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Single-Parent Upbringing as a Predictor of Long-Term Violence Scale in Solo Male Serial Killers

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Abstract

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MPhil, Walden University, 2019

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Dissertation Submitted in Partial Fulfillment

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Doctor of Philosophy

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Abstract

Growing up in a single-parent household has been associated with exposure to adverse childhood experiences that contribute to negative short- and long-term psychological and behavioral outcomes, including violent behavior. It is unclear, however, whether a single-parent upbringing predicts the scale of a perpetrator's violence. The current study examined the scale of violence through measures of frequency and duration, correlated with a single-parent upbringing among male serial killers who operated alone in the United States. In a nonexperimental, cross-sectional design, I used a multivariate analysis of variance to compare 85 male serial killers raised by a single parent with 85 male serial killers raised by two birth parents across four measures of violence scale: the number of victims suspected, the number of victims confessed to, the number of victims convicted of having killed, and the duration of violent homicidal behavior. The findings yielded no statistically significant relationship between the parental structure of the male serial killer's childhood home and the 4 measures of scale of long-term repeated homicidal violence. This study contributes to the understanding of the role of a single-parent upbringing in long-term extreme, recurrent, prolonged violence by suggesting that while a single-parent upbringing and violence are correlated, a single-parent upbringing and the magnitude of that violence may not be. By revealing the limits of the association between a single-parent upbringing and long-term violence, efforts to predict long-term violence scale can focus more precisely on the underlying adverse childhood experiences that are frequently, but not exclusively, commensurate with a single-parent upbringing.

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Dedication

To those who prompted me to reach deep into my bucket list and who supported my journey in so many ways, I am forever thankful. To my daughter, Reese, thank you for your patience and understanding over the years that I gazed endlessly into my computer screen. I hope that you, too, will be infected with the bug of lifelong learning.

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Chapter 1: Introduction

The perpetration of violence by humans against humans has occurred as long as humans have existed. The quest to identify factors that reliably contribute to violent behavior—particularly extreme, recurrent violence—persists. Researchers have repeatedly identified the critical role of parenting quality in children's short- and long-term maladaptive behavioral outcomes (Mathews & Abrahams, 2018; Sulima, 2019). As a result of temporal and financial resource limitations and increased demands on single parents, children who grow up in single-parent households may be particularly vulnerable to conditions that foster long-term violent behavior. Although researchers associate growing up in a single-parent household with violent behavior, the magnitude and pervasiveness of the violence associated with a single-parent upbringing is relatively unexplored (Heleniak & McLaughlin, 2019). Examination of the relative scale of violence perpetrated by male serial killers raised by single parents may facilitate more precise insight into the characteristics of the parent-child relationship that tend to contribute to large-scale violent behavior over time. By further dissecting the relationship between single-parent households and the perpetration of extreme, recurrent violence over the course of a lifetime, researchers may identify yet-unexplored parental behaviors or household conditions that play a significant role in the psychology of a developing serial killer.

The background section of this chapter briefly covers previous research of the association between single-parent households and negative psychological and behavioral outcomes, and the knowledge gap is set forth. In the problem statement section, I state the

research problem and summarize evidence of its relevance and significance. The following section provides the purpose statement and the independent and dependent variables the quantitative study includes. The research questions and hypotheses are stated, followed by a discussion of the theoretical framework for the study. In the nature of the study section, I outline the rationale for the study, briefly describe the variables of study, and summarize the methodology to be used. Definitions of the independent and dependent variables are provided before I state the assumptions I made in conducting the study and why I made those assumptions. The scope and delimitation section includes the scope of the study and the rationale for choices I made in designing the study. In the limitations section, I describe methodological weaknesses and measures I took to address them. In the significance section, I suggest potential contributions of the study to understanding the association between a single-parent household in childhood and long-term extreme and recurrent violence. Finally, the main points of the chapter are briefly summarized.

Background

Nearly one fourth of children in the United States live in single-parent households (Pew Research Center, 2019). Growing up in a single-parent household is associated with exposure to adverse childhood experiences (ACEs; Jackson, Choi, & Preston, 2019; Manjunatha, Chandrashekar, & Chandrashekhara, 2019; Rousou, Kouta, Middleton, & Karanikola, 2019). For example, children in single-parent homes may experience adverse psychological impacts from an absent parent (Mok et al., 2018), exposure to unsafe or age-inappropriate situations due to poor supervision (Ben-David, 2016), and overtly

harsh or withdrawn parenting behaviors by a burdened and poorly coping single parent (Jackson et al., 2019; Mathews & Abrahams, 2018).

Previous researchers have correlated a single-parent upbringing and myriad negative short- and long-term psychological and behavioral outcomes. These range from psychological distress (Clements-Noelle & Waddington, 2019; Sinha & Ram, 2019) and interpersonal problems (Hinojosa, Hinojosa, Bright, & Nguyen, 2019; Nawaz, Ali, Najmussaqib, Ahmed, & Rehna, 2019), to juvenile delinquency (Burlaka, 2016; Dijanic, 2016) and, ultimately, violence (Heleniak & McLaughlin, 2019). Although an association between growing up in a single-parent home and violent behavior has been established, the scale of violence perpetrated by offenders raised by a single parent remains unknown. I conducted this quantitative study to investigate the scale or magnitude of the violence associated with offenders raised by a single parent. More clearly understanding the relative violence level that children raised in single-parent households may be at increased risk of perpetrating may contribute to a better-informed narrative regarding the risks of single-parent households. Further, more focused and effective intervention strategies may be developed and implemented with children at elevated long-term violence risk.

Problem Statement

Researchers have established a clear association between growing up in a single-parent household and myriad maladaptive psychological and behavioral outcomes that may endure throughout adulthood (Fergusson, Boden, & Horwood, 2007). Although the single-parent/violence link has been empirically established, there has been little or no

research on the scale of violence perpetrated by violent offenders from single-parent backgrounds. The dissection of the violence linked to single-parent households through an examination of violence extensiveness (i.e., number of victims suspected, number of victims confessed to, number of victims convicted of, duration) among serially violent offenders will help elucidate the predictive relationship between a single-parent upbringing and recurrent and extreme violent behavior throughout adulthood. With nearly one quarter of children in the United States growing up in a single-parent home, it is imperative to fully understand the long-term, potentially violent implications of the single-parent household.

Purpose Statement

The purpose of this study was to examine the scale of the violence correlated with a single-parent upbringing. Expanding on prior research establishing the correlation between growing up in a single-parent household and violent behavior, I dissected the scale of the associated violence. Solo, male serial homicide offenders who, through previous research, have been identified as having grown up in a single-parent home were the subjects of this study. Scale of violence was measured through four variables: (a) number of suspected victims, (b) number of victims confessed to, (c) number of victims convicted of, (d) duration. I explored the psychological path from single-parent-related ACE exposure to the ultimate violent behavioral outcomes using interpersonal acceptance and rejection theory (IPARTheory; Rohner, 1986) as a theoretical lens. The results of this study can provide a more nuanced understanding of the relationship between a single-parent household upbringing and the scale (e.g., number of suspected victims, number of

victims confessed to, number of victims convicted of, duration) of correlated violence among male solo serial killers in adulthood.

Research Questions and Hypotheses

RQ1: Does growing up in a single-parent household predict the number of victims solo male serial killers are suspected to have killed?

$H_0 1$: Growing up in a single-parent household does not predict the number of victims solo male serial killers are suspected of killing.

$H_a 1$: Growing up in a single-parent household does predict the number of victims solo male serial killers are suspected of killing.

RQ2: Does growing up in a single-parent household predict the number of victims solo male serial killers confess to killing?

$H_0 2$: Growing up in a single-parent household does not predict the number of victims solo male serial killers confess to killing.

$H_a 2$: Growing up in a single-parent household does predict the number of victims solo male serial killers confess to killing.

RQ3: Does growing up in a single-parent household predict the number of victims solo male serial killers are convicted of killing?

$H_0 3$: Growing up in a single-parent household does not predict the number of victims solo male serial killers are convicted of killing.

$H_a 3$: Growing up in a single-parent household does predict the number of victims solo male serial killers are convicted of killing.

RQ4: Does growing up in a single-parent household predict the duration of homicide perpetration among solo male serial killers?

$H_0$4: Growing up in a single-parent household does not predict the duration of homicide perpetration among solo male serial killers.

H_a4: Growing up in a single-parent household does predict the duration of homicide perpetration among solo male serial killers.

Theoretical Framework

The theoretical basis for this study was Rohner's (1986, 2016) IPARTheory, which indicates that irrespective of parental intent, parental behaviors and household conditions interpreted by a child as abusive, neglectful, or indifferent contribute to perceptions of rejection (Rohner & Lansford, 2017). Significant research supports the notion that a child's perception of parental rejection as a function of an ACE, rather than an ACE itself, contributes to short- and long-term negative behavioral outcomes (Khaleque, 2017; Smeijers, Brazil, Bulten, & Verkes, 2018). Thus, IPARTheory offers a psychological framework for understanding the path from ACE, such as those that may accompany a single-parent household, to long-term negative behavioral outcomes, such as homicidal violence.

Nature of Study

In this study, I employed a nonexperimental, cross-sectional design to assess the correlations between growing up in a single-parent household and scale of violence for statistical significance. Nonexperimental research is appropriate when the independent variable is not manipulated. Instead, the relationships between variables are measured as

they naturally exist (Thompson, 2007). Because the circumstances of an individual's upbringing cannot be experimentally manipulated, a nonexperimental design was appropriate.

To examine the role of single-parent household on violence scale without manipulating the independent variable, I used a cross-sectional design. Cross-sectional designs enable the comparison of two preexisting groups of people based on the presence or absence of the independent variable (Mann, 2003). By comparing male serial killers who were raised in a single-parent home with those who were not, the role that a single-parent upbringing has on the dependent variable, violence scale, may be more precisely described. Figure 1 presents the framework and variables in the study.

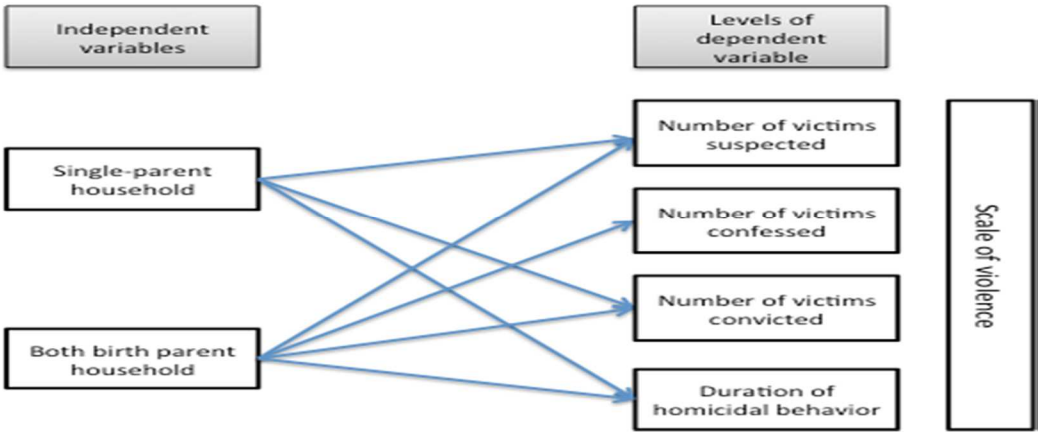

Figure 1. Framework and variables.

Archival secondary data contained in the Radford/FGCU Serial Killer Database were analyzed (Radford University/Florida Gulf Coast University, 2015). The database is the accumulation of multiple serial killer researchers' independent findings. The database serves as a response to Kiger's (1990) call to develop robust sources for empirical serial killer research, satisfying in part the historical difficulty with researching serial homicide

(Yaksic, 2016). The independent and dependent variables in this study are included in the database.

Definitions

Confessed homicide: An admission to the perpetration of a homicide (18 U.S.C. § 3501[e]).

Convicted homicide: Homicide for which a formal judgment of guilt is entered by a court (Federal Rules of Criminal Procedure, Title VI, Rule 31).

Scale of violence: The magnitude or extent of some phenomenon, such as through the measure of quantity (Blanchet, Ceresetti, Molinié, & Creutin, 2016; Salamon, Davies, Fuentes, Weisman, & Hainsworth, 2014).

Single-parent household: A child's primary residence in which only one of a child's biological parents resides (Pew Research Center, 2015).

Suspected homicide: Homicide which law enforcement officials believe, based on evidence, an offender committed but for which the offender did not confess and was not legally convicted (18 U.S.C. § 3103a).

Violence duration: Number of years in the span of time in which the offender perpetrated homicide (Dekel, Shaked, Ben-Porat, & Itzhaky, 2019; Godrati, Yazdanpanahi, & Akbarzadeh, 2019).

Assumptions

This study included several assumptions. First, I assumed the methodological rigor of this data. For instance, I assumed the primary data collection methods were sound, the relevant constructs (raised by birth mother only, raised by birth father only,

number of homicides perpetrated, years of first and last known homicide, and number of known victims) were measured in a way that the data are valid and reliable, and the recording of the primary data is accurate.

Second, I assumed that external factors affecting the dependent variables did not present a substantial danger to the validity of the research. Specifically, the number of victims suspected, the number of victims confessed to, the number of victims convicted of, and the duration of homicidal behavior are influenced by how quickly the offender is apprehended. One offender may be apprehended more quickly than another because his crimes were committed in a well-resourced or particularly adept law enforcement agency's jurisdiction or because the offender took less effective precautions to prevent being caught. As a consequence, the offender may have committed fewer homicides over a shorter period of time, killing fewer people than he would have if he had remained free, perhaps artificially deflating his statistics. Although this is a threat to the study's validity, because this issue is inherently present among all the serial killers in the database and is not limited to one group or another, the associated risks are relatively evenly distributed across the data.

Scope and Delimitations

The scope of the study is the examination of two variables: single-parent household in childhood and scale of violence. A delimitation of the study is the choice to examine male serial killers to better understand the relationship between a single-parent upbringing and long-term, large-scale violent behavior. Serial homicide is only one form

of long-term violence; however, it is an extreme form and may provide the outer limits of any identified relationships.

A second delimitation is the choice to compare male serial killers raised in a single-parent home with serial killers raised with both birth parents. Other categories of upbringing circumstances included in the database are, for example, being raised by a birth parent and a stepparent, a stepparent only, relatives, foster parents, or in an orphanage (Radford University/Florida Gulf Coast University, 2019). To compare the effects of a single-parent upbringing with the empirically proven ideal household situation, which is to be raised by both parents (Behere, Basnet, & Campbell, 2017; Fallesen & Gahler, 2019; Upreti & Sharma, 2018), I chose to include only these two groups.

A third delimitation of the study is the choice to operationalize scale of violence as number of victims suspected, number of victims confessed to, number of victims convicted of, and duration. Quantity, as measured by number of victims and duration, is readily found in the literature to measure the scale, magnitude, or extent of some phenomenon (Blanchet, Ceresetti, Molinié, & Creutin, 2016; Salamon, Davies, Fuentes, Weisman, & Hainsworth, 2014). Therefore, they were used as a measure of scale for this study.

A fourth delimitation is the choice to study only solo male serial killers in the United States. Although the database contains serial killers, including women, partners, and groups from all over the world, I chose to focus my population to male and solo serial killers, the most common type of serial killers (Hickey, 2016), and to those whose

crimes were committed, at least in part, in the United States. These choices were made to improve the generalizability of the results across serial killers within the same demographic group. It may, however, limit generalizability to serial killers who do not share these demographics.

Limitations

This study has limitations. First, errors or inconsistencies with the secondary data used in the analysis may constrain the validity of the results. The data were compiled over 20 years from multiple researchers who used varying methodologies into a single database (Aamodt, 2015). In addition to the potential for human error in acquiring and/or recording the relevant data, not all the relevant variables are reported for all the serial killers in the database. For example, there may be serial killers included in the database who were raised by a single parent but who were not assessed on the variable of single-parent upbringing by the primary researcher. This limitation affects sample size.

A second limitation is the likelihood that many of the serial killers in the database would have continued to kill if they had not been caught, in which case the number of victims suspected, number of victims confessed to, number of victims convicted of, and duration would have increased. The practical effect of this limitation is that the dependent variable data are almost certainly a conservative estimate of the data. As previously discussed, this effect spans across most serial killers and, thus, does not likely favor one group over another.

Significance

This study extends previous research of single-parent upbringing and its potentially grievous impacts in three ways. First, in this study, I dissected the construct of violence as a behavioral outcome. Existing literature regarding the increased risk of short- and long-term negative psychological and behavioral outcomes of single-parent households to children does not include investigations of violence scale. Thus, although a link between a single-parent upbringing and long-term violence has been established, it remains unclear whether violence tends to be recurrent, endures over time, and/or tends to claim multiple victims. A more nuanced understanding of the extent of the single-parent/violence relationship and the psychological underpinnings of the relationship enables a more precise narrative of the predictive nature of the single-parent household to large-scale violence in adulthood. As a consequence, well-informed, pointed risk assessment and intervention strategies may be developed and implemented early in a child's life.

Second, I focused on adult male solo serial killers in the examination of violent outcomes of single-parent households. Serial killing is an inherently violent pursuit; therefore, the variable of violence outcome necessarily exists in this population. By studying only those serial killers who were raised in single-parent homes and analyzing various measures of scale of their homicide perpetration, correlational relationships, to the extent they exist, revealed themselves more clearly.

Third, I used IPARTheory (Rohner, 1986) as this study's theoretical framework. IPARTheory holds that it is the child's psychological interpretation of ACEs as parental

rejection that bridges the adverse event or enduring adverse condition to the behavioral outcome (Rohner, 1986, 2016). By examining the single-parent/scale-of-violence relationship through the lens of IPARTheory, a deeper layer of understanding the psychological operation of the relationship between these variables emerged.

Summary

The goal of this study was to investigate the relationship between growing up in a single-parent household and the scale of long-term violence perpetration. The relative magnitude of violence perpetrated by male serial killers, an extremely violent population, helps clarify the importance of a potentially adverse early experience. Further, by examining this phenomenon through the lens of IPARTheory (Rohner, 1986; 2016), a framework for contextualizing the psychological processes driving the negative behavior is provided. Through this study, a more nuanced understanding of the relationship of a single-parent upbringing and large-scale, long-term violence may be achieved.

Chapter 2: Literature Review

Introduction

Nearly 25% of children in the United States live in single-parent households (Pew Research Center, 2019). Growing up in a single-parent home is often treated as an adverse childhood experience (ACE) by psychologists and courts because of the strong correlation between single-parent households and child maltreatment (Kratsky & Schroder-Abe, 2018; Paluch, Heard-Garris, & Carnethon, 2019). A single-parent household may expose a child to ACEs in multiple ways: through psychological impacts of an absentee parent; increased risk of abuse, neglect, and indifference by the single parent; and household conditions that tend to accompany single parenthood, such as poverty and parental depression (Afifi et al., 2015; Mathews & Abrahams, 2018).

According to IPARTheory (Rohner, 1986), parental behaviors and household conditions interpreted by a child as abusive, neglectful, or indifferent—even if not the parent's intent—contribute to perceptions of rejection (Rohner & Lansford, 2017). A child's perception of parental rejection, rather than parental intent, is the critical psychological component for maladaptive outcomes (Rohner, 1986, 2016). Such a perception is amplified when a child depends on a single parent (Carrasco, Gonzlez-Calderon, & Suarez, 2018). When a child perceives rejection by a parent, the child's fundamental need for emotional attachment to, recognition by, and support from the primary caregiver goes unmet (Humphreys, 2019; Rohner, 1986, 2016), contributing to a host of detrimental psychological (Alenazi, Hammad, & Mohamed, 2019), cognitive

(Khaleque, Uddin, Hossain, Siddique, & Shirin, 2019), affective (Ali et al., 2019), and behavioral (Smeijers et al., 2019) manifestations.

According to the literature, violence that begins in childhood and persists through adulthood is an extreme-case outcome shared by offenders from single-parent households (Fergusson, Boden, & Horwood, 2007) and by offenders who perceive parental rejection (Woeckener et al., 2018). Although evidence shows a direct, significant relationship between growing up in a single-parent home and perpetrating violence, there has been little or no research investigating the scale or extent of violence. Analysis of the number of victims suspected, the number of victims confessed to, the number of victims convicted of having killed, and the duration of violent homicidal behavior among offenders raised by a single parent may clarify the role of single-parent households in recurrent, extreme long-term violence. Examining the strength of the relationship between growing up in a single-parent household and the commission of extreme violence will help to illuminate the psychological impact of single-parent homes.

Chapter 2 includes an overview of the literature search strategy I used and a brief statement of the conceptual framework of the study. A discussion of adverse experiences and trauma follows. The single-parent household as an adverse childhood experience, its maladaptive outcomes, and its contributors are discussed. Next, I delve into IPARTheory and its application to violence, including serial killing. Finally, I summarize the major points of Chapter 2.

Literature Search Strategy

The literature review search strategy involved the exploration of multiple scholarly databases, Internet search engines, and websites. The most recurrently used databases were Academic Search Complete, EBSCO, PsycARTICLES, PsycINFO, Research Gate, SAGE Journals, ScienceDirect, and SocINDEX. The most frequently used search engine was Google Scholar. I used Walden University's online library to search for relevant article and to locate exact articles. Keyword searches included various forms of the root words of terms including *adverse childhood experiences*, *IPARTheory*, *parental acceptance*, *parental rejection*, *perceptions of rejection*, *warmth and affection*, *hostility and aggression*, *undifferentiated rejection*, *parental indifference*, *parental disengagement*, *parental neglect*, *child neglect*, *child abuse*, *parental absence*, *single parent*, *poverty*, *financial hardship*, *financial instability*, *socioeconomic disadvantage*, *emotional outcomes*, *social outcomes*, *cognitive outcomes*, *behavioral outcomes*, *anger*, *criminal behavior*, *violence*, *violence intensity, scale of violence, brutality*, *violence severity*, *homicide*, *murder*, and *serial killer* (see Appendix A for a complete list of search terms). This intensive search consisted primarily of examining data from studies published in or after 2015. Research published prior to 2015 was included when few subsequent studies were published on a topic or when the research was foundational to a topic.

Theoretical Framework

Interpersonal Acceptance-Rejection Theory

IPARTheory is a theory of socialization and lifespan development (Rohner, 1986, 2016). IPARTheory's personality subtheory focuses on the culturally invariant nature and effects of parental acceptance and rejection to children over the course of their lifespan, attempting to predict and explain the psychological consequences and personality manifestations of children's perceptions of parental rejection (Rohner, 1986, 2016). In this way, IPARTheory resembles attachment theory (Ainsworth, 1973; Bowlby, 1969, 1973) in its emphasis on the quality of the connection to an attachment figure (e.g., parent) as the basis for an individual's feelings of emotional security and comfort (Rohner, 1986, 2016). IPARTheory illuminates the powerfully motivating effect of the emotional need for a positive response from an attachment figure and, as such, provides a relevant and compelling psychological roadmap to examine the maladaptive psychological and behavioral outcomes that may occur when a child's emotional need for emotional security are unmet by a parent.

Perception of Parental Rejection

ACEs are comprised of parental behaviors and household dysfunctions which a child mentally interprets and assigns meaning to (Rohner, 1986, 2016). According to IPARTheory (Rohner, 1986), the process of mental interpretation and meaning assignment results in a child's perceptions of parental acceptance or rejection. For example, children whose single parent is absent from their sports events because the parent works multiple jobs to support the family may interpret the parent's absence as the

parent deliberating choosing not to attend the events and, thus, as rejection. A child's perceptions are the bridge between a parent's action or inaction or some household condition and a child's behavioral manifestation.

