life and murders, which even included a local museum dedicated to her victims; however, no information about her childhood could be located. This was most likely due to the era in which she lived and the fact that she was 22 years old when she first immigrated to the United States. The final serial killer excluded from the sample was Lee Boyd Malvo, the 17 year old "Beltway Sniper." Although his life history is very detailed and carefully illustrated in more than one text, there was some debate over his true role in the killings; specifically, whether or not he actually pulled the trigger on any of the victims. It is believed that Malvo was just being dragged along by his older accomplice, John Allen Muhammad (Cannon, 2003). Therefore, to avoid any ambiguity given the previous criteria, he was removed from the sample.

The final sample was comprised of the following convicted serial killers: David Berkowitz – a.k.a. "The Son of Sam"; Ted Bundy; Jeffrey Dahmer; Albert DeSalvo – a.k.a. "The Boston Strangler," "The Green Man," and "The Measuring Man"; Larry Eyler; Albert Fish; John Wayne Gacy; John George Haigh; Edmund Kemper III – a.k.a. "The Coed Killer"; Randy Kraft – a.k.a. "The Freeway Killer"; Peter Kurten; Henry Lee Lucas; John Allen Muhammad – a.k.a. "The Beltway Sniper"; Herbert Mullins; Carl Panzram; Gerald Schaefer; Dr. Harold Shipman; Peter Sutcliffe – a.k.a. "The Yorkshire Ripper"; Ottis Toole; Aileen Wournos; and Robert Lee Yates. All 21 serial killers met the outlined criteria and had significant published biographical works written about their lives and murders.

Biographical data, namely books written about the killer during or after conviction, were examined to obtain detailed information about each killer. These resources were found

via internet and library searches for each serial killer. Once two or three reliable and authentic texts were found, requests were made to local public and college libraries, as well as some nation-wide searches, for copies of the texts. Some of the texts that were requested were not included as references to the study because they were deemed unreliable by this author based on the information presented, as well as their lack of documented sources. All efforts were made to ensure that only factual information about each killer was used in this study. Supplemental texts, such as research magazines and informational videos, were also reviewed for any and all relevant facts.

Once the sources were located, each was carefully reviewed and pertinent facts were coded and recorded. Both quantitative and qualitative data were collected on each serial killer's life. The first data gathered was the serial killer's date of birth, coded simply as a date. Secondly, the killer's place of birth was recorded and coded into one of five categories: Europe, Northeast, South, Midwest, and West. Next, the serial killer's gender was documented as either male or female. The number of siblings each serial killer had was collected as was the killer's order of birth, classified as oldest, middle, youngest, or only child. Family status was also recorded and categorized as adopted, family intact, divorced or separated parents, father died, raised by a single parent, and raised by grandparents. Another coding was also established for the family status data, separating the serial killers into those who grew up in intact homes versus those who grew up in broken homes, as well as another deciphering between those killers whose fathers were present during their childhood and those who were not.

Next, data was collected as to whether or not the killers were abused as children – two separate categories for physical and sexual – coded simply as yes or no. Data was also

collected as to whether or not there was evidence of the killer abusing animals during his/her childhood, also coded as yes or no. Any abandonment issues, specifically the loss of a parent or close friend – regardless of intentionality – was documented as yes or no. Sexual orientation was recorded as heterosexual, homosexual, or bisexual. Next, the killer's relationship history was collected, specifically, the status at the time of his/her first kill. This category was grouped into single, married, divorced, and in a long-term homosexual relationship.

The killer's number of children was also documented. Next, the killer's education level was gathered and coded as dropping out of high school, earning a high school diploma, earning a technical school degree, completing some college courses, earning an associates degree, and earning a doctorate. The occupation of the killer was categorized as blue collar, white collar, law enforcement, or prostitution. Next, it was documented as to whether or not the serial killer served in the military.

The place where each killer's victim was killed was coded the same way the killer's place of birth was coded (one of five – Europe, Northeast, South, Midwest, and West). Another category was created to record whether or not the killer's first kill was in the same place he/she was born. The gender of the killer's first victim was noted (male or female), as was the age of the killer's average victim, separated into four categories: child, adult, elderly, or unspecified (meaning the killer murdered victims of all ages). The killer's numerical age at the time of his/her first kill was also documented on the spreadsheet.

Next, the number of victims was collected, followed by the duration of time the serial killer was active (the amount of time – in years – between his/her first kill and the date of arrest); both were simply recorded in numerical form. The average victim type is grouped in

seven categories: young males, young females, elderly people, children, prostitutes, homosexuals, and not specific (killed a variety of victims where no average victim was obvious). The killer's number of failed murder attempts was also collected and noted in its numerical form. The modus operandi (MO), or mode of killing, was recorded in eight groupings: blunt force trauma, blunt force trauma paired with a knife/stabbing, drugs, drugs paired with strangulation, gun shot/firearm, hanging paired with a knife/stabbing, a knife/stabbing alone, and strangulation. The category was also collapsed into only two groups – hands on/violent deaths and less hands on/further distance deaths – as an alternative way of examining the data. The killer's evolution of kill, whether or not he/she changed or evolved his/her modus operandi as the killings progressed, was documented.

