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Assessing the Predictability of Sexual Homicide Subtypes in Serial Homicide Offenders Using Childhood Abuse and the MacDonald Triad

Kevin Dionne
Walden University

Walden University

College of Psychology and Community Services

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Kevin Dionne

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Review Committee
Dr. Eric Hickey, Committee Chairperson, Psychology Faculty
Dr. Scott Gfeller, Committee Member, Psychology Faculty

Chief Academic Officer and Provost
Sue Subocz, Ph.D.

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Abstract

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Dissertation Submitted in Partial Fulfillment

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Abstract

Prior research established a positive correlation between childhood abuse and sexually motivated murders, and childhood abuse is considered a risk factor for serial murder, especially for sexually motivated serial murder. The purpose of this quantitative study was to assess whether a predictive relationship exists between childhood abuse types (physical, sexual, and psychological) and MacDonald triad behaviors (enuresis, fire setting, and animal cruelty) in predicting sexual homicide subtypes (sexualized, grievance, and rape murder) in a sample of male serial sexual homicide offenders. The subtypes were derived from the Higgs, Carter, Tully, and Browne systematic review. The theoretical lenses applied in the analysis were social learning theory and the trauma-control model. Results of multinomial logistic regression analyses indicated that the presence or absence of abuse types and MacDonald triad behaviors did not differentiate and statistically predict group assignment of offenders' sexual homicide subtypes. The nonsignificant results suggest either that there was no true predictive relationship between the variables, the quantitative methodology required modifications to mitigate the limitations of the study (i.e., sample size), or this topic would be more effectively researched qualitatively. Results contribute to the psychological literature by advancing the field's knowledge on this offender group and providing methodology recommendations for future research.

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Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction to the Study

The subject of this study was serial sexual homicide, serial homicide in which there is evidence of at least one sexual element (Ressler et al., 1992). Serial sexual homicide is a heinous yet rare crime when compared to other forms of criminally violent behavior. The number of known active serial homicide offenders in the United States peaked in the 1980s and has declined since. Similarly, the prevalence of known serial killers in Canada peaked between 2000 and 2009 (Aamodt et al., 2020). Although the number of offenders appears to have declined for various reasons, there remains interest in understanding the precursors of this type of deviant behavior. Sexual murder is a niche research topic that has received a significant amount of research attention (James et al., 2020).

The current quantitative study examined the relationship between childhood abuse types and MacDonald triad behaviors, and their influence on the offenders' subsequent patterns in serial sexual homicide offending. Sexual homicide offenders are considered a heterogenous offender group. In other words, there are subcategories differentiating between different motive and offending patterns. The Higgs, Carter, Tully, and Browne (2017) sexual homicide subtypes of sexualized, grievance, and rape murder were used in this study. The study sought to assess whether the presence or absence of childhood abuse types and MacDonald triad behaviors in an offender's development can statistically predict the serial sexual homicide offenders' sexual homicide subtype.

Conducting the current study had the potential to advance the knowledge in the field pertaining to the development of sexually motivated serial homicide offenders and

may contribute to the differentiation of the psychosocial development between sexual homicide subtype groups using the Higgs, Carter, Tully, and Browne (2017) identified subtypes. The positive social change potential lies in further developing the field's knowledge on serial sexual homicide offenders. The greater the field's knowledge on violent offenders, the greater the opportunity to identify these offenders and understand their developmental characteristics in investigative and clinical realms.

In this chapter, literature pertaining to the role of childhood abuse and MacDonald triad behaviors on serial sexual homicide offending is briefly summarized. The chapter also includes the problem statement, purpose of the study, research questions, hypotheses, theoretical framework, and definitions. Lastly, the scope, limitations, and underlying assumptions are discussed.

Background

The bulk of the literature on serial homicide and sexual homicide pertaining to childhood abuse, victimization, and abnormal behavioral developmental markers (i.e., MacDonald triad) suggested that the offenders' past experiences tend to influence their offending patterns (DeLisi & Beauregard, 2018; Hickey, 2016; James et al., 2020; Leary et al., 2017; Marono et al., 2020; Mitchell & Aamodt, 2005; Reid et al., 2019; Ressler et al., 1992). The rates of childhood abuse among serial homicide offenders are thought to be significantly greater than those of the general population (Mitchell & Aamodt, 2005). In a sample of 50 serial homicide offenders, Mitchell and Aamodt (2005) found that 68% had experienced at least one form of childhood abuse. From a theoretical perspective, trauma and childhood victimization are a key features of Hickey's trauma-control model.

The trauma-control model outlines the developmental pathway and cyclical trajectory of serial homicide offenders (Hickey, 2016).

Correlations between MacDonald triad behaviors, personality trait formation, and future offending patterns have been identified in the literature (Joubert et al., 2021; Parfitt & Alleyne, 2020). Leary et al. (2017) also found correlations between experiencing specific types of abuse and MacDonald triad behaviors, suggesting underlying connections between childhood abuse, MacDonald triad behaviors, and offending patterns.

Recent studies examined the predictability of offending patterns based on childhood abuse types and parental maltreatment (James et al., 2020; Marono et al., 2020). Marono et al.'s (2020) behavioral sequence analysis examined the relationship between childhood abuse and subsequent adult killing behaviors. Marono et al.'s sample comprised offenders with various motive types, rather than limiting the sample to sexual homicide offenders. Their sample included offenders belonging to four motive types: lust, thrill, anger, and financial. Marono et al.'s findings suggested that experiencing different abuse types led to distinct homicide crime scene behaviors. In a similar study, James et al. (2020) sought to examine whether childhood victimization, exposure to inadequate parental behaviors, and psychopathology (i.e., psychopathy and sexual sadism) can predict proactive versus reactive aggression in a sample of nonserial sexual homicide offenders. James et al. found that parental maltreatment in childhood was associated with reactive aggression. James et al. drew comparisons between the proactive versus reactive aggression dichotomy and the Higgs, Carter, Tully, and Browne (2017)

sexual homicide motive subtypes. However, neither Marono et al. nor James et al. used a conceptualization of sexually motivated serial homicide offenders as a heterogeneous group in a manner to differentiate these offenders by motive subtypes.

With the emergence of the Higgs, Carter, Tully, and Browne (2017) systematic review, which aimed to identify sexual murder subtypes utilizing an amalgamation of previous research on serial and nonserial sexual homicide offenders, there was a gap in the literature in understanding the relationship between the presence and absence of abuse types, MacDonald triad behaviors, and the Higgs, Carter, Tully, and Browne (2017) subtypes. Higgs, Carter, Tully, and Browne's (2017) study identified three sexual homicide motive subtypes: sexualized, grievance, and rape murder. There was consensus in the literature on the role of childhood developmental events, such as adverse childhood events, abuse victimization, and dysfunctional or deviant childhood behaviors, on the development of serial murderers and serial sexual homicide offenders (DeLisi & Beauregard, 2018; James et al., 2020; Leary et al., 2017; Marono et al., 2020; Mitchell & Aamodt, 2005; Reid et al., 2019; Ressler et al., 1992). This topic continues to be of interest for researchers in the field of forensic psychology, particularly in serial murder research (Mitchell & Aamodt, 2005). I conducted the current study to obtain a better understanding of the relationship between childhood abuse and MacDonald triad behaviors, in predicting sexual homicide motive subtypes, to advance the field's knowledge on the development pathways of this offender group.

Problem Statement

The social problem addressed in this study was sexually motivated serial

homicide. Prior research established a positive correlation between childhood abuse and sexually motivated murders; childhood abuse is considered a risk factor for serial murder (Marono et al., 2020), especially for sexually motivated serial murder (Mitchell & Aamodt, 2005). Associations exist between specific childhood abuse types and offenders' future killing behaviors (Marono et al., 2020). The Higgs, Carter, Tully, and Browne's (2017) systematic review identified themes in the existing empirical literature pertaining sexual murder typologies. Higgs, Carter, Tully, and Browne analyzed and grouped sexual murder typologies into three proposed subtypes: sexualized, grievance, and rape murder. Higgs, Carter, Tully, and Browne later proposed the need to explore the biopsychosocial factors that are associated and differentiated across the three proposed sexual homicide subtypes. Similarly, Leary et al. (2017) conducted a quantitative study examining the relationship between the MacDonald triad and childhood abuse types in a sample of serial homicide offenders. Leary et al.'s approach of using the Radford/FGCU Serial Killer Database set a foundation for future research on the associations between psychopathic variables while comparing different serial murder typologies (i.e., lust and anger, spree versus serial). However, Leary et al. studied these associations on serial homicide offenders using broader motive types, and did not differentiate sexual homicide offenders into their heterogenous motive subtypes.

With an understanding of the relationship between childhood abuse, MacDonald triad behaviors, and sexual homicide subtypes in a population of serial sexual homicide offenders, there is an opportunity to expand the field's understanding of how or whether these developmental events can differentiate serial sexual murderers across subtypes.

Uncovering these relationships may create a more thorough understanding of the heterogeneous group of serial sexual homicide offenders.

Purpose of the Study

The purpose of this quantitative study was to assess whether a predictive relationship exists between childhood abuse types (physical, sexual, and psychological) and MacDonald triad behaviors (enuresis, fire setting, and animal cruelty) in predicting sexual homicide subtypes (sexualized, grievance, and rape murder) in a sample of male serial sexual homicide offenders. Using data from the Radford/FGCU Serial Killer Database and conducting multinomial logistic regression analyses, I examined the relationship between childhood abuse types, MacDonald triad behaviors, and sexual homicide subtypes. The independent predictor variables examined in this study were childhood abuse types (physical, sexual, and psychological abuse) and MacDonald triad behaviors (enuresis, fire setting, and cruelty to animals). The dependent outcome variable was offenders' sexual homicide subtype (sexualized, grievance, and rape murder). The aim was to determine whether specific abuse types and triad behaviors can statistically predict sexual homicide subtypes.

Research Questions and Hypotheses

RQ1: Does the presence or absence of childhood abuse types (psychological, physical, sexual) statistically predict the serial sexual homicide offenders' sexual homicide subtype?

H_o1: The presence or absence of childhood abuse types does not statistically predict serial sexual homicide offenders' sexual homicide subtype.

H_a1: The presence or absence of childhood abuse types statistically predicts serial sexual homicide offenders' sexual homicide subtype.

RQ2: Does the presence or absence of MacDonald triad behaviors (fire setting, animal cruelty, enuresis) statistically predict the serial sexual homicide offenders' subtype?

H_o2: The presence or absence of MacDonald triad behaviors does not statistically predict serial sexual homicide offenders' sexual homicide subtype.

H_a2: The presence or absence of MacDonald triad behaviors statistically predicts serial sexual homicide offenders' sexual homicide subtype.

Theoretical Framework for the Study

The theoretical lens through which the study was examined was a combination of Bandura's (1973) social learning theory, as applied to the concept of aggression, and Hickey's (2016) trauma-control model of serial murder. Bandura's social learning theory is a widely accepted psychological theory that pertains to nearly all aspects of human learning and development. Social learning theory may be used as a foundational theory to aid in understanding the concept of violence and serial murder in general. Bandura's social learning theory is founded on the concept that people learn through observation and the attributions they make of their experiences. Social learning theory focuses on the role of previous learning as a determinant and influencer for future behavior. In the context of aggression and violent offending, social learning theory recognizes the role of adverse childhood experiences, traumatization throughout the lifespan, and adverse environmental conditions on the development of aggressive behavioral patterns (Bandura,

1973).

Hickey's (2016) trauma-control model provided an explanatory model to understand the trajectory, cyclical nature, and contextualization of the role of several compounding variables in the development of a serial murderer. The trauma-control model emphasizes the role of trauma as defined by the influence of destabilizing events in early life on the development of serial murder offenders (Hickey, 2016). The trauma-control model incorporates how the traumatization interacts with other known variables to contribute to the etiology of a serial homicide offender. The model suggests an interaction between traumatization (i.e., sex abuse, divorce of parents, physical abuse, death of parents, peer rejection) in the formative years of an offender's life and how these develop into a cyclical interactive process between trauma, low self-esteem, dissociation, and violent fantasies to psychologically regain power, with facilitators (stressors), ultimately leading to homicidal behavior and circling back to trauma reinforcement (Hickey, 2016). I used the trauma-control model as a theoretical backdrop to contextualize the offender's trajectory within the larger scheme of serial sexual homicide.

The combination of social learning theory and the trauma-control model offered a unique viewpoint into the development of those who commit serial murders and serial sexual homicides. Social learning theory served as the basis for understanding aggressive behavior and provided insight into the role of developmental events that can shape aggressive behavior with the added contextualization of the variables in the trauma-control model. A more in-depth discussion of social learning theory and the trauma-control model is provided in Chapter 2.

Nature of the Study

The current study was a nonexperimental quantitative secondary data analysis using the Radford/FGCU Serial Killer Database. The case inclusion criteria were limited to known serial sexual homicide offenders using Ressler et al.'s (1992) definition of sexual homicide, and offenders with confirmed data on the presence or absence of childhood abuse by type, and MacDonald triad behaviors. Cases were assigned into their respective Higgs, Carter, Tully, and Browne (2017) sexual homicide motive subtypes: sexualized, grievance, and rape murder. The sexual homicide subtype categories were the three-category nominal dependent variable. Multinomial regression analyses were conducted to assess the relationship between the predictor variables and the motive subtypes.

The use of quantitative methods and logistic regression analyses allowed for uncovering the statistical associations and relationships between sets of categorical variables. Multinomial logistic regression analyses assess whether the independent predictor variables can predict the outcome variables, using categorical variables (Wagner, 2017; Warner, 2013). Other researchers used logistic regression analyses in assessing the relationship between similar variables in studies pertaining to serial murder (Leary et al., 2017), and sexual murder (James et al., 2020).

Definitions

Animal cruelty: Abuse and maltreatment toward animals (Hickey, 2016; Leary et al., 2017).

Childhood abuse: All forms of physical, emotional, and sexual neglect and exploitation resulting in harm to a child (World Health Organization, 2022).

Enuresis: Persistent bedwetting (urinating in bed) after the age of 5 (Leary et al., 2017).

Fire setting: The act of arson that is committed by juveniles (Hickey, 2016).

Grievance sexual homicide subtype: The grievance murderer is described as a sexual murderer driven by an angry schema and an excessively aggressive response style (Higgs, Carter, Tully, & Browne, 2017). This offender is characterized by the presence of anger from distal and proximal grievances. This offender tends to engage in violent attacks and may inflict multiple injuries to the victim (Higgs, Carter, Tully, & Browne, 2017). Beech et al. (2005) identified a group of offenders who not only were motivated by anger but also harbored resentment toward women; these offenders were later associated with the grievance type (Stefanska et al., 2015).

MacDonald triad: Three abnormal developmental behaviors that are known as potential precursors to violence: fire setting, animal cruelty, and persistent enuresis (Hickey, 2016; Joubert et al., 2021; Leary et al., 2017).

Physical abuse: Any act that causes, has the potential to cause, or is allowing any nonaccidental physical injury and harm (Marono et al., 2020; Mitchell & Aamodt, 2005).

Psychological abuse: Any act that causes intentional humiliation or emotional conflict, or any act that could be psychologically damaging to the child (Mitchell & Aamodt, 2005). Psychological abuse also includes the lack of an appropriate and

supportive environment or acts that have an adverse effect on the emotional health and development of the child (Marono et al., 2020).

Rape murder sexual homicide subtype: The rape murder is best defined as an instrumental killing following the act of rape (Higgs, Carter, Tully, & Browne, 2017).

Sexual abuse: Sexual activity, practice, or instruction that either meets the criminal definition or is unhealthy for a child considering their age and level of development; examples include incest, rape, fondling, indecent exposure, prostitution, or allowing a child to be used in any sexually explicit visual material (Mitchell & Aamodt, 2005).

Sexual homicide: The operational definition of sexual homicide used in the current study was Ressler et al.'s (1992) criteria for sexual homicide. One of the following characteristics must be met: victim lacks attire, exposure of sexual parts of the victim's body, the body is found in a sexually explicit position, an object has been or was inserted in a body cavity, there is evidence of sexual intercourse, or there is evidence of a substitute sexual activity or sadistic fantasies.

Sexualized sexual homicide subtype: The sexualized sexual murderer refers to the sexual murderer in which sadistic behavior is a central component of the motive to sexually kill (Higgs, Carter, Tully, & Browne, 2017). Although the sadistic element is commonly noted in the literature, Stefanska et al. (2017) noted that it is not always a feature in every sexualized sexual homicide. Within this motive category, the act of killing is functionally related to the sexual element of the offense, meaning that the

offender derives sexual pleasure through the process of killing and the infliction of pain and control over their victims.

Assumptions

There were several underlying assumptions in this study. First, I assumed that offenders in the data set could be classified into the sexual homicide motive subtype groups based on crime scene behaviors noted in the Radford/FGCU Serial Killer Database, supplemented by publicly available open-source information. This assumption allowed me to classify the offenders into appropriate motive subtype groups. The second assumption was that the presence of childhood abuse types and MacDonald triad behaviors has a direct impact on the offenders' offending patterns and influences the sexual homicide subtype. Although research suggested that childhood maltreatment and deviant behavior variables influences offending patterns (DeLisi & Beauregard, 2018; James et al., 2020; Leary et al., 2017; Marono et al., 2020; Mitchell & Aamodt, 2005; Reid et al., 2019; Ressler et al., 1992), there was no research indicating that childhood experiences could differentiate within subgroups of sexual homicide offenders. The third assumption was that the absence of available data on a particular data point (i.e., an abuse type or a MacDonald triad behavior) could be considered as not present in the individual's life. This assumption was only made in the circumstance in which there was existing data on one or more abuse types and one or more MacDonald triad behaviors present in the data set. For example, if sexual abuse and psychological abuse had data confirming presence or absence, the third nonindicated physical abuse was considered absent. Although the data set was among the most comprehensive serial killer data sets

available to researchers (Aamodt et al., 2020), the nature of this type of data on a hard-to-reach population implied that some data points would not be available. This assumption allowed me to work with the available data and conduct the study with the confines of available data.

Scope and Delimitations

The scope of this quantitative study was limited to assessing the statistical relationships between the predictor variables (childhood abuse types and MacDonald triad behaviors) and the outcome variable of sexual homicide subtype (sexualized, grievance, and rape murder). I was unable to account for rich stories and in-depth descriptions of how the presence of the childhood abuse and MacDonald triad behavior impacted individual offenders in their development toward serial sexual homicide offending. The sample was limited to male serial sexual homicide offenders, according to the Ressler et al.'s (1992) definition of sexual homicide and the Federal Bureau of Investigations (FBI, 2008) definition of serial homicide. Furthermore, only cases that had sufficient data to classify the offender into one of the three sexual homicide subtypes using the Higgs, Carter, Tully, and Browne (2017) sexual homicide subtypes were included in this study. The influence of demographic variables and other variables known to contribute to the development of serial homicide offenders was outside of the scope of the study. These include cultural differences, race, age, biological/genetic factors, socioeconomic class, trauma and stressors that occurred beyond the age of 18, and criminal history.

