EXPLORATION OF JUVENILE SERIAL HOMICIDE OFFENDER CHARACTERISTICS

BY

ASHLEY SHIER BOICE

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Author

Ashley S. Boice

ABSTRACT OF THE THESIS

Exploration of Juvenile Serial Homicide Offender Characteristics

By

Ashley Shier Boice

College of Behavioral and Social Sciences

Dr. Anne-Marie Larsen

Thesis Committee Chairperson

2020

The current exploratory study of juvenile serial homicide offender characteristics identified possible risk factors for antisocial behavior and provided descriptions of the offenders and the crimes. Literature pertaining to psychopathy, clinical diagnoses, severe antisocial behavior risk factors, and serial homicide offenders were reviewed. The research involved an analysis of the 2004 United States Survey of Inmates in State and Federal Correctional Facilities pre-coded data for all juvenile serial homicide offenders (n = 11) and juvenile homicide offenders who committed only one homicide (n = 174). Descriptive and bivariate analyses were conducted to compare juvenile serial homicide offenders (JSHOs) and juvenile single-time homicide offenders (JSTHOs). Prior violent offenses, the offender's age at the time of their first homicide, education level, whether they had been fired in the last year due to substance use issues, and their victims' sex showed significant differences between JSHOs and JSTHOs. Binary logistic regression analyses were conducted, however no factors predicted JSHO group membership. These crimes are extremely rare and their perpetrators even more so; future research is encouraged.

Keywords: serial homicide, serial murder, juvenile offender, antisocial behavior

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CHAPTER 1

The Problem Statement

Understanding the causes of psychopathy and antisocial behavior has been a large focus of research in clinical and forensic psychology due to its adverse effect on society. Typically, when average individuals hear the word 'psychopath,' the person's mind goes towards the Ted Bundy or Hannibal Lector stories. The stereotypical image that comes to mind is a white, adult male who kills easily without remorse. Psychopaths, as defined by renowned Psychopathic Behavior specialist Robert Hare (1996), are "remorseless predators who use charm, intimidation, and, if necessary, impulsive and cold-blooded violence to attain their ends" (p. 1). Serial killers, like Ted Bundy, could fit the definition of 'psychopath' nicely but so could a politician, businessman, or a child. Psychopaths are usually charming, self-centered, and callous but that does not mean that all, or even most of them, become criminals; in fact, many individuals could be psychopaths achieving success in our society (Lilienfeld et al., 2015). When the psychopath is unsuccessful, or becomes incarcerated for criminally acting out, society becomes alarmed, and rightfully so as psychopathic offenders, after violently offending, are "three to four times more likely to violently reoffend" after being released than non-psychopathic offenders (Hare, 1996, p. 3). A general belief is that the younger an individual is, the more malleable the person is, as they are still developing; therefore, studying juvenile offenders who commit severe antisocial acts would be the next logical step to work towards predictive and preventative efforts. This study examines juvenile serial homicide offenders to create a general profile and possibly identify risk factors for predictive, prevention, and treatment efforts.

Problem Statement

Ideally, serial murder, or even murder in general, would not exist. To prevent individuals from progressing to the point of acting out such extreme antisocial behaviors, the factors which produce a higher risk of these behaviors occurring must first be identified and assessed. In response to this, researchers have explored various risk factors for antisocial behavior and correlating diagnoses or traits. The first presumed case study of juvenile serial murderers, by Myers (2004), used historic, newspaper and internet articles in conjunction with books to gather information to assess the crime and victim details. Missing from current literature is a study comprehensively assessing the risk factors, crime details, and mental health of juvenile serial homicide offenders directly from the primary source via offender interviews. Once these factors and details have been ascertained, it would be imperative to determine the findings usability in the field by comparing the most salient results with slightly less violent juvenile offenders: single-time homicide offenders.

Purpose of the Study

The purpose of this case study was to identify possible risk factors, describe the offense characteristics, and understand the minds of juvenile serial homicide offenders from archived comprehensive interviews. The secondary aim was to see if there were differences between juvenile serial homicide offenders and single-time homicide offenders having these elements, such as prior crimes, mental illnesses, and past abuse. The goal of this comprehensive analysis was to give mental health professionals and law enforcement a greater insight into juvenile serial homicide offenders' demographics, genetics, upbringing, current and past mental health status, motivations and methods of killing, and victim characteristics.

Research Questions

This study has an overarching exploratory research question and sub-questions which cover the risk factors and criminal elements of juvenile serial homicide offenders.

Q1. What trends arise when exploring juvenile serial homicide offenders' personal and criminal backgrounds?

Q2. What are the offenders' characteristics and offense characteristics?

Q3. How frequent are these variables in juvenile serial homicide offenders?

Q4. Do juvenile serial homicide offenders have high psychopathic traits?

Q5. Are juvenile serial homicide offenders more likely to have more extreme risk factors for antisocial behavior- contextual, genetic, intrinsic, and historical- than juvenile single-time homicide offenders?

Q6. Do juvenile serial homicide offenders differ from juvenile single-time homicide offenders in their offender and offense characteristics?

Q7. Are these factors predictive of an individual becoming a juvenile serial homicide offender compared to juvenile single-time homicide offenders?

Delimitations

The archival data from persons included in this case study are from a United States Bureau of Justice Statistics survey titled *Survey of Inmates in State and Federal Correctional Facilities [United States], 2004* (SISFCF). The study provided "nationally representative data on inmates held in State prisons and Federally-owned and -operated prisons" (Bureau of Justice Statistics, 2018, p. 4). Therefore, only individuals residing in prison at the time of the survey were included in the population to sample from; individuals prior to arrest, out on probation, or released after serving a sentence were not included. This case study solely included individuals

in prison who, as of 2004, were convicted and were serving a sentence for killing another person with the first or only homicide incident occurring while the offender was between ages 12 and 17. This study details risk factors of specific extreme social behaviors: murder and serial murder. Due to various state's terminology for killing another person and the survey's offense coding, offender data of those who were convicted of murder, homicide, and voluntary/nonnegligent manslaughter were included in the present study. There are other forms of severe antisocial behavior unaccounted for by the present study's scope including attempted murder, conspiracy murder, attempted homicide, attempted manslaughter and many more.

In addition, inmates under the age of 12 were excluded from the 2004 SISFCF interviews and are therefore not included in the present study. The population of juvenile serial homicide offenders is extremely small leading the sample size to be equally sized. By virtue of the small sample size, this study cannot generalize to all murderers, all juveniles, or all individuals acting antisocially. Generalizability may further be limited as much of the research literature regarding antisocial conduct or risk factors pertained to juveniles outside of the legal system and typically with less severity of the antisocial behavior.

The data collection through interviews of the inmates was conducted by unknown individuals in 2004. Explanations, further questioning and testing, and follow-up questions directly from the inmates were not accessible. Developmental disorders, like attention-deficit/hyperactivity disorder (ADHD), and disruptive, impulse-control and conduct disorders, like conduct disorder (CD) and oppositional defiant disorder (ODD), were not queried in the survey used for this study; only depressive disorder, bipolar 1 and 2, schizophrenic and psychotic disorders, post-traumatic stress disorder, anxiety disorders, and personality disorders as broad

categories were questioned, leaving the diagnoses most often related to juvenile antisocial behavior unanalyzed for the present study.

Assumptions

In conducting this comprehensive case analysis, the following assumptions were made: the interview elicited reliable responses, there was minimal respondent fatigue during questioning, the respondents fully understood the questions asked, and the respondents provided honest information to their knowledge. It was also assumed that risk factors for antisocial behavior, psychopathic traits, Conduct Disorder, and/or Antisocial Personality Disorder identified in the literature would be seen in this population as the risk factors have been found in individuals with less severe antisocial behaviors. Lastly, due to the statistics consistently illustrating significantly more known male juvenile homicide offenders than known female juvenile homicide offenders, more males were assumed to be represented in this case study (Office of Juvenile Justice and Delinquency Prevention [OJJDP], 2018).

Definition of Key Terms

Affect. "A pattern of observable behaviors that is the expression of a subjectively experienced feeling state (emotion)" (APA, 2013, p. 817).

Affective. A dimension of psychopathy in which the individual portrays lack of remorse or guilt, shallow affect, callous lack of empathy, and failure to accept responsibility (Psychopathy Checklist Revised by Hare as cited in Hare & Neumann, 2008).

Antisocial Personality Disorder. A pervasive pattern of disregard for and violation of the rights of others, occurring since age 15 years, as indicated by three (or more) of the following: failure to conform to social norms with respect to lawful behaviors, deceitfulness, impulsivity, irritability and aggressiveness, reckless disregard for safety of self or others,

consistent irresponsibility, or lack of remorse. The individual is at least age 18 years. There is evidence of conduct disorder with onset before age 15 years (APA, 2013).

Attention Deficit-Hyperactivity Disorder. A persistent pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development; it is characterized by a minimum of six inattention symptoms and six or more hyperactivity and impulsivity symptoms all lasting at least six months to a degree that is inconsistent with developmental level and that negatively impacts directly on social and academic/occupational activities (APA, 2013).

Callous-Unemotional Traits. A specific affective and interpersonal style characteristic of a subgroup of children with severe conduct problems (Frick et al., 2003).

Conduct Disorder. A persistent pattern of behavior in which the basic rights of others or major age-appropriate social norms or rules are violated, as manifested by the presence of at least three" out of 15 criteria from any of the criteria clusters including aggression to people and animals, destruction of property, deceitfulness or theft, and serious violations of rules. CD is further categorized into childhood-onset type, adolescent-onset type, and unspecified onset, with the division being symptoms present prior to or absent before age 10 (APA, 2013).

Interpersonal. A dimension of psychopathy in which the individual portrays glibness/being superficial, grandiose self-worth, pathological lying, and conning or manipulative behavior (Psychopathy Checklist Revised by Hare as cited in Hare & Neumann, 2008).

Juvenile serial homicide offender (JSHO). There is no uniform definition of serial homicide, more colloquially known as serial murder, let alone adding the age qualifier of juvenile. Taken literally, word by word, it would be defined as an individual under the age of 18 who had committed a series of homicides. This literal definition does not detail starting and ending ages. Myers (2004) decided to only use individuals who had committed every murder

while under the age of 18. However, as Myers (2004) noted, this excluded several murderers who began killing as a juvenile and continued into adulthood. As such, I provided a definition which was used in this thesis that increased the sample size. For the purposes of this thesis, I defined a 'juvenile serial homicide offender' (JSHO) as a person whose first act of murder was committed while under the age of 18.

Mass murder. Four or more murders occurring during the same incident, typically at a single location, with no distinctive time period between the murders [Behavioral Analysis Unit-2 & National Center for the Analysis of Violent Crime (BAU 2 & NCAVC), 2005].

Meta-analysis. A study which takes the data and results from all published studies on the same topic or research question and combines them to arrive at one combined answer (Association for Psychological Science, 2012).

Psychopath. An individual who is a "remorseless predator" who uses "charm, intimidation and, if necessary, impulsive and cold-blooded violence to attain their ends" (Hare, 1996, p. 1).

Psychopathy. Personality traits most commonly thought of as having four dimensions: interpersonal (e.g. charm, deception, manipulation), affective (e.g. lack of remorse, callous), antisocial (e.g. early behavior problems, poor behavior control), and lifestyle (e.g. stimulation seeking, impulsivity) (Psychopathy Checklist-Revised by Hare as cited in Hare & Neumann, 2008).

Serial murder. Two or more murders by the same offender, at separate times and events, with a time period between murders (Behavioral Analysis Unit 2 & National Center for the Analysis of Violent Crime, 2005).

Spree murder. Two or more murders by the same offender or offenders, without a cooling off period (BAU 2 & NCAVC, 2005, p. 8).

Temperament. "The automatic associative responses to emotional stimuli that determine habits and moods" (Cloninger et al., 1993 as cited in Cloninger, 1994).

Organization of the Remainder of the Study

Chapter 2 discusses a review of research literature associated with JSHOs. The first few parts of Chapter 2 discuss the general subject matter and later discuss the specific variables focused on in this case study. The connection between psychopathy and the various diagnoses that can be made for the appropriate age groups are first discussed. This is followed by a review of known risk factors for juvenile antisocial behaviors. A realistic picture of juvenile homicide offenders is then painted. Finally, relevant case studies conclude the literature review on JSHOs.

Chapter 3 describes the respondents whose survey answers were analyzed for this study, the study design, and how the respondents' data was collected and analyzed. Chapter 4 reveals if trends in the juveniles' risk factors and crime elements were discovered. Finally, Chapter 5 draws cautious conclusions and reflects upon the effect of the study limitations. Future recommendations and suggestions for future research conclude Chapter 5 and this thesis.