While all criminal history was recorded, only whether or not the killer had a criminal history was used for the categories in the frequency data, coded as yes or no. Whether or not the case against each serial killer went to trial, as well as whether or not the killer was declared insane, was recorded. Finally, the killer's final disposition – if he/she received the death penalty for his/her crimes – was noted on the spreadsheet.

Results and Discussion

Frequency Data

Following the coding of all bibliographic sources (see Appendix A) for all relevant variables, frequency analysis for all variables was conducted and are reported below. Where applicable chi-square goodness of fit tests were computed using those frequencies to test for significance and predictive value – that is, to test if some categories were more likely than others or if the distribution of the results is consistent with a chance distribution.

Gender. Table 1 reports the frequency distribution of the serial killers' gender. As can be seen, the overwhelming majority of the killers are male. In fact, only one killer in the sample was female. A chi-square goodness of fit test (χ^2 (1) = 17.19, p-value = 0.00) showed that the male-female distribution within this sample is significant and therefore is reliably different than chance. There are clearly more male serial killers than female serial killers. No data was missing for this variable.

Table 1

GENDER	FREQUENCY
Male	95.2%
Female	4.8%

After viewing the results of this analysis, it is understandable that the stereotypical serial killer is always male. In this case, the stereotype matches the factual data. According to the Bureau of Justice Statistics, in 2005, men were ten times more likely to commit homicide than women (U.S. Department of Justice, 2005). Apparently, there is something about men – most likely a genetic factor, socialization factor, or some combination of the two – that makes them more likely to commit serial murder. Based on this data it is reasonable to conclude that gender is one (very basic) predispositional factor to becoming a serial killer.

Birth Place and Place of First Kill. The distribution of the serial killers' birth places can be seen in Table 2; no data for this variable was missing. While it appears that more serial killers may be born in the Midwest and the Northeast, a chi-square goodness of fit test (χ^2 (4) = 2.095, p = 0.718) reveals that this is not the case. The distribution is not significant, establishing that there is no evidence that serial killers are more likely to be born in one

region over another. Therefore, it cannot be concluded that the birth place of a serial killer has any predictive relevance as to his/her later development.

Table 2

BIRTH PLACE	FREQUENCY
Europe	19%
West	19%
Midwest	28.6%
South	9.5%
Northeast	23.8%

Similarly, the geographical location in which the serial killer murdered his/her first victim is not significant (χ^2 (4) = 0.667, p = 0.955). The frequency data on the places where the killer committed his/her first victim can be seen in Table 3. No one location was found to be home to more deaths of the serial killer's first victim than any other.

Table 3

PLACE OF 1st KILL	FREQUENCY
Europe	19%
West	23.8%
Midwest	19%
South	14.3%
Northeast	23.8%

Comparatively, the variable depicting whether or not the serial killer's first kill took place in the region where he/she were born and raised explains more about what drove the person to start killing in the first place. This frequency distribution can be seen below in Table 4.

Table 4

SAME	FREQUENCY
Yes	71.4%
No	28.6%

A large majority of the serial killers in this sample committed the murder that began his/her reign of terror in the same place in which they were born. A chi-square goodness of fit test reveals that the distribution is significant (χ^2 (1) = 3.857, p = 0.050) and shows that there is evidence to state that serial killers are more likely to commit their first murder in the same region in which they were born. While this information does little to help explicitly outline what characteristics define a serial killer, it does provide some enlightenment as to how the first kill happens. This data suggests that the first kill is committed in a location which the killer is more familiar and comfortable with and perhaps a place he/she likely feels safe – where his/her rookie kill has the best chance of going undetected by the law.

Number of Siblings and Birth Order. Many psychological theories discuss the number of siblings one has and the order in which one was born compared to the rest of the family. The theories suggest that these two factors have an impact on the way in which the child develops. The serial killers in this sample ranged from only children (16.7%) to one of 10 children in their respective families (5.6%). The complete distribution of the serial killers' sibling count is depicted in Table 5. A small majority of the serial killers grew up with only one or two siblings (38.9%).

Table 5

NUMBER OF SIBLINGS	**FREQUENCY**
Zero	16.7%
One	16.7%
Two	22.2%
Three	11.1%
Four	5.6%
Five	11.1%
Six	11.1%
Ten	5.6%
Missing	3

A chi-square goodness of fit test (χ^2 (7) = 3.33, p = 0.853), however, reveals that the distribution of the serial killers' number of siblings is not significant. This means that the number of siblings a person has and his or her tendency toward becoming a serial killer are unrelated and have no predictive value. Therefore, it can be reasonably concluded that the number of siblings the killer has does not have any determining affects on the killer's later development of violent tendencies.

Similarly, the serial killers' birth order cannot be considered a predispositional characteristic or factor of his/her later development into a multiple murderer, because the chi-square goodness of fit test for this variable is also not significant (χ^2 (3) = 0.733, p = 0.865). Table 6 shows the complete distribution of this variable of which 6 cases were missing.