IPARTheory operates under three premises. First, everyone has a biological need for love, support, comfort, and affection from others who are important to them. Second, parental behaviors and conditions lead a child to conclude whether they are loved and accepted. There are four categories of these parental behaviors and conditions, each of which exists on a continuum. Acceptance is characterized by warmth and affection. The remaining three categories are forms of rejection: (a) hostility-aggression, (b) indifference-neglect, and (c) undifferentiated rejection (Rohner, 1986; 2016). The third premise of IPARTheory is that people tend to respond to perceived rejection through any of seven personality dispositions when they conclude they are rejected: (a) anger and hostility, (b) dependence or defensive independence, (c) negative self-esteem, (d) negative self-adequacy, (e) emotional instability, (f) emotional unresponsiveness, and (g) negative worldview (Rious, Cunningham, & Beale Spencer, 2019; Rohner, 2004; Rohner & Lansford, 2017).

Generally, the more rejected a child feels, the more of these personality dispositions the child tends to adopt (Rohner, 2004, 2016). When these seven personality dispositions form a negative stable pattern of personality over time, the result is a condition that Rohner (2004, 2016) has termed *rejection syndrome*. Not unlike the posttraumatic stress responses demonstrated by Pavlov's dogs (Pavlov, 1927) and

Horowitz's humans (1976), Rohner (2004, 2016) identified a conditioned personality disposition among children who perceived chronic parental rejection.

Although IPARTheory has not previously been applied to the study of single-parent households and their relationship to long-term violence, it is an appropriate framework to examine the psychological phenomena at the root of children's interpretation of the conditions often accompanying the experience of growing up in a single-parent household and those that drive behavioral outcomes, including long-term extreme violence. IPARTheory enables the tracking of a child's psychological perceptions of the conditions that frequently accompany life in a single-parent household through the behavioral manifestation of those perceptions, particularly in cases where negative perceptions go unchallenged or unprocessed. IPARTheory uniquely provides a theoretical explanation for a child's path from adverse event to cognitive interpretation to affective response to behavior, both immediate and long-term.

Warmth and Affection

Parental acceptance is characterized by warmth and affection (Rohner, 1986, 2016). The most widely studied dimension of parenting (Rious et al., 2019), *warmth and affection* refer to expressions of love, affection, support, praise, care, empathy, guidance, and genuine interest by a parent toward a child (Khan & Munaf, 2017). Emotional engagement with and emotional connection to the child are foundational to parental warmth and affection (Briere, Runtz, Eadie, Bigras, & Godbout, 2017).

Parental warmth and affection have long been recognized as critical to the development of positive outcomes across a person's lifespan. Parental warmth is

correlated with flourishing in midlife on psychological, emotional, and social measures of well-being (Bethell, Gombojav, & Whitaker, 2019; Chen, Kubzansky, & VanderWeele, 2019). Researchers have linked parental emotional availability, a characterization of warmth and affection, with decreased aggression in children (Babore, Carlucci, Cataldi, Phares, & Trumello, 2017). Parental warmth is a protective factor against risky and deviant behavior associated with perceptions of parental rejection (Daspe, Arbel, Ramos, Shapiro, & Margolin, 2018; Denes, Bennett, & Winkler, 2017). Researchers suggest that warmth and acceptance tend to be absent in single-parent households where the parent is overburdened with responsibilities and/or copes poorly with these burdens (Baker, Jensen, & Tisak, 2019; Sasser, Beekman, & Bierman, 2015).

Hostility and Aggression

Rohner (1986, 2016) described three categories of parental behaviors and conditions that children interpret as rejecting. One is hostility-aggression. In the context of IPARTheory, parental expressions of animosity, anger, or resentment, leading to harmful verbal and physical behavior (i.e., abuse) toward their children, characterize the hostility-aggression construct (Khaleque, 2017). Abusive parental behaviors may include verbal assaults, insults, and domineering (e.g., harsh criticism, name-calling, screaming); physical violence toward the child; and other behaviors that may cause physical or emotional harm to the child (Hunt, Goddard, Cooper, Littlechild, & Wild, 2016; Khaleque & Ali, 2017; Rohner & Lansford, 2017).

Researchers suggest that birth parents perpetrate physical and emotional abuse of their children most commonly (Sedlak et al., 2010), leading to various forms of

externalizing problems by children and adolescents (Glatz, Lippold, Jensen, Fosco, & Feinberg, 2019; Khaleque, 2017; Weymouth, Buehler, Zhou, & Henson, 2016). Verbal aggression by parents has been linked to oppositional defiant disorder (Contreras & del Carmen Cano, 2016; Derella, Burke, Stepp, & Hipwell, 2019). Parental aggression toward children in the form of corporal punishment, including spanking, has been linked to subsequent aggression in children (Yaros, Lochman, & Wells, 2016), although researchers disagree as to the consistency of this finding (Gershoff et al., 2018; Rohner & Melendez-Rhodes, 2018). Less deliberative parental hostility and aggression, such as the parent losing emotional control and lashing out at a child, has been more consistently associated with early and enduring signs of anger, hostility, aggression, delinquency, and antisocial behavior in children and adolescents (Atherton, Conger, Ferrer, & Robins, 2016; Glatz et al., 2019; Hay, Meldrum, Widdowson, & Piquero, 2017; Meldrum, Connolly, Flexon, & Guerette, 2016). IPARTheory research shows significant correlation between maternal and paternal hostility and aggression and psychological maladjustment that manifests through any of the seven negative personality dispositions put forth by Rohner (2004, 2016; Khaleque, 2017; Rious et al., 2019; Rohner & Lansford, 2017).

Fosco, Lippold, and Feinberg (2014) theorized that children raised in households where hostility and aggression are normalized become socialized into a hostile interaction style. The development of aggressive behaviors in children may be associated with rigid and/or inconsistent parenting behaviors (Derella et al., 2019; Patterson, 2002; Patterson, 2016). The child's aggression may strengthen the parents' negative parenting practices, which reinforces the child's aggression (Patterson, 2016). This reciprocal relationship is a

form of operant and classical conditioning reminiscent of Pavlov (1927), Seligman (1972), and other behavioral researchers, in which the child becomes conditioned over repeated parental interactions to behave aggressively (Patterson, 2002). Once parents develop a cycle of negatively reinforcing a child's aggressive behavior, it may be difficult to correct, even if the parent's behavior changes, as conditioned behavioral patterns tend to survive after discontinuation of the initial stimulus (Lunkenheimer, Lichtwarck-Aschoff, Hollenstein, Kemp, & Granic, 2016; Patterson, 2002).

Children raised in a hostile or aggressive household tend to demonstrate a generalized hostility in public interactions. Hostility toward peers often suggests exposure to parental hostility (de Vries et al., 2018). Similarly, children may attribute hostile motives to others, eliciting a defensive or aggressive response from the child (Healy, Murray, Cooper, Hughes, & Halligan, 2015; Yaros et al., 2016).

Children raised in a hostile or aggressive household may also demonstrate hostility or aggression toward the parent or parents (Derella et al., 2019; Fosco et al., 2014; Martinez-Ferrer & Stattin, 2016). Researchers suggest that child-to-parent aggression occurs more commonly in children who perceive the parent as generally hostile and neglectful of the child's needs, rather than as corrective (Contreras et al., 2016; Rohner & Melendez-Rhodes, 2019). High impulsivity, a hostile social perception, and an inability to navigate social situations are common among children and adolescents who aggress toward their parents (Contreras et al., 2016).

Child victims of hostility, aggression, and interpersonal violence have a significantly increased risk for aggressive behavior and violence in adolescence and

adulthood (Heleniak & McLaughlin, 2019). The aggressive behavior that begins in childhood and adolescence as a consequence of parental hostility and aggression is at a markedly elevated risk of turning into violent, sometimes serially violent, behavior throughout the child's lifetime (Heleniak & McLaughlin, 2019). Specifically, in single-parent households where the sole parent is disproportionately hostile, rejecting, and uses psychological, verbal, or physical aggression against the child, long-term criminal offending by the child is an increased risk (DeLisi & Vaughn, 2016).

Child abuse, including hostility and aggression by parents toward their children, is common among recurrently violent offenders, including serial killers (Mitchell & Aamodt, 2005; Willmott, Boduszek, & Robinson, 2018). A tragic example is Donald "Pee Wee" Gaskins, who confessed to killing approximately 100 people but was convicted of killing eight, including several children and a baby, in the early 1970s (Townsend, n.d.). Gaskins was born to a poor 14-year-old alcoholic girl who prostituted herself for money. The girl was unmarried to Gaskins' father, who was a wealthy local landowner who paid for sex with the girl, and who had no relationship with Gaskins (Kirby, Wolford, & Hayward, 2011). Throughout Gaskins' childhood, his mother had sex in front of him, and would laugh and push him away when he tried to make her stop (Kirby et al., 2011; Townsend, n.d.). Several of Gaskins' mothers' clients abused and sexually assaulted Gaskins while his mother looked on (Kirby et al., 2011; Townsend, n.d.). Gaskins was teased at school for his small stature and for the bruises on his body (Crime Museum, 2017). Blaming him for his inability to get along with his classmates, teachers repeatedly beat Gaskins. He quit school at age 8 (Kirby et al., 2011).

Gaskins' mother married a man who verbally and physically abused Gaskins (Crime Museum, 2017). The beatings continued through Gaskins' adolescence when he began to steal and engage in other delinquent behavior (Kirby et al., 2011; Townsend, n.d.). At age 15, Gaskins participated in a gang rape of a friend's sister for which he was sent to reform school where he was sodomized nightly for three years by a school leader (Crime Museum, 2017; Kirby et al., 2011; Townsend, n.d.). Gaskins attempted murder at age 19 when a woman threatened to turn him in for the arson of a tobacco farm. He hit her over the head with a hammer, but the woman survived (Kirby et al., 2011; Townsend, n.d.). In jail for his crime, Gaskins was sexually assaulted repeatedly by fellow inmates. In an attempt to establish his dominance, Gaskins slashed the throat of a fellow inmate, committing his first murder at age 20 (Crime Museum, 2017; Kirby et al., 2011; Townsend, n.d.). His series of murders, however, did not begin until Gaskins was 36 years old. For the next six years, Gaskins claimed to have targeted hitchhikers, both male and female, then strangled, suffocated, stabbed, and shot his victims. After they died, Gaskins said he mutilated the bodies and, in some cases, cannibalized them (Townsend, n.d.).

Gaskins' story punctuates the disastrous and heartbreaking behavioral outcomes that may occur as a consequence of prolonged, intense hostility and aggression by a parent toward a child. Unquestionably an extreme case of child abuse, Gaskins' story reveals the escalation in his angry, aggressive, and ultimately violent behavior over time and the many missed opportunities to intervene on his behalf during Gaskins' childhood. Many serial killers experience hostility and aggression at the hands of their parents or

other primary caregivers, to a milder degree than Gaskins in some cases (e.g. John Wayne Gacy, Gary Ridgeway) and comparatively severe in others (e.g., Henry Lee Lucas, Richard Ramirez).

Neglect and Indifference

Neglect. Child neglect, the failure to provide necessary care, is the most common form of mistreatment reported to authorities (Gilbert et al., 2009; U.S. Department of Health & Human Services, 2018; Vanderminden et al., 2019). More than 1 in 17 children (6.07%) in the United States experienced physical or emotional neglect in 2018, and more than 1 in 7 (15.14%) experienced neglect at some time in their lives (Vanderminden et al., 2019). Neglect can be physical or emotional (Khodabandeh, Khalilzadeh, & Hemati, 2018). Physical neglect may be described as the failure to protect a child's safety (Sulima, 2019), and often occurs when supervision is lacking in the context of single parenting. Emotional neglect is "the absence of sufficient attention, responsiveness, and protection that are appropriate to the age and needs of a child" (National Scientific Council on the Developing Child, 2012, p. 2). The forms of deprivation that emotional neglect may take include, for example, chronic ignoring, dismissing, belittling, overlooking the child's needs, understimulation, emotional non-responsiveness, and withholding love or emotional support (Hart, Brassard, Binggeli, & Davidson, 2002; Khaleque & Ali, 2017).

The psychological impacts of emotional neglect to a child are extensive. Although neglect has been identified by researchers as an understudied ACE (Bland, Lambie, & Best, 2018; Fagan & Novak, 2018; Widom, 2017), researchers suggest that

child neglect is at least as damaging to children as physical or sexual abuse in the long-term (Gilbert et al., 2009; Vanderminden et al., 2019). Adverse consequences include an increased risk of internalizing behaviors, such as depression and anxiety; and externalizing behaviors, including aggression and delinquency; delayed or altered cognitive and emotional development; a lack of emotional resiliency in the short- and long-term; insecure attachment style; behavioral and personality disorders; poor academic performance; substance abuse; risky sexual behaviors; aggression; and violence (Bland et al., 2018; Stoltenborgh, Bakermans-Kraenburg, & van IJzendoom, 2013; Vanderminden et al., 2019).

Psychological effects produce behavioral consequences. Khodabaudeh et al. (2018) identified a correlation between emotionally neglected children, decreased self-esteem, and subsequent behavioral problems. Researchers have found that neglect may double the likelihood of childhood behavioral problems (Norman, Byambaa, De, Butchart, Scott, & Vos, 2012), including elevating the risk of antisocial behavior (Braga, Gonçalves, Basto-Pereira, & Maia, 2017) and juvenile recidivism (Ryan, Williams, & Courtney, 2013).

Research shows a direct link from neglect to physical aggression and violence (Felitti et al., 2019) and criminal offending (Grady et al., 2016). A longitudinal study of children ages 0 to 12 who were victims of chronic neglect revealed impaired social functioning and predicted aggression and delinquency at age 14 (Logan-Greene & Jones, 2015). Chronic maltreatment including neglect of 0- to 14-year-old children predicted male delinquency at age 21 (Abajobir et al., 2017). Khodabandeh et al. (2018) found a

strong correlation between neglect in childhood and adulthood aggression among 350 adult men criminally accused of physical aggression. Child neglect research makes clear the deleterious effects of chronic neglect to a range of antisocial and criminal behavior, including aggression and violence, through a child's lifespan.

Like child abuse, child neglect is common among recurrently violent offenders, including serial killers (Yaksic, 2018). For example, Edmund Kemper killed 15 people, mostly women, in the 1970s. He killed his grandparents when he was 15 years old and later killed his mother. His mother was a domineering alcoholic who was overly critical of her son, berating him in public and blaming him for her divorce when he was 9 years old (Biography.com, n.d.; Leyton, 2003). In addition to these hostile-aggressive behaviors, Kemper's mother forced him to sleep in the locked basement for 8 months, purportedly so he could not harm his sisters (Biography, n.d.; Hickey, 2016; Leyton, 2003). This neglectful behavior not only contributed to under-stimulation, emotional non-responsiveness, and a failure to provide needed psychological care to Kemper by his mother, but it suggests a history of chronic maternal neglect of Kemper's emotional needs such that Kemper's aggressive behavior had reached a level where his mother feared for the safety of his sisters. Years later, Kemper cited a seething hatred for his mother as a reason for his murders (Leyton, 2003). Kemper's case demonstrates the contribution of parental neglect to a child's antisocial behavior and, ultimately, to recurrent long-term violence in adulthood.

Andre Crawford was convicted of killing 11 women from 1993 to 1999. Crawford's neglect began in his infancy, when he was abandoned in filth and squalor. His

mother admitted to leaving him for hours, even days, while she prostituted herself. When authorities learned of his abandonment, Crawford was put into foster care where he suffered all manner of physical and sexual abuse, primarily by his female caretakers. He was subsequently returned to his family, where he was forced to have sex with a family member (Walberg, 2009). Crawford suffered horrific neglect and abuse in his young life. His caretakers were consistently derelict in providing Crawford's most basic human needs for affection, positive attention, responsiveness, safety, and protection. These experiences undoubtedly shaped Crawford's psychological and social development and likely fueled the violent aggression Crawford perpetuated through his murders (Garbarino, 2017; Su, 2018; Walberg, 2009).

Indifference. IPARTheory pairs neglect with indifference (Rohner, 1986, 2016). The seemingly less severe manifestation of neglect, parental indifference may be characterized as uninvolved but not overtly dismissive or rejecting parenting (Briere et al., 2017). Insensitivity, a lack of responsiveness to a child's emotional needs, and the absence of warmth and affection typify parental indifference (Boyer, Scott, & Nelson, 2016; Briere et al., 2017). Parental indifference has been described as caretaker emotional disengagement, emotional distance, emotional unavailability, lack of awareness of the child's experience, inattention, distraction, misattunement, and diminished responsiveness (Artz et al., 2016; Briere et al., 2017; Kahn & Munaf, 2017). Parental indifference also suggests a lack of warmth, affection, love, sympathy, or interest in the child (Khan & Munaf, 2017). In its physical manifestation, parental indifference may involve the failure to provide for and the lack of supervision of a child (Fagan & Novak,

2018). The reduced temporal, cognitive, and emotional resources a single parent may have for meaningful child interaction makes indifferent or disengaged parenting an increased risk.

The behaviors that characterize parental indifference operate by invalidating a child's emotional experiences (Tanaka, Wekerle, Schmuck, & Paglia-Boak, 2011; Vettese, Dyer, & Wekerle, 2011). Indifference communicates to a child that his or her internal experiences do not matter (Westphal, Leahy, Pala, & Wupperman, 2016). A child interprets and internalizes a parent's negative response, ignorance, and otherwise uncaring behavior as indifference (Sulima, 2019), which is interpreted as nullifying the importance of the child's thoughts and feelings, and subsequently perceived as rejection (Khan & Munaf, 2017; Sulima, 2019).

Parental indifference may be extremely detrimental to a child's psychological and emotional health. Some researchers posit that the psychological impact of parental indifference to a child is more emotionally destructive than abuse (Briere et al., 2017), reconfirming that malignant intent and harsh treatment are not necessary for psychologically damaging effects (Artz et al., 2016; Briere et al., 2017; Sulima, 2019). Parental indifference is associated with emotional insecurity and poor personality development (Mendo-Lazaro, Leon-del-Barco, Polo-del-Rio, Yuste-Tosina, & Lopez-Ramos, 2019); mental health conditions, such as depression (Alenazi et al., 2019; Baek, Roberts, & Higgins, 2018) and borderline personality disorder (Bayes, Graham, Parker, & McCraw, 2018); and psychosis (Catalan et al., 2017; Mansueto, Palmieri, & Faravelli, 2018).

Parental indifference increases a child's risk for maladaptive behavioral outcomes. Indifference leads to childhood antisocial and delinquent behavior (Mwangangi, 2019) and delinquency (Baek, Roberts, & Higgins, 2018). Anger and depression have been found to moderate the relationship between parental indifference and delinquency, suggesting that a child may respond to indifference through anger or depression, either of which may precede delinquent (Baek, Roberts, & Higgins, 2018).

Parental indifference predicts aggression (Su, 2018), criminal behavior (Artz et al., 2016; Hesselink & Booyens, 2016), including violence (Mumford, Liu, & Taylor, 2016; Pyle et al., 2019). The likelihood of a child or adolescent engaging in criminal behavior may increase when parental indifference combines with low family cohesion and physical violence in the home (Mwangangi, 2019) or when parental indifference is mediated by a child's poor self-control (Baek, Nicholson, Higgins, & Losavio, 2018). Moreover, parental indifference is predictive of violence in adolescence, both against the self through self-harming behaviors and suicide (Chung & Lesorogol, 2019) and against others, often through dating violence (Mumford et al., 2016; Reyes, Foshee, Markiewitz, Chen & Ennett, 2018). Although researchers have begun to identify the deleterious effects of parental inattention, distraction, or lack of awareness of a child's needs (Briere et al., 2017), additional research is needed to more deeply understand the long-term effects of indifferent parenting to violent behavior (Bland et al., 2018). Research of the relationship to violence in children of a single parent where the parent exhibits behaviors indicative of indifference may further this understanding.

Undifferentiated Rejection

Of the three categories of parental behaviors and conditions that children interpret as rejecting, undifferentiated rejection is the least understood (Ali, Khatun, Khaleque, & Rohner, 2019). Undifferentiated rejection refers to a child's belief that a parent does not care about, appreciate, or love the child even absent objective evidence that this conclusion is true (Rohner, 1986, 2016). A child may interpret and internalize a parent's behavior as rejecting when an outside observer sees no indication through parental behaviors or conditions of interpersonal rejection (Ali et al., 2019; Khaleque, 2017).

Although the behavioral triggers of a child's perception of rejection in such cases is unclear, research underscores the damaging psychological impacts to the child. For example, respondents worldwide reported a significant association between the experience of undifferentiated maternal and paternal rejection and measures of overall psychological maladjustment in both children and adults (Ali et al., 2019). Maladjustment as a product of undifferentiated rejection may manifest through many of the same negative personality dispositions as parental hostility (Rious et al., 2019; Rohner, 2014; Rohner & Lansford, 2017). Despite the lack of research into undifferentiated rejection, existing research makes clear its potentially devastating consequences to a child, further strengthening the role of a child's perception of rejection to his or her long-term well-being.

Cognitive, Affective, and Behavioral Components

Following Rohner's development of IPARTheory (1986), he and other researchers sought to more deeply understand the way perceptions of parental rejection

operate by exploring the cognitive, affective, and behavioral components of the phenomenon. Rohner (2004) hypothesized that children draw a fundamental judgment about whether they are loved by a parent based on the parent's responsiveness to and support of the child. If the child concludes he or she is unloved, this judgment contributes to the child's diminished feelings of self-worth and assumption of his or her unlovability by others (Miranda, Affuso, Esposito, & Bacchini, 2016; Rohner, 2004). IPARTheory predicts that children who perceive rejection by their parents are likely to develop maladaptive cognitive and affective manifestations before they act out behaviorally. These cognitive and affective manifestations express through a common set of negative personality dispositions and dysfunction behavior that may pervade through adulthood (Rohner, 2004). According to IPARTheory, the trajectory from parental indifference, to perceptions of parental rejection, to the development of core beliefs about oneself and others, to internalized feelings and externalized behaviors is common among people regardless of differences in culture, ethnicity, language, gender, or race (Ali et al., 2019; Rohner, 2004).

Cognitive manifestations. On the path from an ACE to a child's perception of parental rejection, several internal processes occur. The first involves a mental interpretation of the ACE in which the child assigns meaning to the event. As part of his attachment theory, Bowlby (1973) described the meaning-making process as the development of an internal working model (IWM). An IWM is the cognitive framework an individual uses to process and organize mental information, which informs one's understanding of and expectations about our inherent worth, basic trust in other humans,

and general worldview (DeWinter, Vaudevivere, Waters, Braet, & Bosmans, 2016). For example, through the experience of having a single mother who works three jobs to provide for her children, a child may conclude that the mother does not prioritize him or her because the mother is frequently absent, mistaking a caretaking responsibility for neglect or indifference, and consequently may feel rejected.