With regard to generalizability, human behavior is complex and individualized, making it impossible to fully predict or assess true causality. Using multinomial regression analyses, I sought to assess whether the predictor variables could statistically predict the outcome variable, and the extent to which these variables were likely to influence the sexual homicide motive subtype. The study's sample could include only known offenders and failed to account for offenders who had evaded detection. Lastly, offenders with characteristics that met the definition of more than one sexual homicide subtype were excluded.

Limitations

There were several projected limitations to the study. First, although access to a comprehensive data set on serial killers, such as the Radford/FGCU Serial Killer Database, was an immense asset in conducting this study, there were limitations associated with the use of secondary data. The original data collection was not directly driven by objectives of the current study. With consideration to the population from which data were collected, I expected that not all data points would be available for all offenders. Missing data on key variables would limit the number of offenders who met the study's inclusion criteria. The current study was unable to assess the impact of other meaningful variables relevant to offender development. For example, the current research was limited in its ability to assess all other adverse childhood events beyond the three noted childhood abuse types. Neglect was not included in the childhood abuse types. There were not sufficient data on variables such as parental abandonment and peer rejection to include these variables in the study. The unavailability of data on the age at

which the offender may have experienced the childhood abuse was another limitation in the current study. James et al. (2020) found that the age at which the offender experienced adverse childhood events impacted the offender's future presentation and crime scene behaviors.

Second, although the use of quantitative analysis has many advantages, its main limitation is the inability to account for qualitative data that may have impacted the offenders' development (e.g., internal attributions and meaning formation after trauma, sensations derived from MacDonald triad behavior exhibition, reinforcers throughout the lifespan). Third, there were two potential instances in the study when bias could have been present: (a) during initial data collection and (b) researcher bias in the sexual homicide motive subgroup assignment. As a user of secondary data, I could not identify the potential bias related issues associated with the original data collection. The Radford/FGCU Serial Killer Database is a renowned database that is maintained by experts in the field and is subjected to measures to assure the accuracy of the data (Aamodt et al., 2020). There was also potential for researcher bias in the group assignment to the sexual homicide motive subtype groups: sexualized, grievance, and rape murder. To mitigate the risk of researcher bias in group assignment, I used a systematic approach to assign offender subtypes. Offender data were weighed against the known characteristics of each motive subtype. Each offender's subtype assignment process was documented and kept in my files.

Significance

The current study contributed to the existing literature by quantitatively assessing

whether childhood abuse types and MacDonald triad behaviors could differentiate serial sexual murderers across sexual homicide subtypes: sexualized, grievance, and rape murder (see Higgs, Carter, Tully, & Browne, 2017). At the time of the current study, the literature highlighted the positive correlation between childhood development and adverse childhood experiences, with serial homicide and sexual homicide (Hickey, 2016; James et al., 2020; Leary et al., 2017; Marono et al., 2020; Mitchell & Aamodt, 2005; Rogers, 2020), but no research had examined the psychosocial developmental differences between serial sexual homicide offenders based on a sexual homicide subtypes.

James et al. (2020) examined the role of childhood maltreatment and psychopathy trait factors across the dichotomized reactive versus proactive aggressors in the context of nonserial sexual homicide. Although the proactive and reactive aggression types correlated to some degree with the grievance and sexualized subtypes, they failed to account for the third subtype identified by Higgs, Carter, Tully, and Browne (2017): rape murder. Considering that there are identified developmental differences between serial and nonserial sexual homicide offenders (James & Proulx, 2014), examining the potential differences across subtypes and comparing the findings to the James et al. (2020) findings was expected to add to the knowledge base on the topic of serial sexual homicide.

The significance of the current study also lay in the potential to expand the knowledge base on the developmental factors that lead to and potentially differentiate between serial sexual murder offender subtypes. The results of this study contributed to the larger body of research aimed at understanding this violent phenomenon. From a practical perspective, the findings of the current study could have significance in clinical

and investigative domains. From an investigative perspective, the findings could add to the statistical data connecting psychosocial developmental events to potential serial sexual murder subtypes. This would add to the actuarial data that can be utilized in conjunction with other methods to aid in investigative efforts. From a clinical perspective, understanding the relationships between childhood events and violent crime may help clinicians and assessors expand the knowledge base in understanding the role of psychosocial developmental events on serial sexual homicide offenders.

Summary

There was a gap in the literature regarding the potentially differentiated development of serial sexual homicide offenders based on their respective sexual homicide subtypes. The influence of childhood abuse types and MacDonald triad behaviors on sexual homicide and serial homicide offenders was well established (DeLisi & Beauregard, 2018; Hickey, 2016; James et al., 2020; Leary et al., 2017; Marono et al., 2020; Mitchell & Aamodt, 2005; Reid et al., 2019; Ressler et al., 1992). What was unknown was the influence of childhood abuse types and MacDonald triad behaviors on predicting the offender's sexual homicide subtype. The sexual homicide subtypes identified in Higgs, Carter, Tully, and Browne's (2017) systematic review were used in this study. Operating within the lens of the combined theoretical frameworks of social learning theory (Bandura, 1973), and the trauma-control model (Hickey, 2016), I sought to quantitatively assess whether a predictive relationship exists between the childhood abuse type and MacDonald triad behaviors for predicting sexual homicide subtypes in a sample of serial sexual homicide offenders. In Chapter 2, an exhaustive literature review

is presented to highlight the field's current knowledge and support the need to conduct the current study.

Chapter 2: Literature Review

The problem explored in this study was sexually motivated serial murder. There is a wealth of literature tying childhood abuse, victimization, and abnormal behavioral developmental markers (i.e., MacDonald triad) to future offending patterns (DeLisi & Beauregard, 2018; James et al., 2020; Leary et al., 2017; Marono et al., 2020; Mitchell & Aamodt, 2005; Reid et al., 2019; Ressler et al., 1992). Recent studies examined the predictability of offending patterns based on childhood abuse types and parental maltreatment (James et al., 2020; Marono et al., 2020); however, none of these studies examined this phenomenon using a conceptualization of sexually motivated serial homicide offenders that differentiates these offenders by motive subtypes. Marono et al. (2020) used the serial murder motive types including lust, thrill, anger, and financial, and James et al. (2020) used a dichotomy of proactive versus reactive aggression. With the emergence of the Higgs, Carter, Tully, and Browne (2017) systematic review, which aimed to identify sexual murder subtypes using an amalgamation of previous research on serial and nonserial sexual homicide offenders, there was a gap in the literature in understanding the relationship between abuse types and MacDonald triad behaviors with subsequent motive categories. The Higgs, Carter, Tully, and Browne (2017) study identified three sexual homicide motive categories: sexualized, grievance, and rape murder.

The purpose of the current study was to examine the relationship between childhood abuse and MacDonald triad behaviors of known serial sexual murderers and their sexual homicide motive subtype as defined by the Higgs, Carter, Tully, and Browne

(2017) subtypes. Using data from the Radford/Florida Gulf Coast (FGCU) Serial Killer Database and applying multinomial logistic regression analyses, I examined the relationship between childhood abuse types, MacDonald triad behavior, and sexual murder sub-typologies. The analyses assessed whether the presence or absence specific childhood abuse types and MacDonald triad behaviors, or combinations thereof, can be differentiate and predict serial sexual homicide offender subtypes.

There was consensus in the literature on the role of childhood developmental events, such as adverse childhood events, abuse, victimization, and dysfunctional or deviant childhood behaviors, on the development of serial murderers and serial sexual homicide offenders (DeLisi & Beauregard, 2018; James et al., 2020; Leary et al., 2017; Marono et al., 2020; Mitchell & Aamodt, 2005; Reid et al., 2019; Ressler et al., 1992). This area of research continues to be an area of interest for researchers in the field of violent crime and in serial murder research (Mitchell & Aamodt, 2005). Recent studies found that the nature of the childhood victimization endured can influence the individual's subsequent criminal behavior (Marono et al., 2020; Mitchell & Aamodt, 2005), and some studies found that the age at which the child experiences maltreatment also plays a role in their offense pathways by affecting the child's development at different developmental periods (James et al., 2020). Rogers's (2020) qualitative review of the lives of a few serial killers revealed how their experiences of abuse victimization and subsequent cognitive attributions of their victimization shaped their deviant sexual fantasies, which directly contributed to their modus operandi. Additionally, literature suggested that in a sample of sexually motivated serial murderers, those who reported

having been sexually abused were statistically more likely to develop deviant sexual fantasies at a younger age than those who were not sexually abused (Ressler et al., 1992).

Beyond the exploration of the role of childhood abuse, recent research on the MacDonald triad suggested that the child's exhibition of MacDonald triad behaviors was correlated with subsequent personality trait formation and was linked to later offending patterns (Joubert et al., 2021; Parfitt & Alleyne, 2020). Leary et al. (2017) found correlations between the exposure of specific types of abuse with subsequent MacDonald triad behaviors. These findings suggest a connection between victimization, MacDonald triad behaviors, and offending patterns. Some studies described the exhibition of MacDonald triad behaviors, particularly fire setting and animal cruelty, as the transference of the victim's pain to the infliction of pain on a perceivably weaker being (Wright & Hensley, 2003), creating hurt because of hurt (Hickey, 2016). Wright and Hensley (2003) discussed the plausibility of a graduation hypothesis in which the individual exhibiting animal cruelty behavior graduates from inflicting pain to helpless animals, as they themselves grow in age and strength, toward inflicting pain to other people.

The existing literature on serial homicide and sexual homicide pertaining to childhood developmental experiences and behaviors endorsed the notion that previous victimization, exposure, and abnormal behaviors can contribute to later offending behavior. The research suggested that the type or the nature of the childhood victimization may influence and statistically predict the serial sexual homicide offender's most likely sexual homicide motive subtype. Within the body of this literature review, the

reader is presented with the recent literature on the role of childhood abuse and MacDonald triad behaviors on later offending patterns; a discussion of the literature on defining sexual homicide; the differentiation between serial and nonserial sexual homicide offender developmental profiles; a discussion of existing sexual homicide typologies; a review of the literature pertaining to the link between victimization, abnormal behaviors, and sexual homicide offending patterns; and a description of the conceptual framework that served as the underlying framework of the study: social learning theory as applied to aggression combined with Hickey's trauma-control model.

Literature Search Strategy

The databases used to conduct the literature review for this study were Academic Search Complete, PsycINFO, and Google Scholar. Google Scholar alerts were also used as a means of obtaining notification of new articles being published. Several keywords were used to conduct a comprehensive literature search, and various combinations of the following keywords were used: *serial killers*, *serial homicide*, *serial murder*, *serial murderers*, *multiple murder*, *multiple killer*, *lust*, *sexual homicide*, *sexual murder*, *sexual killer*, *motivation*, *anger*, *grievance*, *rape*, *MacDonald triad*, *abuse*, *sadism*, *adverse childhood experiences*, and *trauma*. The initial search strategy included filtering the search results to only include peer-reviewed literature published between 2016 and 2023. The publication date filter was expanded to include critical publications on the topic published in earlier years. Two seminal works in the form of books were used in this review, including Ressler et al. (1992) and Bandura (1973). Other sources cited in this literature review included books published by renown experts in the field (e.g., Hickey,

2016) and a Walden University dissertation published in 2020. Some of the sources pertained to nonserial sexual homicide because there had been a greater number of recent publications on nonserial sexual homicide than serial sexual homicide. As a mitigation strategy, the literature review provides a comparison of serial versus nonserial homicide and draws similarities and differences between both sample groups. Further, the systematic review by Higgs, Carter, Tully, and Browne (2017), which proposed the sexual homicide subtypes used in this study, was developed using a combination of serial and nonserial sexual homicide offenders in their sample.

Defining Sexual Homicide

Sexual homicide is not legally defined in any of the jurisdictions in which most research on this phenomenon is published (Carter & Hollin, 2014; Higgs, Carter, Stefanska, & Glorney, 2017). Without a legal definition, the research of sexual homicide has primarily included the definition of sexual homicide defined by Ressler et al. (1992), whose foundational work with the FBI defined sexual homicide using six criteria. The Ressler et al. criteria rely on physical crime scene evidence that indicates a sexual component to the homicide. To meet the criteria, the case must include evidence of one of the following indicators: (a) victim lacks attire, (b) exposure of the sexual parts of the victim's body, (c) the body is found in a sexually explicit position, (d) an object is inserted in a body cavity, (e) evidence of sexual intercourse, (f) evidence of substitute sexual activities (e.g., masturbation and ejaculation) or evidence of the execution of sexual fantasies (e.g., genital mutilation). Although the Ressler et al. criteria remain the most widely accepted and used in the literature (Higgs, Carter, Stefanska, & Glorney,

2017), it has not been without criticism.

Among the main criticisms of the Ressler et al. (1992) criteria is that it has been considered to be overly inclusive. This was especially true within the context of examining direct and indirect sexual gratification associated with the killing (Stefanska et al., 2020; Stefanska et al., 2017; Stefanska et al., 2015). The Ressler et al. criteria do not allow for the identification of what Stefanska et al. (2017) considered the true sexual killer or the direct sexual killer: that is, cases in which the killing is an integral part of the offender's sexual stimulation. In fact, some authors suggested adjusting the Ressler et al. criteria to include the presence of a minimum of two indicators rather than one, to lower the odds of misclassification of sexual murders as indirect (Chopin & Beauregard, 2019; Stefanska et al., 2017).

Chan (2015) proposed new criteria to identify sexual homicide. Chan's definition resembled Ressler et al.'s (1992) definition; however, it places an added emphasis on understanding the offender's underlying motive. Chan's definition uses the following criteria: (a) physical evidence of pre-, peri, and postmortem sexual assault against the victim, (b) physical evidence of substitute sexual activity or the immediate area of the victim's body reflecting deviant or sadistic sexual fantasy of the offender, (c) legally admissible offender confession of the sexual motive of the offense that intentionally or unintentionally results in a homicide, or (d) an indication of sexual elements of the crime from the offender's personal belongings. However, this definition does not appear to have gathered much traction in the literature, while the Ressler et al. criteria remain the most widely accepted and used criteria in the literature.

To uncover what some have coined the true sexual killer, Stefanska et al. (2020) conducted exploratory factor analyses to develop an empirically driven checklist to aid in determining the functional role of the killing in a newly proposed classification of sexual homicides. Stefanska et al.'s sample consisted of 361 male sexual killers assigned to direct or indirect groups. The results identified eight factors used to compose a checklist to identify the sexual murders with direct sexual motives. Direct motives include motives in which sexual gratification is directly associated with the process of killing. The checklist comprises the following items: sexual sadism, sexually driven related disinhibitors, stalking behaviors, use of restraints, presence of postmortem sexual activity, presence of other sexual activities, unusual interest following the murder, and the presence of biting (Stefanska et al., 2020). Stefanska et al. sought to establish a new way for researchers and clinicians to identify cases and offenders' sexual motives in their sexual homicide behavior in contrast to cases in which the killing solely occurred in a sexual context or where the act of killing served an instrumental motive. This approach offered benefits from a clinical and research perspective.

Recently the literature has taken a turn toward describing sexual homicide as a hybrid offense characterized by a combination of elements from sexual assault or substitute sexual behavior and homicide (Beauregard & Martineau, 2016; Chopin & Beauregard, 2019, 2020; Stefanska et al., 2017). The use of the term hybrid offense can to some degree suggest a spectrum-like approach to understanding and differentiating sexual aggressors from sexual murders, with sexual murders at one end of the violence spectrum and sexual aggressors at the other. However, it has been clearly identified in the

recent literature that homicidal sexual aggressors or sexual murderers are distinct types of offenders and should be studied as such (Chopin & Beauregard, 2019; Higgs, Carter, Stefanska, & Glorney, 2017).

Chopin and Beauregard (2019) compared sexual homicide offenders, nonsexual homicide offenders, and violent sexual assault offenders using bivariate and multivariate analyses to determine whether the offender was a sex offender, murderer, or both. Their findings suggested that sexual homicide offenders underwent different criminal career trajectories and had different offender characteristics, indicating that the sexual murderer is a separate type of offender and should be studied as such. Higgs, Carter, Stefanska, and Glorney (2017) conducted a similar study in which they found that the sexual homicide offenders present with a different psychological profile than nonhomicidal sexual aggressors. Some of the differentiating characteristics included a tendency for greater social disconnection, emotional loneliness, problematic peer relationships, lack of warmth toward others, low empathetic concern, and sexual entitlement beliefs. The definition used in the current study was the Ressler et al. (1992) definition, applied within the context of serial sexual murder. The Ressler et al. criteria remain the most widely accepted criteria in the literature (Higgs, Carter, Stefanska, & Glorney, 2017).

Serial Versus Nonserial Sexual Homicide Offenders

In recent years there has been some disagreement in defining serial homicide (Adjorlolo & Chan, 2014; FBI, 2008; Reid, 2017). The most recent FBI-published document defining serial homicide was the result of the FBI Serial Murder Symposium, a symposium that brought together law enforcement and academicians to discuss and

define serial homicide (FBI, 2008). In the FBI publication, serial homicide was defined as two or more homicides with an emotional cooling off period in between homicides (FBI, 2008). However, recent academic publications have used a serial homicide definition that necessitates a minimum of three distinct killing events with a cool down period (Adjorlolo & Chan, 2014, James & Proulx, 2014; Reid, 2017). A Google or Wikipedia search of the definition of serial homicide yielded results in alignment with the three or more criteria. According to Reid (2017), although the FBI definition has posed some difficulties to researchers, it pervades the recent literature on serial homicide.

One could suppose that committing two or more homicides with sexual features over time fits the general profile of a serial killer, regardless of whether the offender was apprehended after two, three, or more victims. The serial sexual homicide offenders' offences are considered expressive crimes driven in psycho-emotional sexual compulsion; these homicides are distinct from the nonsexual or noncompulsive homicide offenders who have perpetrated two homicides within the course of a lifetime under different conditions. Given the nature of sexual homicide, the definition of two or more victims with a cooling off period (FBI, 2008) accurately classifies sexual homicide offenders as serial sexual homicide offenders. Conversely, if the current study included the academia-driven criteria of three or more victims, the study's inclusion criteria would have failed to include cases such as Colonel Russell Williams, whose modus operandi and offending progression was evidently that of a serial sexual homicide offender even though he was apprehended by law enforcement after his second victim. One could also argue that offenders such as Colonel Russell Williams, although apprehended after two

victims, would have likely continued offending had they successfully avoided detection. For the purpose of the current study, serial homicide was defined in accordance with the FBI's latest publication defining serial homicide as the killing of two or more victims with an emotional cooling off period in between killing events (FBI, 2008).