Table 6

BIRTH ORDER	**FREQUENCY**
First Born	26.7%
Middle Child	20%
Youngest Child	33.3%
Only Child	20%
Missing	6

It is interesting to note, however, that 20 percent of serial killers in this sample were classified in the "Middle Child" category for this variable. Of those killers, all were the middle child of three children born to their parents and all were named after their fathers. While this fact may have some significance, further research will need to be done to understand the reliability of this curious fact and its implications.

Family Status. Many theories also exist concerning the role that the child's family structure plays in his/her development. Table 7 shows a breakdown of all the family structures present in this sample of serial killers with data from 2 killers missing. A chi-square goodness of fit

test on this data (χ^2 (5) = 11.0, p = 0.51) reveals that the data approaches significance. This suggests the killer's family structure may be a factor in his/her development toward killing; however, this trend may not be overly reliable.

Table 7

FAMILY STRUCTURE	**FREQUENCY**
Adopted	5.3%
Intact	36.8%
Parents Divorced/Separated	31.6%
Father Died	5.3%
Single Parent	10.5%
Grandparent	10.5%
Missing	2

To further investigate these results, the variable was collapsed into just two categories; broken and intact. The "broken" category represents families in which children do not see both parents on a day-to-day basis, including the adopted, parents divorced/separated, father died, single parent, and grandparent categories from Table 7. The "intact" family structure, on the other hand, is made up of homes where children interact with both of their parents – both together and separate – on a regular, everyday basis. This category consists of only the "intact" category from the earlier classification of the variable (Table 7). The frequency distribution for this breakdown is depicted in Table 8. It was suggested that perhaps it is not the exact type of family structure that has an affect on serial killers-to-be (which is suggested by this study); rather, it is the more basic family structures of broken or intact that are actually predictive and show a tendency toward serial murder. However, as can be seen in the chi-square goodness of fit test (χ^2 (1) = 2.683, p = 0.267), this variable reclassified is also not significant. Therefore, the family structures, broken versus intact, are likely not a predictive factor for predetermining the development of a serial killer.

Table 8

FAMILY STRUCTURE	FREQUENCY
Broken	63.2%
Intact	36.8%
Missing	2

A final compilation of the data was investigated before addressing other variables. One particular theory within the realm of family structure has been studied by Robert Ressler (Ressler, 2000). He theorizes that the presence of the child's father in his/her life significantly reduces violent tendencies later in life (Ressler, 2000). Table 9 again reclassifies the variable into two categories, father present and father not present, to test his theory and determine if family structure is a predispositional factor to becoming a serial killer. While it may appear that a larger portion of the serial killers come from families without fathers present, the distribution is deceptive. In actuality, the chi-square goodness of fit test (χ^2 (1) = 0.932, p = 0.627) shows that this distribution is not significant. Therefore, unlike the stereotype (and even some theoretical research), lack of a father figure in the home is not a significant predictor of becoming a serial killer.

Table 9

FAMILY STRUCTURE	FREQUENCY
Father Present	42.1%
Father not Present	57.9%
Missing	2

As is evident above, regardless of how the variable family structure is categorized, it does not seem to have any predictive value as to whether or not that child will commit serial murder later in life.

Physical, Mental, and Sexual Abuse as a Child. The frequency data for whether or not the serial killers experienced abuse as children, both physical and mental, is recorded in Table 10. Contrary to what was hypothesized, serial killers in the sample were not more likely to have been abused as children. The distribution of the variable child abuse is not significant (χ^2 (1) = 0.8, p = 0.371). Therefore, there appears to be no evidence that abuse experienced as a child relates in a predictive manner to the development of a serial killer.

Table 10

ABUSED AS A CHILD	**FREQUENCY**
Yes	40%
No	60%
Missing	1

Also contrary to the hypothesis, fewer serial killers in the sample experienced sexual abuse than did not. However, unlike the child abuse data, this variable, seen in Table 11, is significant (χ^2 (1) = 5.0, p = 0.025). This data suggests that serial killers are more likely to never have experienced sexual abuse than they are to have been molested or raped as a child. While the distribution is significant, it proves the opposite of what the hypothesis suggested. In general, these results show that physical, mental, and sexual abuse experienced as a child has no real or predictive value to the development of a serial killer and therefore cannot be considered a predispositional factor.

Table 11

SEXUALLY ABUSED AS A CHILD	**FREQUENCY**
Yes	25%
No	75%
Missing	1

Abuse of Animals. One factor often investigated by researchers in this field is the abusive tendencies of serial killers toward animals as children. The frequency distribution of this variable is seen in Table 12; no data was missing from this variable. Serial killers who abused animals as children are clearly in the minority of this sample, and the chi-square goodness of fit test (χ^2 (1) = 8.048, p = 0.005) confirms these observations. The distribution of this variable is significant, suggesting that serial killers are actually not more likely to abuse animals as children contrary to the popular stereotypes. Therefore, it can be reasonably concluded that abusive tendencies toward animals as a child is not characteristic of a serial killer. While this characteristic may have some predictive value (based on its statistical significance), it is important to note that this factor would not likely be helpful in predetermining potential serial killers, because it would seem that few people in general abuse animals as children.