According to IPARTheory, parental rejection is a developmental risk factor and contributes to children's negative evaluation of themselves and their future (Miranda et al., 2016; Rohner, 2004). Because children define their own fundamental worth based on their perceptions of parents' emotional availability and responsiveness to their needs, a parent who is lacking in these areas may produce a child who negatively self-evaluates (Miranda et al., 2016; Rohner, 2004). IPARTheory further suggests the quality of early parental experiences is internalized and incorporated within an IWM, creating expectations for the availability and responsiveness of people beyond the parent (Trumbell, Hibel, Mercado, & Posada, 2018). A child who perceives a parent or other primary attachment figure is unavailable or unresponsive to the child's emotional needs is likely to develop core inaccurate beliefs that others will be as or more unavailable and unresponsive as the parent (Rohner, 1984, 2004; Smeijers et al., 2018). Believing relationships are unsafe, the child develops heightened rejection sensitivity through childhood and adulthood (Khaleque et al., 2019). An expectation of hostility or indifference from others toward the child evolves, and the child filters all perceptions of and communications with others through this expectation (Khaleque et al., 2019; Rohner, 2004).

A child may make hostile attributions to others' motives (Rohner, 1986, 2004; Smeijers et al., 2018). Cognitive and perceptual distortions may occur as a result of the child's expectation of others' behavior as hostile and untrustworthy. These may include personalizing, hypervigilance, hypersensitivity, selective perceptions, and selective attention to information that reinforces the child's expectation of others (Rohner, 2004). Adolescents ages 9 to 13 negatively interpreted ambiguous maternal behavior, even after controlling for depressive mood (DeWinter et al., 2016). Similarly, parents' physical absence impacted children's emotional health and perceptions of self-worth even when children were aware of the reasons for parents' absence and when the absence was to financially support the family (Wang, Zhang, & Chen, 2019). Both DeWinter et al. (2016) and Wang et al. (2019) demonstrated the negative filter through which children who are denied a parent's emotional availability and responsiveness perceive the larger world. Perceptions of parental rejection create and reinforce an IWM that the world at large cannot be trusted (Bowlby, 1973; Waters, Ruiz, & Roisman, 2017).

Affective manifestations. Once an ACE has been mentally processed as thought and meaning has been assigned to the experience, emotion arises. Like the development of cognitive IWMs, affective manifestation is an internalized process (Rohner, 2004, 2016). Negative self-evaluations and negative evaluations of the future as a product of perceptions of parental rejection make children vulnerable to depression, anxiety, and insecurity (Briere et al., 2017; Miranda et al., 2016; Rohner, 1984, 2004). These affective responses to rejection are universal, independent of culture, ethnicity, race, or other demographic circumstance (Rohner, 2004, 2016).

Psychological pain from perceived parental rejection often manifests through anger and resentment (Ali et al., 2019; Rohner & Lansford, 2017). Because of its mediating role between parental rejection and aggression, anger is a critical component to criminal behavior and violence (Baek et al., 2018). Notably, however, researchers suggest that anger alone does not correlate with a child's long-term psychological and behavioral outcomes; rather, the health of the relationship between parent and angry child is determinative.

Brock and Kochanska (2019) studied anger proneness and parental attachment security in 102 children at four points in time, from infancy through early school age. Children were exposed to scenarios that involved the mother leaving the child alone for a short period. Over time, some of the children demonstrated negative emotions and oppositional behaviors while others did not. The researchers identified the emotional attachment between the parent and child as the critical factor in the children's responses. Even the children who displayed anger at the time the mother left them alone in the research scenarios did not show anger over time unless the child was insecurely attached to the parent. In cases where the child was insecurely attached to the parent, the child's initial anger at being left alone set a trajectory for child toward greater defiance, negative affect, and oppositional disposition throughout childhood. In cases where the child was securely attached, no such negative downstream effects occurred (Brock & Kochanska, 2019). These findings demonstrate the importance of the fundamental parent-child emotional bond, or the child's perception of the bond, to the child's long-term emotional health.

Behavioral Manifestation

Negative evaluations of self, others, and the future as a product of perceptions of parental rejection facilitate externalized behavior (Rohner, 2004; Rohner & Lansford, 2017). The form the behavior takes may be informed by a child's ability to regulate his or her own emotions (Brumarlu, 2015; Casselman & McKenzie, 2015). Emotional self-regulation involves the ability to change one's own thoughts, feelings, and impulses, and to suspend tendencies to behave in socially undesirable ways (Li, Delvecchio, Lis, Nie, & Riso, 2015). The quality of the parent-child relationship is highly correlated with a child's ability to self-regulate emotion (Cooke, Kochendorfer, Stuart-Parrigon, Koehn, & Kerns, 2019). Sensitive, flexible, and emotionally mature caregivers who encourage a child to express a range of emotions and who model and teach effective emotion regulation strategies produce children who effectively self-regulate negative emotion and show behavioral self-control (Brumarlu, 2015; Cooke et al., 2019; Li et al., 2015).

The inability to self-regulate emotion may have injurious psychological and behavioral consequences. Insecurely attached children are less likely than securely-attached children to effectively manage negative emotions, openly express emotions, and alleviate their distress in healthy ways (Brumarlu, 2015; Casselman & McKenzie, 2015; Stern & Cassidy, 2018). As a rule, the less secure the parental attachment, the less likely a child is to effectively self-regulate emotion, and the less self-control the child has over his or her behavior, creating a habitually reactive pattern of behaving (Li et al., 2015). A child's ability to effectively manage distressing emotions as they arise is a critical

moderator between perceptions of parental rejection and positive, healthy behavioral responses.

According to IPARTheory, children often respond to perceptions of parental rejection with anger (Rohner & Lansford, 2017). Anger may be acted out through oppositional defiance (Smeijers et al., 2018), delinquency (Hambrick et al., 2018), hostility (Babore et al., 2017), aggression (Miranda et al., 2016; Smeijers et al., 2018), and other forms of externalizing behavior (Hunt, Slack, & Berger, 2017). Further, perceptions of parental rejection in childhood are an important predictor of childhood and adult antisocial and criminal behavior (Farrington, 2000; Smeijers et al., 2018). Perceptions of parental rejection have been empirically linked to violent juvenile delinquency (Fox, Perez, Cass, Baglivio, & Epps, 2015), juvenile arrest and reoffending (Baglivio, Wolff, Piquero, & Epps, 2015; Fagan & Novak, 2017; Wolff & Baglivio, 2017; Wolff, Baglivio, & Piquero, 2017), adulthood aggression (Smeijers et al., 2018), adulthood criminal offending (Craig, Piquero, Farrington, & Ttofi, 2017), and adulthood violence (Felitti, 2019; Lindberg & Zeid, 2018). Researchers suggest that perceptions of parental rejection in childhood may set a trajectory toward adulthood violence (Cameranesi, 2016).

In a study of 100 incarcerated criminals convicted of crimes including drug trafficking, robbery, kidnapping, rape, and first-degree murder, all 100 criminals reported the experience of parental rejection in childhood (Khan & Munaf, 2017). A significant difference was found, however, among criminal types on the degree of parents' emotional warmth. The most violent criminals, those convicted of first-degree murder, reported

significantly less paternal warmth than criminals convicted of drug trafficking. Similarly, those with a kidnapping conviction reported significantly less maternal warmth than murder convicts. Therefore, parental rejection predicted criminality and the degree of warmth experienced predicted degree of violence exhibited through criminality (Khan & Munaf, 2017).

Adverse Experiences and Trauma

Trauma is a negative emotional response to single, multiple, or long-lasting adverse events (American Psychological Association, 2020; Center for Substance Abuse Treatment, 2014). The notion of trauma found its beginnings in animal research in the 1920s (Koch, 2019). Pavlov's well-known dog experiments demonstrated the conditioning of an initially neutral stimulus to create a conditioned stimulus. Pavlov conditioned the dogs to salivate in anticipation of food at the sound of a buzzer or metronome by pairing the sound with meat powder. Over time, what was initially a neutral event, the sound of the buzzer or metronome, had been conditioned to generate a predictably positive salivation response by the dogs (Pavlov, 1927).

Years later, Seligman (1972) expanded on Pavlov's research to investigate the conditioning of a negative response in dogs. Like in Pavlov's experiments, a dog was placed into a box with two halves, and then was conditioned to anticipate food at the ringing of a bell. The sound of the bell was then paired with electric shocks of varying intensity. In initial response to the bell/shock pairing, the dog ran around, howled, defecated, and urinated, until it realized it could jump into the other half of the box, escaping the shocks (Seligman, 1972). Next, Seligman restrained the dog in one half of

the box, and the bell/shock pairing resumed. The dog attempted to escape the shocks; however, recognizing it was not in control of what happened to it, the dog cowered in the back of the box quietly until the shocks stopped (Seligman, 1972). These neurotic responses continued even when the restraints were removed, the shocks discontinued, and the dog was simply presented with the sound of the bell (Seligman, 1972). The same response occurred across multiple dogs. The phenomena of learned helplessness became "a model for the emotional numbing and maladaptive passivity sometimes following victimization" (Peterson & Seligman, 1983, p. 103).

As a result of Pavlov's experiments, he and subsequent researchers in the Pavlovian tradition understood trauma as a conflict of psychological forces, resulting in a disruption of the nervous system (Koch, 2019; Pavlov, 1927). On the shoulders of Pavlov's work, researchers began to study the traumatic impacts of adverse events on humans. Watson and Rayner (1920) exposed a 9-month-old child called Little Albert to various stimuli, including a white rat, rabbit, monkey, and several inanimate objects, to which Little Albert exhibited no fear. The white rat was reintroduced to the boy, this time pairing the rat with a loud noise, causing the child to cry. After repeated pairings of the white rat and the loud noise, Little Albert cried after seeing the white rat, absent the loud noise. The white rat, a previously neutral or perhaps positive stimulus, had been conditioned to elicit a fear-based response in the child (Watson & Rayner, 1920). Thereafter, Little Albert cried in response to similar white furry objects, such as a white fur coat and Santa's beard (Watson & Rayner, 1920). Despite the unethical nature of the experiments on Little Albert (Cornwell & Hobbs, 1976), the experiments produced two

valuable findings: emotional responses may be conditioned in humans, and those conditioned emotional responses are generalizable to other similar stimuli (Watson & Rayner, 1920).

Building on this body of research into conditioning and trauma responses, Horowitz (1976) found that, like Seligman's (1972) dogs, humans attempt to avoid unpleasant experiences through thought suppression, emotion suppression, and avoidance of stimuli associated with the trauma (Horowitz, Wilner, & Alvarez, 1979). When those experiences prove unavoidable, humans develop various trauma responses such as anxiety, irritability, restlessness, and fatigue (APA, 2020). This and similar trauma research ultimately led to recognition of post-traumatic stress in humans not as indicative of a weak biological or emotional constitution, but of a legitimate psychiatric disorder (Bortolon & Raffard, 2019; Koch, 2019). Post-traumatic stress disorder (PTSD) was introduced as a psychiatric diagnosis in the third edition of the Diagnostic and Statistical Manual of Mental Disorders in 1980 (American Psychiatric Association, 1980).

Contemporary researchers developed a new understanding of trauma, not as a battle of internal forces, as Pavlov (1927) proposed, but a consequence of a lack of control over one's circumstances (Koch, 2019; Seligman, 1972). This paradigm reflects "changed societal concerns that entailed a transformation of the vision of how individuals relate to threatening environments and social forces beyond their control" (Koch, 2019, p. 3). This paradigm shift is consistent with modern research literature regarding children's maladaptive responses to frequent, long-term, or intense exposure to inescapable adverse experiences.

Single-Parent Household as an Adverse Childhood Experience

ACEs refer to any abuse, neglect, or other traumatic exposure that occurs before age 18 (CDC, n.d.; Fagan & Novak, 2018; Felitti et al., 2019; Karatekin & Hill, 2019) that often lead to negative long-term psychological consequences (Boullier & Blair, 2018). ACEs may include household dysfunction that behaviorally manifests through, or is psychologically interpreted by a child as, abuse or neglect (Fagan & Novak, 2018; Felitti et al., 2019). Examples of household dysfunction may include, for example, parental absence, parental substance abuse, and financial hardship. ACEs commonly co-occur, increasing the likelihood of negative short- and long-term outcomes in children and adults (Hunt, Slack, & Berger, 2017). Because of their prevalence and destructive long-term consequences, ACEs have been labeled a public health crisis (Grady, Levenson, & Bolder, 2016).

Researchers suggest that ACEs set a trajectory toward deleterious life-persistent outcomes. Frequent or intense childhood adversity often leads to psychological and emotional trauma, which negatively impacts normal psychological and social development over time (Garbarino, 2017; Grady et al., 2016). If a child does not have a strong attachment to a parent, various adverse outcomes may occur (Lindberg et al., 2018). These include depression and anxiety (Alenazi et al., 2019; Briere et al., 2017); preadolescent and adolescent delinquent behavior, including violent delinquency (Abajobir et al., 2017; Hambrick, Rubens, Brawner, & Taussig, 2017); juvenile offending (Wolff & Baglivio, 2017; Wolff, Baglivio, & Piquero, 2017) and violent criminal offending into and throughout adulthood (Craig, Piquero, Farrington, & Ttofi, 2017;

Smeijers et al., 2018). The correlation between ACEs and adverse outcomes, including criminal behavior and violence, are well-established (Lindberg et al., 2018).

Maladaptive Outcomes

A single-parent household may expose a child to ACEs in multiple ways. Children living in a single-parent household experience the psychological effects of the absence of the parent who has left the household. Many children of single parents are poorly supervised, increasing their exposure to experiences they are emotionally unequipped to handle or allowing others inappropriate access to a child (Ben-David, 2016). A single parent who copes ineffectively with the burdens of responsibility may respond to a child using unduly harsh tactics or by emotionally withdrawing from the child, perhaps leaving the child to draw inaccurate conclusions about his or her self-worth (Jackson et al., 2019; Theobald, Farrington, & Piquero, 2013). Growing up in a single-parent home may increase a child's vulnerability for abuse, neglect, and indifferent treatment by the single parent (Afifi et al., 2015; Mathews & Abrahams, 2018). Each of these ACEs may influence a child's psychological development.

Researchers have identified multiple maladaptive psychological and behavioral outcomes associated with single-parent households. Children who grow up with a single parent are at elevated risk for psychological distress (Clements-Noelle & Waddington, 2019; Sinha & Ram, 2019), obesity (Gardner, Feely, Layte, Williams, & McGavock, 2019), sexual activity and pregnancy at an early age (Vazquez-Nava et al., 2019), grade retention in school (Hinojosa et al., 2019), poor social skills (Nawaz et al., 2019), adverse peer relationships (Gioumouki, Smaili, Antoniou, & Babalis, 2018), and delinquency

(Burlaka, 2016; Dijanic, 2016). Growing up in a single-parent household is related to inhibited impulse control, poor planning ability, poor problem-solving, and unwanted, intrusive thoughts (Doebel & Zelazo, 2016). Children of single parents may receive less emotional support than children with two in-home parents (Maschi, Schwalbe, & Ristow, 2013), making these children more likely to leave home at an early age (van den Berg, Kalmijn, & Leopold, 2018).

Single-parent household is predictive of the negative long-term psychological states and behavioral outcomes that lead to and encompass serial killing. Growing up in a single-parent home is associated with anger in children that, without intervention, may become a stable personality trait (Dijanic, 2016). Poorly regulated anger may manifest as relational aggression, through which another's reputation or social status is denigrated (Baker, Jensen, & Tisak, 2019) and physical aggression (Fomby, Goode, & Mollborn, 2016; Woods, Menna, & McAndrew, 2017), often persistent throughout the child's lifetime (Dijanic, 2016; Ostrov, Murray-Close, Godleski, & Hart, 2013).

Violence is strongly associated with single-parent households beginning in childhood (Fergusson et al., 2007; Mok et al., 2018; Sattler & Thomas, 2016). Children and adolescents who grow up in a single-parent home are at increased risk for gang affiliation (Pyrooz & Sweeten, 2015) and violence toward the parent (Fegadel & Heide, 2018; Gabriel et al., 2018). One study found that child-to-parent violence occurs in almost 20% of single-parent homes (Armstrong et al., 2018). Researchers suggest that violent behavior that begins in childhood may endure through adulthood (Fergusson et al., 2007).

The rate of single-parent households has steadily increased since 1960 (Beaulieu & Messner, 2010) and risen more significantly since 1990 (Coulton et al., 2018). As of 2019, more than one-quarter of preschool-age children were living in single-parent households (Baker, Jensen, & Tisak, 2019). The prevalence of children living in single-parent homes and the potentially deleterious effects of a single-parent home to children's long-term well-being makes it critical to understand the role of a single parent in a child instigating and perpetrating the most extreme forms of violence (Mathews & Abrahams, 2018; Paluch et al., 2019).

Contributors

Parental absence. Children raised in single-parent homes necessarily experience the absence of a parent. Although children and adolescents raised by one parent reported higher overall life satisfaction than those raised by non-parental caregivers, research shows that emotional support from both parents is optimal for positive child and adolescent development (Costa, Sireno, Larcan, & Cuzzocrea, 2019; Hayles, Xu, & Edwards, 2018; McCarty, Zimmerman, Digiuseppe, & Christakis, 2005). According to a study by Hayles et al. (2018), high school aged adolescents who reside with both parents are significantly more satisfied with their lives than children who are raised by one parent, grandparents, or other caretakers. This result held regardless of the adolescents' feeling of connectedness with their caregivers, demonstrating the importance of parental connection to a child's well-being.

Permanent absence. In all single-parent scenarios, one of a child's two biological parents is absent from the home. A parent is permanently absent if there is no contact

with the child or if the parent is deceased (Trujillo & Servaty-Seib, 2018). Permanent parental absence can be psychologically devastating to a child, increasing the risk of adverse psychological and behavioral outcomes (Johnson, Torres, Sykes, Gibson, & Baker, 2017). Children exposed to permanent parental absence are five times more likely to engage in self-harm and suicide than children who have not experienced parental absence (Trujillo & Servaty-Seib, 2018). Fatherless boys are at greater risk for joining violent gangs than boys whose father is present (Stewart, 2018). Permanent parental absence is associated with elevated risk for subsequent violent offending, particularly when the absence begins in early childhood and when the mother is the absent parent (Mok et al., 2018).

Temporary absence. Alternatively, parental absence can be temporary. In the context of single-parent families, a child whose parent is involved in the child's life but does not reside full-time with the child experiences this form of parental absence. Regardless of parental intent, temporary parental absence may be internalized by a child as neglect or indifference (Khaleque, 2017; Sulima, 2019). Research is clear that temporary absence of a parent predicts maladjustment in children and adolescence through adulthood. In a field study of 346 children and adolescents, 173 separated parents, and 173 intact parents, researchers assessed the effects of parental separation from the child on the child's well-being. Psychological effects of temporary separation from a parent included depression, anxiety, hostility, lack of impulse-control, social withdrawal, decreased self-esteem, paranoid ideation, interpersonal alienation, and decreased self- and family-concept (Seijo, Fariña, Corras, Novo, & Arce, 2016).

Outwardly measurable negative outcomes included increased probability of poverty, decreased academic performance, increased school drop-out rates, and increased exposure to gender violence.

Significant research confirms the relationship between temporary parental absence and criminal behavior. A myriad of studies have tied criminal behavior and violence in adolescence and adulthood to temporary parental absence due to work demands (Dittman, 2018), migration for work (Beazley, Butt, & Ball, 2018; Sulima, 2019; Zhang, Zhang, & Ding, 2019), military deployment (Dittman, 2018; Gewirtz & Zhang, 2018), incarceration (Giordano, Copp, Manning, & Longmore, 2019; Haney, 2018; Muftić, & Smith, 2018; Schwartz-Soicher, Geller, & Garfinkel, 2011; Wakefield & Wildeman, 2014), and other forms of temporary parental absence (Artz et al., 2016; Hayles, Xu, & Edwards, 2018). The body of research on the long-term psychological and behavioral impacts of parental absence strongly suggests that children perceive rejection from parental absence, regardless of the purpose or length of the absence, in some cases evolving into adulthood violence.

Poor parental coping. Single parenthood is often tremendously stressful for the single parent (Gioumouki et al., 2018). Unassisted caregiving, burdensome financial responsibilities, and decreased social support relative to two-parent households lend to various manifestations of psychological distress among single parents (Rousou et al., 2019). Single parents frequently report feelings of loneliness (Gioumouki et al., 2018), depression (Hernandez, Aranda, & Ramirez, 2009; Jackson et al., 2019), and anxiety

(Theobald et al., 2013). Economic hardship often plagues single parent households (Coulton et al., 2018; Manjunatha et al., 2019).

Poor coping skills by single parents may limit their ability to effectively manage their life circumstances and, as a consequence, their emotions. The high rate of child murders perpetuated by single parents is an extreme illustration of the inability to effectively manage one's own mental health (Dekel et al., 2018). More commonly, single parents cope with mental and emotional distress in less extreme but potentially damaging ways. Problem drinking, alcoholism, and drug abuse, often used to cope with difficult circumstances, are associated with single parenthood (Kong & Easton, 2018; Manjunatha et al., 2019). Unmanaged frustration may contribute to domestic violence between parent and child or between parent and non-relative men (Kong & Easton, 2018; Zerr et al., 2019).

A parent's inability to emotionally self-regulate may contribute to poor quality parenting behaviors, including harsh and inconsistent behavior toward children (Mathews & Abrahams, 2018; Shaffer & Obradovic, 2017). Researchers suggest that single parents tend to cope through punitive behaviors and disciplinary tactics to gain a child's compliance (Briggs et al., 2016). In a longitudinal study of children ages 6 to 15 years, child aggression contributed to parenting stress, instigating further harsh parenting behaviors and creating a negative reciprocal pattern (Briggs et al., 2016; Krahe et al., 2015).

In other cases, single parents may emotionally withdraw from children in response to oppressive demands. Children of parents who are physically present but

emotionally absent are at increased risk for antisocial and criminal behavior (Artz et al., 2016; Hesselink & Booyens, 2016). Sulima (2019) found that poor quality parenting characterized by parental disengagement, lack of affection and support, and inconsistent discipline predicted aggression and juvenile delinquency. This research provides evidence of the effects to children of limited cognitive and emotional resources a single parent may have to invest in a child as a function of poor coping skills.

Lack of parental supervision. Children of single parents are often left unsupervised by an adult while the single parent is at work, attending to other children or responsibilities, or coping with depression, substance abuse, or other affliction. Lack of parental supervision during periods of parental absence contributes to negative child development outcomes (Vanderminden et al., 2019). For example, insufficiently supervised children are at highest risk for sexual victimization by a non-family adult (Turner et al., 2019), substance abuse in adolescence (Caspi, Lardier, & Barrios, 2018), and juvenile delinquency (Sulima, 2019).

Researchers have long recognized supervisory neglect as the most common form of child neglect and that supervisory neglect is associated with criminal behavior (Farrington, 1996; Vanderminden et al., 2019). The decrease in the incidence of supervisory neglect among children who live with both biological parents and the increase in trauma, substance abuse, and suicidal ideation among children who experience supervisory neglect implies a psychological impact to the child beyond excessive freedom to engage in potentially destructive behavior that a lack of supervision may invite. Children who experience physical and supervisory neglect may suffer the

most trauma (Turner et al., 2019), setting a trajectory for delinquency, recidivism, and in the most extreme cases, violent criminal behavior (Pyle et al., 2019).

Abuse and neglect. As a consequence of a single-parent's burdensome responsibilities and potentially poor coping skills, children in single-parent households are more likely to experience physical and emotional abuse and neglect than children living with coupled parents (Afifi et al., 2015; Gross-Manos et al., 2019). Strikingly, over half of children in single-parent households have been involved in some form of abuse or substantiated neglect (Afifi et al., 2015). Abuse and neglect rates for children in single-parent households are especially high where poverty and financial hardship exist (Briere, 2019; Pyle, Flower, Williams, & Fall, 2019; Taliep, Ismail, & Titi, 2018; Vreeland et al., 2019). The relationship between child neglect and poverty is stronger than any other type of child maltreatment (Widom, 2017).