Previous research has established that there are significant differences in the psychological and developmental profile of serial sexual homicide offenders and nonserial sexual homicide offenders (Carter & Hollin, 2010; James & Proulx, 2014, 2016). It was recommended to study the two groups separately or at minimum methodologically control for the differences (Higgs, Carter, Stefanska, & Glorney, 2017). James and Proulx (2014) conducted a systematic review in which they examined the psychological and developmental differences between serial sexual murderers and nonserial sexual murderers. James and Proulx's systematic review included the quantitative analysis of 45 studies between 1985 and 2013, including a total of 1836 sexual murderers: 176 serial and 1660 nonserial. Offenders were compared using three variable categories, (a) developmental variables, (b) adult life and criminal career variables, and (c) psychopathological variables. James and Proulx found that nonserial sexual murder offenders tend to be polymorphic criminals with more diverse criminal patterns, they tend to be impulsive when angered. The nonserial sexual murder tends to adopt a victim stance in their lives, and the act of sexual homicide can be perceived as carrying out vengeance or as an outlet for their anger (James & Proulx, 2014). Nonserial sexual homicide offenders are often socially and emotionally isolated and have poor peer relationships, especially during key developmental periods in their lives (Nicole &

Proulx, 2007).

On the other hand, James and Proulx (2014) described the serial sexual murderer as an offender driven by sexuality and sadism, who are socially isolated, who have been rejected, humiliated, and who take refuge in compulsive masturbation and paraphilias to compensate for their lack of success in emotional, relational, and sexual domains. Briken et al. (2010) suggested that paraphilias may develop as a means of coping through avoidance of their severe anxieties and deficiencies. Paraphilias also tend to be found at higher rates in offenders with sadistic personality traits (Briken et al., 2010).

Although James and Proulx's (2014) research highlighted the differences between serial and nonserial sexual murderers, there are multiple similarities between both groups. James and Proulx found that both groups displayed the following characteristics: violent behaviors, fire setting, cruelty to animals, history of childhood trauma including sexual, psychological, and physical abuse, generally being raised in a dysfunctional home environment, and low-self-esteem. Although these characteristics were found to be present in serial and nonserial sexual murderers, they occurred at different rates. Other researchers reported the following similarities in their sample: problems with emotional loneliness, low empathetic concern, sexual entitlement, social disconnection, and problematic peer relationships (Higgs, Carter, Stefanska, & Glorney, 2017).

In James and Proulx's (2014) research, they used a serial murder definition that includes a minimum the three separate murders by the same offender with an emotional cooling off period between murders. The current definition of serial murder used by the FBI, and definition used in this study, only requires two homicides with an emotional

cooling off period between kills. Therefore, many cases that may have been categorized as nonserial sexual homicides in the James and Proulx's study, would be categorized as serial offenders in other studies. The use of different definitions blurs the lines in the claims that serial and nonserial sexual murder offenders are truly different.

Considering the differences between these offender groups, many researchers suggested studying serial and nonserial sexual homicide offenders separately (Higgs, Carter, Stefanska, & Glorney, 2017; James & Proulx, 2014, 2016). The current study only included serial sexual homicide offenders. Regardless of the psychological and developmental differences between serial and nonserial offenders, it is assumed that the underlying sexual murder motive subtypes can be applied in either serial or nonserial cases. The Higgs, Carter, Tully, and Browne (2017) systematic review from which the three distinct sexual murder subtypes were identified used a combined sample of both serial and nonserial murderers. The Higgs, Carter, Tully, and Browne sexual murder subtypes are used in this research and applied exclusively to serial sexual homicide offenders.

Sexual Homicide Subtypes and Subtypologies

The most cited sexual homicide typology in the literature is the FBI's organized versus disorganized typology of sexual homicide behavior. This typology appears to have been used across violent crimes, most notably serial homicide (Hickey, 2016; Ressler et al., 1992). Through time other researchers have proposed different typologies to best describe and categorize the different motivational and offending patterns of sexual homicide offenders (see Higgs, Carter, Tully, & Browne, 2017; James et al., 2020;

Ressler et al., 1992; Stefanska et al., 2016). These typologies have often been considered for both serial and nonserial sexual homicide offenders, although most of the recent research tends to focus on nonserial homicide (i.e., Beauregard & Chopin, 2020; James et al., 2020). One should also consider the other existing typologies for serial homicide, in which sexual homicide is often referred to as lust murders and hedonistic (Hickey, 2016; Mitchell & Aamodt, 2005).

In the current study, sexual homicide was subdivided into three subtypes using the subtypes identified in the Higgs, Carter, Tully, and Browne (2017) systematic review. Higgs, Carter, Tully, and Browne reviewed the sexual homicide typology literature, including both serial and nonserial offender studies, and found three consistent subtypes across the literature: sexualized, grievance, and rape murder. Although many studies have outlined sexual homicide typologies using behavioral and crime scene variables, intent and motivation in offending behavior is difficult to identify, prove, and understand (Beauregard & Martineau, 2016). In many cases, the absence of offender disclosure becomes an issue in classifying the motive category of sexual homicide offending (Carter et al., 2016). The Higgs, Carter, Tully, and Browne's (2017) sexual homicide subtypes are explored in this section, alongside some of the other documented typologies and classifications.

Organized and Disorganized

Ressler, Burgess, and Douglas were the early pioneers of criminal profiling in the FBI. Using offender interviews, they developed the organized versus disorganized classification system for serial murder offenders (Ressler et al., 1992). The underlying

rationale for the use of their classification system was that the offender's behavior reflects their personality, and by examining behavioral traits, investigators can gain insight on what type of person is likely responsible for the offense. The organized murderer was described as an offender who demonstrates an element of conscious planning in his murder and displays control over his victim at the scene, their victims are often targeted and likely to be strangers, they tend to engage in an element of ritualism and tend adopt forensic countermeasures to avoid detection (i.e., moving the body and disposing of weapons). The organized offender's crime scene reflects control, they are more likely to use restraints, to inflict aggressive acts prior to death, and demand submission from their victims (Ressler et al., 1992).

On the other hand, the disorganized murderer was described as an offender with a higher tendency to act spontaneously, they are more likely to know their victims or have a familiarity with the crime location, they tend to be more chaotic in their approach to the murder, and tend to leave behind a more disorganized or sloppy crime scene with limited efforts to engage in forensic countermeasures. These offenders are less conscious of their planning of the offense, they tend to exert violence in a sudden manner, they are less likely to use restraints and more likely to depersonalize the victim, they are also more likely to engage in post-mortem sexual activity (Ressler et al., 1992).

Higgs, Carter, Tully, and Browne (2017) Sexual Homicide Subtypes

Several prior studies have attempted to establish a classification of sexual homicide offenders based on behavioral and psychological characteristics, however according to Higgs, Carter, Tully, and Browne (2017) most of these studies relied heavily

on expert opinion rather than a data driven empirical approach with sufficiently large sample sizes. As a means of mitigating this problem, Higgs, Carter, Tully, and Browne conducted a systematic review utilizing offender samples of a combined 7 studies including 700 sexual murderers that met their inclusion criteria and sought to establish an empirically valid typology of sexual murderers. Their sample included sexual murderers above the age 10 who killed women above the age of 14; 264 were serial sexual murderers and 436 were nonserial sexual murderers. The data was analyzed and organized to identify themes in types across the studies, and the factors that may reliably distinguish between types were identified. Higgs, Carter, Tully, and Browne identified three subtypes that clearly emerged in the literature and identified the social and psychological characteristics that were most likely to be associated with each type. The types identified in their systematic review were sexualized, grievance, and rape murder (Higgs, Carter, Tully, & Browne, 2017).

Sexualized Subtype

According to the Higgs, Carter, Tully, and Browne (2017) systematic review, the sexualized sexual murderer is an offender in which sadistic behavior is a key component of the motive to sexually kill. However, although the sadistic element is commonly noted in the literature, Stefanska et al. (2017) noted that it is not always a feature in every sexualized sexual homicide. Within this motive category, the act of killing is functionally related to the sexual element of the offense, meaning that the offender derives sexual pleasure through the process of killing, and the infliction of pain and control over their victims. The sexualized motive subtype was present in all seven of the studies meeting

the inclusion criteria in Higgs, Carter, Tully, and Browne systematic review.

The findings of the systematic review indicated that the sexualized motive type can be identified by the following characteristics: the presence of deviant sexual fantasies with a higher likelihood of having deviant fantasies 48 hours prior to the offense (Beauregard & Proulx, 2002), self-reported regular use of pornography and sexual contact with prostitutes (Stefanska et al., 2015), presence of sadistic behaviors, a higher likelihood to strangle victims, post-mortem sexual interference, premeditation of act of killing, victims are more likely to be strangers and may often be specifically targeted, there is often a degree of perversion beyond that of the other subtypes, foreign object insertion is more likely in this type, substance abuse tends to not be a significant precipitating factor in the sexualized murder type, and the murder itself carries a functional role in the offender's sexual arousal. In another study by Stefanska et al. (2017) published two months prior to the Higgs, Carter, Tully, and Browne (2017) study found that those who fit the criteria of the sexualized subtype of sexual homicide, were more likely to exert control over their victim, were more likely to use a con strategy to lure the victim, kidnap, confine, humiliate, and torture the victim. They also appeared more adept at using forensic countermeasures such as destroying or removing evidence, cleaning the crime scene, and concealing the victim's body (Stefanska et al., 2017).

Grievance Subtype

The grievance murderer is described as a sexual murderer driven by an angry schema and an excessively aggressive response style (Higgs, Carter, Tully, & Browne, 2017). In their study, Beech et al. (2005) identified a group of offenders that were not

only motivated by anger but also harbored resentment towards women; these offenders were later associated with the grievance type (Stefanska et al., 2015). It was suggested that these offenders often kill within the context of what may have initially begun as a consensual encounter, when something triggers the offender (i.e., a victim who refuses further sexual advances, rejection, an argument ensues, or offender may not have successfully achieved an erection for intercourse, etc.) (Stefanska et al., 2015).

In the Higgs, Carter, Tully, and Browne (2017) systematic review, the grievance subtype was found in six of the seven studies meeting the inclusion criteria. The grievance subtype is also commonly known as the anger or angry type. The grievance sexual murderer is characterized by the presence of anger from distal and or proximal grievances, this offender tends to engage in particularly violent attacks and may inflict multiple injuries to the victim, and overkill is common in this offender subtype. Overkill alone is not sufficient to categorize an offender as fitting the grievance sexual murderer subtype, because overkill has been identified in other types of sexual murderers (Chopin & Beauregard, 2020). The grievance sexual homicide offender's behavior typically does not reflect deviant sexual fantasies, and the offense is more likely to be unplanned. Compared to the other sexual homicide subtypes, the grievance offender is more likely to engage in anal rape (Higgs, Carter, Tully, & Browne, 2017). Like the sexualized murderer, the grievance offender may engage in post-mortem interference and post-mortem mutilation, however these behaviors are found less frequently and likely do not represent the acting out of premeditated sexual fantasy (Stefanska et al., 2017). The grievance sexual homicide offender is more likely to know the victim, compared to the

other subtypes. Given the spontaneity of these murders, the murder weapon is often found at the scene. This offender may also have experienced prior problems with substance abuse, and intoxication may be a precipitating factor to the crime. Lastly, the offender is unlikely to engage in forensic countermeasures and the scene is often found uncleaned with the body unmoved from the scene of the death (Stefanska et al., 2017).

Rape Murder Subtype

Rape murder is defined as an instrumental killing following the act of rape (Higgs, Carter, Tully, & Browne, 2017). The act of killing carries little to no sexual gratification, and there is only an indirect association between the sexual offense and killing the victim (Stefanska et al., 2015). A simple way of categorizing this type of murder, is the absence of the defining characteristics of the two other types of sexual murderers (Higgs, Carter, Tully, & Browne, 2017). Higgs, Carter, Tully, and Browne (2017) described the rape murderer as a murderer with the main objective of having the rape and sex, and killing is instrumental following the sexual assault. There is no post-mortem sexual interference, no post-mortem rituals or mutilation. The sexual assault is generally planned while the intention to kill may have been planned or unplanned. The victim selection and rape offense may be driven by fantasy. Even though fantasy may contribute to the victim selection and rape behavior, the violence and killing is not associated with deviant sexual interest and is not triggered by a negative state of emotional arousal. Further, overkill or the prolonged use of violence is not present in this subtype (Higgs, Carter, Tully, & Browne, 2017).

Other researchers conceptualized sexual murderers as the more violent extreme on

a spectrum of sexual offenders (Chopin & Beauregard, 2019; Higgs, Carter, Stefanska, & Glorney, 2017). This theory appeared plausible when considering the presence of the rape sexual homicide subtype, thus suggesting that these offenders commit sexual assaults with a greater degree of violence causing death. This question was examined further by Higgs, Carter, Stefanska, and Glorney (2017) in which they found that the sexual murderer had a different developmental and psychological profile than violent sexual aggressors. Therefore, suggesting that although the commission of the murder is considered indirect or instrumental to the sexual assault, these offenders are more closely associated with other sexual murderers than with violent sexual aggressors.

Criticism of Higgs, Carter, Tully, and Browne Subtypes

Regardless of the empirical method in which the Higgs, Carter, Tully, and Browne (2017) sexual murder subtypes were identified, these subtypes have not been without criticism. Generally, there appears to be widespread consensus on the existence of the sexualized sexual murder and their defining characteristics. Within the literature, various terms have been used to identify the sexualize sexual homicide offender. The sexualized subtype is a widely accepted sexual homicide motive subtype. On the other hand, even though the grievance motive was found in six of the seven studies included in the Higgs, Carter, Tully, and Browne systematic review, some authors have criticized the grievance or anger motive subtype. Carter and Hollin (2014) argued that anger as a motivational drive is problematic, they noted that recognizing the emotional state of an offender at the time of the crime does not adequately explain the nature of the sexual element in sexual murder. However, it could be suggested that emotional state is linked to

sexually oriented underpinnings, whether it be longstanding distal or proximal grievances toward women, sexual incompetence, sexual rejection, etc.

James et al. (2020) criticized the approach used in the identification of the Higgs, Carter, Tully, and Browne (2017) subtypes, and suggested that the process was completed without consideration for existing psychological and criminological concepts. In other words, the Higgs, Carter, Tully, and Browne's sexual homicide subtypes were not guided by underlying psychological or criminological theories (i.e., proactive vs. reactive aggression), but rather identified using common offender characteristics that consistently arose throughout various studies. James et al. also noted that this approach created additional terminology that is only specific to the domain of sexual offending, which runs the risk of remaining only peripheral to mainstream psychology. James et al. noted that the approach used to identify the subtypes negatively affected the ability to integrate future findings into mainstream psychology and criminology.

Although not without limitation, the Higgs, Carter, Tully, and Browne (2017) sexual homicide subtypes have merit in defining and categorizing sexual homicide offenders into three subtypes: sexualized, grievance, and rape murder. In fact, many studies authored after the publication of these subtypes have cited the motive subtypes and often drawn parallels to other more mainstream psychological concepts (see James et al., 2020; Stefanska et al., 2017). Higgs, Carter, Tully, and Browne clearly noted that further research is needed to gain additional knowledge and to develop standardized operational definitions of each offender type.

Other typologies in the recent literature include what Stefanska et al. (2020)

defined as direct versus indirect sexual homicide offenders. The direct sexual murderer was characterized as the "true" sexual killer, in that the sexual element and the act of killing are both integral to the criminal event. The act of killing provides a source of sexual gratification. On the other hand, the indirect sexual homicide offender is an offender in which the sexual element is not directly linked to the act of the killing (Stefanska et al., 2020; Stefanska et al., 2017). The indirect sexual murderer resembled the rape murder type, whereas the direct sexual murderer is more closely associated with sexualized type, and the grievance cases appear to be a combination of both direct and indirect sexual homicide offending (see Stefanska et al., 2015). However, if the indirect type offender's killing behavior is not linked to sexual gratification, but the serial sexual homicide offender only kills within the context of sexual interactions, or in which a sexual element is present (i.e., Ressler et al. 1992 criteria), and does not kill within any other context, one must therefore consider the presence of a sexual element as integral to the killing regardless of the source of sexual gratification.

In their study, James et al. (2020) utilized the dichotomy of reactive versus proactive aggression as applied to sexual homicide. James et al. discussed the value in applying pre-existing and widely utilized concepts such as proactive and reactive aggression to the field of sexual homicide, rather than constructing new typologies specific to sexual offending. Like the direct sexual murderer, the proactive sexual murderer was described as an offender motivated by the internal reward associated with offending. The proactive sexual homicide offender resembles the sexualized offender. Whereas the reactive sexual homicide offender was defined as an impulsively driven

offender in which the physical aggression is accompanied by high, uncontrolled autonomic arousal, which resembles the grievance type (James et al., 2020). Although other typologies and models are cited and discussed in the sexual homicide literature, the Higgs, Carter, Tully, and Browne (2017) subtypes are the subtypes used in the current study.

Theoretical Foundation

The theoretical lenses through which the study is examined is Bandura's social learning theory as applied to the concept of general aggression (Bandura, 1973) and Hickey's trauma-control model for serial murder (Hickey, 2016). Bandura's social learning theory is a widely accepted psychological theory that pertains to nearly all aspects of human learning and development (Bandura, 1973). Social learning theory can be used as a foundational theory to aid in understanding the concept of serial murder. In a recent publication on sexual homicide by James et al. (2020), they recommended to study the topic of sexual homicide using more common theoretical frameworks, including social learning theory, as a means of merging the knowledge on sexual homicide with known foundational theories of criminal behavior.

Social learning theory was founded on the idea that people learn through the observation of others and subsequent attributions to their experiences. In the development of social learning theory, Bandura described the nature of human behavior as understood within the context of continuous reciprocal interactions between the individual's behavior and its controlling conditions within the world in which they operate. Social learning theory focuses on the role of previous learning and experiences on future behavior.

Bandura suggested that behavioral patterns are acquired through one's direct experience and through observation. Additionally, social learning posits that human functioning relies on three regulatory systems: that of antecedent inducements, response feedback, and cognitive processes that guide and regulate behavior. Aggression is therefore learned through similar processes as the acquisition of other behaviors, through stimulus, reinforcement, and cognitive control (Bandura, 1973).