Table 12

ABUSED ANIMALS AS A CHILD	**FREQUENCY**
Yes	19%
No	81%

Abandonment Issues. The frequency data for serial killers' abandonment issues is displayed in Table 13; no data was missing. It was hypothesized in this study that serial killers would be more likely to have issues with abandonment – probably brought on by a parent, close relative or close friend deserting them. This proposition is supported (χ^2 (1) = 3.857, p = 0.050) and the distribution of the variable is significant. As can be seen from the data, serial killers are more likely to suffer from abandonment issues than not. Therefore the occurrence

of abandonment issues should be considered a predispositional factor to becoming a serial killer.

Table 13

HAVE ABANDONMENT ISSUES	FREQUENCY
Yes	71.4%
No	28.6%

Sexual Orientation. The distribution for the sexual orientation variable can be seen in Table 14; no data is missing. The data depicts that about one-third of the serial killers are homosexual or show some tendency toward homosexuality (bisexual). This figure is high when compared to the generally accepted percentage (of Americans) considered to be homosexual – ten percent (Kinsey et. al., 1948). The chi-square goodness of fit test (χ^2 (2) = 12.286, p = 0.002) for the distribution is significant.

Table 14

SEXUAL ORIENTATION	FREQUENCY
Heterosexual	66.7%
Homosexual	28.6%
Bisexual	4.8%

This verifies that even though the proportion of homosexuals in this sample is higher than what some researchers have predicted in the general public, serial killers in this sample are still more likely to be heterosexual (Kinsey et. al., 1948). In general, the data suggests sexual orientation may be a predispositional factor for becoming a serial killer; however, this suggestion must be considered cautiously, as it is important to note that the proportions of heterosexuals and homosexuals are not even in the general population, so it stands to reason that this trend would carry over into this sample and analysis.

Marital Status and Number of Children. The family life of the serial killer, specifically as an adult, was also investigated to determine the effect the killer's marital status has on his/her developmental track towards repeated violence, as well as the number of children he/she has. The data for the marital status distribution is depicted below in Table 15; no data was missing for this variable. It was suggested that perhaps one's marital status may change his/her outlook on life and therefore his/her violent tendencies.

Table 15

MARITAL STATUS	**FREQUENCY**
Single	42.9%
Married	23.8%
Divorced	14.3%
Married and Divorced	9.5%
Serious Homosexual Relationship	9.5%

While it appears that more killers were single at the time of their first kill, the chi-square goodness of fit test reveals that the distribution is actually not significant (χ^2 (4) = 8.286, p = 0.82). This means that the serial killers are not more likely to be classified under one marital status over another. Therefore, marital status cannot be considered a predictive characteristic of a serial killer.

Analysis of the number of children variable, seen in Table 16, however, showed a significant trend. The data clearly shows that a large majority of killers produced no children in their lifetime. The chi-square goodness of fit test (χ^2 (4) = 24.0, p = 0.00) confirms this observation. This suggests that serial killers are more likely to not reproduce than even to have one or two children. Based on this significance, it could be said that the number of children a person has could help to determine predispositions to becoming a serial killer.

Although, it is much more likely the relationship is reversed and the fact that a person is serial killer is predictive of the number of children he/she will have.

Table 16

NUMBER OF KIDS	FREQUENCY
Zero	61.9%
One	14.3%
Two	4.8%
Four	4.8%
Five	14.3%

Education Level. The serial killer's education level was investigated thoroughly in this study from several approaches as described below. At this most basic analysis of frequency, two education levels were believed to have some predictive value, as can be seen in Table 17. The data suggests that the majority of the serial killers either dropped out of high school or completed only some college. The significant chi-square goodness of fit test (χ^2 (5) = 14.158, p = 0.015) confirmed these observations. Based on the data, it can be concluded that serial killers are more likely to have dropped out of high school or attended some college than to have completed or participated in any other level of education.

Table 17

EDUCATION LEVEL	FREQUENCY
Drop out of High School	36.8%
Graduate High School	10.5%
Technical School	5.3%
Some College	36.8%
Associate's Degree	5.3%
Doctorate	5.3%
Missing	2

It is interesting to note that there are two categories that are most frequent, high school drop out and having completed some college. No serial killer received his/her

Bachelor's Degree. Perhaps this says something about the intelligence levels of serial killers, suggesting that some are somewhat less intelligent and uneducated and commit gruesome acts, whereas the others are very intelligent, but their lives have not kept their attention and have failed to challenge them, so they turned to serial murder. This is a topic of discussion for further research; regardless, education can be concluded to be a predetermining characteristic to serial murder.