Just as children who grow up in single-parent households are at increased risk for abuse, neglect, and exposure to various dysfunctional household conditions, these children are vulnerable to the associated adverse short- and long-term emotional and behavioral outcomes (Costa et al., 2019; Gross-Manos et al., 2019; Vanderminden et al., 2019). Investigating the relationship between single-parent households and child, adolescent, and adulthood violence through a psychological framework may help illuminate the role of single-parent households in the commission of recurrent, long-term violence.

Effect of the Single-Parent Household on Serial Killing

Serial Killers

Despite continuing public interest in serial killers, empirically-based information is somewhat limited (Hodgkinson, Prins, & Stuart-Bennett, 2017). Public understanding of modern serial killers is largely driven by media portrayals, which tend to represent serial killers as monsters (e.g., Jeffrey Dahmer) or celebrities (e.g., Ted Bundy) (Wiest, 2016). Walters, Drislane, Hickey and Patrick (2014) published a summary of pervasive myths about serial killers. These include, among others, that serial killers are white men who are intelligent, psychopaths, sexually motivated, target strangers, highly mobile, kill alone, use brutal methods, have high body counts, and struggle between a compulsion to continue killing and a deeper desire to get caught (Walters et al., 2014).

Research contradicts many of these highly reductionist generalizations. Although many serial killers are solo white men who are sexually motivated, many are not. At least one in five, and possibly more, serial killers are black (Hickey, 2016; Walters et al., 2014). Nearly 17% are women (Hickey, 2016; Walters et al., 2014). Up to 25% of serial killers have a partner with whom they commit homicides (Fox & Levin, 2011; Hickey, 2016). Most serial killers are average or below average intelligence (Hickey, 2016; Leary, Southard, & Aamodt, 2019; Walters et al., 2014). Many serial killers are married or in stable long-term relationships, employed, and commit homicides within a local area (Hickey, 2016; Walters et al., 2014). While some serial killers are psychopaths, a significant number do not qualify as a psychopath based on the PCL-R psychopathy checklist (Hickey, 2016; Walters et al., 2014). Victims of serial killers are not always

strangers (Hodgkinson et al., 2017; Prins, 2015), nor are they necessarily young white women (Hickey, 2016; Miller, 2014; Walters et al., 2014). Some serial killers target minorities or children, or have no demographically-focused victim (Hickey, 2016; Miller, 2014). Most, but not all, serial killers tend to victimize individuals of the same race as the killer (Miller, 2014).

A serial killer's motive is frequently fantasy-based. Approximately two-thirds of serial killers are sexual sadists in which the offender acts out a fantasy by inflicting torment on the victim (Hickey, 2016). In these cases, the victim is merely a prop for the offender's motivation to achieve sexual gratification by acting out the fantasy (Hickey, 2016; Miller, 2014). Not all serial killers are pleasure-oriented, however; some are purpose-oriented (Miller, 2014). Serial killers may be motivated by delusion (e.g., to rid the world of undesirable people, such as prostitutes) or power over the helpless (e.g., to kill elderly, children, or disabled people in their care or custody). In other cases, serial killers may be motivated by utilitarian reasons, such as to achieve financial gain, to enact revenge (Hickey, 2016; Miller, 2014).

Serial killers are an extremely violent population; however, demographic and psychological characteristic vary widely within the population. Serial killers are not frequently monstrous cannibals who engage in necrophilia, nor are they charismatic, handsome, and cunning gentlemen (Wiest, 2016). An accurate understanding of serial killers' wide-ranging physical and demographic characteristics, personalities, backgrounds, motivations, and victim preferences is important to ensure findings from the study of serial killers are properly contextualized and interpreted. It is with the

perspective that serial killers are not a dichotomous group but a highly diverse population with the perpetration of multiple homicides in common that we should seek to understand the relationship between the circumstances of serial killers' upbringing and the scale of their violence.

Scale of Violence

Although researchers associate growing up in a single-parent household with violent behavior across the child's lifespan, there is significantly less research on the scale of violence that a single-parent childhood may evoke. Scale and severity of violence are terms often used interchangeably in the research literature (Marshall, 1992; Harris, Oakley, & Picchioni, 2013; Troisi, 2018; Tyrer et al., 2007). Efforts to quantify violence severity sometimes include measures of degree (Tyrer et al., 2007). This approach has been criticized, however, as subjective and error-prone. Bowers (1999) encouraged researchers to use objective, behavioral components of violence to determine severity.

Assessing the frequency of various facets of violence is a common method of measuring violence severity because of its objective nature (Harris, Oakley, & Picchioni, 2013). More than half of nine tools designed to assess violent behavior reviewed by Harris, Oakley, & Picchioni (2013) included frequency, or number of instances of a behavior, as a measure of the scale of violence. Because of its relative measurement objectivity, I will use frequency and duration, a method of measurement similar to frequency in its numerical objectivity, to quantify the scale of homicidal violence. Measures of scale in the context of serial homicide will include the number of victims suspected, the number of victims confessed to, the number of victims convicted of having

killed, and the duration of violent homicidal behavior. Each of these measures speaks to the extent to which an individual perpetrates violence over time.

Summary

Researchers have established an escalatory trajectory from ACEs associated with single-parent households to a host of negative long-term outcomes, including criminal behavior and violence (Mok et al., 2018; Sattler & Thomas, 2016). Although research on the role of IPARTheory within the context of single-parent households is limited, existing research on IPARTheory strongly supports the notion that ACEs commensurate with growing up in a single-parent home, when interpreted by a child as rejection, predicts significant short- and long-term maladaptive behavioral outcomes. In the most extreme cases, a child may respond with recurrent homicidal violence beginning at an early age and continuing throughout his or her lifespan.

Although research has revealed a link between a single-parent upbringing and long-term violence, there has been little investigation of the scale of violence associated with growing up in a single-parent household. IPARTheory provides an appropriate psychological framework by which to examine the relationship between a single-parent upbringing and the scale of long-term violence operationalized through serial homicide. This analysis may deepen our understanding of the magnitude of the psychological influence that growing up in a single-parent household may have on children.

Chapter 3: Research Method

Introduction

The purpose of this study was to examine the scale of violence associated with a single-parent upbringing. Prior research has established the correlation between growing up in a single-parent household and long-term violent behavior (Fergusson et al., 2007; Theobald et al., 2013). This study expands on the existing research by dissecting the scale of violence associated with a single-parent upbringing. Solo, male serial killers, an inherently violent population, were the subjects of study.

In this chapter, I present a detailed overview of the research design and rationale and the components of the methodology, which includes the population, sampling procedures, data collection procedures, instrumentalization and operationalization of constructs, and data analysis plan. I discuss potential threats to validity. Finally, I discuss the ethical procedures I followed in conducting the study, including attaining the approval of the Walden University Institutional Review Board (IRB).

Research Design and Rationale

I used a quantitative research design to perform a cross-sectional study using archival data. Cross-sectional designs enable the comparison of two preexisting groups of people based on the presence or absence of the independent variable (Mann, 2003). The research design includes one categorical independent variable with two levels for comparison: offenders raised by both birth parents and offenders raised by a single parent. There are four interval-level dependent variables: (a) the number of victims suspected, (b) the number of victims confessed to, (c) the number of victims convicted of

having killed, and (d) the duration of violent homicidal behavior. I chose a quantitative design to enable comparison between the two levels of the independent variable across the four dependent variables, expressing the comparison result numerically and categorically (Smith, 1983).

The research design was chosen with the intent of responding to the following research questions:

RQ1: Does growing up in a single-parent household predict the number of victims solo male serial killers are suspected to have killed?

RQ2: Does growing up in a single-parent household predict the number of victims solo male serial killers confess to killing?

RQ3: Does growing up in a single-parent household predict the number of victims solo male serial killers are convicted of killing?

RQ4: Does growing up in a single-parent household predict the duration of homicide perpetration among solo male serial killers?

The research is nonexperimental using archival data contained in the Radford/FGCU Serial Killer Database (Aamodt, 2015). Academic researchers collaboratively established the Radford/FGCU Serial Killers Database for the express purpose of research (Boyne, 2014; Yaksic, 2015). It is the largest nongovernmental database of known serial killers with over 5,200 individuals and over 175 variables (Aamodt & Leary, n.d.). The large size of the database allows for random sampling, high statistical power, and parameter restriction without undue sacrifice of sensitivity or specificity (Yaksic, 2015).

Methodology

Population

The sample population is convicted male serial killers listed in the Radford/FGCU Serial Killer Database who perpetrated at least one of their homicides in the United States and who killed their victims alone (without a partner). Among this sample population, all serial killers who were raised by a single parent, as indicated by the applicable variable in the database, were included in the study. This sample population, n = 85, represent one level of the independent variable. An equivalent number of serial killers who were raised by both birth parents were included, comprising the population of the second level of the independent variable. In total, 170 male serial killers were included in the study.

Sampling and Sampling Procedures

A purposive sampling strategy was used to identify solo male serial killers who committed one or more of their homicides in the United States in the Radford/FGCU Serial Killer Database. From that sample population, purposive sampling was used to identify serial killers who were raised in a single-parent home. Purposive sampling is a type of nonprobability sampling useful in selecting research participants who fall within a particular domain of interest (Tongco, 2007). After filtering the sample population for serial killers who were raised by both birth parents, these serial killers were randomly chosen using a random number calculator (Fowler, 2014), as there are more serial killers raised by both birth parents than by a single parent. Each comparison group had an equal number of serial killers (n = 85).

Only those offenders who are specifically designated in the Radford/FGCU Serial Killer Database as having been raised by the birth mother or by the birth father were included in the study. Excluded were data that required any assumptions or guesswork on my part as to whether or for how long offenders grew up in a single-parent household. For instance, offenders who may have grown up with a single parent for some period but are designated in the database as having lived with a birth and a stepparent were excluded. Also excluded were offenders raised by a stepparent only. Although these offenders experienced a single primary caregiver, the stepparent is not biologically related to the child. Because research suggests biological relatedness may positively impact the parent-child relationship (Fallesen & Gahler, 2019; Upreti & Sharma, 2018), these offenders were excluded.

Selection of power (1- β) and significance level (α). I conducted a power analysis prior to data analysis to determine the minimum appropriate sample size for my study. I used the statistical power analysis calculator *G*Power 3.1.9.4*, which was designed for use in social and behavioral research (Faul, Erdfelder, Lang, & Buchner, 2007). With a statistical significance level of $\alpha = .05$, an alpha level commonly used in research (Lakens, 2013), and power of $1- \beta = .8$ (Kim, 2016), the *G*Power* calculation yielded a minimum total sample size of 128 participants, or 64 in each comparison group. My sample size exceeded the minimum necessary to achieve power.

Effect size f2(V). To determine the effect of any difference between the means of the two comparison groups, partial eta squared was used to standardize the effect size. Partial eta squared is the default effect size measured reported by SPSS when performing

the multivariate analysis of variance (MANOVA) and the analysis of variance (ANOVA) statistical tests (Lakens, 2013). Effects were interpreted according to partial eta squared descriptive guidelines: 0.1 = small effect, 0.6 = medium effect, and 0.14 = large effect.

Data Collection

Radford/FGCU Serial Killer Database. All data used in the study were included in the Radford/FGCU Serial Killer Database (Aamodt, 2015). These archival data have been collected over more than 20 years—first by a faculty member and his students at Radford University and eventually as a compilation of data collected by multiple serial killer researchers. As of April 2020, the evolving database included over 5,200 serial killers and 14,643 victims (Aamodt, Hargrove, & Witzig, 2019).

Researchers disagree as to the definition of a serial killer (Reid, 2016). In 2005, the FBI modified the definition of a serial killer from an offender who has unlawfully killed three or more victims in separate events to one who has unlawfully killed two or more victims in separate events (FBI, 2005). To enable researchers to determine which definition to use, the Radford/FGCU Serial Killer Database includes offenders who have killed two or more victims with the option to filter the data for a higher threshold. Excluded from the database are double murders (two murders in the same location within a 24-hour period), triple murders (three murders in the same location within a 24-hour period), and mass murders (four or more murders in the same location within a 24-hour period), and spree-one event-one day murders (two or more murders occurring in different locations within a 24-hour period) (Aamodt et al., 2019). Spree killers (two or

more murders over a period of multiple days with no cooling off period or clear break between kills) are included (Aamodt et al., 2019).

Only publicly available information was included in the Radford/FGCU Serial Killer Database by Radford University researchers. Sources include online prison records; online state birth, death, marriage, and divorce records; online social security information; individual-level census data; journal articles; newspaper articles; books; dissertations and theses; and internet sources (Aamodt et al., 2019). Where inconsistent data between data sources occurred, researchers relied on the most official sources (e.g., death certificate rather than a media article) (Aamodt et al., 2019).

Radford University researchers took precautions to ensure the accuracy of information in the database. When possible, multiple sources were used to verify each piece of information. Graduate students at Florida Gulf Coast University, the database custodian, reviewed many of the data fields to corroborate and source the information. Victim information was corroborated by information in the supplementary homicide reports as part of a joint project with the Murder Accountability Project (Aamodt et al., 2019). Further, researchers granted access to the database must agree to notify appropriate Radford University or FGCU personnel of any errors in the database or new information to add to the database (Aamodt et al., 2019). Over the years, additional researchers have contributed their findings to the database.

Gaining access to the data set. Researchers may request access to the Radford/FGCU Serial Killer Database through an online application process. Access is generally granted so long as the researcher agrees not the share the data or use it for

commercial or “inappropriate” purposes (Aamodt et al., 2019, p. 1). Researchers must agree to properly cite the database and to share any additional relevant data the researcher gathers so it may be added to the database (Aamodt et al., 2019). Access to the database is free of charge.

I did not complete the online application to gain access to the Radford/FGCU Serial Killer Database. I directly contacted Dr. Michael Aamodt of Radford University. After I agreed to the terms of use via email (Appendix B), Dr. Aamodt provided me with the database in Excel format. The Excel file includes the data set and codebook.

Instrumentation and Operationalization of Constructs

As discussed, the research used previously collected data contained in the Radford/FGCU Serial Killer Database (Aamodt, 2015). The basis for development of the database was the lack of robust sources for empirical serial killer research, which hampered the ability to systematically research serial homicide (Yaksic, 2016). Because I am using archival data, I did not use a data collection instrument.

Through my research I explored two primary constructs: single-parent households and scale of violence. Single-parent households are operationalized as those in which one biological mother or father resides with the child under the age of 18 (APA, 2019). By comparison, the traditional nuclear family is one in which a child lives with both birth parents (APA, 2019). Together, the single-parent household and the household in which two birth parents reside comprised two levels of the independent variable.

Scale of violence was measured through four dependent variables: (a) the number of victims suspected, (b) the number of victims confessed to, (c) the number of victims

convicted of having killed, and (d) the duration of violent homicidal behavior. Frequency of homicidal behavior, as measured here by the number of victims suspected, the number of victims confessed to, the number of victims convicted of having killed, and the duration of homicidal behavior are readily found in the literature to measure the scale, magnitude, or extent of some phenomenon (Blanchet et al., 2016; Harris et al., 2013; Salamon et al., 2014). Therefore, they were used as a measure of scale in the current study.

Data Analysis

Before analyzing the data, I performed necessary data cleaning procedures. Missing data required to respond to the research questions were minimal and, thus, were imputed to be included in the analysis. The research questions and hypotheses in this study are as follows:

RQ1: Does growing up in a single-parent household predict the number of victims solo male serial killers are suspected to have killed?

$H_0 1$: Growing up in a single-parent household does not predict the number of victims solo male serial killers are suspected of killing.

$H_a 1$: Growing up in a single-parent household does predict the number of victims solo male serial killers are suspected of killing.

RQ2: Does growing up in a single-parent household predict the number of victims solo male serial killers confess to killing?

$H_0 2$: Growing up in a single-parent household does not predict the number of victims solo male serial killers confess to killing.

H_a2: Growing up in a single-parent household does predict the number of victims solo male serial killers confess to killing.

RQ3: Does growing up in a single-parent household predict the number of victims solo male serial killers are convicted of killing?

H_03: Growing up in a single-parent household does not predict the number of victims solo male serial killers are convicted of killing.

H_a3: Growing up in a single-parent household does predict the number of victims solo male serial killers are convicted of killing.

RQ4: Does growing up in a single-parent household predict the duration of homicide perpetration among solo male serial killers?

H_04: Growing up in a single-parent household does not predict the duration of homicide perpetration among solo male serial killers.

H_a4: Growing up in a single-parent household does predict the duration of homicide perpetration among solo male serial killers.

Using SPSS Version 25, I performed a multivariate analysis of variance (MANOVA) to examine the difference between two levels of the independent variable across three dependent variables (Faul et al., 2009). MANOVA is commonly used to test the strength between variables when multiple dependent variables are being examined (Zientek & Thompson, 2009). Use of MANOVA is preferable to conducting multiple ANOVAs where, as here, more than one dependent variable is examined for two reasons: conducting multiple ANOVAs increases the likelihood of committing a Type I error (Fish, 1988; Russell, 2014) and (b) multiple ANOVAs are unable to reveal whether each

level of the independent variable is related to some combination of dependent variables or to a single dependent variable (Russell, 2014). To control Type I error while assessing the potential interaction between and among dependent variables, I conducted a MANOVA. My analysis plan was to perform ANOVAs on each dependent variable if the MANOVA test was significant at the $\alpha = .05$ level to ascertain which dependent variables or combination of dependent variables contributed to the overall effect.

Threats to Validity

External Validity

A threat to the external validity of this study is the inclusion only of male serial killers who committed homicides by themselves. Further, only those who committed one or more homicides in the United States were included. This methodological choice was made to increase generalizability across solo male serial killers in the United States, as this demographic comprises the greatest proportion of known serial killers (Hickey, 2016). It may decrease generalizability of the findings across serial killers not included in this study, such as women, serial killers who commit their crimes with a partner or in a group, and serial killers who kill outside of the United States, as they may be influenced by cultural considerations different from those in the United States.

Internal Validity

The covert nature of serial homicide presents a threat to the internal validity of this study. Because serial killers generally seek to avoid identification and apprehension for their crimes, they may not be forthcoming about the number of victims suspected, the number of victims confessed to, the number of victims convicted of having killed, and the

duration of violent homicidal behavior. Therefore, because the available data is based on arrests, confessions, and convictions, it is possible, perhaps likely, that the data reflecting the dependent variables is erroneously conservative. Barring wrongful convictions, the serial killers included in the study may have committed more homicides than reported. This did not necessarily hamper correlations between the independent and dependent variables, but there was a risk it may decrease the strength of the dependent variables.

Methodological issues may have threatened the validity of this study. The data collection procedures for the portion of the Radford/FGCU Serial Killer Database that were compiled by faculty and students at Radford University have been described; however, there is no description of the data collection procedures of the multiple researchers who have subsequently contributed their data to the database. Who collected the data, the procedures by which it was collected, the variables that were being explored, how those variables were operationalized, and other methodological issues are unknown. The lack of clarity about the integrity of these researchers' data may threaten the validity of my study.

Construct Validity

If the primary researchers were deficient in their methodological rigor or if methodology differed across researchers who studied similar constructs, the data used in this study was confounded. An example of inconsistent methodology across researchers is the difference in construct definition as it related to my independent variable. Researcher A may have operationalized an offender's childhood household as "birth mother," "birth father," "birth parent and stepparent," etcetera, while Researcher B may

have operationalized the same construct as "living with family." I chose to include only those serial killers who were clearly delineated as growing up with birth mother or birth father. This purposive sampling strategy, however, may have excluded from the sample serial offenders who were not included in Researcher A's study but were included in Researcher B's study and who lived with a single parent but were not specifically designated as so by the primary researcher. The negative affect to generalizability should be minimal provided an appropriate sample size.

Ethical Procedures

I abided by the ethical principles required by the American Psychological Association and Walden University in the performance of my study. To ensure the ethical soundness of my study, I sought and received approval from the Walden University IRB (approval number 03-03-20-0663360). Although I used archival data that is publicly available and/or has been the subject of prior research, only includes individuals who have been convicted of a crime, and excludes names or other personally identifying information, the study involved human subjects. None of the data is anonymous or confidential; however, as part of my data access agreement, I did not share the data. I did not conduct data collection and data analysis prior to receiving IRB approval for my study.

Summary

In this chapter, I discussed the quantitative, cross-sectional design of my study to examine the relationship between a single-parent upbringing and scale of long-term violence. I described the framework of the study as including one categorical independent

variable with two levels and three interval-level dependent variables. I described the Radford/FGCU Serial Killer database and the means by which I acquired it. I outlined the procedure I used to identify the sample population within the database and the combination of purposive and random sampling strategies I employed. I discussed the operationalization of the constructs I measured and the statistical analysis I performed to respond to my research questions. Finally, I set forth the threats to the validity of my findings and the procedure I underwent to ensure my study complies with the ethical treatment of human subjects.

Chapter 4: Results

Introduction

Researchers have established a significant increase in the risk of violent behavior across a lifetime by offenders who were raised in single-parent homes (Fergusson et al., 2007; Heleniak & McLaughlin, 2019). Parenting quality—as defined by measures of physical presence (Ben-David, 2016; Mok et al., 2018), emotional availability (Babore et al., 2017), and disciplinary style (Khaleque, 2017)—may be compromised as a result of competing demands on single parents, contributing to negative short- and long-term psychological and behavioral outcomes, including recurrent, extreme forms of violence, such as serial homicide (Heleniak & McLaughlin, 2019). Although a single-parent upbringing may predict violence, it remains unexplored whether a single-parent upbringing predicts the scale of that violence.

In this study, I examine the scale of violence correlated with a single-parent household upbringing by comparing measures of four variables between serial killers raised by a single parent and serial killers raised by both birth parents. The four dependent variables are (a) number of suspected victims, (b) number of victims confessed to, (c) number of victims convicted of, and (d) duration of killing. The research questions and hypotheses are as follows:

RQ1: Does growing up in a single-parent household predict the number of victims solo male serial killers are suspected to have killed?

$H_0 1$: Growing up in a single-parent household does not predict the number of victims solo male serial killers are suspected of killing.

H_a1: Growing up in a single-parent household does predict the number of victims solo male serial killers are suspected of killing.

RQ2: Does growing up in a single-parent household predict the number of victims solo male serial killers confess to killing?

H_02: Growing up in a single-parent household does not predict the number of victims solo male serial killers confess to killing.

H_a2: Growing up in a single-parent household does predict the number of victims solo male serial killers confess to killing.

RQ3: Does growing up in a single-parent household predict the number of victims solo male serial killers are convicted of killing?

H_03: Growing up in a single-parent household does not predict the number of victims solo male serial killers are convicted of killing.

H_a3: Growing up in a single-parent household does predict the number of victims solo male serial killers are convicted of killing.

RQ4: Does growing up in a single-parent household predict the duration of homicide perpetration among solo male serial killers?

H_04: Growing up in a single-parent household does not predict the duration of homicide perpetration among solo male serial killers.

H_a4: Growing up in a single-parent household does predict the duration of homicide perpetration among solo male serial killers.