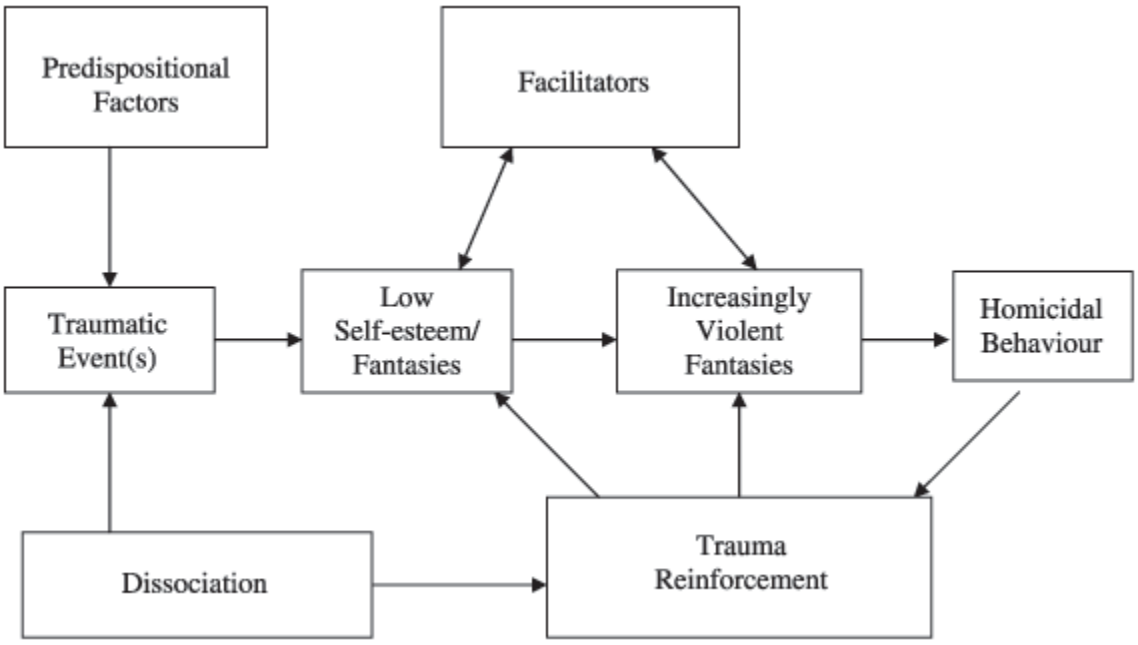
Consistent with the purpose of the current study, social learning theory recognizes the role of previous adverse childhood experiences and adverse environmental conditions on the development of aggressive behavioral patterns (Bandura, 1973). In his book on aggression, Bandura (1973) discussed Silver et al. 's (1969) longitudinal research that identified a cross generational pattern of aggression. Silver et al. reported that children who were exposed to brutal treatment from their parents, later became more inclined to engage in abusive behaviors later in life. Although Silver et al.'s research dates back over 50 years, the concept of childhood maltreatment influencing the risk of future violence is a well-established phenomenon in current forensic psychological and criminological literature. Lastly, social learning theory posits that aversive treatment can generate a state of negative emotional arousal which can then facilitate the exhibition of aggressive behavior, mitigated by the presence of previously learned coping responses (Bandura, 1973).

Hickey's (2016) trauma-control model for serial murder explains the general trajectory and contextualization of the role of several compounding variables in the development of a serial murderer. Hickey's model focuses primarily on the role of trauma

as defined by the influence of destabilizing events in early life on the development of serial murder offenders, and how these interact with the other known variables involved in the etiology of serial murder. The model suggests an interaction between traumatization (i.e., sex abuse, divorce of parents, physical abuse, death of parents, peer rejection, etc.) in the formative years of an offender's life and how these develop into a cyclical interactive process between trauma, low self-esteem, dissociation, and violent fantasies to psychologically regain power, with facilitators (stressors), ultimately leading to homicidal behavior and circling back to trauma and fantasy reinforcement. The experience of traumatization or adverse childhood events can lead to low self-esteem, the potential development of control-gaining violent fantasies, subsequent dissociations, added to potential pre-dispositional factors, psychosocial facilitators, trauma reinforcement throughout development, which can lead to homicidal behavior (Hickey, 2016). Arndt et al. (2004) noted that although the trauma-control model applies to the general serial murderer population, the model is best applied to sexually motivated murderers. See figure 1 for a depiction of the Hickey's trauma-control model.

Figure 1

Hickey's Trauma-Control Model



According to Hickey (2016), the most common effect of childhood trauma is manifested in rejection. The abuse is felt as a form of rejection, leading to a deep sense of anxiety, mistrust, and confusion in the aftermath of abuse victimization by adults. Childhood abuse victimization interferes with the child's normal development and potentially leads to the development of antisocial methods in expressing their needs, using intense hostility, and can lead to further social isolation (DeLisi & Beauregard, 2018). Hickey suggested that nearly all serial homicide offenders experience feelings of inadequacy, self-doubt, and worthlessness. Feelings that if not coped with adequately can

lead to distorted views of self and the world around them, at which point the individual can retreat in dissociation and fantasy (Hickey, 2016).

Offenders dedicate a substantial effort in re-establishing their psychological equilibrium that has been lost through their maltreatment; this may take the form of constructing a facade persona of self-confidence and self-control at times only achieved through fantasy. The trauma-control model places significant emphasis on the role of control, regaining self-control and controlling others (Hickey, 2016). The control of others is used as a substitute for filling the void of self-control and psychological agency on the offender's own life. Offenders use violent offending, and depending on the offender type, sexual acts as a means of achieving their sense of control. Dr. Hickey stated that: *"Violence is an ego defense mechanism against intense inner pain and loss of self-esteem" (Hickey, 2016, p. 87).* In sum, Hickey's trauma-control model places significant emphasis on the cyclical interaction between the trauma experience and offending processes that influence the development of the serial homicide offender. The trauma-control model focuses on the interconnected nature of the role of traumatization, dissociation, fantasy formation, facilitators, violence, control seeking, re-traumatization, and repeating the process (Hickey, 2016).

There are several commonalities between Hickey's trauma-control model for serial murder and Burgess et al.'s (1986) motivational model of sexual homicide. They both draw similar emphasis on offenders' developmental responses to previous adverse experiences on the pathway toward sexual homicide offending (Burgess et al., 1986; Hickey, 2016). Using the Trauma-Control model as a theoretical backdrop for this study

provided a contextualized view of the larger process of the trajectory toward serial sexual homicide offending. The combination of social learning theory and the trauma-control model offered a unique viewpoint into the development of those who commit serial murders, particularly serial sexual murders. The social learning theory serves as a foundational basis for understanding aggressive behavior and provides insight into the role of developmental events in shaping aggressive behavior, in conjunction with the trajectory contextualization of the trauma-control model.

Childhood Developmental Variables

It is well documented in both the serial murder and sexual homicide literature that childhood developmental factors such as childhood abuse of varying types and childhood behaviors (i.e., McDonald Triad), are known to influence the development of serial murderers, particularly sexually driven serial murderers (see Chopin et al., 2022; DeLisi & Beauregard, 2018; James et al., 2020; Leary et al., 2017; Marono et al., 2020; Mitchell & Aamodt, 2005; Reid et al., 2019; Ressler et al., 1992). Several researchers have sought to quantify the presence of abnormal developmental events in sexual homicide offenders and serial sexual homicide offenders. These studies unequivocally suggested that childhood trauma, in the form of abuse and exposure to adverse childhood experiences (ACEs), are prevalent at a higher rate in populations of sexual homicide offenders, compared to the general public (DeLisi & Beauregard, 2018; Mitchell & Aamodt, 2005). The role of childhood abuse in the development of serial murderers remains an area of interest for researchers, a phenomenon that has varied in level of correlation across the literature (Mitchell & Aamodt, 2005). Reid et al. (2019) stressed that human development

occurs as a result of a series of complex reciprocal transactions between the individual and their environment across the lifespan. The relationship between specific childhood experiences and future behavior can rarely be defined as direct causal relationships.

Childhood Victimization

In writings as early as Ressler et al.'s (1992) pioneering work in studying serial sexual homicide offenders, they documented a high prevalence of childhood abuse in their offenders. In their sample, offenders presented with a history of psychological abuse (74%), physical abuse (42%), sexual abuse (43%). Additionally, these offenders frequently grew up in homes with a family history of alcohol and drug overuse, family psychiatric history, family criminal history, family sexual problems, parental abandonment, and inconsistent, hostile, and unfair discipline. Mitchell and Aamodt (2005) conducted an analysis to assess the rate of childhood abuse in serial sexual murderers and compared the rates of abuse between organized and disorganized offenders using the FBI organized/disorganized classification. Within a sample of 50 offenders, Mitchell and Aamodt found abuse rates similar, but slightly lower than Ressler et al.'s findings. Mitchell and Aamodt found that 68% of their sample experienced at least one form of childhood abuse, while 32% did not experience any childhood abuse. In Mitchell and Aamodt's sample, 36% of offenders experienced psychological abuse, 26% experienced sexual abuse, 50% experienced psychological abuse, and 18% experienced neglect. Organized serial sexual murderers were more likely to report psychological abuse, whereas the disorganized offenders were more likely to report sexual abuse and neglect. Both groups reported physical abuse equally. Mitchell and Aamodt's findings

indicate that although both groups experienced similar rates of abuse, there were differences in the types of abuse experienced between organized and disorganized sexual homicide offenders.

Recent studies have examined the incidence and the role of childhood abuse on the development of sexual homicide offenders (see DeLisi & Beauregard, 2018; Chopin et al., 2022; James et al., 2020; James & Proulx, 2014; Leary et al., 2017; Marono et al., 2020; Reid et al., 2019). The recent literature supported the notion that childhood abuse, in its different forms, influenced the development of sexual homicide offenders in both serial and nonserial samples. No studies thus far have endorsed identical statistical proportions of childhood abuse victimization in this population group, yet all support the notion of the validity of childhood abuse as a factor in the developmental equation leading to sexual homicide.

James and Proulx (2014) examined the differences in the developmental profile between serial and nonserial sexual homicide offenders and identified differences in the incidence of childhood abuse victimization particularly in the form of psychological abuse, neglect, exposure to sexual activities outside the family unit, dysfunctional family environment, and deviant behaviors. Serial sexual homicide offenders were characterized as being socially isolated, rejected, humiliated, and tend to take refuge in compulsive masturbation and paraphilias, as a compensation for personal deficits in social, emotional, relational, and sexual lives (James & Proulx, 2014). However, this study did not distinguish between sexual homicide motive subtypes, instead they grouped serial and nonserial as dichotomous groups, without consideration for the intra-group heterogeneity.

Reid et al. (2019) analyzed the developmental mechanisms that shaped serial sexual homicide offenders with a focus on the role of the caregivers or caregiver figures, paternal or maternal, from whom the abuse was inflicted. They found that the offenders who experienced psychological abuse most frequently experienced it from a maternal figure, whereas physical abuse was most prevalent from the child's male paternal figures. Reid et al. also found that a large portion (79%) of their sample experienced polyvictimization, that is, experiencing more than one form of childhood abuse.

DeLisi and Beauregard (2018) examined the association between adverse childhood experiences (ACEs) and nonserial sexual homicide offenders using a large sample of incarcerated males in Canada. Their findings and epidemiological table of odds suggested that a gradient of ACEs was associated with sexual homicide. The odds of committing sexual homicide increased drastically in offenders that experienced all the types of adverse experiences included in the Adverse Childhood Experience Questionnaire. Offenders who were exposed to psychological, physical, and sexual violence, had a higher likelihood of developing into sexual homicide offenders, compared to nonlethal sexual offenders. Consistent with Reid et al.'s (2019) findings on the high prevalence of polyvictimization in serial sexual homicide offenders, DeLisi and Beauregard found evidence suggesting that as the number of ACEs increased, so did the likelihood of sexual homicide offending. Furthermore, Chopin et al. (2022) found a distinction in the psychological development of those who experienced firsthand victimization compared to those who only witnessed it. Chopin et al.'s findings indicated that the psycho-developmental impact of direct victimization versus witnessing

victimization differed in the resulting psychopathology within their sample of Canadian non-homicidal sexual offenders and homicidal sexual offenders.

Parental Abandonment and Peer Rejection

In addition to childhood abuse and exposure to violence, the literature suggested that parental abandonment also plays a role in the development of serial sexual homicide offenders (Beauregard & Martineau, 2016; Hickey, 2016; Mitchell & Aamodt, 2005; Reid et al., 2019; Ressler et al., 1992). Ressler et al. ‘s (1992) interviewed serial murderers and on reported on the significance of the impact of parental separation, particularly when a new male paternal figure was added in the family unit. Reid et al. (2019) found that parental abandonment by at least one parent was reported by 56% of their serial sexual homicide offender sample. Fathers were three times more likely to abandon their children than mothers. A significant portion of a child’s development rests upon the extent to which they feel accepted or rejected by their early caregivers (Reid et al., 2019); a perception which then translates into a roadmap for future interpersonal interactions and interpretations (Ressler et al., 1992). These findings align with literature on the role of early attachment on childhood development (Conradi et al., 2015; Walters, 2019).

In Ressler et al.’s (1992) sample of serial sexual homicide offenders, they found that 47% of offenders had their father leave before the age of 12, 72% of offenders had a negative relationship with their paternal caretaker figures, 44% had a negative relationship with their mothers, and 66% of offenders had their mother as the dominant parent. Parental abandonment and the familial contribution in development, both in the

physical absence of parents and or the emotional absence in the lack of involvement of one or both parents, are considered important variables in the development of the serial sexual murder (Mitchell & Aamodt, 2005). Physical abandonment and perceived abandonment and poor attachment by one of both parental figures should be considered in the developmental equation. An example of perceived abandonment includes physically present but mentally absent parents, possibly due to factors such as alcohol or drug use (Mitchell & Aamodt, 2005), the innate lack of parental empathy and caring, and or other behaviors that leave the child feeling uncared for. Consistent with the larger body of literature, Beauregard and Martineau's (2016) findings supported the notion that offenders who committed violent sexual assaults were likely to have experienced parental abandonment.

Beyond parental abandonment, peer rejection has also been credited as a formative developmental experience common across many known serial and nonserial sexual homicide offenders (Hickey, 2016; Nicole & Proulx, 2007; Reid et al., 2019). In their research, Nicole and Proulx (2007) discussed how social and emotional isolation, and impoverished peer relationships, can be particularly impactful during key developmental stages of one's life. Nicole and Proulx reported that experiencing peer rejection was a common experience among sexual murderers. Further, in a study examining the life course trajectory of serial sexual homicide offenders, Reid et al. (2019) found that 71% of the men in their sample reported being loners during middle school. Reid et al. explained that peer rejection led to experiencing chronic stress, which can lead to synaptic deficits, and undermine health, social, and emotional development.

According to Hickey (2016) children who face peer rejection and alienation are statistically more likely to adopt aggressive behaviors in comparison to their nonrejected counterparts. It has been hypothesized that some serial killers have killed as a result of rejection and abandonment from their childhoods (Hickey, 2016), that is, in combination with other complex combinations of developmental experiences.

Abnormal Sexual Experiences

Ressler et al.'s (1992) research highlighted the prevalence of abnormal sexual experiences in early childhood and subsequent abnormal sexual desires, fantasy, and sexual problems, in their sample of serial sexual murderers. Many studies have incorporated sexual abuse and witnessing sexual violence as variables in the psychological development of serial and nonserial sexual homicide offenders. Ressler et al. identified the elements of abnormal sexual experiences that these offenders experienced, there included direct victimization, observation, fantasy, and sexual dysfunction. In their sample, they found that 35% of offenders reported witnessing sexual violence in childhood, 35% witnessed disturbing sex from their parents, 42% witnessed disturbing sex from other adults/friends, 28% suffered from sexual injury or disease, 73% recall experiencing a sexually stressful event, and 43% reported having been sexually abused as a child. From a paraphilic perspective, Ressler et al. found that 71% of their sample reported engaging in voyeuristic behaviors, 81% used pornography, 72% reported fetishism, and 79% reported engaging in autoerotic practices. Within their sample, 61% admitted to endorsing rape fantasies, 50% endorsed a rape fantasy between the age of 12 and 14 years old, only 56% of the offenders had ever experienced consenting sex, and

44% had experienced non-consenting sex. Lastly, Ressler et al. found that 70% reported feeling sexually incompetent, 43% had an aversion toward sex, and 30% expressed concern regarding their genital size.

The statistics identified in Ressler et al.'s (1992) book clearly paint a picture of the high prevalence of sexual victimization, both experienced and observed, and subsequent sexual abnormalities and dysfunctions in this population. These findings highlight the relevance of sexual experiences and sexual role models throughout the serial sexual homicide offenders' lives. Ressler et al. suggested that those who experienced sexual abuse were more likely to report sexual conflicts, dysfunction, and incompetence. Even though Ressler et al.'s research dates back over 30 years, these authors pioneered this area of research within the FBI, specifically in the context of serial sexual murderers. Recent studies and authors have identified similar findings in relation to the prevalence of sexual victimization in this population group (DeLisi & Beauregard, 2018; James et al., 2020; James & Proulx, 2014; Leary et al., 2017; Marono et al., 2020; Mitchell & Aamodt, 2005; Reid et al., 2019).

Some authors explored the psychological mechanisms that explain the role of childhood abuse in the later development of serial sexual homicide offenders. Tanescu (2021) discussed how childhood victimization can fundamentally change the individual's perception of the world around them, altering their perception of social values, and forming negative self-views. Tanescu's explanation is aligned, to some degree, with Hickey's (2016) view that violence is a defense mechanism to intense inner pain and loss of self-esteem. In some cases, experiences of victimization led to the subsequent

investment in solidarity, illegal or obsessive sexual behaviors, as a means of regaining control they have perceivably lost over their lives (DeLisi & Beauregard, 2018; Hickey, 2016). Instead of engaging in peer-appropriate activities, potentially because of peer rejection, some offenders retreat into their personalized fantasy worlds in which they are the sole owner of control (Ressler et al., 1992). Fantasies, particularly sexual fantasies, in serial sexual homicide offenders acts as a guiding map toward future offending (Ressler et al., 1992; Rogers, 2020). According to Rogers' (2020) qualitative analysis of five known serial sexual murderers, there was a clear relationship between the offenders' childhood abuse and offending behavior. The offenders acted out their sexual fantasies that were derived as a response to their childhood trauma and victimization (Rogers, 2020). Ressler et al. (1992) suggested that the offenders' fantasies were often projected repetitions of their own abuse and identification with the aggressor. Additionally, the age at which serial sexual homicide offenders began to engage in sexual fantasies was lower in those who reported sexual abuse victimization in comparison to who did not. On average, offenders who experienced sexual abuse engaged in fantasy formation 3.7 years earlier than those who did not experience sexual abuse (11.6 years old versus 15.3 years old) (Ressler et al., 1992).

Linking Childhood Abuse to Offending Patterns

Marono et al. (2020) conducted a study using behavioral sequence analysis as a quantitative method of assessing the relationships and sequences between childhood abuse and adult killing behaviors in male serial killers. Marono et al.'s sample included serial killers from various typologies, not limited to those with a sexual motive. Their

sample included 233 serial murderers that were categorized using the following motive categories: lust, anger, power, and financial. There are various recognized serial murderer typologies. Other researchers examined serial homicide offending using the Holmes and DeBurger typology which comprises of the visionary, mission-oriented, hedonistic, and power/control (Hickey, 2016; Mitchell & Aamodt, 2005), whereas Higgs, Carter, Tully, and Browne (2017) endorsed a typology that viewed sexual homicide offenders (including serial) as a subdividable heterogenous group. Of particular interest to the current study is the relationships that pertain to the lust typology or serial sexual homicide offenders. Marono et al. included three types of childhood abuse in their study, physical, psychological, and sexual abuse.