CHAPTER 2

Review of the Literature

This article explains the construct of psychopathy in children, the risk factors for future violent offenses, and discusses JSHOs and similar case studies regarding serial homicide offenders. First, psychopathy models, diagnoses, and their application to juveniles are discussed. Next, the risk factors for psychopathic juveniles such as the juvenile's psychosocial or contextual factors, biological factors, intrinsic attributes, and history of antisocial behavior and diagnoses are explored. The reality of juvenile homicide offenders and JSHO are denoted in the following section. Homicide offenders' personal characteristics and offense characteristics are then reviewed. Lastly, the consensus found between studies, limitations of prior studies, and the gap that exists in the literature end the review.

Psychopathy and Juveniles

Psychopathy Conceptualizations

Psychopathy does not have one conceptualization, model, or definition. In the following sections, some of the main psychopathy conceptualizations are discussed in chronological order to provide a background and summation of psychopathy as it relates to antisocial behavior.

Cleckley's Psychopath

Neuropsychiatrist and professor Hervey Cleckley rose to fame in 1941 by proposing the first contemporary construct of psychopathy derived from extensive interviews with his psychiatric patients (Skeem et al., 2011; Lilienfeld et al., 2018). Cleckley's refined psychopath concept included 16 characteristics: (1) superficial charm and good intelligence, (2) absence of delusions and other signs of irrational thinking, (3) absence of nervousness or psychoneurotic manifestations, (4) unreliability, (5) untruthfulness and insincerity, (6) lack of remorse or shame,

(7) inadequately motivated antisocial behavior, (8) poor judgement and failure to learn by experience, (9) pathologic egocentricity and incapacity for love, (10) general poverty in major affective reactions, (11) specific loss of insight, (12) unresponsiveness in general interpersonal relations, (13) fantastic and uninviting behavior with drink and sometimes without, (14) suicide rarely carried out, (15) sex life impersonal, trivial, and poorly integrated, and (16) failure to follow any life plan (Skeem et al., 2011). Cleckley believed that while these individuals might have completed violent antisocial acts, their antisocial acts were secondary characteristics resulting from their primary psychopathic characteristics (Skeem et al., 2011).

Primary and Secondary Psychopath

Soon after Cleckley's proposal, another bright mind, Benjamin Karpman, provided a framework for psychopathy. Like Cleckley, Karpman was a hospital psychiatrist and professor who became globally recognized for his work in psychopathy and criminal offenders (Benjamin Karpman Papers, 1921-1961). Karpman (1948) theorized the primary and secondary model of psychopathy based on his clinical experiences. Karpman (1948) classified psychopaths based on their motivations and their absence or presence of conscience. Secondary psychopaths, or symptomatic psychopaths, are individuals born with a conscience, yet their conscience is blocked by unconscious hostility stemming from insufficient love or a denial of love (Karpman, 1948). According to Karpman, a secondary psychopaths' immorality may be cured because their behavior is an emotional reaction (Karpman, 1948). On the other hand, primary psychopaths, or idiopathic psychopaths, are born without a conscience (Karpman, 1948). Primary psychopaths are therefore egoistic individuals, incapable of loving another besides themselves, without the capacity to be trained in ethics or morality (Karpman, 1948). Essentially, in Karpman's model of psychopathy, secondary psychopathy is created while primary psychopathy is innate.

Two-Factor Model

Later in the 1970's, Robert Hare combined Cleckley's concept with his clinical experience and, most importantly, empirical articles to eventually create the now gold-standard and highly validated Psychopathic Checklist- Revised (PCL-R) (Hare & Neumann, 2008). The PCL-R construct utilizes four main facets- interpersonal, affective, lifestyle, and antisocial- which each encompass a section of the 18 psychopathic traits (Hare & Neumann, 2008). The interpersonal traits include being glib or superficial, having a grandiose sense of self-worth, pathological lying, and being conning or manipulative (Hare & Neumann, 2008). The affective traits are lack of remorse or guilt, shallow affect, callous lack of empathy, and failure to accept responsibility (Hare & Neumann, 2008). Lifestyle traits include stimulation seeking, impulsivity, irresponsibility, parasitic orientation, and lack of realistic goals (Hare & Neumann, 2008). Hare expanded upon Cleckley's conceptualization and added the antisocial facet consisting of poor behavior controls, early behavior problems, juvenile delinquency, revocation of conditioned release, and criminal versatility (Hare & Neumann, 2008). Promiscuous sexual behavior and having many short-term relationships were traits also included in the PCL-R but not placed under any of the four factors (Hare & Neumann, 2008). This construct of psychopathy altered Cleckley's psychopath based on which traits were statistically associated, leading to some traits being added and others removed (Hare & Neumann, 2008). After Hare published the psychopathy checklist and prior to its revision, the two-factor model combined the original four dimensions into two groups: Factor 1, Interpersonal/Affective, and Factor 2, Lifestyle/Antisocial, for assessment scoring purposes (Harpur et al., 1989; Hare & Neumann, 2008). Factor 1 correlated with Cleckley's clinical psychopathic personality, interpersonal dominance, and low anxiety (Harpur et al., 1989) and has been linked to planned predatory violence (Hart &

Dempster, 1997 as cited in Cooke & Michie, 2001). Factor 1, interestingly, had no correlation with "social class, family background, or educational achievement," leading researchers to hypothesize that Factor 1 traits were unaffected by upbringing (Harpur et al., 1989, para. 59). Factor 2, on the other hand, strongly correlated with self-report psychopathy-related measures, family background, and, unsurprisingly, diagnosis of Antisocial Personality Disorder (APD) and criminal behavior (Harpur et al., 1989). In addition, Factor 2 has been linked with impulsive violence (Hart & Dempster, 1997 as cited in Cooke & Michie, 2001).

Three-Factor Model

While the two-factor model demonstrated differing correlations, it did not replicate well with various races, sexes, ages, and nationalities including the original demographic (Cooke & Michie, 2001; Weaver et al., 2006). Cooke and Michie (2001) found the two-factor model inadequate, so they developed the three-factor model wherein affective and interpersonal factors were separate and the third factor incorporated all behavioral symptoms while removing the criminality measures. This model was statistically supported; the three factors are meaningfully and validly distinct (Hall et al., 2004). Most notably, through this model, the affective factor, distinct from the behavioral and interpersonal factors, was determined to be the only factor significantly associated with violent predatory criminal behaviors even after omitting callousness and lack of empathy (Hall et al., 2004). This research laid the groundwork for future focus on the affective factor.

Four-Factor Model

The four-factor model was born to address concerns about the absence of criminal measures in the three-factor model (Weaver et al., 2006). Williams and colleagues (2007) conducted a confirmatory factor analysis with a community sample and discovered the four

facets of the PCL-R making up the two-factor model were each distinct yet interrelated factors. The main difference between the four- and two-factor models is that the four-factor model holds each of the original four psychopathic trait facets as unique elements. Jones and colleagues (2006) conducted a factor analysis with juvenile offenders and concluded that the three- and four-factor models fit their sample better than the two-factor model. The four-factor model demonstrated greater predictability of aggression and violence than the three-factor model, most likely due to the three-factor model's removal of criminal measures (Vitacco et al., 2005). A criticism of this model is that the positive features described in Cleckley's psychopath concept, like lack of anxiety or suicidal ideations, are weakly represented (Patrick et al., 2009).

Triarchic Model

Developed by Patrick, Fowles, and Krueger (2009), the triarchic model of psychopathy intended to conceptualize psychopathy through characteristics stemming from physiological references instead of emotional or behavioral references. The triarchic model utilizes three factors as its core constructs, but labels them differently: disinhibition, boldness, and meanness. Patrick and colleagues (2009) characterized disinhibition by an individual's impulse control issues, lack of foresight, impaired regulation of affect, need for immediate gratification, lack of behavioral restraints, irresponsibility, and proneness to substance issues and violating norms or committing crimes. In a sense, the disinhibition factor would parallel the PCL-R's Lifestyle/Antisocial Factor 2 because they both share the lifestyle and antisocial factors, but disinhibition includes the affect dysregulation (Patrick et al., 2009). Boldness was used to describe individuals who can remain calm under pressure, have a reduced sensitivity to threat or punishment, and are assertive and daring (Patrick et al., 2009). These boldness facets mirror Cleckley's psychopaths with low or no anxiety symptoms, diminished emotions, and diminished

reactivity (Patrick et al., 2009). They also portray Karpman's primary psychopath characteristics as diminished anxiety and reduced sensitivity to threat signals can be physiological (Patrick et al., 2009). Meanness easily maps onto the PCL-R Interpersonal/Affective Factor 1 including "deficient empathy, disdain for and lack of close attachments with others, rebelliousness, excitement seeking, exploitativeness, and empowerment through cruelty" (Patrick et al., 2009, p. 927). Patrick and colleagues (2009) suppose meanness is due to developmental and socialization issues which resembles Karpman's secondary psychopathic concept. The triarchic model assesses these constructs on a continuum using descriptors such as high, moderate, or low instead of a cutoff number as in the PCL-R assessment. Recently, in 2019, a meta-analysis of the triarchic model backed the meanness and disinhibition constructs but could not support boldness due to the lesser association of boldness with validated psychopathy constructs and measurements (Sleep et al., 2019).

Successful and Unsuccessful Psychopaths

At its core, successful psychopaths are individuals who, for various hypothesized reasons, have not been incarcerated (Lilienfeld et al., 2015). One reason, called the differential-severity model, suggests that successful psychopaths can stay out of incarceration due to a lower intensity of psychopathic traits, specifically lower lifestyle/antisocial traits from the PCL-R Factor 2 (Lilienfeld et al., 2015). Another, the moderated-expression model, hypothesizes that successful psychopaths have the same traits as unsuccessful, but also have protective factors "such as intact executive functioning, intelligence, or effective parenting" which decrease the person's likelihood of committing antisocial acts leading to incarceration. (Lilienfeld et al., 2015, p. 299). Stemming from the boldness factor of the triarchic model, fearless dominance, a psychopathy dimension associated with leadership and high-risk occupations, could be one of these protective

factors (Lilienfeld et al., 2015). Lastly, the differential-configuration model stipulates that successful and unsuccessful psychopaths have different personality traits which allow successful psychopaths to not only avoid incarceration, but possibly use those psychopathic traits to meet normative occupational success in society (Lilienfeld et al., 2015). The model that best supports the differential-configuration model is also the triarchic psychopathy model; the successful psychopath could have higher boldness and lower disinhibition than an unsuccessful psychopath (Lilienfeld et al., 2015).

Given its extensive reliability, validity, and literature base with the PCL-R, the four-factor model was used as this study's definition of psychopathy. However, keeping in mind the fact that many psychopaths are successful, antisocial behavior is viewed as willful acts (Fragkaki et al., 2016). For example, Fragkaki and colleagues (2016) established that adolescents with high affective callous-unemotional traits can distinguish between right and wrong and can identify the appropriate moral emotions in others according to social norms, but when they imagine themselves committing antisocial acts, they exhibit deviant moral emotions. In other words, these children with high psychopathic traits can identify and complete moral actions in line with social norms even though they internally wish to act out: antisocial behavior is a choice.

Personality Disorders and Psychopathy

Currently, the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5) is the latest manual published by the American Psychiatric Association (APA) as a classification of mental disorders and their diagnostic criteria (APA, 2013). Each of the disorders are numerically coded for treatment billing purposes (APA, 2013). Personality disorders, in general, are believed to be enduring, stable, inflexible, and pervasive patterns of inner experiences and behaviors which impair or distress the individuals' (1) perception of themselves,

others, or situations, (2) range, intensity, and appropriateness of emotional responses, (3) interpersonal functioning, and/or (4) impulse control (APA, 2013). These behaviors and internal experiences deviate from the individuals' cultural norms, leading to a clinically significant impairment in personal, social, and occupational functioning (APA, 2013). Psychopathy, as we have discussed, is a cluster of traits which align with this definition. Psychopathy traits, like personality disorder features, are stable, inflexible, and persistent across time as a part of the individual's self (Neumann et al., 2011). They impact how the individual thinks of themselves and others, how they connect to others, and subsequently how they behave.