Occupation. While there are numerous occupations in the work force today, it was noted by this author that many serial killers held jobs such as painting and other maintenance positions – blue collar jobs, most likely due to the fact that these jobs allowed for the most flexibility and free time. For this reason, the occupation variable was coded blue collar versus white collar and includes two other categories that may be of interest – law enforcement and prostitution – to test for significance. The frequency data for this variable can be seen in Table 18. The chi-square goodness of fit test (χ^2 (3) = 18.0, p = 0.00) is significant and reveals that, indeed, serial killers are more likely to work in blue collar jobs over any other occupation. This means that the occupation in which a serial killer finds employment may be a predispositional factor to becoming a serial killer.

Table 18

OCCUPATION	**FREQUENCY**
Blue Collar	65%
White Collar	20%
Law Enforcement	10%
Prostitute	5%
Missing	1

Military. Military experience was also documented and the frequency distribution can be seen in Table 19. The chi-square goodness of fit test for this data is not significant (χ^2 (1) =

0.8, p = 0.371,) revealing that serial killers are not more likely to have served in the military at some point in their lives versus a person from the general population.

Table 19

MILITARY	**FREQUENCY**
Yes	40%
No	60%
Missing	1

This statistic, however, does not fully demonstrate the predictive value that military experience may have on a person's life. An alternate comparison is the percentage of serial killers who have spent time in the military and the percentage of the greater population who have served throughout history. This type of comparison between variables within the serial killer sample and the greater population realistically could have been done on every variable within the study. However, these analyses were not completed because several confounding factors, including the large time span from which the sample was chosen, would inevitably be reason to question the validity of the results. Although, the analysis of this variable (military experience) would not be comprehensive without further investigation. Due to the nature of the variable, certain transformations of the data can be done to minimize the confounding factors in order to obtain the desired information about serial killers' experience with the military. Specifically, the European serial murderers in the sample were removed for this comparison and a new percentage was calculated, which can be seen in Table 20 below.

Table 20

MILITARY	**FREQUENCY**
Serial Killers	47.1%
General Population	3%
Missing	1

According to Segal and Segal (2004), an average of one percent of the American population has been in the military in some manner (active, guards, or reserves) throughout history – dating back to the Mexican and Civil Wars. This average percentage tends to increase to three percent during times of war (Segal & Segal, 2004). Using this three percent as a base, serial killers' time in the military can be evaluated and compared to the likelihood of the general population serving in the military. Using this data, a chi-square goodness of fit test was completed to compare the two new percentages ($\chi^2 = 91.302$, $p = 0.00$). While not even the majority of the serial killers in this sample served in the military, the percentage of those who did was likely higher than at least some estimates in the general population.

Gender and Age of Victims. Information about the serial killers' chosen victims was also examined in order to discover any significant characteristics. Both of these variables are used more in further analyses.

The frequency distribution of the gender of the first victim can be seen in Table 21. The apparent even distribution of the data is confirmed in the non-significant chi-square goodness of fit test (χ^2 (1) = 0.20, $p = 0.655$). This means that serial killers in this sample were not more likely to choose a first victim of one gender over the other.

Table 21

GENDER OF FIRST VICTIM	**FREQUENCY**
Male	55%
Female	45%
Missing	1

The ages of the serial killers' victims were averaged into three categories; children, adults, and elderly people. The frequency data for this variable is depicted in Table 22 with

no data missing. It appears that the majority of the killers favor adults as their victims; in fact, this observation is upheld in a chi-square analysis (χ^2 (2) = 16.143, p = 0.001). This means that serial killers are much more likely to kill adults than any other age group. While this variable could have predictive value, because it explains trends after the murders occur, it has no real predictive value for determining who is and is not likely to become a serial killer.

Table 22

AGE OF VICTIMS	**FREQUENCY**
Child	4.8%
Adult	57.1%
Elderly	4.8%
No Specific Age	33.3%

Number of Victims. This variable, like the previous variable and many of the following variables, has little predictive value in predetermining who may or may not develop into a serial killer; however, these frequencies are still important to examine as they may have comparative value to earlier variables discussed below. The frequency distribution of the number of victims can be seen in Table 23. Serial killers in this sample killed as few as three victims (the minimum number necessary to be defined as a serial killer) and as many as 200 victims or more (the exact number is unknown). The chi-square goodness of fit test (χ^2 (3) = 0.905, p = 0.824) was not significant. This means that serial killers were not more likely to kill any certain number of victims.

Table 23

NUMBER OF VICTIMS	FREQUENCY
Three to Ten	23.8%
Eleven to Twenty	33.3%
Twenty-one to Thirty-five	23.8%
Thirty-six or more	19%

Duration of Kill. The frequency distribution for this variable is depicted in Table 24. The duration of kill describes the length of time the serial killer committed murders – from his/her first kill, to his/her arrest. The missing data is due to issues with obtaining exact dates on which the murders began. The terror of serial killers in this sample lasted from as short a time as a couple of months to as long as 25 years. A chi-square goodness of fit test is not significant (χ^2 (4) = 2.842, p = 0.585), revealing that serial killers were not more likely to kill over a long period of time versus a shorter period of time.