Marono et al.'s (2020) findings suggested that experiencing different abuse types led to distinct crime scene behaviors. There was a distinct sequence of events between psychological abuse and the lust type. When all three types of abuse were present, the most likely sequence was associated with the lust typology, suggesting that polyvictimization may be correlated more significantly with sexual motives. Sexual abuse on the other hand was linked to all four motive types, and the presence of sexual abuse was associated with more quick deaths. They found distinct sequences between physical abuse and the lust and anger types. Those who experienced physical abuse in childhood were most likely to display overkill, in comparison to those who were sexually or psychologically abused. There were no strong connections between any of the abuse types and the financial gain type, suggesting that childhood abuse played a less significant role in instrumental crime, but rather influenced more significantly expressive

crimes. Marono et al.'s study highlighted the importance of the role of childhood abuse as a risk factor to serial homicide and provided evidence suggesting that the types of abuse endured as a child influenced future offending behavior.

Similar to Marono et al.'s (2020) study, James et al. (2020) examined whether childhood victimization, exposure to inadequate parental behaviors, and psychopathology (i.e.: psychopathy and sexual sadism) could predict the type of aggression displayed in the commission of a sexual homicide. James et al. used the dichotomy of proactive versus reactive aggression as their outcome variable. Their sample consisted of nonserial sexual homicide offenders. Parental maltreatment in the offenders' childhood was associated with reactive aggression, however there was no significant relationship between maltreatment in adolescence and either aggression type. In terms of assessing the role of psychopathy in predicting aggression type, James et al. found that psychopathy factor 1 variables related to interpersonal-affective deficits were associated with proactive aggression, and factor 2 variables related to lifestyle-antisocial symptoms were associated with reactive aggression. Based on their findings, the James et al. suggested that proactive and reactive offenders may have experienced maltreatment at different neurodevelopmental stages. They suggested that reactive aggression offenders may have been maltreated at a younger age, which could have contributed to long lasting neurocognitive deficits that correlate with factor 2 symptoms of the psychopathy checklist. James et al. reported that reactive sexual homicide offenders appeared to carry forward trends of impulsiveness, explosiveness, irresponsibility, and antisocial lifestyles into their offending behaviors, whereas the proactive sexual homicide offenders were

more emotionally detached and utilize cognitive skills and interpersonal strategies including manipulation, superficial charm, and glibness to gain access to their victims.

James et al. (2020) drew comparisons between the proactive and reactive aggression categories and the Higgs, Carter, Tully, and Browne (2017) sexual homicide subtypes. James et al. found that the grievance type shared similarities with the reactive aggression offender, because they lacked extensive premeditation, deviant fantasy, and exhibited a high degree of physical violence in the murder. The findings of the study highlighted the detrimental role of inadequate parental behaviors in the development of reactive aggression sexual homicide offenders, which primarily manifested in impulsive or anger-driven sexual murders. On the other hand, there was an association between proactive aggression sexual homicide offender and sexualized sexual murder subtype. This type was found to have higher scores of sexual sadism and correlated with the presence of the offender's desire to carry out the re-enactment of sadistic sexual fantasies, with clear evidence of planning. The rape subtype of sexual homicide offenders shared commonalities with both proactive and reactive aggression offenders (James et al., 2020).

MacDonald Triad

The MacDonald Triad is a set of childhood behaviors that are considered potential precursors to future violence, these include animal cruelty, fire setting, and enuresis beyond the age of 5 years old (Hickey, 2016; Joubert et al., 2021; Leary et al., 2017; Parfitt & Alleyne, 2020; Walters, 2017). These behaviors have been linked to serial homicide offenders. Serial homicide offenders have a higher prevalence of triad behaviors in childhood than nonoffenders, however the presence of triad behaviors in and

of themselves provide little insight into the direct causality of future serial killing (Hickey, 2016).

In a narrative review of the literature Parfitt and Alleyne (2020) re-examined the validity of the MacDonald Triad and found that there is indeed evidence supporting the notion that any one of the triad behaviors could to some degree predict future offending. However, Parfitt and Alleyne noted the rarity of having all three triad behaviors present in a single case. Joubert et al. (2021) also explored the validity of the MacDonald triad on a sample of non-homicidal sexual offenders. They found that fire setting and animal cruelty were the two most prevalent triad behaviors in offenders who exhibited a higher level of antisocial and aggressive traits. The offenders who exhibited animal cruelty and fire setting behaviors were more likely to exhibit higher levels of expressive aggression. Although the Joubert et al. study was conducted using a nonhomicidal sexual offender sample, the construct of the MacDonald triad was validated on a sample group of whom, by definition, exhibited a lesser degree of violence than sexual homicide offenders. One could then speculate that as the degree of expressive violence increases, the construct's validity strengthens.

Early research on the MacDonald triad, using a sample of incarcerated adults, found that there were nine motivations for childhood animal cruelty: (a) to control the animal, (b) to retaliate against the animal, (c) to satisfy prejudice against a specific species or breed, (d) to express aggression toward an animal, (e) to enhance one's own aggressiveness, (f) to shock people for amusement, (g) to retaliate against another person, (h) to displace hostility from a person to an animal, (h) and to exhibit non-specific sadism

(Kellert & Felthous, 1985). Wright and Hensley (2003) hypothesized that serial homicide offenders turned toward animal cruelty in childhood as a means of venting their anger, and gaining control over another being, and when the target of their frustrations or pain, often adults in their lives, were seen as too powerful to hurt. In a qualitative examination of the graduation from animal cruelty toward killing humans with a sample of five renown serial killers, Wright and Hensley (2003) found that offenders reported a sense of retribution for their own pain and suffering through the infliction of pain, suffering, and death of animals. Wright and Hensley's research supported the hypothesis that animal cruelty can act as a steppingstone behavior toward graduating onto human victims, as they grow older and gain a sense of power in comparison to their child victimized selves. While some serial killers recalled events and thoughts supporting the graduation hypothesis (Wright & Hensley, 2003), others have expressed more interest and enjoyment in the vivisection and exploration of dead animals (Hickey, 2016). The child's interest in animal cruelty and exploration of cutting into dead animals plays a role in the development of the offenders' deviant sexual fantasies (Hickey, 2016), thus potentially influencing offending behaviors and patterns.

Exhibiting MacDonald triad behaviors can be viewed as the child's inner response to adverse developmental events such as parental neglect, abuse, and rejection (Hickey, 2016; Leary et al., 2017). Hickey (2016) noted that the trauma experienced by the child may trigger unintentional bedwetting or enuresis, which can in turn lead to additional emotional distress and shame. There appears to be a cyclical process in which the pain endured can lead to the dysfunctional and shameful behavior of enuresis, thus further

increasing exposure to additional pain, shame, and potential exposure to parental frustrations and additional abuse. On the other hand, fire setting is believed to reflect a proactive expression of the offender's pain through the transitory pathological method of self-expression. Hickey (2016) suggested that the MacDonald triad indicates a pattern of creating hurt because of hurt.

Leary et al. (2017) assessed the relationship between MacDonald triad behaviors and parental abuse within a population of serial killers. Using a sample of 280 male serial killers from the Radford/FGCU Serial Killer Database, Leary et al. found that the strongest predictor of serial killers reporting psychological abuse victimization was fire setting, and the strongest predictor of reported physical abuse was enuresis. There were associations between each triad behavior and sexual abuse victimization, but none of the associations were statistically significant predictors. Leary et al.'s study confirmed the presence of a correlation between childhood victimization and the adoption of subsequent dysfunctional behaviors that have been linked to future aggression in violent offenders. In a study aimed at gaining an understanding of the MacDonald triad behaviors of fire setting and animal cruelty in relation to the traits of fearlessness and disinhibition, Walters (2017) found that disinhibition correlated significantly with fire setting and animal cruelty correlated significantly with fearlessness. When controlling for both fearlessness and disinhibition, animal cruelty and fire setting could no longer predict violent offending. Fearlessness and disinhibition were central to the prediction of violence in those who exhibited triad behaviors in childhood. Walters (2017) also found that fearlessness and callous-unemotional traits were exhibited and strengthened through

animal cruelty, whereas disinhibition and low self-control were more frequently exhibited in those who engaged in childhood fire setting behaviors. Callousness and unemotionality are traits of psychopathy checklist factor 1, whereas disinhibition and low self-control are psychopathy checklist factor 2 characteristics. Walter's (2017) findings aligned with the traits identified and associated to characteristics of proactive and reactive sexual homicide offenders (see James et al., 2020) which also aligns with the sexualized and anger grievance sexual homicide subtypes, respectively (see Higgs, Carter, Tully, and Browne, 2017; James et al., 2020).

In addition to MacDonald triad behaviors, many researchers acknowledged the presence of other developmental behaviors that are associated to future violent offending (see James & Proulx, 2014; Ressler et al., 1992; DeLisi & Beauregard, 2018). Other common childhood behaviors that have been observed in violent offenders and sexual homicide offenders have been daydreaming, destruction and vandalism, rebelliousness, social isolation, chronic lying, and compulsive masturbation (James & Proulx, 2014; Ressler et al., 1992). Compulsive masturbation and daydreaming may be considered influential behaviors in the development of deviant sexual fantasies when considered alongside other developmental experiences (i.e., MacDonald triad, childhood victimization, and criminal behavior).

DeLisi and Beauregard (2018) conducted a comparative analysis examining the role of specific developmental factors in influencing the development of sexual homicide offenders in comparison to non-lethal sexual aggressors. Although Delisi and Beauregard's sample did not include serial sexual homicide offenders, parallels in the

developmental course can be drawn between these two groups (see James & Proulx, 2014). The developmental profile of serial compared to nonserial sexual homicide offenders were different in their degree of sexual sadism, level of isolation, rejection, humiliation, and finding refuge in compulsive deviant sexual fantasies and behaviors. However, both groups shared similarities in their history of exhibiting MacDonald triad behaviors, history of childhood trauma, low self-esteem, and exposure to a dysfunctional home environment (James & Proulx, 2014). Using a series of logistic regressions Delisi and Beauregard (2018) found that sexual homicide offenders backgrounds were riddled with childhood abuse and problematic behaviors. The problematic behaviors, often seen as poor coping mechanism from emotional pain in childhood, were the most useful variables in distinguishing between lethal and non-lethal levels of violence. In other words, it was less about what they have experienced, but more how they responded and coped when faced with adverse and traumatic experiences. DeLisi and Beauregard noted that sexual homicide offenders adopt sexual behaviors in early childhood that reflect a high need for sexual gratification. These early sexual behaviors do not necessarily meet their true sexual needs and may contribute to the seriousness of their adult sexual offending (DeLisi & Beauregard, 2018). Consistent with Hickey's trauma-control model, these offenders may find refuge in solitary, illegal, and obsessive sexual behaviors as a means of regaining some degree of control over their lives (DeLisi & Beauregard, 2018; Hickey, 2016).

Conclusion

There is a wealth of literature linking childhood abuse, adverse childhood experiences, and abnormal developmental behaviors (i.e. MacDonald Triad), as influential variables in the development of sexual homicide and serial sexual homicide offenders (DeLisi & Beauregard, 2018; Hickey, 2016; James et al., 2020; James & Proulx, 2014; Joubert et al., 2021; Leary et al., 2017; Marono et al., 2020; Mitchell & Aamodt, 2005; Parfitt & Alleyne, 2020; Reid et al., 2019; Ressler et al., 1992). The relationship between these variables does not appear to exert influence in isolation, but are rather all intertwined throughout the development of the offender, from childhood abuse, adverse events, to dysfunctional childhood behaviors, fantasy, a psychological need to regain control over oneself, leading to inflicting pain onto another. There is clear evidence in the literature suggesting a relationship between childhood developmental events and offenders' future offending patterns (James et al., 2020; Joubert et al., 202; Marono et al., 2020; Parfitt & Alleyne, 2020; Rogers, 2020). Considering that research on the intricacies of role of adverse childhood experiences in sexual homicide remains scarce (Chopin et al., 2022), there was an opportunity to uncover another facet of this phenomenon. Using a sample of known male serial sexual homicide offenders, the current study sought to assess the relationship between the presence or absence of childhood abuse types and MacDonald triad behaviors, on predicting sexual homicide subtypes using the Higgs, Carter, Tully, and Browne (2017) subtypes.

Chapter 3: Research Method

The purpose of this study was to quantitatively assess the relationship between the childhood developmental variables childhood abuse and McDonald triad behaviors and sexual homicide offender subtypes in a sample of male serial sexual homicide offenders. The sexual homicide subtypes used in this study were those identified in the Higgs, Carter, Tully, and Browne (2017) systematic review. The aim of the analysis was to determine whether the independent variables, childhood abuse types and MacDonald triad behaviors, statistically predict offenders' group assignment in the following subtypes: sexualized, grievance, and rape murderers. This chapter includes a review of the research design and rationale, a definition of the target population, an estimated sample size required for the logistical regression analyses for statistical validity, the analysis plan, the Radford/FGCU Serial Killer Database, and anticipated limitations.

Research Design and Rationale

The variables examined in this study were two clusters of independent variables and a nominal dependent variable. The first independent variable cluster was presence or absence of childhood abuse types: physical abuse, psychological abuse, and sexual abuse. The second cluster of independent variables was the presence or absence of MacDonald triad behaviors: fire setting, animal cruelty, and enuresis. There was clear evidence of the influence of these independent variables on the development of serial sexual homicide offenders (DeLisi & Beauregard, 2018; James et al., 2020; Leary et al., 2017; Marono et al., 2020; Mitchell & Aamodt, 2005; Reid et al., 2019; Ressler et al., 1992). Also, literature suggested that childhood variables can influence later offending patterns in

adulthood (DeLisi & Beauregard, 2019; Hickey, 2016; James et al., 2020; Marono et al., 2020; Ressler et al., 1992; Rogers, 2020; Wright & Hensley, 2003). The dependent variables were the offenders' sexual homicide subtype in accordance with the subtypes identified by Higgs, Carter, Tully, and Browne (2017). Higgs, Carter, Tully, and Browne analyzed the existing literature on the various reported typologies of sexual homicide offenders. Their systematic review established empirically valid subtypes of sexual homicide offenders. The three subtypes were sexualized, grievance, and rape murder. All independent variables were dichotomous categorical variables scored as present or absent, and the dependent variable was a nominal categorical variable with three options: sexualized, grievance, and rape murder.

The research questions were the following: Does the presence or absence of childhood abuse types statistically predict the serial sexual homicide offenders' sexual homicide subtypes? Does the presence or absence of MacDonald triad behaviors statistically predict the serial sexual homicide offenders' sexual homicide subtypes? The research design best suited to answer the research questions was a quantitative secondary data analysis using multinomial logistic regression models. Multinomial logistic regression is a statistical analysis that allows the researcher to statistically assess the correlation between the independent predictor variables and the dependent outcome variable (Cokluk, 2010; Warner, 2013). In the current study, the logistic regression analysis provided statistical estimates of the degree the outcome could be statistically predicted by the presence or absence of the predictor variables: childhood abuse types and MacDonald triad behaviors. Other researchers had used the Radford/FGCU Serial

Killer Database and logistic regression approach in assessing the relationship between MacDonald Triad behaviors and childhood abuse types in serial killers (Leary et al., 2017).

Methodology

Population

The target population was known male serial sexual homicide offenders. Serial homicide offenders were defined by the FBI (2008) as individuals who committed two or more homicides with an emotional cooling off period between homicide offenses. The sexual homicide definition used was Ressler et al.'s (1992) criteria of sexual homicide. According to Ressler et al., a homicide is classified as a sexual homicide when there is evidence of at least one of the following indicators: (a) victim lacks attire, (b) exposure of sexual parts of the victim's body, (c) the body is found in sexually explicit position, (d) an object is inserted in a body a cavity, (e) evidence of sexual intercourse, (f) evidence of substitute sexual activity (e.g., masturbation and ejaculation) or (g) evidence of the execution of sexual fantasies (e.g., genital mutilation). Direct access to the target population was not sought for the purpose of this study. A secondary data analysis was conducted using the Radford/FGCU Serial Killer Database.

Radford/FGCU Serial Killer Database

The Radford/FGCU Serial Killer Database contains data on over 5,000 serial killers in the United States and around the world, and on approximately 15,000 victims. The database includes information on offender demographics, childhood events, family events, MacDonald triad behaviors, general typology, and specific offense characteristics.

The Radford/FGCU Serial Killer Database is managed by Dr. Aamodt of Radford University and Dr. Leary and Larry Southard of Florida Gulf Coast University. The data have been compiled and vetted by the Radford/FGCU Serial Killer Database team over several years from a variety of sources including biographical books, newspaper articles, court documents, self-reports, and other online sources. Furthermore, data from the Serial Homicide Expertise and Information Sharing Collaborative has also been included and merged into the database (Aamodt et al., 2020).

The Serial Homicide Expertise and Information Sharing Collaborative brought together an interdisciplinary team of scholars and practitioners to share data on serial homicide offenders; these contributors included James Alan Fox, Eric Hickey, Gerard Labuschagne, Jack Levin, Janet McClellan, Bryan Nelson, Micheal Newton, Kenna Quinet, Cloyd Steiger, John White, and Enzo Yaksic (Aamodt et al., 2020). Several studies on the topic of serial killers have been conducted using the Radford/FGCU Serial Killer Database (see Leary et al., 2017; Luc, 2016; Mitchell & Aamodt, 2005; Reed, 2018; Tidrick et al., 2020). The Radford/FGCU Serial Killer Database is estimated to be the largest, most reputable, and most comprehensive serial killer database available to researchers (Aamodt et al., 2020; Leary et al., 2017). The goal of the database is to compile and generate accurate data on serial killers and their victims (Aamodt et al., 2020). The definition used to identify serial homicide offenders in the database aligns with the FBI definition outlined at the FBI Serial Murder Symposium in 2005 (Aamodt et al., 2020) and later published by the FBI (2008).

In terms of accuracy, the database administrators continually monitor and update

the information in the database (Aamodt et al., 2020). According to the Radford/FGCU Serial Killer Database 2020 Annual Report, there were several safeguards put in place to ensure the accuracy of the data: (a) they used multiple sources to confirm each piece of information; (b) when multiple sources contained conflicting information, they relied on the most official source such as state records versus media sources; (3) they used graduate students at Florida Gulf Coast University to review and verify the source of information for each data point; and (4) they included an access condition that researchers are to provide new information that they uncover and notify the administrators of any errors they encountered in the database (Aamodt et al., 2020).