Psychopathy and Antisocial Personality Disorder

In psychological terms, psychopathy and Antisocial Personality Disorder (APD) are not the same, even though they have been used synonymously. To be diagnosed with APD, as specified by the DSM-5, a person must have three or more of the following criteria: repeatedly committed criminal acts, deceitfulness, impulsivity, irritability or aggressiveness, reckless disregard for the safety of themselves or others, consistent irresponsibility, and a lack of remorse (APA, 2013). Psychopathy is a severe syndrome that, while overlapping with APD, is arguably distinct. Only "10% of those with antisocial personality disorder" meet the "criteria for psychopathy as measured by the Psychopathy Checklist- Revised" (PCL-R) while most, but not all, psychopaths as signified by the PCL-R meet the criteria for APD (National Collaborating Centre for Mental Health [NCCMH], 2010, p. 20). This is in part due to the criteria cut-offs; a diagnosis of APD requires only three of the criteria while the PCL-R cutoff score of 30 points requires significantly more. While the DSM-5 states that APD's essential features have been referred to as psychopathy, the DSM-5 in Section III added psychopathy as a specifier to APD's alternative model due to recent developments in the construct of psychopathy which include

boldness, lack of anxiety, and high attention seeking (Crego & Widiger, 2014; APA, 2013). Currently, the closest clinical diagnosis of psychopathy according to the DSM-5 is APD, however psychopathy, as a concept, is still being explored and understood. Presently, the diagnosis of APD, and by extension psychopathy, by definition cannot be applied to an individual under the age of 18. Juvenile Conduct Disorder (CD) is the precursor to adult APD, and CD with limited prosocial emotions, is the closest current clinical diagnosis to child psychopathy.

Conduct Disorder with Limited Prosocial Emotions

The DSM-5 APD criteria state that all individuals with APD must have had CD, but the reverse is not true. The percentage of individuals that are diagnosed with CD and are later diagnosed with adult APD "varies from 40 to 70% depending on the study" (NCCMH, 2010, p. 16). While pioneering a two-factor model of psychopathy in children, Frick et al. (1994) found a subset of children who displayed conduct problems and personality characteristics consistent with adult psychopathy callous-unemotional (CU) traits, including lack of guilt, shallow affect, superficial charm, and lack of empathy. This subset of children with CU traits was perceived as a means by which to more precisely extend the construct of psychopathy to children (Frick et al., 2015). With this goal in mind, the Psychopathy Checklist- Youth Version was adapted from the PCL-R to assess psychopathic traits in juveniles. In the latest edition of the DSM, based on extensive interpersonal and affective research, a specifier of "with limited prosocial emotions" was added to CD for persons who, in addition to the criteria of CD, also persistently display at least two characteristics from the criteria clusters, including lack of remorse or guilt, callousness-lack of empathy, lack of concern about performance, and having a shallow or deficient affect (APA, 2013). The terminology "limited prosocial emotions" (LPE) was used to minimize

stigmatization of labeling a child ‘psychopathic.’ The CD diagnosis also calls for a specification of symptom onset age: childhood-onset type children present with symptom(s) prior to age 10, adolescent-onset type present no symptoms prior to age 10, and if there is not enough information to determine the age of onset, unspecified onset is indicated (APA, 2013). These CD specifications are regularly utilized in research, as they frequently differentiate factors of antisocial behavior by type.

Children with Psychopathic Traits

Although CD with LPE might seem sufficient to define the concept of child psychopathy, the LPE specifier, which covers the affective dimension of psychopathy, does not include the interpersonal and impulsive dimensions. One study found that high levels of all dimensions of child psychopathy- affective, interpersonal, and impulsivity- in combination were more predictive of persistent future conduct problems than CU traits, or what are now recognized as LPE’s, alone in adolescents (Colins et al., 2018). This demonstrates that each of the dimensions or psychopathic constructs are equally important and influence antisocial behavior. CU traits alone cannot explain antisocial behavior or psychopathy making it likely that the present study’s respondents, individuals who have committed the violence of serial murder, will display high levels of the multidimensional construct. In that same study, it was notable that the number of male and female children with conduct problems but no psychopathic traits “were quite low” (Colins et al., 2018, p. 12). This suggested that conduct problems rarely appear without psychopathic personality traits (Colins et al., 2018), possibly due to conduct problems overlapping with the antisocial behavior dimension of psychopathic traits. The DSM is always evolving, and perhaps the construct of psychopathy will solidify for adult and child diagnoses.

This case study hopes to add to the literature of child psychopathy core traits and risk factors for future antisocial violent behavior by analyzing JSHOs.

Risk Factors for Antisocial Behavior

Understanding the variables from current research on risk factors of antisocial behavior is salient for the present case study so that the variables can be comprehensively analyzed and possibly expanded to provide a deeper understanding of children who commit severe antisocial acts. Stemming from the vast literature on risk factors of antisocial behavior and aligning with the DSM-5 risk factor categories, this paper discusses the following risk factors: contextual, biological, intrinsic, and historical. Contextual factors include those in the individual's many environments, biological factors include genetics or physiological changes, intrinsic factors speak to the individual's personality and temperament, and the relevant historical factors are the individual's prior antisocial behavior and prior diagnoses.

Contextual Factors

Both home and school environments in which an individual was raised have a great impact on the individual's likelihood for antisocial behavior. A child's experiences at school, including peer rejection or peer influence, experiences at home, and childhood trauma, can all increase the probability of the child behaving antisocially.

Factors at School

McCabe et al. (2001) revealed that exposure to deviant peers was predictive of adolescent onset CD, but not childhood-onset CD. This could be because adolescents spend more time with peers compared to less autonomous children, and therefore have more time to be influenced. In addition, in line with social learning theory, people imitate others they perceive as important. In childhood, guardians would likely be most important, and in adolescence, friends would likely

become more important than parents as the person grows towards individuality and maturity. The DSM-5 lists risk factors of CD as peer rejection and being associated with delinquent peers (APA, 2013). Wallinius et al. (2016) found that severe school adjustment issues were the highest predictors of aggressive antisocial behaviors, and an earlier onset of aggressive antisocial behavior, such as bullying and "early onset truancy," predicted persistently higher levels of aggressive antisocial behavior (pp. 557-558). Byrd et al. (2018) found that those in the early onset chronic group with high levels of callousness had more risk factors than all other groups, including higher levels of peer delinquency and peer rejection in comparison to those with low or moderate internal callousness.

Factors Within the Home

It is commonly thought that individuals become like those who surround them, and early on in a child's life the main people influencing children are those in the home. Children perceive and internalize the world around them as normal, and prior to schooling, a child's main environment is the home. Parents or guardians can impact their children's development through their interaction, demeanor, and actions towards the child and others in the home.

Parenting. Parents, typically being the child's only influencers before school begins, play a central role in the child's future behavior. Dr. Baumrind categorized parental levels of warmth and responsiveness and levels of control towards the child into four main styles: authoritarian, authoritative, permissive, and uninvolved (Kail & Cavanaugh, 2019). Authoritarian is a style with high control and low levels of warmth; this could present as a parent with strict rules, an emphasis on child obedience, and little to no consideration for the child's feelings. Authoritative is a style with warmth and responsiveness and a moderate amount of control. An example of this parenting style would be a mother who has rules but thoroughly explains why the

rules exist and encourages openness from the child about the topic. Authoritative parenting is considered the ideal parenting style for proper child development. Permissive parenting has the warmth of authoritative parenting but very little control over their children (Kail & Cavanaugh, 2019). This would be a parent who shows their affection for the child with little-to-no punishment or rules. Lastly, the uninvolved style is one with low warmth and low parental control. These parents often provide basic needs for the child but spend little time with their child and avoid emotional connections with them (Kail & Cavanaugh, 2019).

Aligning with the permissive and uninvolved parenting styles, McCabe et al. (2001) discovered that "low parental monitoring" was predictive of childhood-onset CD (p. 313). The DSM-5 lists the risk factors for CD, which include "parental rejection and neglect, inconsistent child-rearing practices, harsh discipline, […] and lack of supervision" (APA, 2013, p. 473). Furthermore, the likelihood CD will evolve into APD is increased if the person has suffered unstable parenting and inconsistent parental discipline (APA, 2013, p. 661). As seen by this research, permissive, uninvolved, and authoritarian parenting styles increase the child's risk for antisocial behavior, CD, and even APD later in life. Attachment theory and social learning theory support the idea that a guardian's parenting style could play a large role in the child's behavior.

Attachment theory. Attachment theory describes various forms of infant interactions with their caregiver. Mary Ainsworth, a pioneer in developmental psychology, discovered in her 'Strange Situation' study that secure infants who trust and depend on their caregivers cry when the caregiver leaves and stop crying upon their return (Kail, & Cavanaugh, 2019). It is believed that infants with secure attachment grow to depend on their parents for support (Kail, & Cavanaugh, 2019). According to Ainsworth, secure attachment is the most common form, but

there are three forms of insecure attachment wherein the baby has not learned trust and dependence towards their caregiver: avoidant, resistant, and disorganized (Kail, & Cavanaugh, 2019). Babies with avoidant attachment are not upset when the caregiver leaves and ignore the caregiver upon return. Those with resistant attachment are upset when the caregiver leaves but are difficult to comfort upon the caregiver's return. Finally, babies with disorganized attachment are confused by the caregiver's actions and do not understand why the caregiver left or returned. Ainsworth uncovered that, of those with insecure attachment, 20% of American infants have avoidant attachment, 10% to 15% have resistant attachment, and 5% to 10% have disorganized attachment (Kail, & Cavanaugh, 2019).

Literature is mixed on whether insecure attachment is predictive of aggression in children. Lyons-Ruth (1996) discussed in her attachment review article how disorganized attachment "is associated with later highly aggressive behavior" towards peers, while avoidant attachment is associated for high-risk families but not associated for low-risk families (p. 67). In agreement with Lyons-Ruth, Vondra et al. (2001) found that disorganized attachment was associated with perceived difficultness at two years of age and externalizing behavior problems at 3.5 years of age. Resistant attachment at age two was only associated with poor emotional regulation, not poor behavioral regulation (Vondra et al., 2001). They also found that infant avoidant attachment was unrelated to behavior and emotional regulation issues. Moving further into adulthood, Walsh et al. (2018) studied the association between the four psychopathy factors and attachment type in young adults. One of the results found was that for men and women the affective factor of psychopathy, including traits such as lack of remorse and callousness, was significantly positively associated with avoidance attachment (Walsh et al., 2018). It seems from the literature that disorganized attachment is the strongest indicator associated with antisocial or

behavioral issues, followed by avoidant and resistant attachment which related more to affective issues. Insecure attachment in severe antisocial behavior is indirectly demonstrated by only one third of a homicide offender sample having familial support (Cale et al., 2010).

Social learning theory. Social learning theory stipulates that people can learn by imitating or observing others' actions and the outcome of those actions (Kail & Cavanaugh, 2019). Research has also shown that individuals are more likely to imitate those they perceive as important (Kail & Cavanaugh, 2019). In early childhood, when the foundations of behavior are being learned and built, the child's parents are likely to be the most important figures in the child's life. In line with this theory, McCabe et al. (2001) discovered that parental antisocial behavior was a risk factor predictive of the child having CD with a childhood-onset specifier (p. 313).

Environment at home. Like parenting style, a child's negative home life can increase the child's chances of antisocial behavior. As indicated in the DSM-5, there is an increased likelihood CD will progress into APD if the person has suffered abuse and neglect (APA, 2013, p. 661). The DSM-5 further lists the familial risk factors for CD, which include "physical or sexual abuse, […] early institutional living, frequent changes in caregivers, large family size, parental criminality, and familial psychopathology" (APA, 2013, p. 473). Research has since affirmed the APA's list by seconding that "children with childhood-onset CD tend to come from dysfunctional family environments, characterized by high rates of parental psychopathology, high rates of family conflict, and the presence of dysfunctional parenting practices" (as cited in Frick et al., 2015). Wallinius et al. (2016) also uncovered that childhood psychosocial variables, such as parental absence, parental substance or alcohol abuse, and a violent home environment, were most frequently reported from violent offenders in early adulthood, and that parental

substance or alcohol abuse specifically was the principal predictor of severe aggressive antisocial behavior. In a mostly adult sample, it was found that nearly one third of repeat homicide offenders were raised in foster care or institutions, and nearly two thirds had parents or guardians with substance abuse issues (Cale et al., 2010).

Childhood Trauma

Childhood trauma has been linked to maladaptive personality traits which form in the early stages of life and remain relatively concrete throughout the lifespan. De Carvalho et al. (2015) examined non-offender adults' traumatic childhood experiences, such as physical, sexual, and emotional abuse, emotional and physical neglect, and total trauma, to assess their fully formed personalities. De Carvalho et al. (2015) found that emotional neglect and abuse were more strongly associated with dysfunctional personality traits than physical and sexual trauma. However, de Carvalho et al. (2019) linked participants with high total childhood trauma with having high harm avoidance, higher novelty keeping, lower reward dependence and persistence, and lower cooperativeness. In layman's terms, high overall childhood trauma was associated with individuals becoming inconsistent, stimulus seeking, and more apathetic regarding society's perception of them or their actions. These trait combinations could more easily allow an individual to commit deviant or impulsive antisocial acts. It is important to note that not all individuals who suffer childhood traumas act out antisocially and the reverse; in a study of repeat homicide offenders, about one third experienced physical abuse, one fifth experienced both physical and sexual abuse, and very few experienced only sexual abuse (Cale et al., 2010).