Table 24

DURATION OF KILLING	FREQUENCY
One or Two years	26.3%
Three to Five years	31.6%
Six to Ten years	10.5%
Eleven to Twenty years	15.8%
Twenty-one years or more	15.8%
Missing	2

Victim Type. A common stereotype for serial killers is that he/she chooses a specific type of victim and kills within that group of people. The common victim groups that the serial killers of this study favored are shown in Table 25. It is interesting to note that while serial killers were not more likely to favor one victim type over the other (χ^2 = 10.0, p = 0.125), one-third of the killers did not kill within a specific victim type, contrary to the stereotype. This fact also brings the investigative tool of criminal profiling into question. A criminal profiler relies

heavily on the type of victim that is being targeted and killed repeatedly in establishing a profile of the killer for law enforcement to use (Douglas, 2007). If serial killers are not killing a specific type of person – as this study clearly shows – then the criminal profiling technique has a limited chance of success.

Table 25

VICTIM TYPE	**FREQUENCY**
Young Males	4.8%
Young Females	23.8%
Elderly	4.8%
Children	9.5%
Prostitutes	9.5%
Homosexuals	14.3%
No Typical Victim	33.3%

Number of Failed Murder Attempts. This variable is another way of depicting the success that each serial killer had in his/her respective reign of murders. Table 26 lists the numbers of failed murder attempts and shows the frequencies at which they occurred in this sample. Serial killers in this sample ranged from completely successful (killed every victim he/she ever attacked) to a failure – one serial killer in the sample managed to wound, but not kill, 30 of his victims. The chi-square goodness of fit test is not significant (χ^2 (3) = 3.714, p = 0.294), suggesting that serial killers were not more or less likely to be successful in attacking their victims.

Table 26

NUMBER OF FAILED MURDER ATTEMPTS	**FREQUENCY**
Zero	21.4%
One or Two	28.6%
Three to Ten	42.9%
Eleven or more	7.1%
Missing	7

Mode of Killing and Evolution of Kill. The modus operandi (MO), or method of killing, is also another variable that criminal profilers use to establish a profile of the suspected killer. The stereotype is that serial killers begin using a certain style or mode of killing, with for the most part, maintain that same method of killing for each murder, evolving it slightly if and when necessary to counter for any issues the killer might have had for some of their earlier kills. Table 27 shows all the different methods of killing that the serial killers in this sample utilized.

Table 27

MODE OF KILLING	**FREQUENCY**
Blunt Object	4.8%
Blunt Object and Knife	4.8%
Drugs	4.8%
Drugs and Strangulation	4.8%
Gun/Firearm	33.3%
Hanging and Knife	4.8%
Knife Only	23.8%
Strangulation	19%

It is interesting to note that every serial killer in the sample could be categorized into a specific mode of killing. However, because this variable has more categories (modes of kill) than can be analyzed given the sample size (it does not meet the required number of five expected in each cell), and therefore the variable significance cannot be reported as classified. For this reason, the variable was also collapsed into two, more general, categories to examine whether these categories have any predictive value as they relate to other variables in the data set (investigated later). The reclassified data set can be seen in Table 28. The first category includes methods of killing that are particularly violent and hands on, including strangulation and the use of a blunt object or knife. The other category contains methods of killing that are less violent and involve a certain distance between the killer and

his/her victim, which includes the use of drugs or a gun to kill the victim. The chi-square goodness of fit test for this frequency distribution was not significant (χ^2 (1) = 0.429, p = 0.513). Therefore, serial killers are not more likely to use one method of killing over another (violent and personal or less violent and distant).

Table 28

MODE OF KILLING	FREQUENCY
Violent and Personal	61.9%
Less Violent and Distant	38.1%

Whether or not the serial killer evolved his or her mode of killing was also documented and can be seen in Table 29. While the data shows more killers maintained their same pattern of killing throughout their serial murders, the chi-square goodness of fit test (χ^2 (1) = 1.190, p = 0.275) was not significant. Therefore, serial killers in this sample were not more likely to maintain their method of killing over evolving it.

Table 29

KILLING EVOLVED	FREQUENCY
Yes	38.1%
No	61.9%

Prior Record. The frequency data for whether or not the serial killers had a record of criminal behavior prior to the start of their multiple murders is depicted in Table 30. Clearly, the majority of the serial killers in this sample had previously committed a crime or several crimes before they became a serial murderer. The chi-square goodness of fit test's significance (χ^2 (1) = 16.2, p = 0.00) confirms this observation. This means that not only are serial killers more likely to have committed prior criminal offenses, the existence of a criminal record can be utilized as a predispositional factor for determining other likely serial killers in the future.

Table 30

PRIOR RECORD	FREQUENCY
Yes	95%
No	5%
Missing	1

Jury Trial. Whether or not the serial killers took their cases to trial was also recorded. This variable has no real predictive value as far as projecting future serial killers, but it is interesting to note. The frequency distribution can be seen in Table 31. The chi-square goodness of fit test was significant (χ^2 (1) = 9.8, p = 0.002), suggesting that serial killers are more likely to take their cases to trial after they have been caught and charged rather than simply pleading guilty. In this way, it is reasonable to predict that serial killers, once arrested, will take their cases to trial; but again, this prediction does not give any insight into how the person became a serial killer in the first place.