In Chapter 4, I will discuss the findings of the statistical analyses I performed in response to the research questions. I will describe the data collection, the demographic

features of the sample, and the results of the tests of the research questions regarding the impact of parental upbringing on measures of violence frequency and duration. Finally, I will briefly summarize the statistical findings.

Data Collection

Following approval of my study by the Walden University's Institutional Review Board (approval number 03-03-20-0663360), I began data collection. The Radford/FGCU Serial Killer Database was formatted in an Excel document. I filtered the 5,071 serial killers in the database to include only male, solo serial killers who operated in the United States. Of the 5,071 serial killers, 4,510 (89%) are male, 3,838 (76%) acted alone, and 3,427 (68%) operated in the United States. After filtering for these three variables, 2,361 serial killers remained.

To identify which serial killers were raised by a single parent, I examined a variable labeled *raised*. Only 701 (30%) of the 2,361 male, solo, U.S. serial killers in the database include information on upbringing. I selected those who were raised by birth mother only (n = 78) or birth father only (n = 7), for a total of 85 serial killers.

Next, I selected those of the 2,361 male, solo, U.S. serial killers who were labeled as having been raised by both birth parents. This resulted in a list of 425 serial killers. To narrow the number of serial killers raised by both birth parents (n = 425) to equal the number of serial killers raised by a single parent (n = 85), I used a random number generator to select 85 of the 425 serial killers raised by both birth parents. Specifically, I used a free random number generator at www.numbergenerator.org, selecting the serial killers associated with the first 85 random numbers generated. Table 1 shows the

difference in racial makeup of the two groups of male serial killers. Tables 2 and 3 show each category of male serial killers' age at first kill and known number of victims killed, both of which are supplementary measures of violence scale.

Table 1

Racial Makeup of Two Groups of Male Serial Killers

Upbringing	White	Non-White	Black	Hispanic	Asian
Single parent	43	42	35	7	0
Both birth parents	58	27	21	5	1

Table 2

Age of First Kill by Two Groups of Male Serial Killers

Upbringing	Minimum	Maximum	Average	Median
Single parent	14	60	25.28	25
Both birth parents	13	59	28.74	26

Table 3

Number of Victims Killed by Two Groups of Male Serial Killers

Upbringing	Minimum	Maximum	Average	Median
Single parent	2	37	3.95	3
Both birth parents	2	46	5.58	3

I identified the four dependent variables in the database. For both categories of the independent variable (upbringing by a single parent and both birth parents), I filtered each dependent variable independently. Data were present among all 85 serial killers for

three of the four dependent variables. Five of the 85 serial killers raised by a single parent and three of the 85 serial killers raised by both birth parents were missing data in the *number of victims confessed to* variable. Using Little's (1988) missing at completely random test, I found that the missing values were insignificant ($p = .595$), indicating the values are missing at random. Therefore, I replaced the missing values with predicted values (Hamilton, Ko, Richards, & Hall, 2010).

Results

Descriptive Statistics

I calculated descriptive statistics to distinguish the two groups of male serial killers, those raised by a single parent and those raised by both birth parents, across the four measures of violence scale. Table 4 shows the descriptive statistics for each of the four dependent variables as they relate to the two levels of the independent variable. The mean and standard deviation of each dependent variable show a skew. The data distribution is illustrated in Figures 2 through 5.

Table 4

Descriptive Statistics for Measures of Violence Scale

	Group	Mean	SD	N
DV1	1	5.64	5.797	85
	2	5.59	6.920	85
	Total	5.62	6.365	170
DV2	1	4.00	6.469	85
	2	4.77	10.374	85
	Total	4.38	8.628	170
DV3	1	3.60	3.767	85
	2	3.13	4.498	85
	Total	3.37	4.143	170
DV4	1	7.35	8.077	85
	2	6.86	7.596	85
	Total	7.11	7.821	170

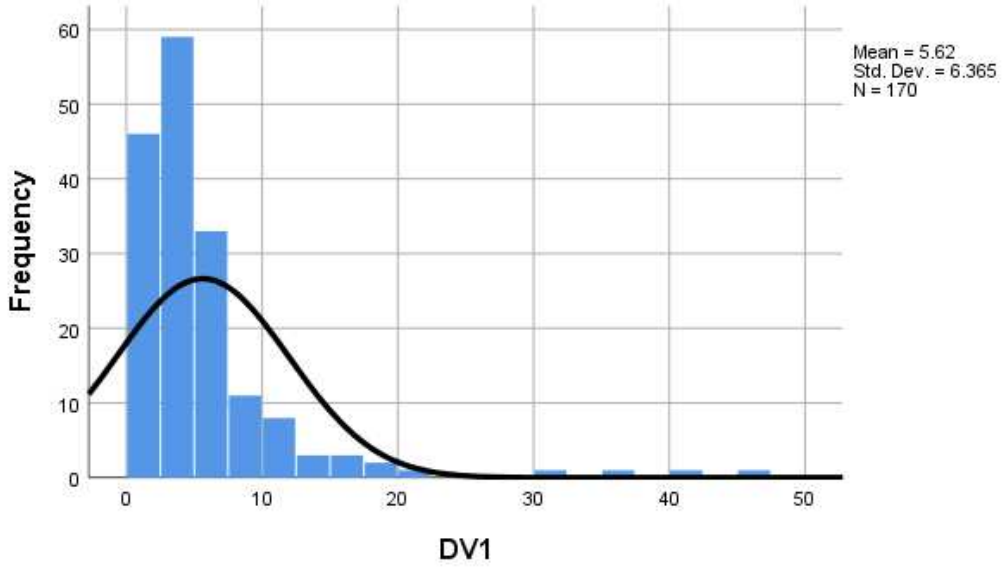

Figure 1. Data distribution for number of suspected victims.

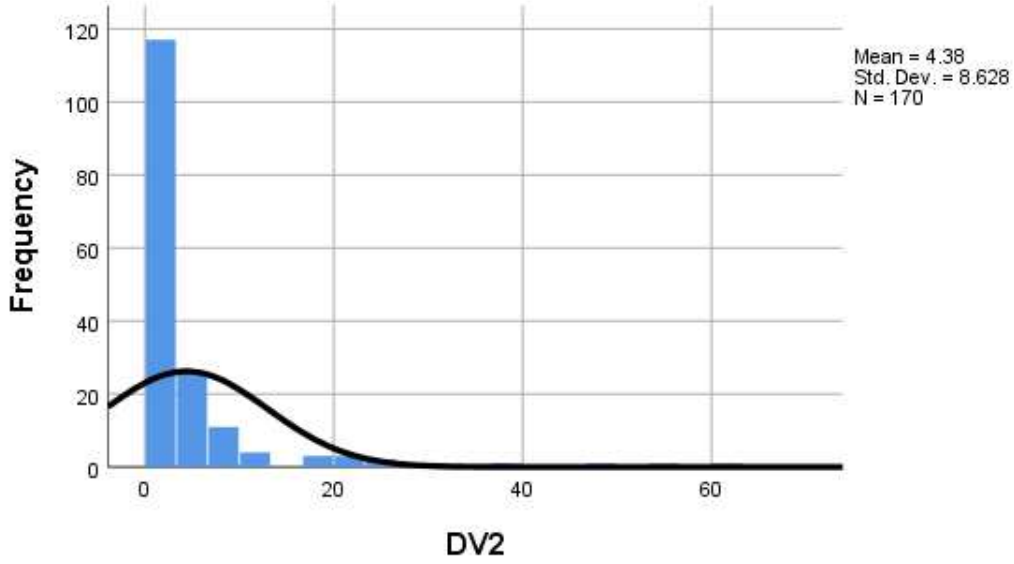

Figure 2. Data distribution for number of confessed victims.

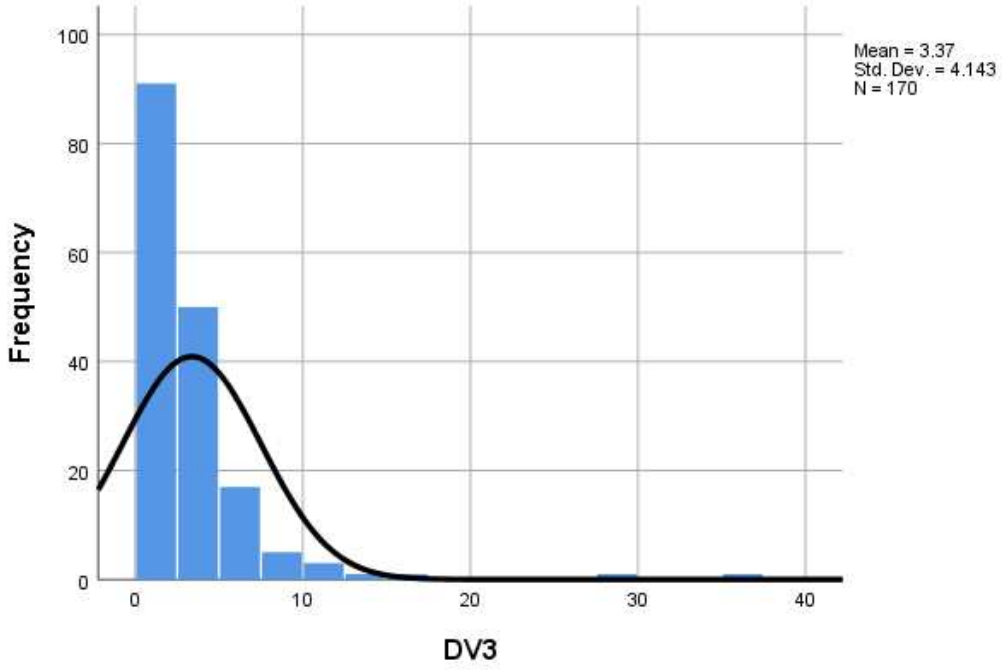

Figure 3. Data distribution for number of victims convicted of killing.

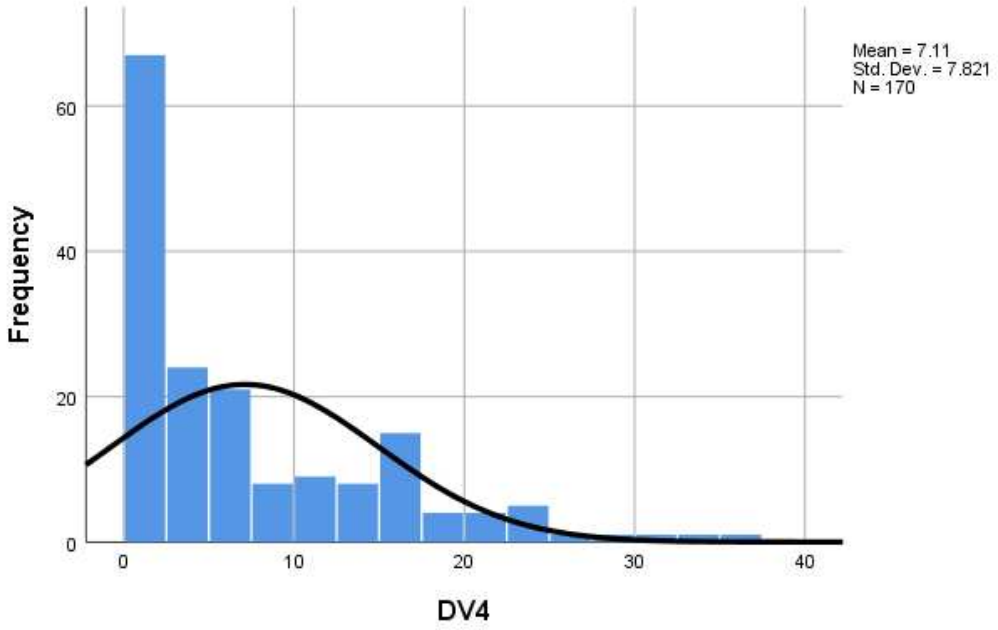

Figure 4. Data distribution for duration of killings.

Analysis of Assumptions

A MANOVA is a multivariate test used to determine whether the two levels of the independent variable statistically differ on the composite of the four dependent variables. The MANOVA requires several assumptions about the data. First, the dependent variables must be measured at the interval or ratio level. The dependent variables in this study are continuous, satisfying this assumption. Second, the independent variable should consist of two or more categorical, independent groups. The dependent variables in this study satisfy this assumption. Third, the observations should be independent. The offenders in one group of the independent variable are independent from those in the other group of the independent variable; therefore, this assumption is satisfied. Fourth, an adequate sample size is required. The test of power indicates a sufficient sample size in each group of the independent variable; therefore, this assumption is satisfied.

There should be no univariate or multivariate outliers in the data. To test for multivariate outliers, I performed a Mahalanobis distance calculation. The maximum value for the Mahalanobis distance calculation was 70.419, larger than the critical value of 9.488 when using four dependent variables with 95% confidence, indicating the presence of outliers (De Maesschalck, Jouan-Rimbaud, & Massart, 2000). The assumption that there are no outliers in the data was violated.

The Shapiro-Wilk test of multivariate normality indicated that the distribution was non-normal for all measures of violence scale. As shown in Table 5, the data are skewed right across all four dependent variables ($p < .05$). Kurtosis was also assessed. As set forth in Table 6, all four dependent variables show leptokurtic characteristics. Although the data were non-normally distributed, violating the normality assumption, it is generally accepted to use non-normally distributed data to perform statistical analyses using a MANOVA (Tabachnick, Fidell, & Ullman, 2007).

Table 5

Test of Normality for Measures of Violence Scale

		Kilmogorov-Smirnov			Shapiro-Wilk		
	Group	Statistic	df	Sig.	Statistic	df	Sig.
DV1	1	.268	85	.000	.622	85	.000
	2	.302	85	.000	.492	85	.000
DV2	1	.270	85	.000	.653	85	.000
	2	.322	85	.000	.449	85	.000
DV3	1	.280	85	.000	.595	85	.000
	2	.306	85	.000	.479	85	.000
DV4	1	.198	85	.000	.824	85	.000
	2	.188	85	.000	.831	85	.000

Table 6

Central Tendency of Measures of Violence Scale

	Group	Mean	Median	SD	Skewness	Kurtosis
DV1	1	5.64	4.0	5.797	3.249	12.967
	2	5.59	3.0	6.920	4.353	21.897
DV2	1	5.62	2.0	6.365	2.490	6.461
	2	4.00	2.0	6.469	4.143	17.967
DV3	1	4.77	2.0	10.374	4.226	24.637
	2	4.38	2.0	8.628	5.592	39.160
DV4	1	3.60	4.0	3.767	1.306	1.038
	2	3.13	4.0	4.498	1.425	1.895

To test the assumption of linearity, I created a scatterplot. Figure 6 illustrates the lack of linear relationship among the four dependent variables across each level of the independent variable. If the data were linear, they would be graphed in a straight line (Casson, 2014). Instead, the scatterplot shows data clustered in a non-linear pattern across the dependent variables in each group.

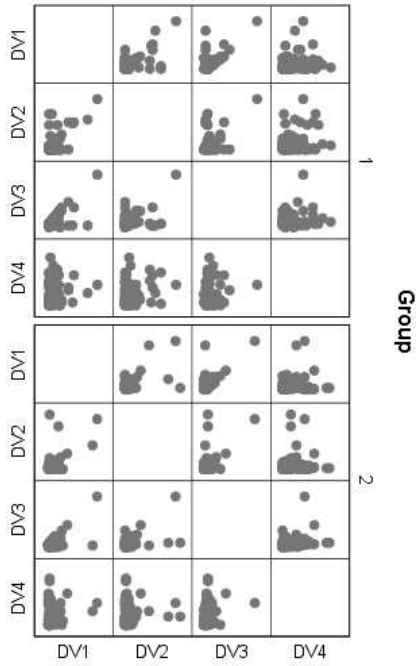

Figure 5. Scatterplot matrix for measures of violence scale.

To test the assumption of variance-covariance matrices, I calculated Box's M test of equality of covariance. As shown in Table 7, the homogeneity of covariance was greater than .001, meeting the assumption of equal variances (Box, 1953). Thus, the observed covariance matrices of the dependent variables are equal across the two groups of male serial killers.

Table 7

Box's M Test of Equality of Covariance

Box's M	28.267
F	2.754
df1	10
df2	134935.458
Sig.	.002

To test the assumption of no multicollinearity, the final assumption of a MANOVA, I used a Pearson correlation coefficient. Table 8 shows that none of the four

dependent variables are multicollinear ($r > .9$) (Allison, 2012). Moreover, there is a relationship among the variables ($r > .2$). The assumption of no multicollinearity is met.

Table 8

Pearson's Correlation Coefficient for Measures of Violence Scale

		DV1	DV2	DV3	DV4
DV1	Pearson Corr.	1	.629**	.671**	.134
	Sig. (2-tailed)		.000	.000	.081
	N	170	170	170	170
DV2	Pearson Corr.	.629**	1	.500**	.104
	Sig. (2-tailed)	.000		.000	.178
	N	170	170	170	170
DV3	Pearson Corr.	.671**	.500**	1	.164*
	Sig. (2-tailed)	.000	.000		.033
	N	170	170	170	170
DV4	Pearson Corr.	.134	.104	.164*	1
	Sig. (2-tailed)	.081	.178	.033	
	N	170	170	170	170

Note. **correlation is significant at the 0.01 level (2-tailed); *correlation is significant at the 0.05 level (2-tailed).

MANOVA

I conducted a MANOVA at an α level of .05 and a confidence interval = .95 to determine whether a significant difference between the male serial killer groups was present across the composite of the four measures of violence scale. Because not all of the assumptions of the MANOVA were met, I analyzed the results using Pillai's Trace**.** There were no significant differences between the groups on the composite of dependent variables, $V = .989$, $F(4, 165) = .465$, $p = .761$ (see Table 9). The partial eta squared analysis revealed a small effect size, and observed power was weak. Because no significant difference was found between male serial killers raised in a single parent

home and male serial killers raised by two birth parents across measures of violence scale using Pillai's Trace, further tests to determine the effect of each measure of violence scale between the groups of male serial killers was unjustified. Therefore, post hoc tests and separate ANOVAs for each dependent variable were not conducted.

Table 9

MANOVA for Measures of Violence Scale

Effect	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Pillai's Trace	.011	.465[a]	4.000	165.000	.761	.011	1.860	.158

a. Exact statistic
b. Computed using α = .05

Based on the MANOVA test results, I failed to reject the null hypothesis for each of the four research questions, as follows:

RQ1: Does growing up in a single-parent household predict the number of victims solo male serial killers are suspected to have killed?

$H_0 1$: Growing up in a single-parent household does not predict the number of victims solo male serial killers are suspected of killing.

$H_a 1$: Growing up in a single-parent household does predict the number of victims solo male serial killers are suspected of killing.

RQ2: Does growing up in a single-parent household predict the number of victims solo male serial killers confess to killing?

$H_0 2$: Growing up in a single-parent household does not predict the number of victims solo male serial killers confess to killing.

H_a2: Growing up in a single-parent household does predict the number of victims solo male serial killers confess to killing.

RQ3: Does growing up in a single-parent household predict the number of victims solo male serial killers are convicted of killing?

H_03: Growing up in a single-parent household does not predict the number of victims solo male serial killers are convicted of killing.

H_a3: Growing up in a single-parent household does predict the number of victims solo male serial killers are convicted of killing.

RQ4: Does growing up in a single-parent household predict the duration of homicide perpetration among solo male serial killers?

H_04: Growing up in a single-parent household does not predict the duration of homicide perpetration among solo male serial killers.

H_a4: Growing up in a single-parent household does predict the duration of homicide perpetration among solo male serial killers.

Summary

The purpose of this quantitative cross-sectional study was to examine the scale of violence correlated with a single-parent upbringing. The results for all four research questions based on the MANOVA indicated no statistically significant differences between the two groups of the independent variable: male, solo, U.S. serial killers raised in single-parent homes and those raised with both birth parents. Parental composition of the offender's childhood household did not predict the number of victims an offender was suspected of killing, confessed to killing, nor convicted of killing. Moreover, parental

composition of the offender's childhood household did not predict the duration of killing. The null hypotheses could not be rejected. Given the lack of statistical significance of the MANOVA, I did not conduct post hoc tests.

In Chapter 5, I discuss the implications of the results. I address limitations of the study and offer recommendations for social change. I conclude the chapter by suggesting future research based on the results of my study.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The quest to understand the contributors to extreme, recurrent, long-term violent behavior has inspired research into childhood influences. Researchers have established significant links between ACEs and negative psychological and behavioral outcomes in the short and long term (Kratsky & Schroder-Abe, 2018; Paluch et al., 2019). A single-parent upbringing is among the childhood influences studied, as growing up with a single parent may both be an ACE in itself, such as the adverse psychological impacts of an absentee parent (Trujillo & Servaty-Seib, 2018), and invite additional ACEs, such as poverty, lack of supervision, and parental depression (Afifi et al., 2015; Mathews & Abrahams, 2018). Temporal and financial resource limitations and increased demands on single parents contribute to a vulnerability in children of single parents to conditions that foster anger, aggression, and long-term violent behavior (Mathews & Abrahams, 2018; Sulima, 2019).

Although research strongly correlates a single-parent upbringing with short- and long-term maladaptive behavioral outcomes, including violence, there has been less study of the scale of those outcomes (Heleniak & McLaughlin, 2019). To address this understudied area, I examined the scale of the violence correlated with a single-parent upbringing. Specifically, I examined large-scale violence, as measured by variables of frequency and duration, among male serial killers, an inherently violent group of individuals. Notably, the study did not simply test the relative scale of violence among criminal offenders, but among serial killers, arguably the most violent offenders in

society. Male serial killers with a single-parent upbringing were compared with male serial killers raised by both birth parents on measures of frequency and duration of homicides to determine whether male serial killers raised by a single parent tend to perpetuate more homicides and over a longer period of time than male serial killers raised by both birth parents. In short, I examined indicators of extreme violence among the already extremely violent. For a correlation to be significant, a single-parent upbringing must predict not simply violence or even homicidal violence, but the highest frequency and duration of homicidal violence.

After identifying two equal-size groups of male serial killers from the Radford/FGCU Serial Killer Database—one group comprised of male serial killers raised by single parents and the other raised by both birth parents—I compared the groups on several measures. I performed a comparison of racial makeup between the groups and comparisons of age at first kill and known number of victims killed, both supplementary measures of violence scale. I analyzed the descriptive statistics for each group of male serial killers across the four measures of violence scale. I discussed the statistical analyses of the various assumptions about the data that must be met for a MANOVA. Finally, I discussed the results of the MANOVA and the reasons post hoc tests were unnecessary. The results and my recommendations based on them may offer guidance for future research on this topic.

Interpretation of the Findings

Parenting quality is predictive of a child's long-term psychological well-being and behavior (Mathews & Abrahams, 2018; Sulima, 2019). Researchers have distinguished

between single-parent households and those in which two birth parents are present in terms of parenting quality, noting that, as a rule, children raised with both birth parents enjoy greater parenting quality, face fewer ACEs, and are more socially adaptive in both the short and long term (Fallesen & Gahler, 2019; Upreti & Sharma, 2018). Children who suffer from poor quality parenting, including but not limited to hostility, abuse, neglect, and indifference, are at greater risk for a host of maladaptive outcomes, including long-term violent behavior (Heleniak & McLaughlin, 2019). This line of research served as the context for my study.

A clear racial divide was revealed through a comparison of the racial makeup of the groups. Male serial killers raised by a single parent were split nearly evenly between Whites and non-Whites. By contrast, White male serial killers more than doubled non-White male serial killers among those raised by both birth parents. This finding is consistent with contemporary research indicating that Whites are more likely than non-Whites to grow up with both birth parents in the home (Chetty, Hendren, Jones, & Porter, 2018; Raley, Sweeney, & Wondra, 2015).