Hollerbach et al. (2018) found elevated psychopathic trait levels in those with childhood trauma. Hollerbach et al. (2018) used the Self-Report Psychology Scale (SRP) to assess psychopathic traits and the Childhood Trauma Questionnaire Short Form to assess emotional and

physical neglect and emotional, physical, and sexual abuse in non-violent adult Finnish twins. In a comprehensive prospective study of boys in the first grade, by Byrd et al. (2018), it was found that children with early onset callous traits were more likely to have experienced early physical abuse, emotional abuse and neglect, and high levels of psychosocial adversity. Examples of psychosocial adversity included change in caretakers, a high number of children in the home, moving residences, a single or absent biological parent in the home, neighborhood crime, parental stress, and public assistance (Byrd et al., 2018). These results affirm the prior research and give weight to the importance of home environmental factors in evaluating risk factors.

Biological Factors

There is an abundance of research on biological factors. However, this paper only briefly reviewed the topics of genetics, physiology, and brain structures in relation to antisocial behavior, due to the limited nature of the study survey.

Genetics

Besides contextual factors, there is evidence that severe antisocial behavior is at least partially determined by the individual's genetics. In the previously mentioned study of McCabe et al. (2001), researchers found that males were more likely to have childhood-onset CD whereby antisocial behavior begins before age 10. Mason and Frick (1994) conducted a meta-analysis of twin and adoption studies to determine the heritability of antisocial behavior and concluded that about 50% of antisocial behavior was due to genetics. The DSM-5 mentions that CD is more common in children whose biological parents have a psychopathology such as severe alcohol use disorder, mood disorders, Attention Deficit-Hyperactivity Disorder (ADHD) or CD (APA, 2013). The DSM-5 additionally states that familial psychopathology is prevalent to a higher degree in individuals with childhood-onset type CD (APA, 2013). While researching genetic

tendencies, Guo et al. (2008) discovered that genetic variants in genes, such as MAOA, DAT1, and DRD2, which deal with dopamine neurotransmitter activity in the brain, predict serious delinquency and criminal behavior. More importantly, though, Guo et al. (2008) found that DRD2 and MAOA effects can be significantly mitigated by positive social control.

Criminologists have theorized the relationship between genes, behavior, and environment. One theory is the continuum of contextual triggers or the stress-diathesis model. In essence, stressful contextual life experiences, such as maltreatment or violence, can trigger expression of genes linked with antisocial behavior, while an environment absent of significant stressors prevents the genes from being expressed (Shanahan & Hofer, 2005). Everything in between either increases or decreases the risk of antisocial behavior (Shanahan & Hofer, 2005). Another theory is that social norms and controls can be taught and implemented to prevent the triggering through social control (Shanahan & Hofer, 2005). In this theory, prevention is not due to the absence of stress but social control (Shanahan & Hofer, 2005). Due to the combined effect of genetics and the individual's environment on antisocial behavior, the predisposed risk might be moderated with parent training or never triggered due to an informational program on the child's genetic vulnerability as a means of prevention (NCCMH, 2010). If the child's genes or genetic history is known, informational programs could educate the parents and guardians on their children's possible triggers or teach positive parenting techniques specific to their child's needs if the traits have begun to surface.

Physiology

Besides heritability, discrepancies in bodily functioning, such as heart rate and cortisol levels, have been connected to risk factors of antisocial conduct and CD. In their review of biologic causes for antisocial behavior, Ling et al. (2019) discussed that low resting heart rate is

associated with an increased risk of criminal behavior in adulthood. Reduced heart rate during stress was also seen in psychopaths compared to non-psychopaths and successful psychopaths (Ling et al., 2019). In 2006, Loney et al. found low cortisol in males with elevated callous-unemotional (CU) traits and no hormone effect differences for the female groups. They also found that testosterone levels did not differentiate groups and, interestingly, that antisocial behavior without CU traits did not show reduced cortisol levels (Loney et al., 2006). Later, Stadler et al. (2011) found that children with ADHD and high CU traits showed lower cortisol levels than those with low CU traits. In 2013, it was found that boys with early-onset conduct disorder and high CU traits had significantly lower levels of cortisol (von Polier et al., 2013). Like Loney et al. (2006), von Polier et al. (2013) found that externalizing behavior or antisocial behavior alone was not associated with cortisol levels for both groups. That same year a study by Stoppelbein et al. (2013) researching cortisol levels, aggression, and psychopathic traits focused on aggression in girls. Tests revealed that low cortisol levels were linked with high narcissistic and impulsive psychopathic traits, and high narcissism was associated with proactive and reactive aggression (Stoppelbein et al., 2013). These studies collectively indicate a negative relationship between psychopathic traits and cortisol levels for males and females while finding no relationship for testosterone or antisocial behavior alone. On the other hand, Feilhauer et al. (2013) studied detained antisocial children with callous-unemotional traits and concluded cortisol levels did not differ from a community comparison group. While there is still debate, most research indicates that low cortisol levels could identify a biological marker for psychopathic traits but not antisocial behavior alone (Feilhauer et al., 2013).

The Brain. Structural brain abnormalities have been linked to antisocial behavior. Frontal lobe impairments and damage, specifically to the prefrontal cortex, have been found in

antisocial and criminal individuals (Ling et al., 2019). These impairments can disrupt the individual's moral and social decision-making and thereby impact behavior. Ling et al. (2019) discussed that successful psychopaths, similar to non-offenders, do not display prefrontal cortex deficits, such as reduced gray matter volume, as seen in unsuccessful psychopaths. Ling and colleagues (2019) also mentioned that both blue-collar criminals and antisocial offenders with psychopathic traits exhibited reduced gray matter compared to both white-collar criminals and antisocial offenders without psychopathic traits. They highlight the connection between antisocial behavior and neurobiological deficiencies but caution against labeling these deficiencies the sole cause for antisocial behavior (Ling et al, 2019). In a traumatic frontal lobe brain injury case study, patients experienced increased aggression levels and a greater risk for incarceration (Lane et al., 2017). Injury to the prefrontal cortex can result in disinhibition, impulsivity, and issues in foresight which can make antisocial or criminal behavior more likely (Lane et al., 2017). Regarding research on the amygdala, hypoactivity is suggested for psychopaths while hyperactivity is suggested for impulsive antisocial individuals (Ling et al., 2019). Research on amygdala maldevelopment assists in understanding possible influences on severe antisocial behavior as it applies to instrumental and expressive violence.

Regarding structural brain damage in non-forensic individuals absent of psychological illness, a brain imaging study found that individuals with lesions of the prefrontal cortex, specifically the right prefrontal cortex, were empathically impaired, both cognitively and affectively (Shamay-Tsoory et al., 2004). Empathy can be characterized as either affective empathy, the ability to feel what another feels, or cognitive empathy, the ability to identify and understand another's feelings (also known as Theory of Mind). Dadds et al. (2009) found severe deficits in affective empathy in children and adolescent males with antisocial behavior and high

callous-unemotional traits, however no deficits in affective empathy were found for their female counterparts. This difference could be due to gender socialization. Regarding cognitive empathy, there is conflicting research as to whether those with psychopathic traits do or do not have deficits. Dadds et al. (2009) found that as children's psychopathic traits scores increased, the cognitive empathy scores decreased for both males and females. This would lead researchers to believe that individuals with high psychopathic traits have significantly impaired cognitive empathy. On the other hand, as mentioned before, Fragkaki et al. (2016) found that children with high CU traits showed no deficit in cognitive morality; these children had Theory of Mind and could identify the appropriate emotions in others. Further research is still necessary to explore the relationship between psychopathy and cognitive empathy and to investigate the biological origins of psychopathy.

Intrinsic Factors

Intrinsic factors (Holmes et al., 2001), like biological factors, often come from within the individual, however, unlike biological factors, they are not physical or material elements. Intrinsic factors are those experienced or felt, such as personality traits and temperament.

Personality Traits

Byrd et al. (2018) found that those in the early onset chronic group with high levels of callousness had more risk factors than all other groups, including higher levels of fearlessness and anger dysregulation in comparison to those with low or moderate internal callousness. This study found that the major predictors of persistent antisocial behavior were "fearlessness, conduct problems, peer delinquency, and psychosocial adversity" after accounting for overlap with other predictors (Byrd et al., 2018, p. 478). In another study, Colins et al. (2018) found that

a high score on all psychopathic personality trait dimensions was predictive of future persistent conduct problems to a greater degree than CU traits alone.

Temperament

Temperament is the most heritable and stable component of a person's personality (Cloninger, 1994). Temperament is something that can be observed after a few months of life and is not significantly influenced by environmental factors early on (Holmes et al., 2001; Cloninger, 1994), making it a prominent risk factor to consider for anticipating future antisocial behavior. The DSM-5 lists the known temperamental risk factors for CD and antisocial behavior as a "difficult under-controlled infant temperament" and a lowered Intelligence Quotient (APA, 2013, p. 473). Goodnight et al. (2016) supported infant temperament as a risk factor and found that infant fussiness significantly predicted juvenile antisocial behavior, particularly in childhood antisocial behavior rather than in adolescence. Bai and Lee (2017) found in a group of 150 ethnically diverse children, ages six- to ten-years old, that a daring temperament significantly predicted an increase in conduct problems after two years.

In a study of adult male violent offenders, violent offenders with APD were more likely to show "high novelty seeking, high harm avoidance, and low reward dependence", and committed higher levels of impulsive violence than low harm avoidance offenders (Tikkanen et al., 2007, p. 1). High harm avoidance offenders were more likely to commit assault while low harm avoidance offenders were more likely to have committed homicide (Tikkanen et al., 2007). Low harm avoidance individuals had average impulsiveness and dependence on environmental reward, higher curiosity, optimism, and carelessness (Tikkanen et al., 2007). The low harm avoidance individuals were hypothesized to have committed premeditated crimes and their features were compared to those of clinical psychopaths (Tikkanen et al., 2007). While a

minority in the violent offender group, these offenders were more violent and thereby extremely relevant to serial homicide offender analysis.

In summary, psychopathic traits, fearlessness, anger dysregulation, difficult and/or daring temperament, lower IQ, and low harm avoidance have been found to increase conduct problems or antisocial behavior and are relevant intrinsic factors for the present study.

Historical Factors

Along with contextual, intrinsic, and genetic background, understanding people's prior conduct and prior diagnoses can be significant as the prior conduct and diagnoses may establish a pattern of behavior.

Prior Antisocial Behavior

Children with childhood-onset CD were found partially more likely than children with adolescent onset CD to have committed aggressive offenses (McCabe et al., 2001). McCabe et al. (2001) found that children with childhood-onset CD were more likely than children with the adolescent-onset subtype to have "bullied or threatened others" but were equally likely to have committed other aggressive offenses such as starting physical altercations, using weapons, being cruel to animals or people, or committing theft with confrontation (p. 314). Individuals who engage in the more severe antisocial behaviors at an early age are at a higher risk for future severe antisocial behavior (APA, 2013). Past antisocial behavior has been the best predictor of future and stable antisocial behavior (Colins et al., 2018).

Prior Diagnosis

Prior diagnoses have been found to correlate with severe antisocial behavior in children and adolescents. Children with CD and ADHD have difference neuropsychological processes and show more severe behavioral problems than children with only CD, displaying a possible

developmental precursor to psychopathy (Lynam, 1996). McCabe et al. (2001) also found that juveniles with CD and comorbid ADHD were likely to have childhood-onset CD. In line with this research, the DSM-5 states that the likelihood that CD will evolve into APD is increased if the persons are diagnosed with childhood-onset CD and comorbid ADHD (APA, 2013).

Childhood-onset CD specifically and CD with comorbid ADHD or comorbid oppositional defiant disorder (ODD) also predict an increased risk of criminal behavior (APA, 2013). ODD is a diagnosis involving irritable or angry mood, argumentative or defiant behavior, and vindictiveness which "often precedes the development of conduct disorder, especially for those with the childhood-onset type" of CD (APD, 2013, p. 464). The traits that often carry over from ODD to the more severe diagnosis of CD are the defiance or argumentativeness and vindictiveness (APA, 2013). Rates of ODD are much higher in individuals who also experience ADHD (APA, 2013). Individuals with ODD and ADHD often have poor emotion regulation which could explain the high comorbidity (APA, 2013). ADHD diagnosis also involves criteria on inattention and/or hyperactivity-impulsivity. Impulsivity and irresponsibility are two of the seven behavioral criteria for APD which overlap with ADHD; these diagnostic similarities might explain the correlation between ADHD, CD, and APD.