To obtain permission to use and access to the database, I communicated directly with Dr. Aamodt, the initial owner of the database, via email in February of 2020 requesting access to the database. Dr. Aamodt agreed to share the database with the following conditions: (a) cite the source of the database as the Radford/FGCU Serial Killer Database, (b) not share the database with anyone outside of the dissertation committee, and (c) inform Dr. Aamodt of any errors found in the database. Dr. Aamodt then shared a Microsoft Excel file containing the entirety of the data set via email. In January of 2023, I communicated with Dr. Aamodt via email to reconfirm the initial permission to use the database for this study. Dr. Aamodt confirmed the permission to use the Radford/FGCU Serial Killer Database for this study.

Sampling Procedure

The sampling method used in this study was convenience sampling with a secondary data set, the Radford/FGCU Serial Killer Database. All available cases in the

data set that met the inclusion criteria were used. Peduzzi et al. (1996) suggested using a minimum of 10 cases per independent variable in a logistic regression analyses. In the current study, six independent variables were examined: three types of childhood abuse (psychological, sexual, physical) and three MacDonald Triad behaviors (enuresis, fire setting, and animal cruelty). Therefore, the minimum number of participants in the study needed to be 60, with the intent of identifying as many appropriate cases as possible. Cokluk (2010) emphasized the importance of conducting a study with a higher number of cases. Due to logistic regression's use of the maximum likelihood approach, the reliability of the model decreases if the number of cases is low.

Case selection was conducted in multiple steps. All cases included in the data set had been screened and identified as serial homicide cases. Serial sexual homicide cases were identified using the Ressler et al. (1992) sexual homicide criteria. Cases with data confirming the presence or absence of childhood abuse types and MacDonald triad behaviors were included. Cases were assigned a motive subtype in accordance with the Higgs, Carter, Tully, and Browne (2017) sexual homicide subtypes. Case details were compared to the behavioral characteristics identified by Higgs, Carter, Tully and Browne. Cases in which motive group assignment was ambiguous or that met the criteria for more than one subtype were excluded from the study. Open-source data were used to supplement the data set information and were used in the offenders' subtype assignment process.

Power analysis for logistic regression was conducted to determine the minimum required sample size using the G*Power software (see Faul et al., 2007). Statistical power

is the probability of correctly rejecting the null hypothesis (Cohen, 1988). The generally accepted power is 0.8 (Cohen, 1988). To conduct a power analysis using the G*Power software, I imputed three main parameters into the application. The first is the alpha value, which was the standard 0.05. The second parameter is the power, which was set at the minimum standard level of 0.8. The third parameter is an estimated odds ratio, which was set at 2.48. An odds ratio of 2.48 represents the intersection between the higher end of small effect size at the intersection of the lower end of a moderate effect size (Ben-Sachar, n.d.; Cohen, 1988). The odds ratio of 2.48 was obtained based on Cohen's effect size equivalencies to odds ratio rule of thumb (Ben-Sachar, n.d.; Cohen, 1988). The minimum required sample size for a power of 0.8 was 71 cases.

Data Analysis Plan

The research questions addressed in the current study were the following: Does the presence of specific childhood abuse types influence and statistically predict the serial sexual homicide offenders' sexual homicide subtypes? Does the presence of MacDonald triad behaviors influence and statistically predict the serial sexual homicide offenders' sexual homicide subtypes? Literature suggested that childhood abuse types and MacDonald triad behaviors are correlated with adult offending patterns within the realm of serial homicide and sexual homicide research (James et al., 2020; Marono et al., 2020; Mitchell & Aamodt, 2005; Rogers, 2020). However, no research had examined that relationship and potential statistical predictability of adult offense characteristics in a population of serial sexual murder offenders, using the Higgs, Carter, Tully, and Browne (2017) subtypes. Considering that a relationship had been identified between childhood

variables and offending patterns in other offender groups (i.e., serial homicide offenders in general or nonserial sexual homicide offenders), I hypothesized that a similar relationship may exist with the scope of male serial sexual murderers. The hypotheses were that the presence or absence of childhood abuse types can statistically predict the offenders' sexual homicide subtype group assignment in accordance with the Higgs, Carter, Tully, and Browne (2017) sexual murder subtypes, and the presence or absence of MacDonald triad behaviors can statistically predict the offenders' sexual homicide subtype group assignment in accordance with the Higgs, Carter, Tully, and Browne (2017) sexual murder subtypes. The null hypothesis was that there is no statistically significant relationship between the predictor variables and the outcome variable.

Multinomial logistic regression analyses were conducted to assess the relationship between the categorical predictor variables and the sexual homicide motive subtypes. The use of a multinomial model allows the researcher to conduct logistic regression analyses without the limitation of a binary outcome variable in a binary logistic regression (Cokluk, 2010; Warner, 2013). For each motive type, logistic regression models assessed the impact of the predictor variables to determine whether any or a combination of the predictor variables influence the motive subtype. Logistic regression analysis allows researchers to predict values of dependent variables based on information from independent variables (Wagner, 2017) in studies in which the dependent variable is binary or categorical (Warner, 2013). In other words, logistic regressions assess whether the independent variables can statistically predict group assignment in the dependent variable. IBM Statistical Package for the Social Sciences software was used to conduct

the statistical analyses. Logistic regression analyses allow more flexibility than other forms of regression analyses or discriminant analyses because the statistical assumptions of normal distribution, linearity, and equality of variance-covariance matrices are not required to be met (Cokluk, 2010).

The overall fit of the model was assessed using the likelihood ratio chi-square test to determine whether the model was statistically significant and different from the null model (see Warner, 2013). Pearson and deviance chi-square tests were also used to assess the model's goodness of fit. McFadden pseudo-R^2 was used to indicate the effect size of the model (see Warner, 2013). The output of logistic regression produces odds ratio data. When the odds ratios are statistically significant, they provide information on which independent variables influenced and statistically predicted the outcome of the dependent variable (Warner, 2013), in this case, predicting the sexual homicide subtype.

Ethical Concerns

The use of secondary data analysis significantly reduced the risk of ethical concerns because it eliminated the need to interact with human subjects. However, there was a potential risk related to the quality of the data (see Devine, 2003). A researcher using secondary (or archival) data has no control over the way the data were collected. It is important to report the data and subsequent findings accurately with transparency to the potential flaws in the data set. Generally, the data should be evaluated in relation to the period of collection, methods used to collect the data, accuracy of the data, and sources of data collection (Devine, 2003; Tripathy, 2013). The Radford/FGCU Serial Killer Database is a well-known database that is consistently revised by its

administrators, who are publishing authors in the field of serial homicide (Aamodt et al., 2020). The extent of the quality control measures put in place by the database administrators bolsters confidence in the accuracy of the data set and reduces subsequent ethical concerns related to the data set. The Walden University Institutional Review Board confirmed that the current study met Walden University's ethical standards. The Institutional Review Board approval number was 02-16-24-0948007.

Threats to Validity

Without access to human subjects, using crime scene behavior descriptions associated with different subtypes to assess and assign sexual murderer subtypes, was a feasible and accessible approach to conducting this study. Marono et al. (2020) employed a similar approach of using behavioral data points in determining serial murder typology in their behavior sequence analysis study. A limitation to reliability in this study was that crime scene behaviors may not always reflect or align with the offenders' true underlying motivations. For example, some crime scene behaviors (i.e., overkill) were present in more than one motive subtype in sexual homicide offenders (Chopin & Beauregard, 2020). Consideration was given to the potential biases involved in the initial data collection and in the subsequent coding of the data into sexual homicide subtypes. Definitions and behavioral characteristics of each type were identified in the Higgs, Carter, Tully, and Browne (2017) systematic review. Researcher bias was also considered. There was the potential for bias in the subtype group assignment process. The risk of bias in subtype assignment was higher in cases in which the available data did not perfectly align or correspond with the Higgs, Carter, Tully, and Browne, descriptions.

Obtaining an adequate sample size was an expected barrier in conducting the study. The Radford/FGCU Serial Killer Database is an extensive dataset consisting of over 5,000 cases comprised of 150 data points per case. However, not all the data points had confirmed data. Therefore, not all variables could be confirmed as present or absent. These gaps in data affected the number the cases that fit the study's inclusion criteria, leading to small sample size and threats to the validity of the results (see Cokluk, 2010).

The use of quantitative methods was an effective approach for statistically assessing the relationship between the predictor variables and the sexual homicide subtypes. However, a quantitative approach fails to account for the individual offender's psychological processes and internal attributions. Even though a recent doctoral dissertation qualitatively explored the factors that influenced homicidal behavior in a small group of serial killers (Rogers, 2020), the is a gap in understanding this phenomenon with a focus on only serial sexual homicide offenders beyond the statistical probability of the associations. A follow-up qualitative study that explores the rich individualized experiences and their role in shaping subsequent offending patterns could mitigate the potential threat to internal validity. Threats to external validity included missing data, which led to the exclusion of many cases. Further, the data set was comprised of known offenders, and therefore did not account for offenders who have avoided detection. This negatively affected the generalizability of the findings.

Summary

The use of a quantitative methodology, specifically multinomial logistic regression analyses was an effective approach to answer the research questions. The

research questions were: does the presence of childhood abuse types, influence and statistically predict the serial sexual homicide offenders' sexual homicide subtypes? And does the presence of MacDonald triad behaviors, influence and statistically predict the serial sexual homicide offenders' sexual homicide subtypes? Access to the Radford/FGCU Serial Killer Database offered a unique opportunity to quantitatively assess the relationship between the predictor variables (childhood abuse types and MacDonald triad behaviors) and the outcome variable of sexual homicide motive subtypes (sexualized, grievance, and rape murder). It was hypothesized that the presence or absence of childhood abuse types and MacDonald triad behaviors would statistically predict the offender's sexual homicide subtype in accordance with the Higgs, Carter, Tully, and Browne (2017) sexual murder subtypes.

Chapter 4: Results

The purpose of the study was to quantitatively assess the relationship between the predictor variables of childhood abuse types (physical, sexual, and psychological) and MacDonald triad behaviors (enuresis, fire setting, and animal cruelty), and the outcome variable of sexual homicide subtype (sexualized, grievance, rape murder) in a population of known serial sexual homicide offenders. The aim of the analysis was to assess whether the presence or absence of childhood abuse types and MacDonald triad behaviors statistically predict offenders' motive subtype. The research questions were the following: Does the presence or absence of childhood abuse types statistically predict the serial sexual homicide offenders' sexual homicide subtype? Does the presence or absence of MacDonald triad behaviors statistically predict the serial sexual homicide offenders' subtype?

Two hypotheses were tested. I hypothesized that the presence or absence of childhood abuse types can statistically predict offenders' sexual homicide subtype group assignment in accordance with the Higgs, Carter, Tully, and Browne (2017) sexual murder subtypes. I also hypothesized that the presence or absence of MacDonald triad behaviors can statistically predict offenders' sexual homicide subtype group assignment in accordance with the Higgs, Carter, Tully, and Browne sexual murder subtypes. The null hypothesis was that there is no statistically significant relationship between the predictor variables and the outcome variable.

This chapter includes a description of the data processing steps and case selection criteria, a review of the offenders' sexual homicide subtype assignment procedure, and

descriptive statistics pertaining to the sample, frequency, and distribution of independent variables among sexual homicide subtype groups. The statistical assumptions required in a multinomial logistic regression and the suitability of the data for analysis are also discussed. Lastly, the results of the statistical analysis are reported.

Data Collection, Processing, and Case Selection

The target population was male serial sexual homicide offenders with available data on the presence or absence of childhood abuse by type, and with data on the presence of absence of MacDonald triad behaviors. Only offenders who could be confidently classified into the sexual homicide subtypes of sexualized, grievance, and rape were included in the study. Cases with evidence of biological or medical conditions considered to have significantly influenced offending behavior (e.g., schizophrenia, traumatic brain injuries) were not included in the study. The criteria used to define sexual homicide was the Ressler et al. (1992) criteria for sexual homicide. Serial homicide was defined using the FBI (2008) definition of two or more homicides with a cooling off period between homicide offenses.

Cases were identified in the Radford/FGCU Serial Killer Database. The data set was provided in a Microsoft Excel file format by Dr. Aamodt. The data set contained information on 5,309 serial homicide offenders. A stepped process to case selection was used to identify 123 cases that met the inclusion criteria of the study. Cases with the following characteristics were excluded from the study: (a) cases with no data on childhood abuse and MacDonald triad behaviors, (b) cases in which the homicides took place prior to the year 1900, (c) team homicides, (d) homicides that appeared to have

been associated with cult or satanic beliefs, (e) homicides that appeared to have been associated with psychosis or traumatic brain injuries, and (f) cases with characteristics that met the definition of more than one sexual homicide subtype.

Open-source data were used to supplement the information in the data set to increase the accuracy of the assignment of sexual homicide subtypes. Cases were assigned sexual homicide subtype motive categories in accordance with the Higgs, Carter, Tully, and Browne (2017) systematic review. The primary purpose of the open-source data was to provide additional descriptive information on the homicides, offenders, and offender behavior to compare them to the behavioral characteristics of each subtype as identified by Higgs, Carter, Tully, and Browne. Open-source information was collected from the following sources: newspaper articles, government websites, court documents (e.g., sentencing, appeals), books, and other websites.

A matrix was used to assign cases to their respective sexual homicide subtypes. The matrix comprised the behaviors associated with and differentiating between each subtype. Information from the Radford/FGCU Serial Killer Dataset and open-source information were used to score the matrix. In the event of contradicting information, the information sourced from the data set took precedence over open-source information with the exception of open-source court documents with full confessions or information pertaining to the confession. Offender confessions were given significant weight in the subtype assignment, many of which provided insight into offenders' motivation and emotional state during the commission of their sexual homicides. Although the Higgs, Carter, Tully, and Browne (2017) systematic review did not provide a comprehensive

operational definition, it provided offender behaviors and crime characteristics for each type. These identified behaviors and crime characteristics were used to develop the matrix. Cases were included in the study if they could be confidently assigned. Any cases with ambiguous or mixed subtypes were excluded.

Grievance was the subtype with the least number of cases present in the data set. To obtain a more balanced distribution and reach acceptable case numbers for the analysis, grievance cases were included in the study with a lower threshold of available data. The threshold for the acceptable amount of data for sexualized and rape cases was the presence of data on four out of six independent variables. An assumption was made that the independent variables without available data were scored as "not present." Due to the low number of grievance cases available, the threshold for inclusion was reduced to cases with any data on the independent variables, thereby increasing the assumption that missing data were scored as "not present." The risk of adopting a lowered threshold of data availability for grievance cases was weighed against the risk of analyzing fewer grievance cases (a smaller sample) and a more uneven distribution.

Convenience sampling was used to select cases for the study. All cases within the data set that met the study's criteria were included in the analysis. The cases available in the data set represented known offenders and the convenience sample was assumed to be representative of the target population. However, the aim of the study was to assess the statistical predictability of sexual homicide subtypes using the presence or absence of childhood trauma types and MacDonald triad behaviors, which required me to exclude cases in which the subtype was ambiguous and cases that had characteristics of more than

one sexual homicide subtype. Therefore, the sample used in this study did not account for ambiguous or mixed subtype cases.

Descriptive Statistics

The total number of cases that met the study's inclusion criteria was 123. The sample breakdown by sexual homicide subtype was, 40.7% sexualized cases (*n* = 50), 26% grievance cases (*n* = 32), and 33.3% rape murder cases (*n* = 41). Within the full sample, 49.6% of the offenders experienced physical abuse (*n* = 61), 56.1% experienced psychological abuse (*n* = 69), 29.3% experienced sexual abuse (*n* = 36), 65.9% experienced at least one form of abuse in childhood (*n* = 81). With regard to MacDonald triad behaviors, 15.4% of offenders in the sample exhibited enuresis (*n* = 19), 17.1% engaged in fire setting (*n* = 21), and 32.5% exhibited animal cruelty behaviors (*n* = 40). Data indicated that 34% of the sample did not experience any childhood abuse (*n* = 42), and 52.8% of the sample did not exhibit any MacDonald triad behaviors (*n* = 65). See Table 1 for frequency of predictor and outcomes variables.

Table 1

*Frequency Table (*N = *123)*

Variable	Category	Number	Percentage
Sexual homicide subtypes	Sexualized	50	40.7%
	Grievance	32	26%
	Rape	41	33.3%
Abuse types	Physical	61	49.6%
	Psychological	69	56.1%
	Sexual	36	29.3%
MacDonald triad	Enuresis	19	15.4%
	Fire setting	21	17.1%
	Animal cruelty	40	32.5%
No abuse		42	34%
No triad		65	52.8%

The sexualized group presented with the lowest incidence of physical abuse (42%), in comparison to rape (53.7%) and grievance (56.3%). The grievance group experienced the highest incidence of psychological abuse (68%) compared to rape (53.7%) and sexualized (50%). All three groups experienced sexual abuse at similar rates, ranging between 26.8% and 31.3%. The group with the highest percentage of offenders who experienced all three abuse types in childhood was the grievance subtype; 25% of the grievance group experienced all three types of abuse, and 28.1% did not experience or report any abuse. Of the rape subtype, 19.5% experienced all three forms of abuse, and 39% did not experience or report any abuse. Similarly, 34% of sexualized subtype did not experience or report any abuse, and 16% experienced all three forms of abuse.

The grievance subtype experienced the lowest rate of enuresis (9.4%) compared to rape (17.1%) and sexualized (18%). The sexualized subtype had the lowest incidence of fire setting (12%) while grievance and rape engaged in fire setting at rates of 21.9%

and 19.5%. The grievance subtype engaged in animal cruelty at a rate of 18.8%, approximately half of those in the rape (36.6%) and sexualized (38%) subtypes. Rape was the subtype with the highest number of cases with all triad behaviors present (n = 3, 7.32%), sexualized subtype had one case (2%), and grievance did not have any who exhibited all triad behaviors. Findings indicated that 65.6% of the grievance subtype in the sample did not exhibit any MacDonald triad behaviors, whereas 48.8% of the rape subtype and 54% of the sexualized subtype exhibited at least one triad behavior in childhood. See Table 2 for the distribution of abuse types and MacDonald triad behaviors per sexual homicide subtypes.

Table 2

Distribution of Abuse Types and MacDonald Triad per Sexual Homicide Subtypes

Variable	Grievance *n* (%)	Rape *n* (%)	Sexualized *n* (%)
Sexual homicide subtype	32 (26.0%)	41 (33.3%)	50 (40.7%)
Physical abuse	18 (56.3%)	22 (53.7%)	21 (42.0%)
Psychological abuse	22 (66.8%)	22 (53.7%)	25 (50.0%)
Sexual abuse	10 (31.3%)	11 (28.6%)	15 (30.0%)
Enuresis	3 (9.4%)	7 (17.1%)	9 (18.0%)
Fire setting	7 (21.9%)	8 (19.5%)	6 (12.0%)
Animal cruelty	6 (18.8%)	15 (36.6%)	19 (38.0%)

Compared to the sexualized and rape subtypes, the grievance subtype had the highest ratio of abuse types per offender, the highest percentage of psychological abuse, and the highest number of cases with all three types of abuse. The grievance subtype had the lowest rates of MacDonald triad behaviors, particularly in enuresis and animal cruelty. These offenders engaged in animal cruelty at a rate near half of rape and sexualized subtypes. However, the grievance group had the highest frequency of fire setting, followed closely by the rape subtype.