Although not a measure of violence scale in this study, examination of a male serial killer's age the first time he commits a homicide may help underscore the factors relevant in the offender's life at the time the homicidal behavior began. Both groups of offenders began to kill in their mid-20s. There were differences in the average age of homicidal onset between groups, with male serial killers raised by a single parent starting to kill at just over 25 years old, while male serial killers raised by two birth parents did not start killing until nearly 29 years old. The median ages, however, were 25 and 26,

respectively, suggesting older age outliers among serial killers raised by two birth parents. The minimum and maximum ages of onset were remarkably similar between groups. The youngest raised by a single parent was 14 years old, and the youngest raised by two birth parents was 13 years old. Similarly, the oldest raised by a single parent was 60 years old, and the oldest raised by two birth parents was 59 years old.

The data distribution between groups on the measure of total number of victims killed through independent homicides provides another layer of insight. The minimum number of victims of male serial killers raised by a single parent and those raised by two birth parents was two. Given that two is the low threshold of independent homicides required to be categorized a serial killer under the current definition (FBI, 2005) and the statistical likelihood that a relatively large number of male serial killers would fall into the low threshold, it is unsurprising that the two groups have this in common. Similarly, the median number of victims through separate homicides was three for both groups. Three is a relatively low number of homicides for a serial killer given that two is the low threshold and, from a statistical perspective, is an unsurprising finding. Unexpected was the difference in the maximum number of victims through independent homicides between groups. The maximum number of victims by a male serial killer raised by a single parent was 37, while the maximum by a male serial killer raised by two birth parents was 46. This high volume of victims by a male serial killer raised by two birth parents skewed the average. Male serial killers with a single parent averaged nearly four victims while those with two birth parents in the household averaged over 5.5 victims.

The data distribution of both groups across all four measures of violence scale was skewed right. That is, the majority of suspected, confessed, and convicted homicides were relatively low with few high outliers. Approximately 80% of all sampled male serial killers were suspected of killing no more than six people. The mean number of suspected victims by male serial killers raised by a single parent was only slightly higher than the mean of those raised in a two birth parent home; however, the standard deviation of the two birth parent group was larger, suggesting the male serial killers suspected of killing a large number of victims were from the two birth parent group.

The measure of confessions was particularly skewed. Approximately 70% of male serial killers across both groups did not confess to a homicide or confessed to no more than two homicides. The mean number of confessions was 4.4, with a relatively large standard deviation between groups of 8.6. Although skew and kurtosis is evident, particularly in the first three dependent variables, they were greatest among the data for confessions. This suggests that, most of the time, the studied sample of male serial killers did not confess, but when they did, they tended to confess to a large number of homicides. As with suspected homicides, male serial killers raised by two birth parents made the largest number of confessions.

The average number of homicide convictions across both groups was over three, with a large concentration between two and three, and the remaining portion dispersed upward. Male serial killers with a single-parent upbringing received slightly more homicide convictions than those raised by two birth parents. Again, however, the high outliers were those raised by two birth parents.

The duration of homicides averaged just over seven years across groups; however, over one-third of male serial killers' homicidal stint lasted less than one year. Male serial killers raised by a single parent tended to continue killing for a longer duration than male serial killers raised by two birth parents. Further, the cases in which a serial killer continued perpetrating homicides for decades tended to be those raised in a single parent household.

Most, but not all, of the assumptions for MANOVA existed. As discussed, for both groups of male serial killers, the data across each of the measures of violence scale were non-normally distributed, contained outliers, and were non-linear. These assumption violations may have impacted the results. The MANOVA showed no significant difference between the male serial killer groups across the composite of the four measures of violence scale. In other words, when the four measures of violence scale were combined into a single measure of violence scale and compared between the two groups of male serial killers, each group's measures of violence scale were not statistically different from the other group. Had the MANOVA yielded a significant difference, I would have performed additional tests to determine on which measure(s) of violence scale the groups differed. However, because the MANOVA showed no statistical difference between groups on the composite of the four measures of violence scale, I concluded that in comparison to male serial killers raised by two birth parents, male serial killers raised by a single parent do not differ significantly in the number of victims they are suspected of killing, the number of victims they confess to killing, the number of victims they are convicted of killing, and the duration of their serial killing.

I was unable to reject the null hypotheses for each of the four research questions. These findings should be interpreted cautiously, however, to prevent overextending their implications. Although the results did not support a conclusion that growing up in a single-parent home or a two birth parent home predict violence scale as the construct was measured here, it would be incorrect to conclude that the parental constitution of the childhood home does not predict violence scale. Rather, through this study, I failed to demonstrate the correlation between the parental constitution of the home and violence scale.

Theoretical Explanation

The theoretical framework for my study is IPARTheory (Rohner, 1986), which holds that the process of mental interpretation and meaning assignment results in a child's perceptions of parental acceptance or rejection. As a general premise, the more ACEs a child experiences as a result of a parent's behavior or conditions established by a parent, the more rejected a child feels. In turn, the more negative thoughts and feelings about himself and others, personality dispositions, and behaviors the child will tend to adopt over time (Rohner, 1986; 2016).

Given the statistically insignificant results of the study, it is logical to conclude that a single-parent upbringing, at least in isolation, does not contribute to large-scale serial homicide through adulthood any more than being raised by two birth parents. A conclusion informed by IPARTheory may be that a child raised in a single-parent household may not perceive parental rejection significantly more than a child raised by both birth parents. This suggests it is not the parental composition of the household in and

of itself that contributes to the ACEs a child may perceive as rejecting. Rather, the impetus of the negative cognitions, affect, and behavioral outcomes may be more nuanced than simply who raises the child. Although research clearly shows that ACEs frequently accompany a single-parent upbringing, this does not preclude the ACEs that may exist in a two birth parent home. Abuse, neglect, lack of supervision, poverty, drug abuse, and mental health issues exist in many homes where two birth parents are present (Behere, Basnet, & Campbell, 2017). Therefore, a deeper dive into the specific components of the single-parent and two birth parent homes may be necessary to more clearly understand the factors that trigger the trajectory from ACEs to a child's perceptions of rejection, to the development of cognitive models, affective responses, and behavioral responses as described by IPARTheory.

Limitations

The present study successfully fulfilled its primary purpose: to examine the scale of violence correlated with a single-parent upbringing. There were, however, several limitations and methodological weaknesses that may have affected the results and the generalizability of the results. For instance, I examined only one potential contributor to long-term violence scale: the parental constitution of a male serial killer's childhood home. Research makes clear that family structure may act as a proxy for various environmental determinants of crime, including but not limited to poverty, substance abuse, and exposure to delinquent peers (Goldstein et al., 2019). Still, large-scale violence is likely a result of complex and multilayered combination of factors. Although a single-parent upbringing is itself an ACE (Pitkanen, Remes, & Moustgaard, 2019) and

tends to invite other ACEs, a single-parent upbringing may not, in isolation, predict the most frequent and prolonged homicidal violence examined here. It may be that a single-parent upbringing operates in combination with other factors not measured in this study. An exploration of mediating variables may reveal a more significant though indirect relationship between a single-parent upbringing and long-term large-scale violence.

Another potential limitation of my research was the lack of analysis into the specific conditions of the two birth parent cases. Research has long held that growing up with two birth parents is most psychologically beneficial (Behere, Basnet, & Campbell, 2017; Fallesen & Gahler, 2019; Upreti & Sharma, 2018). However, households where two birth parents are present are not immune from dysfunction (Behere, Basnet, & Campbell, 2017; Sedlak et al., 2010). The cases of two birth parents in this study may have included domestic violence, parent-child conflict, sexual abuse, lack of emotional support, lack of parent involvement, substance abuse, poverty, lack of supervision, or other ACE. Single-parent homes are not inherently more traumatic to children than two birth parent homes; single-parent homes simply present a greater risk factor for ACEs (Behere, Basnet, & Campbell, 2017). Without exploring the specific conditions of the two birth parent households, we cannot know for certain that the children raised in them had fewer ACEs. Without controlling for these household conditions, we cannot confidently ascertain the relative effects of single parent and two birth parent homes on violence scale.

Within the construct of parental structure, I examined only two possibilities: single parent and two birth parents. There are many other parental structures that I did not

examine, such as a birth parent and a step-parent, a step-parent as single parent, a birth parent and a live-in significant other, grandparents, foster parents, and others. It may be that the study of multiple parental structure variations would help to illuminate the variables related to household structure that are most predictive of long-term large-scale violence.

In addition to the potential limitations of the independent variable, there may be limitations to the dependent variables. The measures of violence scale used in this study may not have been ideal measures of that construct. Although research supports the use of frequency and duration of a particular behavior as evidence of its scale or magnitude (Harris, Oakley, & Picchioni, 2013), the measures of frequency and duration used in this study had limitations. For example, the number of victims a male serial killer is suspected of, confessed to, and convicted of killing in the selected cases are dependent on the serial killers being found out. It is likely, perhaps certain, that there are male serial killers who are never apprehended. A recent estimate of unsolved serial homicides is approximately 2,000 (Pappas, 2018). If a portion of these unsolved serial homicides were perpetuated by offenders raised in a single-family home, the study sample may have largely changed. The absence of data on these male serial killers may impact the findings.

Even among those male serial killers who are identified, the number of a male serial killer's victims and the duration of his homicides are highly dependent on how quickly law enforcement identifies and apprehends him. A well-resourced law enforcement agency may catch a killer quickly while a poorly resourced law enforcement agency may not. This has no bearing on the killer's characteristics, including the

conditions of his upbringing, but has everything to do with the circumstances of the jurisdiction in which he committed his crimes. Because the measures of violence scale are highly influenced by variables not accounted for in this study, the results may be confounded.

A potential methodological weakness of the study was the data set. Because I used archival data collected and labeled by other researchers, I am unable to validate its accuracy. There may be variation across researchers as to the definition of a single-parent upbringing where, perhaps, one researcher may have identified a case as a single-parent upbringing only if the absent birth parent never lived in the home, while another researcher may have labeled a case as a single-parent upbringing if, for any portion of the child's upbringing, he was raised by a single parent. These are different scenarios that may produce different psychological and behavioral outcomes.

Another limitation of the present study is the sample size. Although the data set is comprised of over 5,200 serial killers, only 85 were male, acted without a partner, perpetuated at least some of their crimes in the United States, and were raised by a single parent. This is due, in part, to the relatively few serial killers for whom there is information in the Radford/FGCU Serial Killer Database about the parental structure of their childhood homes. Only 701 (30%) of the 2361 male, solo, U.S. serial killers contained in the database included information about who raised the offender. A larger sample size may have yielded more significant results. Alternatively, a larger sample would have increased the confidence level of the validity of my results.

An additional limitation of the study is the generalizability of the findings. I chose to focus my population to male and solo serial killers, the most common types of serial killers (Hickey, 2016), and to those whose crimes were committed, at least in part, in the United States. These choices were made to improve the generalizability of the results across serial killers within the same demographic group. Assuming generalizability to other male, solo, U.S. serial killers from a statistical perspective, the findings may not be generalizable to serial killers who fall outside of these categories. Female serial killers, those who commit homicides with a partner or in a group, and those who operate outside the United States may be influenced by different psychological, social, and cultural factors. For this reason, findings based on male solo serial killers operating in the United States should not be generalized to these different groups.

Recommendations

The limitations and methodological weaknesses of my study lend to recommendations for future research. My study may be repeated after performing additional research into the childhood family structure of additional male serial killers, increasing the sample size and, therefore, enabling greater confidence in the study's results. In response to the potentially over-simplistic relationship between a single-parent upbringing and scale of violence, future researchers may dissect the relationship more fully. For example, a researcher may focus on the role of mediating variables in the studied relationship. Alternatively, a researcher may delve more deeply into the adverse conditions that made up the single-parent and two birth parent households in my study. Deeper analysis into the ACEs found in both groups may provide greater insight into root

factors of behavioral differences. Additional variations of parent structure may be included in future research, such as a birth parent and a step-parent, a single step-parent, grandparents, and others. Future researchers may reveal particular household structures beyond the single-parent household that lend to comparatively larger-scale violence.

Rather than study an extremely violent population like male serial killers, future research may explore the relationship between a single-parent upbringing and a less extremely violent population. Examples may include single homicide perpetrators, domestic violence offenders, sexual violence perpetrators, or other groups of offenders who have committed assault or battery. Removing the extreme nature of the population's behavior may yield more significant results.

The measures of violence scale used in my study may be modified to better align with the construct of violence scale in future research. Rather than using measures of frequency and duration, which are significantly impacted by external influences, perhaps measures of intensity, such as overkill, mutilation, or evidence of torture, may be used to measure violence scale. By assessing the relationship between a single-parent upbringing and violence scale using different and perhaps more precise dependent variables, more significant results may emerge.

In addition to refining and expanding research of male solo serial killers who committed homicides in the United States from single-parent homes, future research may focus on serial killers having demographic characteristics different from those included in my study. These may include female serial killers, serial killers who committed homicides with a partner or in a team, and serial killers who operated in other countries

besides the United States. These groups may be compared within themselves on the relationship between a single-parent upbringing and violence scale. Alternatively, the influence of a single-parent upbringing in one or more of these groups may be compared to the influence of a single-parent upbringing among male, solo serial killers in the United States. Using the Radford/FGCU Serial Killer Database, future researchers may combine variable in myriad ways to further examine the long-term effects of a single-parent upbringing across serial killers of multiple characteristics.

Further, I recommend that future research into the role of a single-parent upbringing and long-term violence scale employ IPARTheory as a framework for examination. IPARTheory offers an explanation for a child's cognitive, emotional, and behavioral response to events and conditions stemming, directly or indirectly, from a parent's decisions and behaviors. Highlighting the role of a child's subjective perceptions of parental acceptance and rejection as the impetus for a child's personal map of the world, including his own worth, the trustworthiness of others, and the value of other human lives, and how this map informs all subsequent beliefs and behaviors may provide powerful insight into the path from childhood ACEs to large-scale violence throughout adulthood.

Implications

Children who grow up in a single-parent household are at elevated risk for long-term violent behavior (Fergusson et al., 2007; Theobald et al., 2013). Previous researchers indicate this relationship is a function of the exposure to ACEs that children raised by a single parent commonly experience (Jackson et al., 2019; Manjunatha et al.,

2019; Rousou et al., 2019). My study expanded on these research findings in two ways: it included only a violent population, and it and compared those raised in a single-parent household with those raised by two birth parents to assess whether a single-parent upbringing was correlated with greater frequency and duration of violence.

The results of my study showed no significant relationship between a single-parent upbringing and measures of violence scale among the inherently violent population of male serial killers. Notwithstanding the limitations and weaknesses of the study, the implication of the results is that a single-parent upbringing, in isolation, is not determinative of the scale of violence an individual may display where scale of violence is assessed through measures of frequency and duration. There was no statistically significant evidence that growing up with a single parent predicted more frequent or longer lasting episodes of killing than growing up with two birth parents. In both groups of male serial killers, some killed twice while other killed dozens of times. If fact, in the majority of sampled cases, the male serial killers with greatest number of victims grew up with both birth parents in the home. Similarly, male serial killers from both groups killed for less than a year while other killed for decades. No correlation could be drawn from these outcomes to the parental constitution of the offender's childhood home.

To the extent that the parental structure of the childhood home is related to a male serial killer's violence scale, these results imply there are more foundational factors at play. In the context of previous research on the topic, these results seem to highlight the point that it may not necessarily be the number of parental figures in a child's home that is dispositive of the number or strength of the ACEs the child will experience or, perhaps

more importantly, the way a child will interpret and respond to those ACEs. Rather, the quality of the emotional acceptance and support the parent or parents provide a child through support in navigating these ACEs may be a more determinative factor in long-term behavioral outcomes. From the perspective of IPARTheory, a child's perceptions of acceptance or rejection of an event or condition are highly dependent on the emotional support a parent provides to a child in the face of the event or condition (Rohner, 1986; 2016).

From a social change perspective, these findings contribute to the development of a fuller, more precise narrative about the role of a single-parent upbringing in long-term violence. A single-parent upbringing may be an overly broad predictor of violence scale. The narrative should reflect not simply the parental structure of the childhood in the prediction of large-scale long-term violence, but a more granular evaluation of the present parent's role in providing a child with the emotional foundation to manage whatever ACEs may come. IPARTheory may be an effective lens through which to understand parents' role in directing a child's interpretation of and response to adverse events and conditions, changing the child's trajectory away from antisocial and violent outcomes.

These findings have implications for social workers, child and family psychologists, teachers, courts of law, and other social entities charged with the protection of children. Although a single-parent upbringing is a risk factor for negative psychological and behavioral outcomes, we should be cautious not to overestimate the potential scale of these outcomes based on the parental conditions of a child's upbringing

alone. This is particularly true when retrospectively assessing the likely contributors to violent behavior already demonstrated by an individual. As my study directly suggests, individuals who engage in recurrent, extreme violence cannot be distinguished based on the parental structure of their childhood home. Any tendency to be reductionist in attributing responsibility to a single-parent upbringing for frequent, prolonged, and extreme long-term violence is misguided.

Conclusion

Previous researchers have studied the role of a single-parent upbringing to negative short- and long-term psychological and behavioral outcomes, finding a link to violent behavior (Fergusson et al., 2007; Theobald et al., 2013). To this point, there has been no known research on the association of a single-parent upbringing with scale of violence. This was the first study to examine the potential correlation between a single-parent upbringing and scale of violence as measured by number of suspected victims, number of confessed victims, number of victims convicted of killing, and duration of killing among male serial killers who acted alone in the United States. Male serial killers with a single-parent upbringing were compared to male serial killers raised by two birth parents across the four measures of violence scale. The results yielded no significant correlation between the parental structure of the childhood home and scale of violence.

The study added to the research in the areas of single-parent upbringing and long-term extreme, recurrent, and prolonged violence. Limitations and methodological weaknesses of the study support the need for caution in generalizing the findings. Nonetheless, the results add to understanding of the relationship between a single-parent

upbringing and violence scale, imposing a limit on the relationship between single-parent upbringing and violence so as not to include large-scale violence as defined through frequency and duration. By revealing the limits of the association between a single-parent upbringing and long-term violence, efforts to predict long-term violence can focus more precisely on the underlying ACEs that are frequently, but not exclusively, commensurate with a single-parent upbringing. The study provides a foundation for additional research of the ACEs that comprise the single-parent and two birth parent households studied to identify root factors that may more strongly predict large-scale violence. Additional recommendations for future study include increasing the sample size, extending the sample to additional categories of parental structure in the childhood home, and exploring other groups of serial killers, such as women, those who operate with a partner or in a group, and those outside the United States.

References

Aamodt, M. (2015). *Serial killers.* [PowerPoint slides]. Retrieved from http://maamodt.asp.radford.edu/Serial%20Killer%20Information%20Center/Project%20Description.htm

Aamodt, M. G., Hargrove, T., & Witzig, E. (2019, September). The supplementary homicide reports: Unreported homicides are not random. Paper presented at the annual meeting of the Society for Police and Criminal Psychology, Scottsdale, Arizona.

Aamodt, M. & Leary, T. (n.d.) *Radford/FGCU serial killer research.* Retrieved from https://www.fgcu.edu/skdb/

Abajobir, A. A., Kisely, S., Williams, G., Strathearn, L., Clavarino, A., & Najman, J. M. (2017). Gender differences in delinquency at 21 years following childhood maltreatment: A birth cohort study. *Personality and Individual Differences, 106*, 95–103. doi:10.1016/j.paid.2016.10.020

Additional Grounds for Issuing a Warrant, 18 U.S.C. §3103a.

Admissibility of Confessions, 18 U.S.C. § 3501e.

Afifi, T. O., Taillieu, T., Cheung, K., Katz, L. Y., Tonmyr, L., & Sareen, J. (2015). Substantiated reports of child maltreatment from the Canadian Incidence Study of Reported Child Abuse and Neglect 2008: Examining child and household characteristics and child functional impairment. *The Canadian Journal of Psychiatry, 60*(7), 315–323. doi:10.1177/070674371506000704

Ainsworth, M. D. S. (1973). The development of infant-mother attachment. In B.

Cardwell & H. Ricciuti (Eds.), *Review of child development research* (Vol. 3, pp. 1–94) Chicago, IL: University of Chicago Press.

Alenazi, S. F., Hammad, S. M., & Mohamed, A. E. (2019). Prevalence of depression, anxiety, and stress among male secondary school students in Arar City, Saudi Arabia, during the school year 2018. *Electronic Physician, 11*(2), 7522–7528. doi:10.19082/7522

Ali, S., Khatun, N., Khaleque, A., & Rohner, R. P. (2019). They love me not: A meta-analysis of relations between parental undifferentiated rejection and offspring's psychological maladjustment. *Journal of Cross-Cultural Psychology, 50*(2), 185–199. doi:10.1177/0022022118815599

Allison, P. (2012, September 10). When can you safely ignore multicollinearity? *Statistical Horizons.* Retrieved from https://statisticalhorizons.com/multicollinearity

American Psychiatric Association. (1980). *Diagnostic and statistical manual of mental disorders,* (3rd ed.). Washington, D.C.: Author.

American Psychological Association. (2020). Trauma. Retrieved from https://www.apa.org/topics/trauma/

Armstrong, G. S., Cain, C. M., Wylie, L. E., Muftić, L. R., & Bouffard, L. A. (2018). Risk factor profile of youth incarcerated for child to parent violence: A nationally representative sample. *Journal of Criminal Justice, 58*, 1–9. doi:10.1016/j.jcrimjus.2018.06.002

Artz, L., Burton, P., Ward, C. L., Leoschut, L., Phyfer, J., Loyd, S., ... Le Mottee, C.