Early recognition of these risk factors is imperative as tutoring, training, and interventions for the child and parent or guardian might alleviate the risks of future antisocial behavior for the child. As a side note, it is recognized that most of the risk factor studies were not conducted with juvenile offenders or juvenile offenders who have committed violent crime(s) such as homicide. Nevertheless, due to the population's rarity, the present study included the aforementioned risk factors of persistent antisocial behavior to the extent the survey allowed for.

Terminology

At face value, it seems that the definition for a serial homicide offender or serial murderer would be someone who has killed multiple times; this, however, is not specific enough. Multiple homicide offenders are individuals who murder more than one person, but there are many subtypes which vary in victim count, time of events, and location (DeLisi & Scherer, 2006). Some of the more famous types of multiple homicide offenders are mass killers, spree killers, and serial killers (DeLisi & Scherer, 2006). Mass and spree murder definitions are largely agreed upon, while serial homicide is still debated among researchers. From 2001 to 2005, researchers' definitions of serial murder typically included three or more victims. Some researchers suggested adding other requirements: a specific offender motivation, a forensic link between crimes, a sexual element to the crime, premeditation, that the events were spread out over an extended period of time, or a cooling off-period (Adjorlolo & Chan, 2014). In 2005, the FBI held a conference and deemed the official definition of serial murder as a minimum of two murders committed by the same offender, at separate events, with a time period between murders (BAU 2 & NCAVC, 2005). Researcher definitions from 2005 to 2014 range from two to three victims and differ from the FBI's definition by occasionally suggesting the addition of common crime characteristics to link the murders or that the victims be strangers to the offender (Adjorlolo & Chan, 2014). However, many serial killers do not repeat crime characteristics or murder only strangers, so these elements are questionable (Adjorlolo & Chan, 2014). In order to be as inclusive as possible, the present study utilized the FBI's definition of serial homicide.

While the categorization of serial homicide rests under multiple homicide, repeat homicide is a subsection of serial homicide. Repeat homicide offenders (RHOs), like serial offenders, have multiple victims from different events and times. However, these individuals

commit a homicide, are prosecuted, institutionalized, released, and then commit another homicide. DeLisi et al. (2019) differentiated serial offenders from repeat offenders by noting that serial murderers often kill numerous times before arrest or their demise (DeLisi et al., 2019). Not all serial killers, though, are clever enough to evade arrest in such a way. As such, RHOs are included in the present study's serial homicide offender population, aligning with the FBI's definition which does not specify the timing or element of institutionalization.

Myers (2004) examined six child and adolescent serial murderer cases spanning the years 1854-2004. Only six individual cases were found that fit the criteria for their study: juveniles who committed two or more unrelated murders, both murders while under the age of 18, with a sadistic element present. Myers (2004) noted that the criteria excluded several murderers who began killing as a juvenile and continued into adulthood. As such, the present study utilized a less restrained definition in the hopes of increasing the sample size while hopefully not diluting the results. For the purposes of this thesis, a 'juvenile serial homicide offender' (JSHO) was defined as a person whose first act of murder was committed while under the age of 18.

Reality of Juvenile Serial Homicide Offenders

Juvenile homicide offenders are rare and JSHOs are even more rare.

Juvenile Homicide Offenders

The number of male juvenile murderers annually has greatly varied between 1980 and 2016, while the annual number of females has remained relatively constant (Office of Juvenile Justice and Delinquency Prevention [OJJDP], 2018). Juvenile male homicide offenders ranged from a high of 2,656 in 1994 to a low of 662 in 2012, while females ranged from a high of 159 in 1992 to as low as 43 in 2013 (OJJDP, 2018). Through these statistics, it can be surmised that juvenile males, for whatever reason, are convicted of homicide at significantly higher rates than

females, so a heavily male sample is expected in studies of this population. Also, while these annual numbers of juvenile homicide offenders might seem large in comparison to adult homicide offenders, juvenile homicide offenders are quite rare. Lone juvenile offenders made up only 3.6% of all known murder offenders of 2016, and when team or group juvenile offenders are added to the number of lone juvenile offenders, the percentage increases to only 4.6% in 2016 (OJJDP, 2018). According to the Office of Juvenile Justice and Delinquency Prevention *Statistical Briefing Book,* homicide offending increases with age for juvenile offenders. For example, "in 2016, about 9% of known juvenile homicide offenders were under the age of 15, while 79% were ages 16 or 17" (OJJDP, 2018). The younger the juvenile, the rarer the homicide.

Juvenile Serial Homicide Offenders

The National Center for Juvenile Justice and the Office of Juvenile Justice and Delinquency Prevention developed the Easy Access to the FBI's Supplementary Homicide Reports database to provide the public with detailed statistics on juvenile offender data, which does not include justifiable or negligent homicide incidents. According to the FBI Supplementary Homicide Reports (SHR) from 1980-2016, there have been a total of 286 lone murderers under the age of 11 and 23,543 lone murderers under the age of 17 (Puzzanchera et al., 2018). Unfortunately, the SHR's do not catalog the statistics for any version of juvenile multiple homicide offender. A juvenile homicide offender has a different record for each offence in the SHR, making the number of juvenile serial homicide offenders impossible to determine. However, it is safe to assume that juvenile serial murderers are rarer than juveniles who commit only one murder. These rare individuals could be the key to understanding psychopathy and violent homicide risk factors.

Serial Homicide Characteristics

While there have been limited studies on juvenile single-time homicide offenders, research on juvenile serial homicide offenders is lacking. A literature search on Google Scholar and California Baptist University's online library database turned up only two studies which included respondents fitting the present study's criteria of JSHO: Wade Myers' (2004) case study of six serial murderers who committed all acts of murder while under age 18, and Cale and colleagues' (2010) exploratory analysis of Canadian RHOs that included participants under the age of 18 along with adults. These studies were mainly used to compare against the current sample.

Offender Characteristics

Myers (2004) found the juvenile serial homicide offenders' average age at the time of their first killing to be 14 years old while the mode was 16. In their study of RHOs, Cale et al. (2010) identified that the average age of first criminal conviction (18.4 years old) was significantly earlier than single-time homicide offenders (STHO). Cale and colleagues (2010) did not have age parameters though. They did not calculate average age at first homicide conviction, only the first of any convictions. Myers (2004) did not discuss the offenders' races, highest education level, substance use, or employment status, but Cale et al. (2004) did. RHOs from Cale et al. (2010) were just over half white, just over one third aboriginal, and under 5% minority which reflected the Canadian criminal justice system race ratios. RHOs had an average of eight years of education which did not significantly differ from the STHOs (Cale et al., 2010). Regarding mental health, about half of the RHOs had substance abuse issues, which was significantly more than the STHOs (Cale et al., 2010). In a case study of an adult male serial killer, researchers determined the offender was depressed, but did not significantly differ from

other violent offenders on other mental health measurements including psychopathy (Culhane et al., 2011). These researchers attributed the depression to the offender's long life in prison and hypothesized the offender outgrew his psychopathic traits (Culhane et al., 2011). Regarding employment, nearly three-fourths of RHOs had an employment history, but only one tenth had a good employment history (Cale et al., 2010). Cale and colleagues (2010) found the strongest predictors of committing repeat homicide were substance abuse, a prior lack of employment, and child abuse and neglect. A prior lack of employment was the strongest single predictor (Cale et al., 2010). Myers (2004) did not review prior offenses except for sexual crimes; only one of the six JSHOs was known to have a prior arrest for a sexual crime. Cale et al. (2010) noted RHOs were more likely than STHOs to be convicted of violent offenses before and after their first homicide, but these factors were not predictive. While RHOs were more likely to commit violent offenses, they were equal in the number of overall convictions (Cale et al., 2010).

Offense Characteristics

Victim Characteristics

Out of Myers' juvenile serial murderer population, most of the sample killed two victims versus three victims (Myers, 2004). Myers (2004) speculated that the serial murderers did not kill more victims because the offenders were caught by law enforcement early on or had a lack of transportation. Neither Cale et al. (2010) nor Myers (2004) addressed the variable of victim race. Myers (2004) found 50% of JSHOs chose at least one male victim and 50% chose only female victims, but in total there were at least 13 female victims and 4 male victims leaving females as the more likely target. In contrast, Cale et al. (2010) reported almost three fourths of victims were male for both RHOs and SHTOs. Cale et al. (2010) detected no significant difference in victim sex or age between RHOs and STHOs. In Myers' (2004) sample, 50% of JSHOs killed

stranger victims, but in total 12 victims were strangers and 5 knew their killer. Contrary to Myer's results showing about 70% of stranger victims, Cale et al. (2010) identified between a quarter and one third of victims had no relationship.

Crime Characteristics

Myers (2004) excluded juveniles who committed homicides with adults present and mentioned only one JSHO with a co-offender. There was no difference in the presence of co-offenders (common in offenses related to gang activity) between RHOs and STHOs in Cale and colleagues' (2010) study. Myers (2004) disclosed that in five out of the six cases the child serial murderers traveled by foot to the murder locations and all the victims were geographically convenient. This finding was indirectly supported by Cale and colleagues' (2010) finding that RHOs committed their offenses on average in one jurisdiction. Cale et al. (2004) and Myers (2004) did not analyze the time of day or night the offense occurred. In Myers (2004), the victims were mostly killed by cutting or stabbing (with a knife or sharp instrument), then strangled or drowned, and only one victim was killed by firearm. Each homicide offender in Myers (2004) was a juvenile during all homicides and most likely had less access to firearms than knives. Cale et al. (2010) did not uncover differences between RHO and STHO weapon type, but about half of RHOs stabbed their victims, a quarter used a firearm, and a little less than one-fifth used hands or feet. Whether the offenders planned their homicides or not was not addressed by Myers (2004) or Cale et al. (2010); however, they discussed possible motivations. Cale et al. (2010) inferred that there was no distinct pattern between planned or emotion driven motivations for the homicides. Related to motivation, Cale et al. (2010) detected that RHOs were four times more likely to perpetrate sexual violence during their first homicide. Myers (2004) theorized sexual gratification and sexual motivations for the juvenile offenders' antisocial acts,

but this theory likely stemmed from excluding respondents without sadistic elements to their homicides.

Summary

In summary, the risk factors of antisocial behavior, as organized categorically, include contextual, biologic, intrinsic, and historical factors. Contextual factors, which were themes among many researcher's studies, were negative parenting, attachment, family stressors, parental or family psychopathology, childhood trauma, and schooling issues. The DSM-5 (APA, 2013), McCabe et al. (2001), Byrde et al. (2018), and Frick et al. (2015), all identified some form of negative parenting as a risk factor. Unstable/dysfunctional parenting or inconsistent discipline and child-rearing, emotional abuse and neglect, harsh discipline, parental absence, and/or low parental monitoring characterized negative parenting. While literature is mixed on avoidant and resistant attachment, disorganized attachment seems to be the strongest predictor of future aggression (Lyons-Ruth, 1996) and emotional and behavioral issues (Vondra et al., 2001). Family stressors were identified as risk factors by McCabe et al. (2001), Wallinius et al. (2016), Frick et al. (2015), Byrd et al. (2018), and the DSM-5 (APA, 2013). Family stressors were characterized by changes in caretakers, large family size or number of children in the home, frequent changing of residences, family conflict, violent home-life, parental criminality or antisocial behavior, parental stress, or using public assistance. Frick et al. (2015) and Wallinius et al. (2016) each found parental or family psychopathology as a theme, which included substance or alcohol use disorder, APD, CD, ADHD, and other less prevalent disorders. Elevated levels of dysfunctional personality traits, psychopathy traits, and conduct issues were associated with overall abuse and neglect physically, sexually, and/or emotionally (APA, 2013; Hollerbach et al., 2018; Cale et al., 2010; Tikkanen et al., 2007), early abuse (Byrd et al., 20181), and

emotional abuse and neglect (de Carvalho et al., 2015). Lastly, educational issues as a risk factor for antisocial behavior (APA, 2013; Wallinius et al., 2016; McCabe et al., 2001; Byrd et al., 2018) included peer rejection, association with delinquent peers, early age bullying behavior, and early onset truancy.