The sexualized group had the lowest number of offenders who experienced physical abuse. The sexualized group also had the lowest frequency of fire setting when compared to grievance and rape subtypes. The sexualized subtype had the most offenders who engaged in animal cruelty, followed closely by rape. Both sexualized and rape subtypes were the most likely to present with at least one triad behavior. Rape had the most cases with all three triad behaviors present.

A chi-square for independence was conducted to test statistical independence of the independent variables. The chi-square test is used for categorical data (Wagner, 2017). Cross tabs were used to test the independence of each variable against one another. All three abuse types were statistically associated with one another. The chi-square for independence showed a significant association between enuresis and physical abuse, χ^2 (1, N = 123) = 5.22, p = 0.022. The chi-square also showed a significant association between fire setting and enuresis, χ^2 (1, N = 123) = 2.258, p = 0.013. See Table 3 for the chi-square results. No other independent variables were significantly associated.

Table 3

Chi-Square for Independence

Category	Value	*df*	Asymptotic sig. (2-sided)
Enuresis x Psychological Abuse	2.822	1	0.93
Enuresis x Physical Abuse	5.217	1	0.02*
Enuresis x Sexual Abuse	0.623	1	0.43
Animal Cruelty x Psychological Abuse	0.047	1	0.08
Animal Cruelty x Physical Abuse	0.004	1	0.95
Animal Cruelty x Sexual Abuse	0.522	1	0.47
Fire Setting x Psychological Abuse	0.347	1	0.56
Fire Setting x Physical Abuse	2.953	1	0.09
Fire Setting x Sexual Abuse	0.006	1	0.93
Psychological Abuse x Physical Abuse	51.668	1	> 0.001*
Sexual Abuse x Psychological Abuse	9.714	1	0.002*
Physical Abuse x Sexual Abuse	13.142	1	> 0.001*
Enuresis x Animal Cruelty	2.258	1	0.13
Fire Setting x Enuresis	6.203	1	0.01*
Animal Cruelty x Fire Setting	2.631	1	0.11

* Statistically significant $p < 0.05$

Results

Multinomial logistic regression analyses were used to assess the relationship between the categorical predictor variables and the sexual homicide motive subtypes. The logistic regression models assessed the predictability of the outcome variable (sexual homicide subtypes) based on the presence or absence of childhood abuse by type and MacDonald triad behaviors. Contrary to other types of regression analyses, logistic regressions do not require the statistical assumptions of normal distribution, linearity, and equality of variance-covariance matrices (Cokluk, 2010). Statistical assumptions required for logistic regression are the use of a categorical or dichotomous outcome variable, outcome variables that are exhaustive and mutually exclusive (Warner, 2013), independence of observation, no multicollinearity among predictors, and a large sample size (Olowe et al. 2024). All of the required assumptions were met.

A chi-square for independence test showed that the three abuse type variables were significantly associated to one another. The test also showed that enuresis and physical abuse, and enuresis and fire setting, were statistically associated. The variance inflation factor (VIF) was calculated for each predictor to assess the multicollinearity of the abuse type variables. The VIF scores ranged from 1.13 to 1.74, and the collinearity tolerance scores ranged between 0.56 and 0.89. A VIF was also calculated for the association between enuresis and fire setting. The VIF score was 1.05, and the tolerance was 0.95. The VIF scores were below the threshold of 10, and the multicollinearity tolerance scores were above 0.1, suggesting no concerns of multicollinearity (see O'Brien, 2007).

The multinomial logistic regression model in the analysis included all six dichotomous independent variables as covariates, coded as 1 = present and 0 = absent, and the categorical-nominal sexual homicide subtypes as the dependent variable. The independent variables were physical abuse, psychological abuse, sexual abuse, enuresis, animal cruelty, and fire setting. The categorical dependent variable had mutually exclusive categories: sexualized, grievance, and rape murder.

The overall fit of the model was assessed using the likelihood ratio chi-square test, Pearson and deviance chi-square tests, and McFadden pseudo R^2. The likelihood ratio chi-square test was not statistically significant, χ^2 (12) = 13.564, p = 0.33. The model did not statistically predict the sexual homicide subtypes better than the null or intercept-only model. See Table 4 for model fit information.

Table 4

Logistic Regression Model Fit

Model	Model fitting criteria -2 log likelihood	Chi-square	*df*	Sig.
Intercept only	124.544			
Final	110.98	13.564	12	0.329

The Pearson chi-square, χ^2 (50) = 53.03, p = 0.36, was not statistically significant, indicating that the model's predicted frequencies were similar to the observed frequencies, suggesting a good fit of the model. The deviance chi-square, χ^2 (50) = 59.02, p = 0.18, was not statistically significant, which suggested that the inclusion of the predictor variables did not significantly improve the model from the null. The nonsignificant deviance chi-square indicated that the predictors did not meaningfully contribute to the outcome. Lastly, McFadden's pseudo R-square for the model was 0.051, indicating that the full model was only improved by 5.1% relative to the null model with no predictors.

I conducted additional post hoc logistic regressions with models comprised of individually isolated independent variables, and models that included different independent variable combinations. None of the additional models were statistically significant. I also conducted logistic regression analyses with the grouped dichotomous variables: no triad / all triad, and no abuse / all abuse; these models of grouped dichotomous variables were not statistically significant. Lastly, I conducted logistic regression analyses using the interval-ratio variables: sum of triad, sum of abuse, and sum of independent variables present; these models were not statistically significant.

Summary

The research questions were the following: Does the presence or absence of childhood abuse types statistically predict the serial sexual homicide offenders' sexual homicide subtypes? And does the presence or absence of MacDonald triad behaviors statistically predict the serial sexual homicide offenders' subtype? I hypothesized that the presence or absence of childhood abuse types and MacDonald triad behaviors would statistically predict the offender's sexual homicide subtype in accordance with the Higgs, Carter, Tully, and Browne (2017) sexual murder subtypes.

Results of the multinomial logistic regression analyses indicated that the presence or absence of abuse types and MacDonald triad behaviors did not differentiate and statistically predict group assignment of sexual homicide subtypes in a population of known male serial sexual homicide offenders. The tested regression models did not statistically predict the sexual homicide subtypes better than the null or intercept-only model. Therefore, the null hypothesis was not rejected. I conducted additional post-hoc regression analyses with the following isolated and grouped variables: (a) sum of abuse, (b) sum of triad, (c) any abuse / no abuse, (d) any triad / no triad, and (e) sum of independent variables present. These models were not statistically significant. The results are discussed further in Chapter 5. Chapter 5 includes possible explanations to account for the nonsignificant findings, limitations, and avenues for future research.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of the study was to assess whether a predictive relationship exists between childhood abuse types (physical, sexual, and psychological) and MacDonald triad behaviors (enuresis, fire setting, and animal cruelty) in predicting sexual homicide subtypes (sexualized, grievance, and rape murder) in a sample of male serial sexual homicide offenders. The analysis assessed whether the presence or absence of childhood abuse types and MacDonald triad behaviors statistically predict the offenders' motive subtype. The research questions were the following: Does the presence of childhood abuse types statistically predict the serial sexual homicide offenders' sexual homicide subtype? Does the presence of MacDonald triad behaviors statistically predict the serial sexual homicide offenders' sexual homicide subtype?

Two hypotheses were tested. I hypothesized that the presence or absence of childhood abuse types can statistically predict offenders' sexual homicide subtype group assignment in accordance with the Higgs, Carter, Tully, and Browne (2017) sexual murder subtypes. I also hypothesized that the presence or absence of MacDonald triad behaviors can statistically predict offenders' sexual homicide subtype group assignment in accordance with the Higgs, Carter, Tully, and Browne sexual murder subtypes. The null hypothesis was there is no statistically significant relationships between the predictor variables and the outcome variable.

Although similar research existed on the relationship between childhood abuse, MacDonald triad behaviors, and violent crime, including serial homicide, sexual homicide, and sexual offending (Hickey, 2016; James et al., 2020; Leary et al., 2017;

Marono et al., 2020; Mitchell & Aamodt, 2005; Rogers, 2020), no studies had examined the role of these variables in predicting sexual homicide subtypes in a population of known male serial sexual homicide offenders. The Higgs, Carter, Tully, and Browne (2017) systematic review empirically analyzed the existing literature on the various subtypes of sexual homicide offenders and grouped the sexual homicide offenders into three subtypes: sexualized, grievance, and rape murder. At the time of the current study, no research had examined the role of abuse types and MacDonald triad behaviors on serial sexual homicide offenders as a heterogenous group defined by these subtypes. The significance of this study was in advancing the literature on the developmental factors that differentiate between serial sexual homicide offender types. This study contributed to the field of forensic psychology from a methodological perspective by providing recommendations to study and assess developmental precursors that differentiate between sexual homicide subtypes. The results of the statistical analysis were not statistically significant; therefore, I did not reject the null hypothesis. Either there was truly no predictive relationship, or the methodology and limitations hindered the ability to uncover statistically significant relationships between the identified variables.

Results of the multinomial logistic regression analyses showed that the presence or absence of abuse types and MacDonald triad behaviors did not differentiate and statistically predict group assignment of sexual homicide subtypes in a population of known male serial sexual homicide offenders. The logistic regression model could not statistically predict group assignment any better than the null or intercept-only model. Post hoc logistic regression analyses were conducted with additional models by isolating

and grouping variables (i.e. sum of abuse, sum of triad, any abuse/no abuse, any triad/no triad, and sum of independent variables present). The post hoc models were also not statistically significant. Therefore, the null hypothesis was not rejected. Goodness of fit tests indicated that the model had good fit; however, they suggested that inclusion of the predictor variables did not significantly improve the model from the null.

The frequencies of abuse types and MacDonald triad behaviors by sexual homicide subtypes were analyzed. When compared to the sexualized and rape subtypes, grievance had the highest ratio of abuse types per offender, the highest percentage of psychological abuse, and the highest percentage of offenders who had experienced all three types of abuse. The grievance subtype had the lowest rates of MacDonald triad behaviors, particularly in enuresis and animal cruelty. These offenders engaged in animal cruelty at a rate near half of rape and sexualized subtypes. However, the grievance group had the highest percentage of offenders who engaged in fire setting, followed closely by the rape subtype. The sexualized group had the lowest percentage of offenders who experienced physical abuse. The sexualized group also had the lowest frequency of fire setting. The sexualized subtype had the highest percentage of offenders who engaged in animal cruelty, followed closely by the rape subtype. Both sexualized and rape subtypes were the most likely to present with at least one triad behavior. Rape had the most cases in which all three triad behaviors were present.

Interpretation of the Findings

The sample used in the current study showed similarities with the samples of other studies that examined childhood abuse types and the associations between abuse

types and MacDonald triad behaviors. The prevalence of childhood abuse by type in the current study's sample was generally consistent with a previous study's abuse by type frequencies for serial sexual homicide offenders. Mitchell and Aamodt (2005) conducted a study aimed at identifying the prevalence of childhood abuse by type in a sample of 50 sexually motivated serial killers. Mitchell and Aamodt found the following incidences of childhood abuse in their sample: physical abuse (36%), sexual abuse (26%), psychological abuse (50%), any abuse (68%), and no abuse (32%). The current study (N = 123) found similar rates of childhood abuse by type: physical abuse (50%), psychological abuse (56%), sexual abuse (30%), any abuse (66%), no abuse (34%), and all abuse (20%). In current sample, physical abuse was the only abuse type with markedly higher rates than those of Mitchell and Aamodt's study, with physical abuse present at a rate that was 14% higher.

Similarly, associations between abuse types and MacDonald triad behaviors were tested within the current sample. The results of chi-square for independence testing showed similar associations to Leary et al.'s (2017) study. Leary et al. quantitatively assessed the relationship between MacDonald triad and parental abuse types in a sample of serial killers (N = 280). Leary et al.'s sample was not limited to sexual homicide offenders. Their chi-square for independence found statistically significant associations between psychological and physical abuse, and all three triad behaviors. No statistically significant associations were found between sexual abuse and any MacDonald triad behaviors. The chi-square for independence in the current study did not produce as many statistically significant associations. Enuresis was significantly associated to physical

abuse, fire setting was associated with enuresis, and all three abuse types were found to be significantly associated to one another.

There were two main distinctions between both studies: The sample size of the current study was 123 compared to Leary et al.'s (2017) sample of 280 cases. Both studies used the Radford/FGCU Serial Killer Database. However, the current study's population was limited to serial sexual homicide offenders. There are at least two possible explanations of the differences in the associations between Leary et al.'s study and the current study. First, it is possible that there are differences in the associations in triad behaviors and abuse types between serial sexual homicide offenders and general serial homicide offenders that included all motive types. Second, the current study's smaller sample size may have impacted the strength of the associations. The smaller sample size presented as a general limitation to this study.

There is sufficient evidence in the literature to support the hypothesis that experiencing different types of childhood abuse and exhibiting various MacDonald triad behaviors could have a statistically significant predictive relationship with sexual homicide subtypes in a sample of serial sexual homicide offenders (DeLisi & Beauregard, 2018; Hickey, 2016; James et al., 2020; Joubert et al., 2021; Leary et al., 2017; Marono et al., 2020; Mitchell & Aamodt, 2005; Parfitt & Alleyne, 2020; Reid et al., 2019; Ressler et al., 1992). However, the current study, with its limitations and design, did not identify a statistically significant predictive relationship between childhood abuse types, MacDonald triad behaviors, and sexual homicide subtypes. Results of the multinomial logistic regression analyses showed that the presence or

absence of abuse types and MacDonald triad behaviors did not differentiate and statistically predict group assignment of sexual homicide subtypes in a population of known male serial sexual homicide offenders.

A previous study indicated that childhood abuse and victimization had distinct pathways and statistically predicted the serial homicide offender's motive types: power, anger, lust, and financial (Marono et al., 2020). Findings indicated that experiencing different abuse types led to distinct crime scene behaviors. Marono et al. (2020) found that psychological abuse and a combination of all three abuse types were frequent precursors of the sexually motivate serial homicide offender. These findings suggest that poly-victimization may be correlated more significantly with offenders with sexual motives when compared to other motive types. Marono et al.'s behavior sequence analysis also found a distinct sequence between physical abuse and the sexually and anger-motivated offenders.

Similarly, James et al. (2020) found distinctions in the in adverse childhood events (ACEs) experienced between proactive and reactive sexual homicide offenders. There were several differences between the current study and the James et al. (2020) study. First, James et al. studied nonserial offenders. James et al. also examined the ACEs rather than abuse by types, and they examined the variation of the age at which the adverse experiences occurred. The current study examined the presence or absence of abuse and triad behaviors that occurred at any age between 0 and 18. James et al. also made direct associations between the proactive sexual homicide offender the sexualized subtype, and the reactive sexual homicide offender with the grievance subtype. Their

results indicated that parental maltreatment in childhood between the ages of 0 and 12 was associated with reactive aggression. The reactive offenders primarily manifested impulsive and anger-driven behaviors in the commission of their sexual murders (James et al., 2020), suggesting a direct link between early childhood maltreatment and anger-driven sexual homicides, which coincides with the grievance subtype. These findings contributed to the hypothesis that serial sexual homicide offenders of different subtypes may have experienced different forms of abuse in childhood. James et al.'s results also indicated that reactive and proactive offenders experienced maltreatment at different neurodevelopmental stages, suggesting that the reactive offender's maltreatment at a younger age would contribute to lasting neurocognitive deficits, particularly impulsivity, poor self-control, antisocial behaviors, and poor emotional regulation.

Literature on the MacDonald triad suggested that fire setting and animal cruelty are the two most prevalent triad behaviors in those who exhibit a higher degree of antisocial and aggressive traits in nonhomicidal sex offenders (Joubert et al., 2021). Parfitt and Alleyne (2020) found that any of the triad elements could to some degree predict future offending. The underlying traits that tend to be associated to animal cruelty were traits of fearlessness, callousness, and low levels of emotionality (Walters, 2017). These traits tend to align with sexualized subtype. The traits associated to fire setting were disinhibition and low self-control (Walters, 2017). Disinhibition and low self-control are similar traits to what James et al. (2020) found in the reactive sexual homicide offender. Extrapolating from the association between the reactive sexual homicide offender and the grievance subtype, one could expect that fire setting behaviors are more

prevalent in the grievance subtype than in the sexualized and rape subtypes. In the current study's sample, the grievance subtype had the lowest percentage of offenders who exhibited animal cruelty and the highest percentage of offenders who exhibited fire setting behaviors. The sexualized group had the highest incidence of animal cruelty and the lowest incidence of fire setting. Meanwhile, the rape subtype had a similar but lower incidence of animal cruelty as the sexualized group, and lower but similar incidence of fire setting as the grievance group. This suggests a connection between the emotional reactivity of the grievance type, reactive aggression, and fire setting behaviors, and the more sadistic nature of the sexualized type, animal cruelty, and a tendency to engage in more proactive violence. The rape subtype, which is believed to include both proactive and reactive elements, falls somewhere in the middle of extremes of the sexualized and grievance subtypes.

There are multiple possible explanations as to why the presence or absence of abuse types and MacDonald triad behaviors did not statistically predict the sexual homicide subtypes in the current study. First, it is possible that the sample size was insufficient to uncover statistically significant relationships using logistic regression analyses. The sample size was determined by using a G Power calculator. To calculate the required sample size for a logistic regression, researchers must use an estimated odds ratio. It is possible that the estimated odds ratio used to calculate the required minimum sample in the current study was too high. If the odds ratio assumption had been lower, based on knowing the results of the current study, the required minimum sample would have been larger and may have affected the statistical significance. This means that the

relationships may exist but did not meet the threshold of statistical significance due to methodological and sample size limitations.