(2016, May). *Optimus study South Africa: Technical report. Sexual victimisation of children in South Africa. Final report of the Optimus Foundation Study: South Africa*. Retrieved from http://www.cjcp.org.za/uploads/2/7/8/4/27845461/08_cjcp_report_2016_d.pdf

Atherton, O. E., Conger, R. D., Ferrer, E., & Robins, R. W. (2016). Risk and protective factors for early substance use initiation: A longitudinal study of Mexican-origin youth. *Journal of Research on Adolescence, 26*(4), 864–879. doi:10.1111/jora.12235

Babore, A., Carlucci, L., Cataldi, F., Phares, V., & Trumello, C. (2017). Aggressive behaviour in adolescence: Links with self-esteem and parental emotional availability. *Social Development, 26*(4), 740–752. doi:10.1111/sode.12236

Baek, H., Nicholson, J. A., Higgins, G. E., & Losavio, M. M. (2018). Parental indifference and children's digital piracy in South Korea: Mediation effects of low self-control and misconception. *Asian Journal of Criminology, 13*(4), 293–309. doi:10.1007/s11417-018-9271-3

Baek, H., Roberts, A. M., & Higgins, G. E. (2018). The impact of family indifference on delinquency among American Indian youth: A test of general strain theory. *Journal of Ethnicity in Criminal Justice*, *16*(1), 57–75. doi:10.1080/15377938.2018.1433571

Baglivio, M. T., Wolff, K. T., Piquero, A. R., & Epps, N. (2015). The relationship between adverse childhood experiences (ACE) and juvenile offending trajectories in a juvenile offender sample. *Journal of Criminal Justice, 43*(3), 229–241.

doi:10.1016/j.jcrimjus.2015.04.012

Baker, E. R., Jensen, C. J., & Tisak, M. S. (2019). A closer examination of aggressive subtypes in early childhood: contributions of executive function and single-parent status. *Early Child Development and Care, 189*(5), 733–746. doi:10.1080/03004430.2017.1342079

Bayes, A., Graham, R. K., Parker, G. B., & McCraw, S. (2018). Is "subthreshold" bipolar II disorder more difficult to differentiate from borderline personality disorder than formal bipolar II disorder? *Psychiatry Research, 264,* 416–420. doi:10.1016/j.psychres.2018.04.018

Beaulieu, M., & Messner, S. F. (2010). Assessing changes in the effect of divorce rates on homicide rates across large U.S. cities, 1960–2000: Revisiting the Chicago school. *Homicide Studies, 14*(1), 24–51. doi:10.1177/1088767909353020

Beazley, H., Butt, L., & Ball, J. (2018). "Like it, don't like it, you have to like it": Children's emotional responses to the absence of transnational migrant parents in Lombok, Indonesia. *Children's Geographies, 16*(6), 591–603. doi:10.1080/14733285.2017.1407405

Behere, A. P., Basnet, P., & Campbell, P. (2017). Effects of family structure on mental health of children: A preliminary study. *Indian Journal of Psychological Medicine*, *39*(4), 457. doi:10.4103/0253-7176

Ben-David, V. (2016). A focus on neglect: Comparing the characteristics of children and parents in cases of neglect, abuse, and non-CAN (child abuse and neglect) in Israeli rulings on termination of parental rights. *Journal of Aggression,*

Maltreatment & Trauma, 25(7), 721–740. doi:10.1080/10926771.2016.1153549

Bethell, C. D., Gombojav, N., & Whitaker, R. C. (2019). Family resilience and connection promote flourishing among U.S. children, even amid adversity. *Health Affairs, 38*(5), 729–737. doi:10.1377/hlthaff.2018.05425

Biography.com. (n.d.). Edmund Kemper. Retrieved from https://www.biography.com/crime-figure/edmund-kemper

Blanchet, J., Ceresetti, D., Molinié, G., & Creutin, J. D. (2016). A regional GEV scale-invariant framework for intensity–duration–frequency analysis. *Journal of Hydrology*, *540*, 82–95. doi:10.1016/j.jhydrol.2016.06.007

Bland, V. J., Lambie, I., & Best, C. (2018). Does childhood neglect contribute to violent behavior in adulthood? A review of possible links. *Clinical Psychology Review, 60,* 126–135. doi:10.1016/j.cpr.2018.02.001

Bortolon, C., & Raffard, S. (2019). Affective and cognitive factors associated with hallucination proneness in the general population: The role of shame and trauma-related intrusions. *Cognitive Neuropsychiatry, 24*(6), 406–420. doi:10.1080/13546805.2019.1670152

Boullier, M., & Blair, M. (2018). Adverse childhood experiences. *Paediatrics and Child Health, 28*(3), 132–137. doi:10.1016/j.paed.2017.12.008

Bowers, L. (1999). A critical appraisal of violent incident measures. *Journal of Mental Health, 8*(4), 339–349. doi:10.1080/09638239917265

Bowlby J. (1969). *Attachment and loss: Vol. 1. Loss.* New York, NY: Basic Books.

Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation: Anxiety and anger.* New

York, NY: Basic Books.

Box, G. E. (1953). Non-normality and tests on variances. *Biometrika, 40*(3/4), 318–335. doi:10.2307/2333350

Boyer, B. P., Scott, J. K., & Nelson, J. A. (2016). Maternal conflict behavior profiles and child social skills. *Social Development, 25*(4), 759–776. doi:10.1111/sode.12169

Boyne, E. S. (2014). Serial homicide collaborative brings research data together. (Fall/Winter 2014). *Criminal Justice Update (CJ Update). An online newsletter for criminal justice educators.* From Routledge and Anderson, 43(1), 2.

Braga, T., Gonçalves, L. C., Basto-Pereira, M., & Maia, Â. (2017). Unraveling the link between maltreatment and juvenile antisocial behavior: A meta-analysis of prospective longitudinal studies. *Aggression and Violent Behavior, 33*, 37–50. doi:10.1016/j.avb.2017.01.006

Briere, J., Runtz, M., Eadie, E., Bigras, N., & Godbout, N. (2017). Disengaged parenting: Structural equation modeling with child abuse, insecure attachment, and adult symptomology. *Child Abuse & Neglect, 67*, 260–270. doi:10.1016/j.chiabu.2017.02.036

Briggs, H. E., Cox, W. H., Sharkey, C. N., Briggs, A. C., & Black, M. (2016). A review of the research on Pinkston's single-parent group training program. *Research on Social Work Practice, 26*(1), 128–144. doi:10.1177/1049731515592033

Brock, R. L., & Kochanska, G. (2019). Anger in infancy and its implications: History of attachment in mother-child and father-child relationships as a moderator of risk. *Development and Psychopathology, 31*(4), 1353–1366.

doi:10.1017/S0954579418000780

Brumarlu, L. E. (2015). Parent–child attachment and emotion regulation. *New Directions for Child and Adolescent Development, 2015*(148), 31–45. doi:10.1002/cad20098

Burlaka, V. (2016). Externalizing behaviors of Ukrainian children: The role of parenting. *Child Abuse & Neglect, 54*, 23–32. doi:10.1016/j.chiabu.2015.12.013

Cameranesi, M. (2016). Battering typologies, attachment insecurity, and personality disorders: A comprehensive literature review. *Aggression and Violent Behavior, 28*, 29–46. doi:10.2016/j.avb.2016.03.005

Carrasco, M. Á., González-Calderón, M. J., & Suárez, J. C. (2018). Does emotional dependence and perceived parental acceptance predict children's psychological maladjustment? *Family Relations, 67*(5), 660–674. doi:10.1111/fare.12338

Caspi, J., Lardier, D. T., & Barrios, V. R. (2018). The double bind of siblings in adolescent substance abuse treatment. *Journal of Child and Family Studies, 27*(7), 2232–2244. doi:10.1007/s10826-018-1068-6

Casselman, R. B., & McKenzie, M. D. (2015). Young adults' recollections of parental rejection and self-reported aggression: The mediating roles of insecure attachment and emotional dysregulation. *Journal of Child & Adolescent Trauma, 8*, 61–71. doi:10.1007/s40652-014-0032-x

Casson, R. J., & Farmer, L. D. (2014). Understanding and checking the assumptions of linear regression: A primer for medical researchers. *Clinical & Experimental Ophthalmology*, *42*(6), 590–596. doi:10.1111/ceo.12358

Centers for Disease Control and Prevention. (n.d.). Violence prevention: Adverse childhood experiences. Retrieved from https://www.cdc.gov/violenceprevention/childabuseandneglect/acestudy/index.html

Center for Substance Abuse Treatment. (2014). Trauma-informed care in behavioral health services. Treatment improvement protocol. Series, No. 57. *Understanding the Impact of Trauma.* Retrieved from https://www.ncbi.nlm.nih.gov/books/NBK207191/

Chen, Y., Kubzansky, L. D., & VanderWeele, T. J. (2019). Parental warmth and flourishing in mid-life. *Social Science & Medicine, 220*, 65–72. doi:10.1016/socscimed.2018.10.026

Chetty, R., Hendren, N., Jones, M. R., & Porter, S. R. (2018). *Race and economic opportunity in the United States: An intergenerational perspective* (No. w24441). National Bureau of Economic Research.

Chung, S., & Lesorogol, C. (2019). Suicidal thoughts and behaviors in children of immigrants: The experience of Korean-American women. *Journal of Ethnic & Cultural Diversity in Social Work, 28*(2), 191–210. doi:10.1080/15313204.2016.1241974

Clements-Nolle, K., & Waddington, R. (2019). Adverse childhood experiences and psychological distress in juvenile offenders: The protective influence of resilience and youth assets. *Journal of Adolescent Health, 64*(1), 49–55. doi:10.1016/j.adohealth.2018.09.025

Contreras, L., & del Carmen Cano, M. (2016). Child-to-parent violence: The role of exposure to violence and its relationship to social-cognitive processing. *The European Journal of Psychology Applied to Legal Context, 8*(2), 43–50. doi:10.1016/j.ejpal.2016.03.003

Cooke, J. E., Kochendorfer, L. B., Stuart-Parrigon, K. L., Koehn, A. J., & Kerns, K. A. (2019). Parent–child attachment and children's experience and regulation of emotion: A meta-analytic review. *Emotion, 19*(6), 1103. doi:10.1037/emo0000504

Cornwell, D., & Hobbs, S. (1976, March 18). The strange saga of little Albert. *New Society,* pp. 602–604.

Costa, S., Sireno, S., Larcan, R., & Cuzzocrea, F. (2019). The six dimensions of parenting and adolescent psychological adjustment: The mediating role of psychological needs. *Scandinavian Journal of Psychology, 60*(2), 128–137. doi:10.1111/sjop.12507

Coulton, C. J., Richter, F. G.-C., Korbin, J., Crampton, D., & Spilsbury, J. C. (2018). Understanding trends in neighborhood child maltreatment rates: A three-wave panel study 1990–2010. *Child Abuse & Neglect, 84*, 170–181. doi:10.1016/chiabu.2018.07.025

Craig, J. M., Piquero, A. R., Farrington, D. P., & Ttofi, M. M. (2017). A little early risk goes a long bad way: Adverse childhood experiences and life-course offending in the Cambridge study. *Journal of Criminal Justice, 53*, 34–45. doi:10.1016/j.jcrimjus.2017.09.005

Crime Museum. (2017). *Donald "Pee Wee" Gaskins*. Retrieved from https://www.crimemuseum.org/crime-library/serial-killers/donald-pee-wee-gaskins/

Daspe, M. È., Arbel, R., Ramos, M. C., Shapiro, L. A., & Margolin, G. (2018). Deviant peers and adolescent risky behaviors: The protective effect of nonverbal display of parental warmth. *Journal of Research on Adolescence.* Retrieved from https://www.sophiebergeron.ca/images/equipe_fqrsc/publications_scoup/Daspe_2018Risky_Behaviors.pdf

Dekel, B., Abrahams, N., & Andipatin, M. (2018). Exploring adverse parent-child relationships from the perspective of convicted child murderers: A South African qualitative study. *PloS One, 13*(5). Retrieved from https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0196772. doi:10/1371/journal.pone.0196772

Dekel, R., Shaked, O. Z., Ben-Porat, A., & Itzhaky, H. (2019). Posttraumatic stress disorder upon admission to shelters among female victims of domestic violence: an ecological model of trauma. *Violence and Victims, 34*(2), 329–345. doi:10.1891/08866708-VV-D-16-00200

DeLisi, M., & Vaughn, M. G. (2016). Correlates of crime. In A. R. Piquero (Ed.), *The handbook of criminological theory* (pp. 18-36). Hoboken, NJ: Wiley Blackwell.

De Maesschalck, R., Jouan-Rimbaud, D., & Massart, D. L. (2000). The Mahalanobis distance. *Chemometrics and Intelligent Laboratory Systems*, *50*(1), 1–18. doi:10.1016/s0169-7499(99)00047-7

Denes, A., Bennett, M., & Winkler, K. L. (2017). Exploring the benefits of affectionate communication: Implications for interpersonal acceptance–rejection theory. *Journal of Family Theory & Review, 9*(4), 491–506. doi:10.1111/jftr.12218

Derella, O. J., Burke, J. D., Stepp, S. D., & Hipwell, A. E. (2019). Reciprocity in undesirable parent–child behavior? Verbal aggression, corporal punishment, and girls' oppositional defiant symptoms. *Journal of Clinical Child & Adolescent Psychology, 48*(1), 1–14. doi:10.1080/15374416.2019.1603109

de Vries, E. E., Verlinden, M., Rijlaarsdam, J., Jaddoe, V. W., Verhulst, F. C., Arseneault, L., & Tiemeier, H. (2018). Like father, like child: Early life family adversity and children's bullying behaviors in elementary school. *Journal of Abnormal Child Psychology, 46*(7), 1481–1496. doi:10.1007/s10802-017-0380-8

DeWinter, S., Vaudevivere, E., Waters, T. E. A., Braet, C., & Bosmans, G. (2016). Lack of trust in maternal support is associated with negative interpretations of ambiguous maternal behavior. *Journal of Child and Family Studies, 25*(1), 146–151. doi:10.1007/s10826.015.0197.4

Dijanic, I. (2016). Growing up in a single-parent family and anger in adulthood. *Journal of Loss & Trauma, 21*(4), 259–264. doi:10.1080/15325024.2013.851442

Dittman, C. K. (2018). Long-distance parenting: The impact of parental separation and absence due to work commitments on families. In M. Sanders & A. Morawska (Eds.), *Handbook of parenting and child development across the lifespan* (pp. 511–533). Cham, Switzerland: Springer.

Doebel, S., & Zelazo, P. D. (2016). Seeing conflict and engaging control: Experience

with contrastive language benefits executive function in preschoolers. *Cognition, 157*, 219–226. doi:10.1016/j.cognition.2016.09.010

Fagan, A. A., & Novak, A. (2018). Adverse childhood experiences and childhood delinquency in a high-risk sample: A comparison of white and black youth. *Youth Violence and Juvenile Justice, 16*(4), 395–417. doi:10.1177/1541204017735568

Fallesen, P., & Gähler, M. (2019). Family type and parents' time with children: Longitudinal evidence for Denmark. *Acta Sociologica*, 1-20. doi:10.1177/0001699319868522

Farrington, D. P. (2000). Adolescent violence: Findings and implications from the Cambridge Study. In G. Boswell (Ed.), *Violent children and adolescents: Asking the question why* (p. 19–35). Chichester, United Kingdom: Whurr Publishers.

Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*(2), 175–191. Retrieved from https://link.springer.com/content/pdf/10.3758/BF03193146.pdf

Federal Rules of Criminal Procedure. (2016). Title VI, Trial, Rule 31.

Fegadel, A. R., & Heide, K. M. (2018). NIBRS and SHR: A comparison of two national homicide databases with respect to parricide. *Victims & Offenders, 13*(2), 235–256. doi:10.1080/15564886.2016.1246392

Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., ... & Marks, J. S. (2019). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The Adverse

Childhood Experiences (ACE) study. *American Journal of Preventative Medicine, 56*(6), 774–786. doi:10.1016/S0749-3797(98)00017-8

Fergusson, D. M., Boden, J. M., & Horwood, L. J. (2007). Exposure to single parenthood in childhood and later mental health, educational, economic, and criminal behavior outcomes. *Archives of General Psychiatry, 64*(9), 1089–1095. doi:10.1001/archpsyc.64.9.1089

Fomby, P., Goode, J. A., & Mollborn, S. (2016). Family complexity, siblings, and children's aggressive behavior at school entry. *Demography, 53*(1), 1–26. doi:10.1007/s13524-015-0443-9

Fosco, G. M., Lippold, M., & Feinberg, M. E. (2014). Interparental boundary problems, parent–adolescent hostility, and adolescent–parent hostility: A family process model for adolescent aggression problems. *Couple and Family Psychology: Research and Practice, 3*(3), 141. doi:10.1037/cfp0000025

Fowler, F. J. (2014). *Survey research methods.* (5th ed.). Thousand Oaks, CA: Sage.

Fox, J. A., & Levin, J. (2011). *Extreme killing: Understanding serial and mass murder.* Thousand Oaks, CA: Sage.

Gabriel, L., Tizro, Z., James, H., Cronin-Davis, J., Beetham, T., Corbally, A., ... Hill, S. (2018). "Give me some space": exploring youth to parent aggression and violence. *Journal of Family Violence, 33*(2), 161–169. Retrieved from https://link.springer.com/article/10.1007/s10896-017-9928-1

Garbarino, J. (2017). ACEs in the criminal justice system. *Academic pediatrics*, *17*(7), S32–S33. doi:10.1016/a.acap.2016.09.003

Gardner, R., Feely, A., Layte, R., Williams, J., & McGavock, J. (2019). Adverse childhood experiences are associated with an increased risk of obesity in early adolescence: a population-based prospective cohort study. *Pediatric Research, 86*(1), 522–528. doi:10.1038/s41390-019-0414-8

Gershoff, E. T., Goodman, G. S., Miller-Perrin, C. L., Holden, G. W., Jackson, Y., & Kazdin, A. E. (2018). The strength of the evidence against physical punishment of children and its implications for parents, psychologists, and policymakers. *American Psychologist, 73*, 626–638. doi:10.1037/amp0000327

Gewirtz, A. H., & Zhang, N. (2018). The impact of parental military deployment on children. In J. D. Osofsky & B. M. Groves (Eds.). *Violence and trauma in the lives of children* (pp. 169–187). Santa Barbara, CA: ABC-CLIO.

Gilbert, R., Widom, C. S., Browne, K., Fergusson, D., Webb, E., & Janson, S. (2009). Burden and consequences of child maltreatment in high-income countries. *Lancet, 373*(9657), 68–81. doi:10.1016/S0140-6736(08)61706-7

Giordano, P. C., Copp, J. E., Manning, W. D., & Longmore, M. A. (2019). Linking parental incarceration and family dynamics associated with intergenerational transmission: A life-course perspective. *Criminology*, *57*(3), 395–423. doi:10.1111/1745-9125.12209

Gioumouki, M., Smaili, D., Antoniou, A. S., & Babalis, T. K. (2018). Single-parent families: School behavioral problems and school interventions. In T. K. Babalis, Y. Xanthacou, & M. Kaila (Eds.), *Family issues in the 21st century. Single-parenting in the 21st century: Perceptions, issues and implications* (p. 185–210).

Hauppauge, NY: Nova Science Publishers.

Glatz, T., Lippold, M., Jensen, T. M., Fosco, G. M., & Feinberg, M. E. (2019). Hostile interactions in the family: Patterns and links to youth externalizing problems. *The Journal of Early Adolescence, 40*(1), 56–82. doi:10.1177/0272431618824718

Godrati, F., Yazdanpanahi, Z., & Akbarzadeh, M. (2019). The relationship between religious attitude and domestic violence against women of reproductive age. *Journal of Midwifery and Reproductive Health, 7*(1), 1522–1526. doi:10.22038/jmrh.2018.23306.1250

Goldstein, R. B., Lee, A. K., Haynie, D. L., Luk, J. W., Fairman, B. J., Liu, D., . . . Gilman, S. E. (2019). Neighbourhood disadvantage and depressive symptoms among adolescents followed into emerging adulthood. *Journal of Epidemiology and Community Health, 73*(7), 590. doi:10.1136/jech-2018-212004

Grady, M. D., Levenson, J. S., & Bolder, T. (2016). Linking adverse childhood effects and attachment: A theory of etiology for sexual offending. *Trauma, Violence, & Abuse,* 1–12. doi:10.1177/1524838015627147

Gross-Manos, D., Haas, B. M., Richter, F., Korbin, J. E., Coulton, C. J., Crampton, D., & Spilsbury, J. C. (2019). Why does child maltreatment occur? Caregiver perspectives and analyses of neighborhood structural factors across twenty years. *Children and Youth Services Review, 99*, 138–145. doi:10.1016/j.childyouth.2019.01.043

Hambrick, E. P., Rubens, S. L., Brawner, T. W., & Taussig, H. N. (2018). Do sleep problems mediate the link between adverse childhood experiences and

delinquency in preadolescent children in foster care? *Journal of Child Psychology and Psychiatry, 59*(2), 140–149. doi:10.1111/jcpp12802

Hamilton, B. H., Ko, C. Y., Richards, K., & Hall, B. L. (2010). Missing data in the American College of Surgeons National Surgical Quality Improvement Program are not missing at random: Implications and potential impact on quality assessments. *Journal of the American College of Surgeons, 210*(2), 125–139. doi:10.1016/j.jamcollsurg.2009.10.021

Haney, L. (2018). Incarcerated fatherhood: The entanglements of child support debt and mass imprisonment. *American Journal of Sociology*, *124*(1), 1–48. Retrieved from http://users.soc.umn.edu/~uggen/Haney_AJS_18.pdf

Harris, S. T., Oakley, C., & Picchioni, M. (2013). Quantifying violence in mental health research. *Aggression and Violent Behavior*, *18*(6), 695-701. doi:10.1016/j.avb.2013.07.022

Hart, S. N., Brassard, M. R., Binggeli, N. J., & Davidson, H. A. (2002). Psychological maltreatment. In J. E. B. Meyers, L. Berliner, J. Briere, C. T. Hendrix, C. Jenny, & T. A. Reid (Eds.), *The APSAC handbook on child maltreatment* (pp. 79–103). Sage Publications, Inc.

Hay, C., Meldrum, R. C., Widdowson, A. O., & Piquero, A. R. (2017). Early aggression and later delinquency: Considering the redirecting role of good parenting. *Youth Violence and Juvenile Justice, 15*(4), 374–395. doi:10.1177/1541204016631805

Hayles, O., Xu, L., & Edwards, O. W. (2018). Family Structures, Family Relationship, and Children's Perceptions of Life Satisfaction. In *School Psychology Forum,*

12(3).

Healy, S. J., Murray, L., Cooper, P. J., Hughes, C., & Halligan, S. L. (2015). A longitudinal investigation of maternal influences on the development of child hostile attributions and aggression. *Journal of Clinical Child & Adolescent Psychology, 44*(1), 80–92. doi:10.1080/15374416.2013.850698

Heleniak, C., & McLaughlin, K. A. (2019). Social-cognitive mechanisms in the cycle of violence: Cognitive and affective theory of mind, and externalizing psychopathology in children and adolescents. *Development and Psychopathology, 13,* 1–16. doi:10.1017/S0954579419000725

Hernández, R. L., Aranda, B. E., & Ramírez, M. T. G. (2009). Depression and quality of life for women in single-parent and nuclear families. *The Spanish Journal of Psychology, 12*(1), 171–183. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.1029.6442&rep=rep1&type=pdf

Hesselink, A., & Booyens, K. (2016). When parents interchange love with abuse: An analysis of parental-child abuse for correctional intervention. *Child abuse Research in South Africa*, *17*(2), 103–114. Retrieved from https://repository.up.ac.za/bitstream/handle/2263/58300/Hesselink_When_2016.pdf?sequence=1

Hickey, E. (2016). *Serial murderers and their victims.* (7th ed.) Belmont, CA: Wadsworth.

Hinojosa, M. S., Hinojosa, R., Bright, M., & Nguyen, J. (2019). Adverse Childhood

Experiences and Grade Retention in a National Sample of US Children. *Sociological Inquiry, 89*(3). 402-426. doi:10.1111/soin.12272

Hodgkinson, S., Prins, H., & Stuart-Bennett, J. (2017). Monsters, madmen… and myths: A critical review of the serial killing literature. *Aggression and Violent Behavior*, *34*, 282–289. doi:10.1016/j.avb.2016.11.006

Horowitz, M. H. (1976). *Stress response syndromes.* Oxford, England: Jason Aronson.