Table 31

JURY TRIAL	FREQUENCY
Yes	85%
No	15%
Missing	1

Declared Legally Insane. The definition psychologists and psychiatrists use to define "insane" people differs drastically from that used by the law and in criminal trials (Fulero & Wrightsman, 2009). It is important to take this in consideration when examining the data, because while social scientists would have some of these people (killers) committed to a mental hospital, the law has them sentenced to incarceration. The frequency distribution for this variable can be seen in Table 32. The chi-square goodness of fit test was significant (χ^2 (1) = 9.8, p = 0.002), revealing that serial killers are more likely, in the eyes of the law, to be declared sane.

Table 32

LEGALLY INSANE	FREQUENCY
Yes	15%
No	85%
Missing	1

It stands to reason that the courts would push for vindication, especially against these heinous multiple murderers; however, it would be interesting to know how psychologists and psychiatrists would have classified them after killing their victims, but before they were arrested and forced to be classified under the legal definitions. It might also be noteworthy to investigate the serial killers' mental health prior to their first kill. This sort of information would be hard to acquire as many serial killers never sought medical health treatment until after they were arrested. All of these questions would be worthy of further research. Perhaps if these killers really are mentally unstable, psychological interference early in life might stop them from becoming a serial killer in the first place.

Death Penalty. Finally, the last variable explored at the basic frequency level is whether or not the serial killer was sentenced to capital punishment in order to pay for their crimes. This frequency data is depicted in Table 33. A chi-square goodness of fit test is not significant (χ^2 (1) = 0.429, p = 0.513), proving that convicted serial killers are not more likely to be punished for their crimes by the death penalty versus incarceration.

Table 33

DEATH PENALTY	FREQUENCY
Yes	57.1%
No	42.9%

It is important to note that this data is confounded with where the serial killer was arrested and tried, as (at least for the United States) certain states have different laws about

the death penalty. Regardless, this variable has no real predictive value in predetermining future serial killers, although it does give some insight about where they might end up.

Comparative Data

The basic frequency data explained above provided information as to whether or not a serial killer would be more likely to fall into one category over another within the same variable. Variables from this same list were also paired and compared to test for significance between the variables. Chi-square tests of independence were used to examine potential relationships between these variables. Specifically, three separate variable comparisons were hypothesized to be significant, including the killer's completed education level versus his/her age at the time of his/her first kill, the killer's sexual orientation versus the gender of his/her first victim, and the killer's exposure to physical, mental, and sexual abuse as a child versus the violence he/she later uses in killing his/her victims.

Education and Age at First Kill. It was hypothesized that serial killers with a higher education level would be older at the time of their first kill. Specifically, it was reasoned that serial killers who obtained higher levels of education stayed in school, and therefore stayed occupied longer (until a later age), and were older at the time of their first kill. The chi-square test's significance (χ^2 (15) = 21.949, p = 0.015) verifies this reasoning. Based on the statistics from this sample of serial killers, it can be reasonably concluded that serial killers who obtain higher levels of education will be older at the time of their first kill than those killers who obtain lower levels of education.

Sexual Orientation and Gender of First Victim. The predicted relationship between the killer's sexual orientation and the gender of his/her first victim was that the killer would chose his/her first victim in accordance with his/her sexual preference. This association was confirmed through a chi-square test (χ^2 (2) = 7.013, p = 0.030). The test's significance verifies that serial killers are likely to choose their first victim based on their own personal sexual preference.

Abuse and Violence of Kill. Finally, it was also hypothesized that serial killers who experienced any type of abuse as a child (physical, mental, or sexual) would kill in more violent and personal ways throughout their multiple murders. To test this relationship, both the child abuse and sexual abuse variables were compared against the reclassified mode of killing variable using a chi-square test. The first test comparing child abuse and mode of killing was not significant (χ^2 (1) = 1.250, p = 0.264), and neither was the comparison of sexual abuse and mode of killing (χ^2 (1) = 0.0, p = 1.0). This suggests specifically that serial killers' exposure to abuse as a child does not make them more likely to kill their victims in a violent manner. More generally, this data along with the results of the chi-square goodness of fit test on the frequency data for the variables child abuse and sexual abuse, suggests that serial killers' past experience with abuse is irrelevant to their later development into a multiple murderer. Interestingly, this is one of the strongest theories studied today (Ressler, 2000), yet the results of this study show no significance regardless of how the variables are manipulated or tested.

Other chi-square tests were also run comparing a number of different variables to test for any significant trends. However, none of these comparisons were significant. These comparisons included: education level versus violence of the killer's killing style (χ^2 (5) = 6.68, p = 0.246), the serial killer's father's presence versus the killer's age at his/her first kill (χ^2 (3) = 0.932, p = 0.627), the killer's father's presence versus the killer's victim type (χ^2 (6) = 6.164, p = 0.405), the killer's father's presence versus the violence of the killer's killing style(χ^2 (1) = 1.351, p = 0.245), and the killer's age at the time of his/her first kill versus the age of the killer's first victim (χ^2 (6) = 11.494, p = 0.074).