It is also possible that there is no statistically significant relationship between the presence or absence of abuse types and triad behaviors for predicting sexual homicide subtypes. This phenomenon may be better understood from a qualitative perspective. In a qualitative study, Rogers (2020) found that the offenders' experiences of abuse and victimization contributed to shaping their deviant sexual fantasies and directly influenced their modus operandi. Rogers studied serial homicide offenders of various motive types and did not focus on the sexual homicide offender. The quantitative approach of the current study failed to account for the extent of abuse, differentiating between a single abuse event and repeated abuse. The study also failed to account for the intensity of abuse experienced. Similar limitations exist with triad behaviors. The quantitative approach could not account for the qualitative aspects of experiencing abuse, or the gratification or shame experienced from engaging in MacDonald triad behaviors. Beyond the presence or absence of abuse types and triad behaviors, it is possible that the predictors of sexual homicide subtypes are the individual offender's psychological attributions, internalization, and reactions to the experience. DeLisi and Beauregard (2018) found that the emphasis was less on what the offenders' experienced but rather on how they experienced it, and how they responded and coped with their negative experiences. It is common for two individuals to experience the same traumatic event yet present with different reactions. Furthermore, the are several other variables requiring consideration to provide a fuller picture, which were not available in the data set. Additional variables

believed to contribute to the development of serial sexual homicide offenders are discussed in the limitations section. Additional research with a larger sample is needed to further assess the relationships between childhood abuse types and MacDonald triad behaviors and sexual homicide subtypes.

The non-statistically significant results suggest there was either, (a) no true predictive relationship between the predictor and outcome variables, (b) the quantitative methodology required modification to mitigate for the limitations of the study, and or (c) the phenomenon would be more effectively explored qualitatively, using in-depth accounts of fewer offenders, to understand how their experiences influenced their offending behavior.

Social Learning Theory

The underlying theoretical foundations of this study were Bandura's social learning theory as applied to the concept of aggression (Bandura, 1973), and Hickey's trauma-control model of serial murder (Hickey, 2016). Social learning theory is based on the concept that human behavior can be understood in the context of continuous reciprocal interactions between the individual's behavior and controlling conditions or feedback in the world in which they operate (Bandura, 1973). Social learning theory recognizes the role of previous adverse childhood experiences and adverse environmental conditions on the development of aggressive behavioral patterns. The attributions that individuals make about their experiences are central to their responses and subsequent behaviors, which are then reinforced positively or negatively (Bandura, 1973).

The quantitative approach and coding of the predictor variables as either present

and absent, failed to account for the attributions offenders made during and after their abuse and or triad experiences. The study's results suggested no generalizable statistically significant predictive relationship between the presence or absence of abuse types and MacDonald triad behaviors, in predicting sexual homicide subtypes. Within the context of social learning theory, it is possible that the crucial element missing to better understand the relationships between the predictor and outcome variables, was access to internal attributions, and the reciprocal interactions and reinforcements, that accompanied the behaviors.

Considering that the small sample size may have negatively impacted the statistical significance of the model, it is possible that with a larger sample size statistically significant predictive relationships may exist. If a statistically significant predictive relationship existed, social learning theory would explain the results in that, although experiences are individualized, some commonalities may exist in the responses to their abuse and triad behaviors. Walters (2017) found common traits in those who exhibited fire setting and animal cruelty. Those who exhibited animal cruelty presented with common traits of fearlessness, callousness, and low level of emotionality, whereas those who engaged in fire setting had traits of high disinhibition and low self-control. Commonalities in the identified traits differentiating between triad behaviors reinforce the plausibility that patterns and commonalities from previous learned experiences, can influence and lead to common behavioral expressions.

Trauma-Control Model

Social learning theory serves as a foundational basis for understanding the nature

of aggressive behavior and provides insight into the role of developmental learning processes, whereas the trauma-control model provides added contextualization of the developmental trajectory, and series of cyclical events that are precursors of serial homicide offending (Hickey, 2016). The trauma-control model emphasizes the role of trauma as defined by the influence of destabilizing events in early life on the development of serial murder offenders. The model suggests an interaction between traumatization in the formative years and how these develop into cyclical interactive processes between trauma, low self-esteem, dissociation, and violent fantasies to psychologically regain power, with facilitators (stressors), ultimately leading to homicidal behavior and circling back to trauma and fantasy reinforcement. Hickey suggests that nearly all serial homicide offenders experience feelings of inadequacy, self-doubt, and worthlessness. If not coped with pro-socially, these feelings can produce distorted views of self and world around them, leading to dissociation and fantasy formation. They use a persona or false sense of self-confidence or self-control, at times only achieved through fantasy, to fill their internal void of self-control and agency over their lives. Violent offending becomes a vehicle toward regaining their sense of control (Hickey, 2016).

The traumatic event(s) or childhood abuse types only represent a single component of the trauma-control model. The results suggested that the presence or absence of traumatic events, in isolation of the other components of the trauma-control model, was not sufficient in statistically predicting sexual homicide subtypes. The trauma-control model encompasses many factors and moving parts in the trajectory

towards serial homicide offending, namely: low self-esteem, fantasy formation, internal and external facilitators, increasingly violent fantasies, homicidal behavior, and the psychological reinforcement that occur throughout the process (Hickey, 2016). The role of regaining control over one's life, in unison with all components of the trauma-control model, is a dynamic and individualized process.

MacDonald triad behaviors also appear, to some extent, to contribute to regaining a sense control over one's life. Animal cruelty appears to play a role in fantasy formation, rehearsal and reinforcement, whereas fire setting may be a marker of mobilization toward action influenced by high levels of disinhibition and poor emotional control (Walters, 2017). Both behaviors likely contribute to the fantasy formation and behavioral development process toward aggression, with respective psychological reinforcement. However, the findings of the current study indicated that neither the presence or absence of MacDonald triad behaviors or abuse types could statistically predict sexual homicide subtypes. From the lens of the trauma-control model, both variables only represent small components of the full trauma-control model, and did not carry sufficient weight to statistically predict and differentiate subtypes within the larger group of serial sexual homicide offenders.

Limitations of the Study

Only a small proportion of serial sexual homicide offenders in the Radford/FGCU serial killer database met the study's inclusion criteria, mostly due to missing data on the study's target variables. Additionally, many cases that met the minimal threshold of available data on the target variables had an ambiguous or mixed subtype that met the

criteria of more than one subtype. Excluding offenders that did not perfectly align with a single subtype category, negatively impacted the generalizability of the findings. The exclusion of these cases posed a threat to external validity. Using an offender sample of known serial sexual homicide offenders failed to account for unknown offenders who have successfully evaded detection.

The use of secondary data presented as both an asset and a limitation to the study. The Radford/FGCU Serial Killer Database is the largest, most comprehensive and reputable nongovernmental serial killer data set available to researchers (Aamodt et al., 2020; Leary et al., 2017). A limitation of using secondary data was that the data collection was not directed by the requirements of the current study. For example, neglect could not be included as a childhood abuse type, because it was not initially collected in the data set. Not all the identified behaviors or differentiating characteristics in Higgs, Carter, Tully, and Browne (2017) study were available in the data set. The use of open-source data contributed to mitigate this limitation. The nature of the target population generally makes it difficult to collect data on these offenders. As a result, many data points on key variables in dataset had missing data. The lack of available data led to the exclusion of a high number of cases, which negatively affected the validity and generalizability of the findings.

The scope of the study was determined by the availability of data available within the Radford/FGCU Serial Killer Database. Multiple variables believed to be relevant in the psychological development of serial sexual homicide offenders could not be assessed in this study. The variables that could not be included were parental abandonment (see

Beauregard & Martineau, 2016; Hickey, 2016; Mitchell & Aamodt, 2005; Reid et al., 2019; Ressler et al., 1992), peer rejection (see Hickey, 2016; Nicole & Proulx, 2007; Reid et al., 2019), neglect (see Mitchell & Aamodt, 2005; Ressler et al., 1992), age at which the abuse or triad behavior occurred (see James et al., 2020), inappropriate and unusual childhood sexual behavior (see Ressler et al., 1992), and the qualitative elements of the childhood abuse and triad behaviors. The use of a dichotomous, present or absent, variable failed to account for the nature, degree, and intensity of abuse or triad behavior. It did not differentiate between the individual who experienced or exhibited one abuse event or triad behavior, versus those who experienced or exhibited ongoing repeated events.

I used a semi-standardized method of assigning motive subtypes to the offenders who met the study's criteria. I constructed a matrix to assess and assign cases to their respective subtypes. Offenders that met the criteria for more than one subtype or who's subtype could not be confidently determined were excluded. The use of open-source data played a significant role in supplementing the data set information in the subtype assignment process. Although the subtype assignment process was semi-standardized, I nonetheless applied judgement in analyzing the available information. As with any process that requires human judgement, there is inherently a possibility of implicit biases, thus presenting as a limitation to the validity and reliability of the analysis. Furthermore, there is the possibility that the crime scene behaviors of some offenders may not have reflected their true underlying motivation.

Grievance cases were the subtype with the lowest number of cases in the data set. To obtain a more balanced distribution of subtypes and reach acceptable case numbers for the analysis, grievance cases were included in the study with a lower threshold of available data. The threshold for the acceptable amount of data for sexualized and rape cases were the availability of data on four out of six independent variables. One of the study's assumptions were that independent variables without available data were scored as 'not present'. Due to the low number of available grievance cases, the threshold for inclusion was reduced to cases with any data on the independent variables. This increased the scope of the assumption that missing data was scored as 'not present'. The risk of adopting a lowered threshold of data availability for grievance cases was weighed against the risk of analyzing fewer grievance cases, a smaller sample, and a more uneven distribution. However, lowering the data availability threshold for grievance cases negatively affects the validity of the analysis by including cases with more missing data, and therefore was a limitation of this study.

One of the main limitations of this study was the sample size. Although the power analysis suggested that the minimum sample size to conduct the multinomial logistic regression analysis was 71 cases, it is known that within the scope of logistic regressions, a larger sample size increases the validity of the analysis (Olowe et al. 2024). The analysis indicated that the proposed model was not statistically significant in predicting the sexual homicide subtype in serial sexual homicide offenders. However, the small sample size may have negatively contributed to the validity of the analysis.

To demonstrate this, I doubled the sample size for the purpose of running a hypothetical statistical analysis with a larger sample size. The study's sample was comprised of 123 cases. The sample size was increased by duplicating all cases, keeping the distribution and ratios identical. The doubled hypothetical sample included 246 cases. Although duplicating the sample violates the independence of observation statistical assumption, it allowed to test for the impact of using a small sample size.

A multinomial logistic regression model was conducted with the same full model as the initial analysis. When using a larger sample of 246 instead of 123, the model became statistically significant, χ^2 (12) = 27.129, p = 0.007. In this scenario, the model statistically predicted the sexual homicide subtypes better than the null or intercept-only model. McFadden's pseudo R-square remained at the same value of 0.051, meaning that even though the larger sample's regression was statistically significant, the model was only improved by 5.1% relative to the null model with no predictors. The absence of animal cruelty and enuresis, and the presence of fire setting and psychological abuse, were statistically significant in predicting the grievance subtype. With the sexualized subtype as the reference category, those who engaged in enuresis were less likely to be assigned to the grievance subtype (b = -1.12, s.e. = 0.55, p = 0.04) with an odds ratio of 0.33 meaning that grievance offenders were 67% less likely to have exhibited enuresis than sexualized offenders.

Those who engaged in animal cruelty were less likely to be assigned to the grievance group (b = -1.12, s.e. = 0.41, p = 0.01) with an odds ratio of 0.33 meaning that grievance offenders were 67% less likely to have engaged in animal cruelty than the sexualized offenders. Offenders who engaged in fire setting in childhood were 2.96 times more likely to belong to the grievance subtype (b = 1.09, s.e. = 0.48, p = 0.02). When rape was the reference category, animal cruelty and psychological abuse were statistically significant in predicting the grievance subtype. Offenders who experienced psychological abuse were 2.89 times more likely to belong to the grievance subtype than the rape subtype (b = 1.06, s.e. = 0.47, p = 0.02), and those who exhibited animal cruelty were less likely to belong to the grievance subtype (b = -1.01, s.e. = 0.42, p = 0.01) with an odds ratio of 0.36 meaning that grievance offenders were 64% less likely to engage in animal cruelty than the rape subtype offenders. No variables were statistically significant in differentiating between the rape and sexualized subtypes. When using a larger sample size, animal cruelty and enuresis negatively predicted the grievance subtype, whereas the presence of fire setting and psychological abuse increased the likelihood of the offender belonging to the grievance subtype.

There were multiple limitations in this study. Availability of secondary data was crucial in accessing data pertaining to serial homicide offenders. Several limitations were attributable to the use of secondary data. The data was not initially collected with the current study in mind, but rather the study's scope and variables were adapted to fit the available data. There were limitations to generalizability due to the nature of the study, the nature of the population, and missing data. Cases were limited to known offenders,

consequently not accounting for offenders who have avoided detection. The semi-standardized subtype assignment process inherently posed a risk of potential bias in the case analysis and subtype assignment. The assumptions made pertaining to coding missing data as 'not present' in cases where data was not available, and the lowered data threshold for grievance cases was a limitation in this study. Lastly, the small sample size posed a significant limitation to the statistical strength of the analysis. With a larger sample size, it is possible that the logistic regression model may have been statistically significant.

Implications

The implications for positive social change of this study lay primarily in its contribution to the overall psychological literature focused on understanding the developmental factors that influence serial sexual homicide offender behavior. The scope of the positive social change is mostly within the field academia for in the advancement of knowledge. There is a scarcity of research on the intricacies of the role of adverse childhood experiences on sexual homicide offender (Chopin et al., 2022). The current study was the first to attempt to assess the relationship between childhood abuse types and MacDonald triad behaviors, in predicting sexual homicide subtypes using the Higgs, Carter, Tully, and Browne (2017) subtypes. Similar studies have examined these variables within the context of general serial homicide offending, but none have attempted to assess the relationship using the conceptualization of sexual homicide offenders as a heterogenous group using the three Higgs, Carter, Tully, and Browne

subtypes. Any and all advancement of knowledge in the field innately holds potential for positive social change.

The results of the logistic regression analyses were not statistically significant. The findings have minimal potential for practical implications but rather guide future research toward effectively understanding role of childhood abuse types and MacDonald triad behaviors on predicting sexual homicide subtypes. The analysis of the results from the theoretical lenses of social learning theory and the trauma-control model provides future researchers a starting point to re-examine these relationships. The implications of non-statistically significant results are either that (a) there is no true predictive relationship between the variables, (b) the quantitative methodology required modifications to mitigate for the limitations of the study and design, and or (c) the phenomenon is best explored qualitatively using in-depth accounts of fewer offender experiences to more effectively explore how their experiences influenced their offending behavior.

Several methodological implications can be drawn for the results of this study. Firstly, the odds ratio estimate used to calculate the required minimal sample size to meet the adequate statistical power threshold was likely estimated too high. Considering that within the current sample (N = 123) the model was not statistically significant, and pseudo R-square calculations suggests that the full model had minimal influence on accurately predicting sexual homicide subtypes. The low odds ratios in this study provided insight for future estimates of odds ratios to be used in statistical power calculations. Using a smaller odds ratio estimate will lead to a larger minimal sample to

reach a power of 0.8. A larger sample size may have affected the statistical significance of the overall model and provided insight into which predictor variables, if any, statistically predict sexual homicide subtypes.

Secondly, considering the limitation of missing data and the small sample size, there are data collection implications to be considered for future research. Future collection of data should be aimed at collecting additional data on known serial sexual homicide offenders' histories of childhood abuse and MacDonald triad behaviors. Additionally, data variables known to influence the development of serial homicide offenders should also be collected. These additional variables include the age at which the abuse or triad behavior occurred (see James et al., 2020), neglect (see Mitchell & Aamodt, 2005; Ressler et al., 1992); parental abandonment (see Beauregard & Martineau, 2016; Hickey, 2016; Mitchell & Aamodt, 2005; Reid et al., 2019; Ressler et al., 1992), peer rejection (see Hickey, 2016; Nicole & Proulx, 2007; Reid et al., 2019), inappropriate and unusual sexual behavior in childhood (see Ressler et al., 1992), and the qualitative elements of the abuse endured.

Lastly, the results of the study suggest that a qualitative approach to assessing relationships between the predictor and outcome variables may be more effective than a quantitative analysis. A qualitative approach would focus on the detailed individual experiences of the offenders' childhoods in relation to their subsequent serial sexual homicide offending. These would include information on the internal attributions and reinforcements related to the victimization and or triad behaviors. If conducted on a

larger scale, patterns and commonalities may arise, which could later warrant quantitative analysis to assess the generalizability of the findings.

Recommendations for Future Research

Future research should aim to replicate the current study using a larger sample size and including additional variables known to contribute to the development of serial homicide offenders (i.e. age of abuse and triad behaviors, neglect, parental abandonment, peer rejection, inappropriate and unusual childhood sexual behavior, and the qualitative elements of the abuse endured). Future research should also qualitatively explore the nature of the relationships between childhood abuse types, MacDonald triad behaviors, and subsequent serial sexual homicide offending subtypes. The lack of statistical significance in the logistic regression model of the current study may suggest that this phenomenon is best studied in the depth of individualize experiences rather than solely assessing the role of the presence or absence of childhood abuse types and triad behaviors. Future research should also focus on advancing the knowledge pertaining to the three sexual homicide subtypes and developing a standardized approach to assessing and assigning subtypes. Advancing the field's knowledge base on serial sexual homicide offenders and their subtypes could have practical investigative implications.

Conclusion

The current study sought to quantitatively assess the relationship between the predictor variables of childhood abuse types (physical, sexual, and psychological), and childhood MacDonald triad behaviors (enuresis, fire setting, and animal cruelty), in predicting the outcome variable of sexual homicide subtypes (sexualized, grievance, rape

murder) in a population of known male serial sexual homicide offenders. I assessed whether the presence or absence of childhood abuse types and MacDonald triad behaviors, can statistically predict the offenders' motive subtype. A systematic review of sexual homicide subtypes by Higgs, Carter, Tully, and Browne (2017) identified three common subtypes of sexual homicide offenders that were present in the literature: sexualized, grievance, and rape murder. There is literature on the relationship between childhood abuse, MacDonald triad behaviors, and violent crime including serial homicide, sexual homicide, sexual offending, etc. (see Hickey, 2016; James et al., 2020; Leary et al., 2017; Marono et al., 2020; Mitchell & Aamodt, 2005; Rogers, 2020), however no other study examined the role of these variables in predicting sexual homicide subtypes in a population of known male serial sexual homicide offenders.

Results of the multinomial logistic regression analyses indicated that the presence or absence of abuse types and MacDonald triad behaviors did not differentiate and statistically predict sexual homicide subtypes. The non-statistically significant results suggest that either (a) there was no true predictive relationship between the variables, (b) the quantitative methodology required modifications to mitigate for the limitations, and or (c) the phenomenon would be more effectively explored qualitatively using in-depth accounts of offender experiences to uncover how their experiences influenced their offending behavior. The implications for positive social change of this study are centered on its overall contribution to the psychological literature focused on understanding the relationship between developmental factors that influence serial sexual homicide offender behavior. The scope of the positive social change is primarily within academia by

contributing to advancing knowledge on this offender group, and by providing methodological recommendations for effective future research. Future research is required to gain a better understanding of the relationship between childhood abuse, MacDonald triad behaviors, and sexual homicide subtypes. Future research should also focus on expanding data collection and incorporating additional variables into the predictive models.

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