Prevalent biologic factors for severe antisocial or criminal behavior were parental or family psychopathology (Mason & Frick, 1994; APA, 2013), male biological sex (McCabe et al., 2001), genetic dopaminergic variants (Guo et al., 2008), and low resting heart rate (Ling et al., 2019). Most research indicated significantly low cortisol levels for males with psychopathic traits and no association between cortisol level and antisocial behavior (Loney et al., 2006; von Polier et al., 2013). Criminal antisocial behavior has also been linked to prefrontal cortex impairment or damage and amygdala hyperactivity (Ling et al., 2019). The effects of traumatic prefrontal cortex injury included increased aggression, disinhibition, impulsivity, issues in foresight, greater risk for incarceration (Lane et al., 2017), and empathetic impairment (Shamay-Tsoory et al., 2004). Research uncovered severe deficits in affective empathy levels in males with antisocial behavior and high CU traits (Dadds et al., 2009), while research on cognitive empathy and morality remained conflicted (Dadds et al., 2009; Fragkaki et al., 2016).

Intrinsic factors were not as extensive as contextual and genetic factors. Difficult or fussy infant temperament (Goodnight et al., 2016; APA, 2013) and lowered IQ (APA, 2013), daringness (Bai & Lee, 2017), fearlessness (Byrd et al. 2018), and psychopathic personality traits including callousness (Colins et al., 2018) were each found in young antisocial individuals. Adult violent male offenders with extremely low harm avoidance were more likely to commit homicide than other violent offenders and displayed personality characteristics akin to interpersonal/affective psychopathic traits (Tikkanen et al., 2007).

Last of all, historical factors such as early prior conduct problems, severity of prior conduct problems, prior CD with either comorbid ADHD or ODD diagnosis, and especially those comorbid diagnoses with childhood-onset CD were found to correlate with higher risk of antisocial or criminal behaviors (Colins et al., 2018; McCabe et al., 2001; APA, 2013; Lynam, 1996).

Studies of serial homicide offenders provided offender and offense characteristics. Noted offender characteristics included early age of committing crimes and homicides, race distribution in line with the national rates, substance abuse issues, depression and possible psychopathic traits, lack of prior employment, lack of a support network, high childhood trauma, higher levels of sexual violence in the homicides, and additional violent offenses (Cale et al., 2010; Myers, 2004). Literature differed on victim sex and relationship, while victims' race and age were omitted (Cale et al., 2010; Myers, 2004). Regarding crime characteristics, both Myers (2004) and Cale et al. (2010) found serial offenders tended to commit crimes in geographically convenient locations. The weapon preference of knives or sharp instruments was shown, but neither the time the offense occurred nor whether the offense was planned were analyzed (Cale et al., 2010; Myers, 2004). Regarding motivation, Cale et al. (2010) could not distinguish a pattern of motivation, and Myers (2004) theorized sexual gratification.

It is recognized that most of the risk factor studies were not conducted with juvenile offenders or juvenile offenders having committed violent crime. Nevertheless, due to the population's rarity, the present study, in an effort for comprehensiveness, included the risk factors for persistent severe antisocial behavior to the extent the survey allowed. Cale et al. (2010) detailed and compared offender characteristics and crime characteristics in RHOs to STHOs. Psychological, biological, and intrinsic risk factors were not analyzed due to limited

data but were noted as critical elements to assess and analyze in future empirical research (Cale et al., 2010). As RHOs can be considered a subcategory of serial homicide offender per the FBI definition, it is likely the present study results will support Cale and colleagues' (2010) findings. However, with the lack of specific age parameters, their results include many participants outside of the present study's juvenile age parameter. The effect of including serial homicide offenders, not just RHOs, and excluding offenders who began killing in adulthood is to be seen. Myers (2004) was able to create a profile for juvenile serial murderers including crime and victim details. Myers (2004) included whether the young homicide offenders had prior arrests for a sexual offence, but not other past violent or antisocial acts. Myers (2004) also did not analyze the environment, personality, level of psychopathic traits, or prior diagnoses of the juvenile serial homicide offenders. What is missing in the literature is a self-report based comprehensive study of JSHOs, including crime details, psychopathic trait level, and possible contextual, genetic, intrinsic, and historical factors. Such a study could result in a more complete profile of JSHOs and lead to advances in prediction, prevention, and treatment of severe antisocial behavior.

CHAPTER 3

Method

Participants

Archival data of participants were selected from the Bureau of Justice Statistics' 2004 *Survey of Inmates in State and Federal Correctional Facilities* (SISFCF). In 2004, to recruit participants for the SISFCF, a stratified two-stage random sample method in which the first stage selected prisons and the second stage systematically selected inmates to interview using a computerized "randomly selected starting point and a predetermined skip interval" (SISFCF, p. 8). It was unreported how or if the volunteer participants were compensated. The participants for this study were categorized as either juvenile serial homicide offenders (JSHOs) or juvenile single-time homicide offenders (JSTHOs). JSHOs were convicted of murdering at least two victims in different incidents, the first of which was while under the age of 18 and did not qualify as a mass murderer or spree-killer. JSTHOs were convicted of one homicide with one victim. Respondents were excluded for any of the following reasons: (1) they were unsentenced; (2) their first homicide arrest or conviction occurred at or after age 18; (3) age near the time of the homicide could not be determined; (4) respondent indicated there was no deceased victim or the victim was not a person; (5) in the case of only one conviction of homicide, multiple victims were attributed to a single incident; or (6) in the case of only one homicide conviction, offenders could not be categorized due to missing victim and incident count information.

Categorized as either JSHO (11 male, 1 female) or JSTHO (174 male, 27 female), the 2004 SISFCF provided 213 eligible respondents (185 male, 28 female). Due to the small female sample size, females were removed from analyses. The age of the 185 participants, as of 2004, ranged from 17 to 54 years old (M = 29.47, SD = 7.50). Average earliest age at the first homicide

for participants was 16.03 years old (*SD* = 1.24) but ranged from 8 to 17 years old. At the time of the inmates' incident offense arrest, three JSHOs were adults and all other participants were under age 18. The participants' data included the following ethnicities: 50.3% Black non-Hispanic (*N* = 93), 22.7% White (*N* = 42), 21.6% Hispanic (*N* = 40), 2.7% American Indian, Alaska, Native non-Hispanic (*N* = 5), 1.6% multiple non-Hispanic races reported (*N* = 3), 0.5% Asian, Pacific Islander, Native Hawaiian (*N* = 1), and 0.5% other (*N* = 1). Lastly, the majority of participants were born in the United States (95.1%, *N* = 176).

Instruments

Each respondents' survey answers were used to determine factor frequencies, differences, and psychopathic trait scores.

Survey

The 2004 SISFCF is a cross-sectional survey conducted every 5-6 years to provide nationally representative data on inmates held in state and federal prisons. Census Bureau interviewers collected data on 2,984 variables clustered into ten variable groups: individual characteristics, current offenses, pretrial release and trial, current sentence, incident characteristics, criminal history, socioeconomic characteristics, alcohol and drug use and treatment, medical conditions and mental health, and prison programs and disabilities. Each variable corresponded to a possible interview question. Depending on the inmate's answer, some questions, and therefore variables, were skipped and left blank. Interview question response scales varied between dichotomous yes or no, continuous, and categorical. All questions were close-ended questions with no specific anchor points besides each question's last options: Don't know, Refused, Blank. Almost all answers were numerically coded, and a few were alphanumerical which allowed the inmate to "specify other".

Psychopathy Measure

The Self Report Psychopathy Scale- Short Form (SRP-SF) is a brief measure of 29 statements to which individuals rate the degree they agree with each statement on a five-point Likert scale (1- strongly disagree, 5- strongly agree) (Declercq et al., 2015). The SRP-SF is based on the four-factor psychopathy model with survey items addressing the interpersonal, affective, lifestyle, and antisocial dimensions of psychopathy. The SRP-SF demonstrates reliability ($\alpha = .85$) and is significantly correlated with the established PCL-R for male offenders (Declercq et al., 2015).

Design

An exploratory research design was used for this illustrative comprehensive case study. A descriptive analysis was used to explore high frequency factors and then those factors were analyzed to assess if they significantly differ from JSTHOs.

Procedure

I found the data set while searching the BJS for crime statistics on juvenile murderers. Upon finding the data and skimming the survey, I hoped this data set could be used for multiple studies because of its vast and exhaustive questions. The SISFCF coded and categorized states' offenses. The variables that were most important to this study included three of the study's pre-coded offenses: Accessory to murder after the fact, accessory to murder, felony murder, murder, and willful murder (pre-coded as offense 10), homicide, homicide- willful kill, and unspecified homicide (pre-coded as offense 13), and manslaughter with intent, non-negligent manslaughter, premeditated manslaughter, and voluntary manslaughter (pre-coded as offense 15). These pre-coded variables were used as part of the inclusion criteria. To distinguish the sample, I first located the variables indicating the participant's past and current sentenced violent offenses.

Second, I dichotomously marked which cases had general violent offenses and murder offenses, including murder, homicide, and voluntary manslaughter, and noted if those cases had multiple murder charges and/or multiple offenses of murder. I removed unnecessary variables. Once the data was cleaned, I calculated the age of the respondent at the time of the incident. Due to the limited nature of the survey, exact age at the time of the crime was not accessible; however, age was estimated by the respondent's self-reported age/year of arrest or age/year of conviction for the murder(s), whichever date was provided or closer in proximity to the incident. Offenders who committed their first act of murder as adults were excluded.

The SISFCF sections covering the current offense, current sentence, and crime characteristics were used for sample selection. The section detailing the current sentence also detailed which offense received the longest sentence (the longest sentence for which the respondent was currently serving time was labeled the incident offense in the SISFCF). As only homicide related incident offenses were salient for this study, it was crucial to determine which offense the crime characteristics section detailed. Variables noting the incident offense location in the survey and year of the incident offense crime were compared to current and prior offenses to make this determination. To further validate this determination, variables indicating if the incident offense was categorized as violent or not were referenced. Any JSTHO participants with non-homicide related crime characteristic sections were excluded even if they had a prior homicide conviction. Next, respondents were categorized as Single-Time Homicide Offenders, Multiple Homicide Offenders, Serial Homicide Offenders, Mass Homicide Offenders, or 'Refused to Answer' by incident crime victim count and whether the offense took place during one or multiple incidents. Respondents categorized as 'Multiple Homicide Offender', 'Mass Homicide Offender', or 'Refused to Answer' were excluded, leaving only JSHOs and JSTHOs.

Victim characteristic variables were computed to combine single victim incidents and multiple victim incidents so statistical results could reflect group membership. The data was organized by victim instead of offender as serial offenders often had multiple victims during their incident offense.

The SRP-SF was to be completed for each JSHO using proxy variables from the SISFCF to reduce shared variance. Although the scope of SISFCF was extensive, too many variables were missing from the SRP-SF which invalidated the instrument; the sample's psychopathic levels could not be assessed in the present study.

Data Analyses

The Statistical Package for the Social Sciences (IBM SPSS 26) was used to analyze the data in three stages. First, frequency descriptive statistics regarding offender characteristics (n = 11) and offense characteristics including victim and crime details (n = 10) were used to narrate the JSHO profile. One JSHO was filtered out for offense characteristics as neither of their homicides were the incident offense. Due to the small population size, a nonparametric Levene's test was used to verify homogeneity of variance ($p > .05$) (Nordstokke & Zumbo, 2010; Nordstokke et al., 2011). Second, nonparametric bivariate statistics (Fisher's Exact Test, Mann-Whitney U) were used to compare these factors in the JSHO and JSTHO populations. Third, statistically significant bivariate variables were analyzed using a binary logistic regression to predict group membership.

CHAPTER 4

Results

The JSHO profile details the results of the present study's descriptive research questions numbers one through three calling for exploration of the juvenile serial homicide offenders' (1) personal and criminal backgrounds, (2) offenders characteristics and offense characteristics, and (3) the frequencies of these factors. Due to missing variables, we were not able to address the fourth hypothesis regarding whether JSHOs exhibited high psychopathic traits. The nonparametric JSHO and JSTHO statistical comparisons section responds to the present study's research hypotheses number five and six; (5) JSHOs are more likely to have more extreme risk factors for antisocial behavior- contextual, genetic, intrinsic, and historical- than JSTHOs, and (6) JSHOs differ from JSTHOs in their offender and offense characteristics. The final results section, predicting JSHO group membership, responds to the last research hypothesis, hypothesis seven: these factors are predictive of an individual becoming a JSHO compared to becoming a JSTHO.