Conclusions

The goal of this study was to determine what, if any, characteristics a sample of serial killers have in common and if these characteristics have any statistical significance to suggest that they may be predispositions to serial murder. These factors can then be utilized to distinguish people who have these characteristics, and therefore a tendency to acquire violent behaviors, perhaps becoming serial killers themselves. If these characteristics can be identified, it is then probable that society can be watchful of them and provide people who have these characteristics with help before the person develops violent tendencies or commits his/her first murder. In this way, the traits identified in this study may be thought of as warning signs or symptoms of the "disease" of serial murder that can be detected and ideally adjusted before dire consequences ensue.

It was hypothesized, however, that there would be no one characteristic that every serial killer in the sample would share in common. This hypothesis was confirmed in the analysis of the study's data. The serial killers in the sample were not even all men and therefore did not share the male gender in common. Instead, it was predicted that there would

be a number of characteristics that a majority (but not all) of the serial killers would share, which would potentially demonstrate predictive value. This prediction was also confirmed; however, many common stereotypes regarding serial murder and serial killers were not confirmed. The analysis of the data revealed that a majority of the serial killers shared six characteristics. These factors included: being of the male gender, having abandonment issues likely brought on by the desertion of someone close to them, education level – particularly being a high school drop out or being a college drop out, being employed in a blue collar job, and having a prior criminal record. While not every serial killer in this sample has all five of these characteristics, they do share a majority of them. It should also be noted that while the majority of the serial killers did not serve in the military, the percentage of those that did was statistically significant when compared to the military service of the general population. Therefore, military experience might also be considered a predispositional factor to serial murder.

The exact number of these characteristics that are necessary for serial killer development needs to be studied further. This study can only establish this list of factors (based on in depth content analyses of biographical data) and would be overreaching its boundaries by estimating an exact number of characteristics needed to become a serial killer.

The extensive list of variables that were analyzed but did not demonstrate statistical significance might also play a role (although less predictive) in the development of a serial killer. Further research might delve into these possibilities as well, perhaps creating a sort of hierarchy of personal traits that a serial killer might have.

This study was not without its limitations, however. While this sample was the best that was available, it still excluded a number of serial killers. There are several more known

and convicted serial killers than those included in the sample; however, for many there was simply not enough data available to include them in the study. The sample also excludes serial killers who were never identified or arrested for their crimes, such as “Jack the Ripper” and “The Zodiac Killer,” not to mention, the fact that there is a real possibility that several killers have killed multiple victims but the individual kills have not been linked, and therefore the killer has not been identified or labeled as a serial killer.

This author also had to depend upon the authors who wrote the biographies from which the factual data was acquired. These authors had to make decisions concerning what information about the serial killer they included and what information they excluded. The readers of these biographies have no means of knowing whether or not data on the serial killer was excluded, and if so, which facts were withheld. For this reason, this author has no way of knowing if any information was excluded and therefore not presented in this study. If the biographical authors systematically withheld certain particular facts, then these same facts were not present in all biographies, and the data represented in this study could be skewed.

Finally, the study was also limited by a time frame. This author noticed that a large majority of the convicted serial killers in the sample committed their crimes in the 1960s and 1970s. The probable reason for this is due to forensic technology. Prior to this era, many serial killers likely went undetected in their murderous sprees because the technology did not exist that could link each murder and identify the killer. In the 1960s and 1970s, technology had advanced enough that serial killers were detectable but not enough for law enforcement to detain them (DNA and other forensic tools, such as a national crime database, were not yet developed). Today, forensic technology has advanced significantly, and it is now possible to

apprehend murderers, perhaps after their first kill, and therefore before they can be identified (by definition) as a serial killer. This time element and the advancement of technology within it are so interconnected with the serial killer biographical data that the time element cannot be separated from it. Therefore, time confounds all of the variables examined in this study and limits the validity of the results. This relationship should also be further explored in future research.

Despite the investigation's limitations, this study represents an important step in the sciences' ongoing efforts to try to better understand who serial killers are and why they do what they do. The study has identified a set of characteristics common to known serial murderers and refuted some common stereotypes regarding them.

The most important characteristics that the serial killers in this sample shared in common were their being of the male gender, their issues with abandonment, their prior criminal records, their education levels, their employment record of blue collar jobs, and military experience. The relationships that were found between variables from this study that may have predictive value is the relationship between the serial killer's age at the time of his/her first kill and his/her completed education level, and the relationship between the serial killer's sexual orientation and the gender of his/her first victim.

Many predominant stereotypes that are widely used today were refuted by the analysis of this sample of serial killers. These negated stereotypes included: the role of sexual, physical, and mental abuse in the development of a serial killer, the stereotype that serial killers abuse and kill animals as children, and the stereotype that all serial killers are male and in their late twenties or early thirties. Much research still needs to be done to truly understand the development of a serial killer and to use it to establish preventive measures to

effectively retard this developmental process. This study allows the scientific and investigative communities to see the bigger picture as it pertains to the world's most infamous killers.

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APPENDIX A

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