JSHO Depiction

Offender Characteristics as of 2004

The population of JSHOs were all U.S born (n = 11) individuals who were sentenced for committing two or more homicides at two or more incidences, the first of which while under the age of 18. The average age of JSHO's first homicide was 14.45 years old (SD = 2.66); six JSHOs at 15 years old, two at 17 years old, and one JSHO each at age 8, 11, and 16. JSHO race was evenly split: four White, four Black, and three Hispanic. JSHOs highest level of school attendance before admission ranged from ninth grade to senior in college with eight attending some level of high school, two attending college, and one attending an out-of-country school.

Nearly two thirds of JSHOs (63.6%) had a job or business during the month before their incident offense arrest. Substance use was rampant among JSHOs; 100% of respondents (*n* =10) have used illegal drugs and 60% struggle with drug dependence or abuse (*n* =6). With this in mind, two-thirds of those who responded (*n* = 6) noted having job or school trouble due to alcohol use. In addition, seven (63.6%) of the JSHOs had a job during the month before their arrest, however three of those had been fired in the last year due to substance use.

Offender Characteristics Growing Up

Contextual. Contextual factors addressed include offender homelife, parenting, peer delinquency, and physical or sexual childhood trauma. While growing up, 36.4% (*n* = 4) of JSHOs lived in public housing and 27.3% (*n* = 3) lived in a foster home, agency, or institution at some point. This population had an average of 4.18 siblings (SD = 1.83), ranging from one to seven siblings. Regarding their caretakers, nearly three-fourths of the group (72.7%) lived with their mother most of the time while the rest (27.3%) lived with both parents. Over half (54.5%) of JSHO caretakers received welfare and more frequently than not abused alcohol or drugs (54.5%). A little over one-third (36.4%) of JSHOs reported not feeling close to friends or family which aligns with Ainsworth's insecure attachment estimate of about 35%. Peers of JSHOs growing up were frequently deviant (81.8%), committing illegal acts such as destruction of property, shoplifting, vehicle theft, selling stolen property, breaking and entering, mugging, robbing or extorting, or other. The majority of JSHO peers (63.6%) were highly deviant having committed three or more types of illegal acts, two JSHOs peer groups (18.2%) were moderately deviant with one to three types of illegal acts, and the last two peer groups (18.2%) reported not committing any illegal activity. Out of the nine JSHOs with deviant peer groups, 100% also participated in these illegal acts. JSHOs on average began engaging in these illegal acts by age

11.78 (*SD* = 3.38), ranging from 5 years old to 14 years old. Two (18.2%) of the JSHOs were physically abused; one by their parents, and the other by a stranger. The JSHO who was physically abused by a stranger was also sexually abused (9.1%) and almost raped by a stranger. Both JSHOs were abused while under the age of 18.

Biological. The only biological factor which could be assessed was whether the JSHOs had ever experienced a stroke or brain injury; no JSHOs had suffered such injuries.

Intrinsic. Measures for difficult or fussy temperament and low harm avoidance were not included in the SISFCF so proxy variables were used to assess the optimism, fearlessness, and energy associated with those factors. At the time of their most recent arrest, one JSHO (9.1%) argued with or disobeyed police, one (9.1%) cursed at or insulted police, and one (9.1%) attempted to escape. None threatened police, resisted arrest, resisted a search, fought with police, or used a weapon to threaten or assault police. While incarcerated, none of the JSHOs were written up or found guilty of physically assaulting a staff member. However, seven JSHOs were written up or found guilty of breaking any prison rules (63.6%) and six of those were also written up or found guilty for disobeying orders (54.5%).

Historical. Regarding mental health, about one-third of JSHOs (36.4%) had been told they had at least one mental disorder; one of the JSHOs was diagnosed with a personality disorder (9.1%), and one was diagnosed with a depressive disorder (9.1%). None of the JSHO population noted ever attempting suicide, and psychopathic trait levels were undeterminable. Regarding prior behavior, JSHO's age at first arrest for any offenses averaged 13.22 (*SD* = 2.82) and ranged from nine years old to sixteen. Most JSHOs were either first timers (45.5%) or recidivists with prior violent offenses (45.5%), while the rest (9.1%) were recidivists with nonviolent prior offenses. JSHO's number of arrest categories included: three JSHOs (27.3%)

with one prior arrest category, three (27.3%) with two prior arrest categories, two (18.2%) with zero, and one JSHO each with three (9.1%), four (9.1%), and eight prior arrest categories (9.1%). Lastly, zero of the JSHOs were labeled as sex offenders.

Offense Characteristics

Victim Characteristics. Six of the JSHOs killed two victims during the incident offense (60%) and four JSHOs killed one victim during the incident offense (40%). Out of the 16 victims killed by JSHOs, half were male (50%), six were female (37.5%), and two were unknown sex due to missing data (12.5%). Victims of JSHOs were mostly White (68.8%), three were Black (18.8%), and two were unknown (12.5%). Nearly half of JSHO victims were ages 25 to 34 (43.8%), nearly a third were ages 35 to 54 (31.3%), about a fifth were 18 to 24 (18.8%), and one victim was 55 or older (6.3%). Almost three-fourths of all victims were strangers to their offender (62.5%), a quarter knew their killers (25%), and the relationship between offender and victim was left blank in two victims' cases (12.5%).

Crime Characteristics. Half of the JSHOs had co-offenders (50%) and half did not (50%). Most of the JSHOs reported their incident offense was not planned (80%) and two JSHOs left this question blank (20%). The offense occurred in the inmate's city/state of residence in seven out of the ten JSHOs (70%). Three of the homicides took place at or in the victim's residence (30%), three took place in a public space (30%), two took place at a commercial setting (20%), one took place at a residence shared by the offender and victim (10%), and one took place at multiple locations (10%). Half the homicides took place at night with three occurring between 6pm and midnight (30%) and two between midnight and 6am (20%); the other half were either not at one time (20%), between noon and 6pm (20%), or, least likely, between 6am and noon (10%). The weapon type possessed or used by the JSHOs when the

incident offense occurred were firearm (40%), knife (30%), and no weapon possessed or used (30%). The weapons, as they can be used for multiple reasons, were used to kill the victim in 50% of cases, scare the victims in 30% of cases, injure the victim in 30% of cases, to protect themselves in 20% of cases, to get away in 10% of cases, and 40% of JSHOs reported not using a weapon. The contradicting statistic for no weapon possession or use is due to one JSHO who denoted possessing or using a firearm, but then a few questions later responded that he did not use the weapon in any way. As for motive, one JSHO committed the incident offense to get money for drugs (10%), most JSHOs committed the incident offense with other motivations (80%), and one JSHO left the question blank.

Nonparametric JSHO and JSTHO Statistical Comparisons

Some statistical analyses indicated differences between the groups which partially supports the fifth hypothesis that JSHOs would exhibit more extreme risk factors for antisocial behavior than JSTHOs, and the sixth hypothesis that JSHOs and JSTHOs would differ in offender and offense characteristics.

Offender Characteristics as of 2004

There was no evidence to support a difference between JSHO and JSTHO citizenship ($p = 1.00$) or offender race ($p = .67$). Partially supporting the sixth hypothesis, a Mann-Whitney test indicated JSHOs (Mdn = 15) were on average younger than JSTHOs (Mdn = 16) at the time of their first homicide [$U = 493.00$, $p = .003$ (2-tailed)]. In addition, prior to admission for the incident offense, statistical analyses found JSHOs (Mdn = 12) had attended higher levels of education than JSTHOs (Mdn = 10) [$U = 514.00$, $p = .009$ (2-tailed)]. Differences between JSHOs and JSTHOs in drug dependence or abuse ($p = .75$), job/school trouble due to alcohol use ($p = .07$), employment in the month before arrest ($p = .35$), or if the respondents ever used an

illegal drug (p = .22) were not found. However, statistical analysis (two-sided Fisher's exact test) confirmed that JSHOs (42.9%) were significantly more likely than JSTHOs (9.9%) to have been fired from a job because of substance (alcohol or drug) use in the year before the current offense (n1 = 91, n2 = 7, p = 0.04).

Offender Characteristics Growing Up

Partially supporting the fifth hypothesis, comparing JSHOs and JSTHOs, there were no statistically significant differences in any contextual, biological, or intrinsic variables, however there was one historical factor difference.

Contextual. Comparing JSHOs and JSTHOs, there were no statistically significant differences in any contextual variables including offender home-life, parenting, peer delinquency, or childhood trauma.

Biological. Only a few JSTHOs (2.3%) and zero of the JSHOs ever suffered a stroke or brain injury; this minute difference was statistically nonsignificant (p = 1).

Intrinsic. JSHOs and JSTHOs did not significantly differ in their disposition at arrest nor while in prison.

Historical. Partially supporting the fifth hypothesis that JSHOs would exhibit more extreme risk factors than JSTHOs, JSHO and JSTHO categorizations as first-timers, recidivists with prior nonviolent offenses, or recidivists with prior violent offenses were not equally distributed [n 1 = 174, n2 = 11, p = .02, Fisher’s exact test (2-sided)]; JSHOs were more likely to be recidivists with prior violent offenses than JSTHOs (45.5%, 13.8%), slightly less likely to be first timers (45.5%, 59.8%), and much less likely to be recidivists with prior nonviolent offenses (9.1%, 26.4%). Prior diagnoses, suicidal attempt rates, age at first arrest, criminal versatility, and sex offender status differences were non-significant.

Offense Characteristics

Partially supporting the sixth hypothesis that JSHOs differ from JSTHOs in their offender and offense characteristics, analyses displayed one victim characteristic difference but no crime characteristic differences.

Victim Characteristics. Statistical analyses confirmed differences in victim sex between JSHOs and JSTHOs [n1 = 174, n2 = 14, p = .02, Fisher's exact test (2-sided)]; victims to JSHOs were almost evenly split between the sexes (57.1% male, 42.9% female) while the majority of JSTHO victims were males (84.5% male, 15.5% female). Victims were not more likely to be chosen by a JSHO or a JSTHO based on race (p = .17), age (p = .59), or whether they were known or strangers to the offender (p = .49).

Crime Characteristics. The presence of co-offenders (p = 1), whether the incident was planned (p = 1), whether the offense occurred in the inmates' city/state of residence (p = .20), what type of location the offense happened at (p = .13), the time the incident offence occurred (p = .61), the weapon type used or possessed at the incident (p = .25), what the weapons were used for, and drug money motivation (p = .76) were all statistically similar between the populations.

Predicting JSHO Group Membership

Due to the small sample size the following statistics are anecdotal and to be interpreted with caution. However, considering that small sample sizes tend to not result in statistical significance and the present study's results differ from prior research, the following results are of interest.

To identify the best predictive factors of falling into the JSHO population, logistic regression analyses were conducted for the variables found significant in the nonparametric JSHO and JSTHO statistical comparisons. The salient factors included: earliest age of homicide,

education level, whether they had been fired from a job due to substance use in the year prior to the incident offense, their prior offense category, and the victim's sex. Refuting the seventh hypothesis, no variables were predictive of JSHO group membership.

However, the earliest age of committing homicide and if the inmate had been fired due to substance use were both predictive of JSTHO group membership. The difference between JSHO's and JSTHO's was significantly explained by the differences in their average earliest age of committing homicide ($\chi2(1) = 11.99$, $p = .001$); for each increasing year in age, offenders were two times less likely to fall into the JSHO group (Exp(B) = .521, B = -.653, $p = .002$). Using the earliest age of homicide to determine group membership resulted in all JSTHOs categorized correctly as JSTHOs (100%) and only under one-fifth of JSHOs categorized correctly (18.2%) (B = -.653, $p = .002$). In addition, whether the inmate had been fired from a job within the last year due to substance use was predictive ($\chi2(1) = 4.58$, $p = .032$), but again only of JSTHO group membership; all participants were categorized as JSTHOs (B = -1.922, $p = .022$). Education level ($\chi2(1) = .37$, $p = .55$), prior offense category ($\chi2(1) = 3.52$, $p = .06$), and the victims' sex ($\chi2(1) = .29$, $p = .59$) were not predictive of either group membership.

CHAPTER 5

Discussion

The purpose of this exploratory comprehensive analysis was to provide greater insight into juvenile serial homicide offenders' severe antisocial behavior risk factors and offender and offense characteristics to create a profile for this rare population and determine if the profile distinguishes this population from less severe offenders. This chapter includes a discussion on the present study's key findings as related to relevant literature and what can be inferred from them. The chapter ends with recommendations, a discussion on the limitations of the study, and suggested directions for future research.

Conclusions

The present study's first four research questions called for exploration of JSHO characteristics including the personal backgrounds, offender and offense characteristics at the time of the incident offense, the frequency of these factors, and their level of psychopathic traits. The exploration resulted in the JSHO depiction describing the 10 to 11 inmates who were sentenced for committing two or more murders, at two or more incidences, the first homicide committed while under the age of 18. As the sample size is extremely small, the JSHO depiction should be used for reference only.

JSHO Depiction

Offender Characteristics as of 2004. This population of JSHOs were all United States born inmates with an average of 14.5 years old at the time of their first completed homicide. Our JSHO population's average age of committing homicide for the first time matched those of Myers' (2004) and our modal age was one year younger than Myers' (2004) population. JHSO race consisted of nearly equal parts Hispanic, Black, and White showing a slightly more

prominent Hispanic percentage and slightly less prominent Black percentage than the national percentages of 2004 inmates (Harrison & Beck, 2005). All JSHOs had attended some level of high school and had used illegal drugs at some point. Most JSHOs had a job during the month before their incident offense arrest, had job or school trouble due to drinking, and struggled with drug issues.

Offender Characteristics Growing Up. Growing up, most JSHOs had several siblings, lived with their mothers most of the time, and had caretakers who received welfare and abused substances; all factors noted in children with early onset high callous traits (Byrd et al., 2008) or violent offenders (Wallinius et al., 2016). Most JSHOs also had delinquent peers, and those who had delinquent peers also participated in the illegal activities beginning at about 12 years old. The presence of delinquent peers was noted as a risk factor for conduct disorder (APA, 2013) and in children with high callous traits (Byrd et al., 2008). Surprisingly, significantly fewer JSHOs reported childhood trauma than RHOs in Cale et al. (2010). All JSHOs said they had never experienced a stroke or brain injury. Most JSHOs had been written up or found guilty of breaking prison rules and disobeying orders. Specific diagnoses could not be determined, but about one-third of JSHOs had been told they had at least one mental disorder by a health professional, which is significantly higher than the 5.4 to 9.4 percent of all inmates who responded to the SISFCF (James & Glaze, 2006). In addition, only one JSHO was diagnosed with a personality disorder and another with a depressive disorder. Like Cleckley's psychopath description, none of the JSHO population noted ever attempting suicide (Skeen et al., 2011). Our JSHO population's average age at first arrest for any offense was approximately five years younger than the RHO population in Cale et al. (2010). This difference is likely due to the lack of age parameters in Cale et al. (2010), as no significant difference between our JSHO and

JSTHO group starting age was indicated. Most JSHOs were either repeat offenders with violent prior offenses, like the RHO population of Cale et al. (2010), or first timers, and of those recidivists most had only one or two prior arrest categories. The JSHOs were equally versatile in their crimes, an antisocial psychopathic trait, compared to the JSTHOs (Hare & Neumann, 2008). Lastly, although sexual violence during the homicides could not be ascertained as in Myers (2004) and Cale et al. (2010), no JSHOs were registered sex offenders.

Offense Characteristics. Half of the victims killed by JSHOs were male. These results are neutral compared to contrasting prior literature determining serial homicide offenders either kill more males (Cale et al., 2010) or more females (Myers, 2004; Bartol & Bartol, 2013). Victims were predominantly white. This aligns with literature stating white sexual homicide offenders tend to kill within their race while black sexual homicide offenders kill both intra- and inter-racially (Chan et al., 2010). Taken together, this would account for the greater percentage of white victims over the percentage of white offenders. Consistent with prior literature, most of the victims were young adults who had no relationship with their killer (Bartol & Bartol, 2013).

Half of the JSHOs had co-offenders although, as in Cale et al. (2010), the difference when compared to single-time homicide offenders was not significant. Like the JSHTOs, the large majority of JSHOs reported their incident offense was not planned. The homicides could have been impulsive; however, as serial homicide offenders often kill according to a plan (Bartol & Bartol, 2013), the offenders may have been faking good. Their incident offenses most often took place in the inmate's city/state of residence as did the cases in Myers (2004) and Cale et al. (2010). In addition, most homicides took place at or in the victim's residence or at a public place. JSHOs most commonly committed their incident homicide offense between 6pm and midnight. The timing is likely explained by school and work end times as well as the additional cover of

darkness. The weapons used by JSHOs during the incident offense were mostly firearms, closely followed by knives, and finally no weapons used or possessed. The non-weapon homicides likely include manual strangulation and beatings. Myers' (2004) JSHO population most commonly used sharp instruments or no weapons, while RHOs from Cale et al. (2010) most commonly used firearms. Like Cale et al. (2010), the weapon choice did not significantly differ between groups. Unsurprisingly, when the weapons were used, they were most often used to kill the victim, scare the victim, or injure the victim. Finally, almost all JSHOs committed their incident homicide offense for motivations other than drug money, however other motivations were absent from the SISFCF. These other motivations may overlap with Myers' (2004) theory of sexual gratification as the primary motivation.

Nonparametric JSHO and JSTHO Statistical Comparisons

The results from this study provide limited evidence for the fifth hypothesis that JSHOs are more likely to have more extreme antisocial behavior risk factors than JSTHOs. While contextual, biological, and intrinsic antisocial behavior risk factors were similar between JSHOs and JSTHOs, the two groups showed differences in their prior behavior. Reinforcing Cale and colleagues' (2010) discovery that RHOs were more likely to be convicted of violent offenses than STHOs, JSHOs were more likely to be recidivists with prior violent offenses, slightly less likely to be first timers, and much less likely to be recidivists with prior nonviolent offenses than JSTHOs. Out of the recidivists, 71% of all prior offenses committed by JSHOs were violent, while only 40% of the offenses committed by JSTHOs were violent. JSHOs might be more likely to commit violent offenses due to having interpersonal/affective psychopathy traits such as emotional regulation issues or a need for interpersonal dominance (Harpur et al., 1989, Hare & Neumann, 2008). Regarding recidivists with prior nonviolent offenses, recidivist JSTHOs' most

frequent nonviolent offenses, which JSHOs' criminal histories did not include, were burglary, auto theft, and probation violation. Main motivations for such crimes could be financial gain, unemployment, excitement seeking, substance use or abuse, or peer delinquency (Butler, 2005). As poverty, employment, substance abuse, and peer delinquency factors did not result in group differences, JSHOs could have higher levels of excitement seeking or rebelliousness.

The results support evidence of the sixth hypothesis that offender and offense characteristics differ between JSHOs and JSTHOs, including age at first homicide, education level, loss of employment due to substance issues, and the victims' sex.

First, JSHOs median age at the time of their first homicide was one year younger than JSTHOs and two years younger modally. As described in the DSM-5, individuals who begin antisocial behavior at an early age are more likely to continue behaving antisocially into adulthood than those who begin at a later age (APA, 2013). While that section of the DSM-5 described conduct disorder type specifications and our study populations' specific diagnoses were not reported, the pattern nonetheless is observed.

Second, JSHOs had a higher median level of education prior to admission for the incident offense than JSTHOs. This finding differed from Cale et al. (2010) which found education levels were equal between RHOs and STHOs prior to the commission of their first homicide. This difference could be explained by the different points in time; prior to the first homicide versus prior to the incident offense, which for JSHOs was after the prior homicide(s). Three of the JSHOs were adults at the time of their incident offense, allowing more time for education than the all-juvenile STHOs; this might have affected the results.

Third, JSHOs were fired from a job because of substance use in the year before their incident offense much more often than JSTHOs. Cale et al. (2010) found RHOs had a worse

employment history than STHOs and more substance abuse issues, however Cale et al. (2010) did not assess reasons for losing a job. As our populations had no difference in drug dependence or abuse, this job loss could illustrate higher unreliability and irresponsibility in JSHOs than JSTHOs.

Lastly, victim sex selection differed between groups, supporting the sixth hypothesis. On average both groups killed more men than women, but JSHO victim sex was nearly evenly split while JSTHO victims were overwhelmingly male. JSHOs were much more likely to choose female victims than JSTHOs. This slightly follows earlier literature; in Cale et al. (2010) both groups indistinguishably killed more men than women, yet in Myers' (2004) population of JSHOs, victims were more often female. Motivations for the homicides were not able to be fully explored and might explain the preference. If sexual gratification was the dominant motivation, as Myers (2004) hypothesized, female victim majority would be expected; yet, this outcome was not reflected in the data.

Predicting JSHO Group Membership

No support was evident for the seventh hypothesis wherein factors would predict JSHO group membership. Cale et al. (2004) uncovered numerous variables which, if possessed by the individual, were predictive of being in the RHO group including substance abuse issues, childhood trauma, and no prior employment history before their first homicide. Surprisingly, there were no significant differences between JSHO and JSTHO substance abuse/dependence issues or childhood trauma experiences. Cale et al. (2010) attributed RHOs' higher rate of substance abuse to a possible lack of involvement or success in prison treatment programs. However, many of the JSHOs were first timers in the present study which could partially account for the similarity to JSTHOs. Regarding childhood trauma, very few of the JSHOs and JSTHOs

reported experiencing childhood abuse compared to samples in Cale et al. (2010). This difference in affirmative reporting could be attributed to how the data was collected. The SISFCF survey utilized in the present study was conducted with unreported compensation and possibly no external motivation for inmate participation while Cale et al. (2010) used National Parole Board files. Cale et al. (2010) offenders might have had higher motivation to reveal extremely personal information as it might have proved beneficial towards their release. Similar to Cale et al. (2004), employment issues were a salient predictive factor, however for the present study employment issues were negatively related to JSHO membership instead of positively related. Cale et al. (2004) discovered inmates with no employment history were more likely to be correctly categorized as RHOs, and the present study's results indicated that those who have not been fired due to substance use were less likely to be correctly categorized as JSHOs. Interpreted inversely, inmates who have been fired due to substance use were seven times more likely to fall into the JSHO group, but whether they had been fired or not could only predict JSTHO membership. The earliest age of committing homicide was also only predictive of JSTHO membership; higher ages were more likely to be categorized as JSTHOs, but younger ages were not reliably predictive of JSHO membership. In addition, although education level, prior offense category, and victim sex factors resulted in significant differences between JSHOs and JSTHOs, they were not predictive of group membership. It is probable that positive group membership predictions could not be uncovered due to the extremely small JSHO population.

Recommendations

Although our factors did not accurately predict JSHO membership from uncategorized offenders and thereby do not have practical offender profiling use when distinguishing between JSHOs and JSTHOs, the differences identified between known JSHOs and JSTHOs can

contribute further insight into these offenders for various professionals. The study results are applicable to forensic and criminal psychologists for a general juvenile homicide offender profile and a cautious example of juvenile serial homicide offenders. Due to the mixed literature, using the present study results for a victim profile is inappropriate at this time. Law enforcement investigations can also benefit from the crime characteristic description of juvenile homicide offenders. Our findings are also relevant for parole board members in their risk assessments for homicide recidivism. Lastly, the antisocial behavior risk factors and offender characteristics growing up sections are extremely applicable for social workers. The risk factor section broadly reviews risk factors for future antisocial behavior while the offender characteristics growing up section essentially indicates red flags for future violent and severe antisocial behavior. Knowledge of these factors can help social workers identify children in need of assistance or intervention.

Limitations

Due to missing affective and interpersonal data, the fourth hypothesis regarding psychopathic trait levels could not be validly addressed. Additionally, the depth of the discussion section could be lacking compared to experienced experts in this field. Inmate responses were self-reported and taken as truth, with the exception of offender crime history which was validated in the pre-coded datasets. The SISFCF also did not include personality data, in depth mental health diagnoses, or motivations for committing the homicides. Further, our small sample size restricted the generalizability of our results. Lastly, the serial homicide characteristics literature section was sparse as there were only a few previous studies found on juvenile serial homicide offenders.

Future Research

This study identified differences in JSHO's and JSTHO's prior offense categories, ages at first homicide, education levels, employment loss due to substance issues, and the victims' sexes. These differences could be attributable to variances in emotional regulation issues, interpersonal dominance, excitement seeking, and rebelliousness. Psychopathic trait levels could not be directly determined in the present study, but the presence of psychopathic traits in the JSHO population were inferred. Our recommendations echo those of Myers (2004) and Cale et al. (2010) in calling for psychopathy assessment in juvenile serial homicide offenders. In addition, further research into serial homicide offender motivations is necessary. Most importantly, factors did not predict JSHO group membership. Unlike Cale et al. (2004), the present study only utilized one year of de-identified national inmate data. By obtaining the identified data and utilizing multiple survey years, future researchers could reach adequately sized sample populations for predictive statistical analyses. Future researchers should assess psychopathy, offender motivations, and utilize multiple years of data to empirically analyze these facets in relation to juvenile serial homicide offenders.

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