Horowitz, M., Wilner, N., & Alvarez, W. (1979). Impact of event scale: A measure of subjective stress. *Psychosomatic Medicine, 41*(1), 209–218. Retrieved from https://pdfs.semanticscholar.org/b18b/654ee40ceea9a3a3f6d073636d7ff0eaf189.pdf

Humphreys, K. L. (2019). Future directions in the study and treatment of parent–child separation. *Journal of Clinical Child and Adolescent Psychology, 48*(1), 166–178. doi:10.1080/15374416.2018.1534209

Hunt, S., Goddard, C., Cooper, J., Littlechild, B., & Wild, J. (2016). 'If I feel like this, how does the child feel?' Child protection workers, supervision, management and organisational responses to parental violence. *Journal of Social Work Practice, 30*(1), 5–24. doi:10.1080/02650533.2015.1073145

Hunt, T. K. A., Slack, K. S., & Berger, L M. (2017). Adverse childhood experiences and behavioral problems in middle childhood. *Child Abuse and Neglect, 67*, 391–402. doi:10.1016/j.chiabu.2016.11.005

Jackson, A. P., Choi, J. K., & Preston, K. S. (2019). Harsh parenting and black boys' behavior problems: Single mothers' parenting stress and nonresident fathers'

involvement. *Family Relations, 68*(4), 436–449. doi:10.1111/fare.12373

Johnson, L.-M., Torres, C., Sykes, A., Gibson, D. V., & Baker, J. N. (2017). The bereavement experience of adolescents and early young adults with cancer: Peer and parental loss due to death is associated with increased risk of adverse psychological outcomes. *PLoS ONE, 12*(8), e0181024. doi:10.1371/journal.pone.0181024

Karatekin, C., & Hill, M. (2018). Adverse childhood experiences as a predictor of attendance at a health-promotion program. *Journal of Health Psychology,* 1–9. doi:10.1177/1359105318802929

Khaleque, A., & Ali, S. (2017). A systematic review of meta-analyses of research on Interpersonal Acceptance-Rejection Theory: Constructs and measures. *Journal of Family Theory & Review, 9*(4), 441–458. doi:10.1111/jftr.12228

Khaleque, A., Uddin, M. K., Hossain, K. N., Siddique, M. N.-E.-A., & Shirin, A. (2019). Perceived parental acceptance–rejection in childhood predict psychological adjustment and rejection sensitivity in adulthood. *Psychological Studies, 64*(4), 447–454. doi:10.1007/s12646-019-00508-z

Khan, B., & Munaf, S. (2017). Difference in perceived childhood parenting among five criminal types. *Bahria Journal of Professional Psychology, 16*(1), 27–48. Retrieved from http://bjpp.com.pk

Khodabandeh, F., Khalilzadeh, M., & Hemati, Z. (2018). The impact of adverse childhood experiences on adult aggression and self-esteem: A study on male forensic clients. *Novelty in Biomedicine, 6*(2), 85–91. Retrieved from

http://sbmu.ac.ir

Kiger, K. (1990). The darker figure of crime: The serial murder enigma. In S. Egger (Ed.), *Serial murder: An elusive phenomenon* (pp. 35–52). New York, NY: Praeger.

Kim H. Y. (2016). Statistical notes for clinical researchers: Sample size calculation 1. Comparison of two independent sample means. *Restorative Dentistry & Endodontics*, *41*(1), 74–78. doi:10.5395/rde.2016.41.1.74

Koch, U. (2019). The uses of trauma in experiment: Traumatic stress and the history of experimental neurosis, c. 1925-1975. *Science in Context, 32*(3), 327–351. doi:10.1017/S0269889719000279

Kong, J., & Easton, S. D. (2018). Re-experiencing violence across the life course: histories of childhood maltreatment and elder abuse victimization. *The Journals of Gerontology: Series B, 74*(5), 853–857. doi:10.1093/geronb/gby035

Krahé, B., Bondü, R., Höse, A., & Esser, G. (2015). Child aggression as a source and a consequence of parenting stress: A three-wave longitudinal study. *Journal of Research on Adolescence, 25*(2), 328–339. doi:10.1111/jora.12115

Kratky, N., & Schröder-Abé, M. (2018). How are parental functioning and single parenthood associated with court outcomes? An analysis of child protection cases. *Child Abuse & Neglect, 84,* 95–105. doi:10.1016/j.chiabu.2018.07.015

Lakens, D. (2013). Calculating and reporting effect sizes to facilitate cumulative science: A practical primer for t-tests and ANOVAs. *Frontiers in Psychology, 4*, 863. doi:10.3389/fpsyg.2013.00863

Leary, T., Southard, L., & Aamodt, M. (2019). Serial killers and intelligence levels: Variability, patterns, and motivations to kill. *North American Journal of Psychology*, *21*(4), 787–800.

Leyton, E. (2003). *Hunting humans: The rise of the modern multiple murderer.* New York, NY: Carroll & Graf.

Li, J. B., Delvecchio, E., Lis, A., Nie, Y. G., & Riso, D. D. (2015). Parental attachment, self-control, and depressive symptoms in Chinese and Italian adolescents: Test of a mediation role. *Journal of Adolescence, 43*, 159–170. doi:10.1016/j.adolescence.2015.06.006

Lindberg, M. A., & Zeid, D. (2018). Test of the Attachment and Development Dynamic Systems Theory of Crime (ADDSTOC): Toward a differential RDoC diagnostic and treatment approach. *International Journal of Offender Therapy and Comparative Criminology, 62*(12), 3746–3774. doi:10.1177/0306624X17750353

Little, R. J. A. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association, 83*(404), 1198–1202. Retrieved from http://medrescon.tripod.com/docs/little_paper.pdf

Logan-Greene, P., & Jones, A. S. (2015). Chronic neglect and aggression/delinquency: A longitudinal examination. *Child Abuse & Neglect, 45*, 9–20. doi:10.1016/j.chiabu.2015.04.003

Lunkenheimer, E., Lichtwarck-Aschoff, A., Hollenstein, T., Kemp, C. J., & Granic, I. (2016). Breaking down the coercive cycle: How parent and child risk factors influence real-time variability in parental responses to child misbehavior.

Parenting, 16(4), 237–256. doi:10.1080/15295.192.2016.1184925

Manjunatha, C. S., Chandrashekar, J. S., & Chandrashekhara, B. (2019). An overview of multidimensional drivers and adverse impacts of urban sprawl. *International Journal of Environmental Science and Technology, 14*, 77–87. Retrieved from http://www.ewijst.org/issues/vol14/ewijst14010719004.pdf

Mann, C. J. (2003). Observational research methods. Research design II: Cohort, cross sectional, and case-control studies. *Emergency Medicine Journal, 20*(1), 54–60. doi:10.1136/emj.20.1.54

Mansueto, G., Palmieri, S., & Faravelli, C. (2018). Parental style and Cloninger's model in psychosis. *Psychiatry Research*, *269*, 221-228. doi:10.1016/j.psychres.2018.08.066

Marshall, L. L. (1992). Development of the severity of violence against women scales. *Journal of Family Violence, 7*, 103–121. Retrieved from https://link.springer.com/article/10.1007/BF00978700

Martínez-Ferrer, B., & Stattin, H. (2017). A mutual hostility explanation for the co-occurrence of delinquency and depressive mood in adolescence. *Journal of Abnormal Child Psychology, 45*(7), 1399–1412. Retrieved from https://rio.upo.es/xmlui/bitstream/handle/10433/4368/A%20Mutual%20Hostility%20Explanation%20for%20the%20Co.pdf?sequence=1

Maschi, T., Schwalbe, C., & Ristow, J. (2013). In pursuit of the ideal parent in juvenile justice: A qualitative investigation of probation officers' experiences with parents of juvenile offenders. *Journal of Offender Rehabilitation, 52*(7), 470–492.

doi:10.1080/1050.9674.2013.829898

Mathews, S., & Abrahams, N. (2018). Developing an understanding of filicide in South Africa. In T. Brown, D. Tyson, & P. F. Arias (Eds.), *When parents kill children* (pp. 43–61). New York, NY: Palgrave Macmillan, Cham.

McCarty, C. A., Zimmerman, F. J., Digiuseppe, D. L., & Christakis, D. A. (2005). Parental Emotional Support and Subsequent Internalizing and Externalizing Problems Among Children. *Journal of Developmental and Behavioral Pediatrics, 26*(4), 267–275. doi:10.1097/00004703-200508000-00002

Meldrum, R. C., Connolly, G. M., Flexon, J., & Guerette, R. T. (2016). Parental low self-control, family environments, and juvenile delinquency. *International Journal of Offender Therapy and Comparative Criminology, 60*(14), 1623–1644. doi:10.1177/0306624X15584907

Mendo-Lázaro, S., León-del-Barco, B., Polo-del-Río, M. I., Yuste-Tosina, R., & López-Ramos, V. M. (2019). The role of parental acceptance–rejection in emotional instability during adolescence. *International Journal of Environmental Research and Public Health, 16*(7), 1194. Retrieved from http://mdpi.com

Miller, L. (2014). Serial killers: I. Subtypes, patterns, and motives. *Aggression and Violent Behavior*, *19*(1), 1–11. doi:10.1016/j.avb.2013.11.002

Miranda, M.C., Affuso, G., Esposito, C, & Bacchini, D. (2016). Parental acceptance-rejection and adolescent maladjustment: Mothers' and father's combined roles. *Journal of Child and Family Studies, 25*, 1352–1362. Retrieved from https://link.springer.com/article/10.1007/s10826-015-0305-5

Mitchell, H., & Aamodt, M. G. (2005). The incidence of child abuse in serial killers. *Journal of Police and Criminal Psychology, 20*(1), 40–47. Retrieved from http://maamodt.asp.radford.edu/Research%20-%20Forensic/2005%2020-1-Mitchell-40-47.pdf

Mok, P. L., Astrup, A., Carr, M. J., Antonsen, S., Webb, R. T., & Pedersen, C. B. (2018). Experience of child–parent separation and later risk of violent criminality. *American Journal of Preventive Medicine, 55*(2), 178–186. doi:10.1016/j.amepre.2018.04.008

Muftić, L. R., & Smith, M. (2018). Sex, parental incarceration, and violence perpetration among a sample of young adults. *Journal of Interpersonal Violence*, *33*(2), 316–338. doi:10.1177/0886260515605123

Mumford, E. A., Liu, W., & Taylor, B. G. (2016). Parenting profiles and adolescent dating relationship abuse: Attitudes and experiences. *Journal of Youth and Adolescence, 45*(5), 959–972. Retrieved from https://link.springer.com/article/10.1007/s10964-016-0448-8

Mwangangi, R. K. (2019). The role of family in dealing with juvenile delinquency. *Open Journal of Social Sciences, 7*(3), 52–63. Retrieved from https://www.scirp.org/journal/paperinformation.aspx?paperid=90991

National Scientific Council on the Developing Child (2012). The science of neglect: The persistent absence of responsive care disrupts the developing brain. *Harvard University.* Retrieved from https://developingchild.harvard.edu/wp-content/uploads/2012/05/The-Science-of-Neglect-The-Persistent-Absence-of-

Responsive-Care-Disrupts-the-Developing-Brain.pdf

Nawaz, S., Ali, U., Najmussaqib, A., Ahmed, M., & Rehna, T. (2019). The relationship between parental rejection and social skills among children of single parents. *European Online Journal of Natural and Social Sciences: Proceedings, 8*(2), 195–202. Retrieved from http://european-science.com

Norman, R. E., Byambaa, M., De, R., Butchart, A., Scott, J., Vos, T. (2012). The long-term health consequences of child physical abuse, emotional abuse, and neglect: A systematic review and meta-analysis. *PLoS Medicine, 9*, e1001349. doi:10.1371/journal.pmed.1001349

Ostrov, J. M., Murray-Close, D., Godleski, S., & Hart, E. (2013). Prospective associations between forms and functions of aggressive and social and affective processes during early childhood. *Journal of Experimental Child Psychology, 116*, 19–36. doi:10.1016/j.jecp.2012.12.009

Paluch, A. E., Heard-Garris, N., & Carnethon, M. R. (2019). Sport participation among individuals with adverse childhood experiences—Leveling the playing field. *JAMA Pediatrics, 173*(7), 626–627. doi:10.1001/jamapediatrics.2019.1209

Pappas, S. (2018, April 28). How many uncaptured serial killers are out there? *Life Science.* Retrieved from https://www.livescience.com/62431-how-many-serial-killers-free.html

Patterson, G. (2002). The early development of coercive family process. In J. B. Reid, G. R. Patterson, & J. Snyder (Eds.), *Antisocial behavior in children and adolescents: A developmental analysis and model for intervention* (p. 25–44). Washington,

DC: American Psychological Association.

Patterson, G. R. (2016). Coercion theory: The study of change. In T. J. Dishion & J. J. Snyder (Eds.), *The Oxford handbook of coercive relationship dynamics*, (p. 7–22). New York, NY: Oxford University Press.

Pavlov, I. P. (1934). An attempt at a physiological interpretation of obsessional neurosis and paranoia. *Journal of Mental Science, 80*(329), 187–197. doi:10.1192/bjp.80.329.187-a

Peterson, C., & Seligman, M. E. (1983). Learned helplessness and victimization. *Journal of Social Issues, 39*(2), 103–116. doi:10.1111/j.1540-4560.1983.tb00143.x

Pew Research Center. (2019). Religion and living arrangements around the world. Retrieved from https://www.pewforum.org/2019/12/12/religion-and-living-arrangements-around-the-world/

Pew Research Center. (2015). The American family today. Retrieved from https://www.pewsocialtrends.org/2015/12/17/1-the-american-family-today/

Pitkänen, J., Remes, H., Moustgaard, H., & Martikainen, P. (2019). Parental socioeconomic resources and adverse childhood experiences as predictors of not in education, employment, or training: A Finnish register-based longitudinal study. *Journal of Youth Studies*, 1–18. doi:10.1080/13676261.2019.167945

Pyle, N., Flower, A., Williams, J., & Fall, A. M. (2019). Social risk factors of institutionalized juvenile offenders: A systematic review. *Adolescent Research Review*, 1-14. doi:10.1007/s40894-019-00120-2

Pyrooz, D. C., & Sweeten, G. (2015). Gang membership between ages 5 and 17 years in

the United States. *Journal of Adolescent Health, 56*(4), 414–419. doi:10.1016/j.jadohealth.2014.11.018

Radford University/Florida Gulf Coast University. (2019). *Radford/FGCU serial killer database* [Data file and code book].

Raley, K., M. Sweeney, and D. Wondra (2015). The growing racial and ethnic divide in U.S. marriage patterns. *The Future of Children 25*(2), 89–109. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4850739/

Reyes, H. L. M., Foshee, V. A., Markiewitz, N., Chen, M. S., & Ennett, S. T. (2018). Contextual risk profiles and trajectories of adolescent dating violence perpetration. *Prevention Science, 19*(8), 997–1007. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6177331/

Rious, J. B., Cunningham, M., & Beale Spencer, M. (2019). Rethinking the notion of "hostility" in African American parenting styles. *Research in Human Development*, *16*(1), 35–50. doi:10.1080/15427609.2018.1541377

Rohner, R. P. (2004). The parental "acceptance-rejection syndrome": Universal correlates of perceived rejection. *American Psychologist, 59*, 830–840. doi:10.1037/0003-066X-59.8.830

Rohner, R. P. (2016). Introduction to interpersonal acceptance-rejection theory (IPARTheory) and evidence. *Online Readings in Psychology and Culture*, *6*(1), 4. doi:10.9707/2307-0919.1055

Rohner, R. P. (1986). *The warmth dimension: Foundations of parental acceptance-rejection theory.* Beverly Hills, CA: Sage.

Rohner, R. P., & Lansford, J. E. (2017). Deep structure of the human affectional system: Introduction to interpersonal acceptance-rejection theory. *Journal of Family Theory & Review, 9*, 426–440. doi:10.1111/jftr.12219

Rohner, R. P., & Melendez-Rhodes, T. (2019). Perceived parental acceptance− rejection mediates or moderates the relation between corporal punishment and psychological adjustment: Comment on Gershoff et al. (2018). *American Psychologist, 74*(4), 500–502. doi:10.1037amp0000437

Rousou, E., Kouta, C., Middleton, N., & Karanikola, M. (2019). Mental health among single mothers in Cyprus: A cross-sectional descriptive correlational study. *BMC Women's Health, 19*(1), 67. Retrieved from https://link.springer.com/article/10.1186/s12905-019-0763-9

Ryan, J. P., Williams, A. B., & Courtney, M. E. (2013). Adolescent neglect, juvenile delinquency and the risk of recidivism. J*ournal of Youth and Adolescence, 42*, 454–465. doi:10.1007/s10964-013-9906-8

Salamon, K. S., Davies, W., Fuentes, M. R., Weisman, S. J., & Hainsworth, K. R. (2014). The pain frequency-severity-duration scale as a measure of pain: preliminary validation in a pediatric chronic pain sample. *Pain Research and Treatment*. doi:10.1155/2014/653592

Sasser, T. R., Beekman, C. R., & Bierman, K. L. (2015). Preschool executive functions, single-parent status, and school quality predict diverging trajectories of classroom inattention in elementary school. *Development and Psychopathology, 27*, 681–693. doi:10.1017/S0954579414000947

Sattler, L. J., & Thomas, K. A. (2016). “Parents need a village”: Caseworkers’ perceptions of the challenges faced by single parents of system-involved youth. *Children and Youth Services Review, 70*, 293–301. doi:10.1016/j.childyouth.2016.09.027

Schwartz-Soicher, O., Geller, A., & Garfinkel, I. (2011). The effect of paternal incarceration on material hardship. *Social Service Review*, *85*(3), 447–473. doi:10.1086/661925

Sedlak, A. J., Mettenburg, J., Basena, M., Peta, I., McPherson, K., & Greene, A. (2010). *Fourth national incidence study of child abuse and neglect* (NIS-4). Washington, DC: U.S. Department of Health and Human Services.

Seijo, D., Fariña, F., Corras, T., Novo, M., & Arce, R. (2016). Estimating the epidemiology and quantifying the damages of parental separation in children and adolescents. *Frontiers in Psychology*, *7*, Retrieved from https://www.frontiersin.org/articles/10.3389/fpsyg.2016.01611/full doi:10/3389/fpsyg.2016.01611

Seligman, M. E. (1972). Learned helplessness. *Annual Review of Medicine, 23*(1), 407–412. Retrieved from https://www.annualreviews.org/doi/pdf/10.1146/annurev.me.23.020172.002203

Shaffer, A., & Obradović, J. (2017). Unique contributions of emotion regulation and executive functions in predicting the quality of parent–child interaction behaviors. *Journal of Family Psychology, 31*(2), 150. doi:10.1037/fam0000269

Sinha, A., & Ram, F. (2019). Mental health status of unmarried youth living in single

parent families: A case study from India. *Journal of Mental Health, 28*(4), 357–364. doi:10.1080/09638237.2018.1437612

Smeijers, D., Brazil, I. A., Bulten, E. B. H., & Verkes, R. J. (2018). Retrospective parental rejection is associated with aggressive behavior as well as cognitive distortions in forensic psychiatric outpatients. *Psychology of Violence, 8*(4), 495–504. doi:10.1037/vio0000134

Smith, J. (1983). Quantitative versus qualitative research: An attempt to clarify the issue. *Educational Researcher, 12*, 6–13. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.848.7203&rep=rep1&type=pdf

Stern, J. A., & Cassidy, J. (2018). Empathy from infancy to adolescence: An attachment perspective on the development of individual differences. *Developmental Review, 47*, 1–22. doi:10.1016/j.dr.2017.09.002

Stewart, G. (2018). Behavioral problems in sons of incarcerated or otherwise absent fathers: The issue of separation. In R. R. Miller (Ed.). *Impacts of incarceration on the African American family* (pp. 105-120). New York, NY: Routledge.

Stoltenborgh, M., Bakermans-Kranenburg M. J., & van IJzendoorn, M. H. (2013). The neglect of child neglect: A meta-analytic review of the prevalence of neglect. *Social Psychiatry and Psychiatric Epidemiology*, *48,* 345–355. Retrieved from https://link.springer.com/article/10.1007/s00127-012-0549-y

Su, S. (2018, July). Why children have aggressive behaviors. In H. Zhou & Z. Dong (Eds.), *Proceedings of the 2018 4th International Conference on Economics,*

Social Science, Arts, Education and Management Engineering (ESSAEME 2018). Paris, FR: Atlantis Press.

Sulima, S. (2019). Parental migration as neglect: The negative impact of missing parents on the behaviour of children left behind in Moldova. *Research and Science Today, 1*, 9–23. Retrieved from https://www.researchgate.net/profile/Flavius_Marcau/publication/331989070_RESEARCH_AND_SCIENCE_TODAY_NO_1172019/links/5c99f8cf45851506d72be401/RESEARCH-AND-SCIENCE-TODAY-NO-117-2019.pdf#page=9

Tabachnick, B. G., Fidell, L. S., & Ullman, J. B. (2007). *Using multivariate statistics* (Vol. 5). Boston, MA: Pearson.

Taliep, N., Ismail, G., & Titi, N. (2018). Reflections on parenting practices that impact child-rearing in a low-income community. *Child Abuse Research in South Africa*, *19*(2), 1–3. Retrieved from https://www.researchgate.net/profile/Neziswa_Titi/publication/338514153_Reflections_on_parenting_practices_that_impact_child-_rearing_in_a_low-income_community/links/5e188eae92851c8364c090d4/Reflections-on-parenting-practices-that-impact-child-rearing-in-a-low-income-community.pdf

Tanaka, M., Wekerle, C., Schmuck, M. L., & Paglia-Boak, A. (2011). The linkages among childhood maltreatment, adolescent mental health, and self-compassion in child welfare adolescents. *Child Abuse & Neglect, 35*(10), 887–898. doi:10.1016/j.chiabu.2011.07.003

Theobald, D., Farrington, D. P., & Piquero, A. R. (2013). Childhood broken homes and

adult violence: An analysis of moderators and mediators. *Journal of Criminal Justice, 41*(1), 44–52. doi:10.1016/j.jcrimjus.2012.12.003

Thompson, C. B., & Panacek, E. A. (2007). Research study designs: Non-experimental. *Air Medical Journal, 26*(1), 18–22. Retrieved from https://www.airmedicaljournal.com/article/S1067-991X(06)00309-9/fulltext

Tongco, M. D. C. (2007). Purposive sampling as a tool for informant selection. *Ethnobotany Research and Applications, 5*, 147–158. Retrieved from www.ethnobotanyjournal.org/vol5/i1547-3465-05-147.pdf

Townsend, C. (n.d.). Donald 'Pee Wee' Gaskins: Rapist, cannibal and serial killer, *Crimefeed.* Retrieved from https://www.investigationdiscovery.com/crimefeed/serial-killer/donald-pee-wee-gaskins-rape-cannibalism-serial-killing-no-regrets

Troisi, G. (2018). Measuring intimate partner violence and traumatic affect: Development of VITA, an Italian scale. *Frontiers in Psychology*, *9*. doi:10.3389/fpsyg.2018.01282

Trujillo, N. P., & Servaty-Seib, H. (2018). Parental absence and non-suicidal self-injury: Social support, social constraints and sense-making. *Journal of Child and Family Studies*, *27*(5), 1449–1459. Retrieved from https://link.springer.com/article/10.1007/s10826-017-0976-1

Trumbell, J. M., Hibel, L. C., Mercado, E., & Posada, G. (2018). The impact of marital withdrawal and secure base script knowledge on mothers' and fathers' parenting. *Journal of Family Psychology, 32*(6), 699. doi:10.1037/fam0000402

Turner, H. A., Vanderminden, J., Finkelhor, D., & Hamby, S. (2019). Child neglect and the broader context of child victimization. *Child Maltreatment*, *24*(3), 265–274. doi:10.1177/1077559518825312

Tyrer, P., Cooper, S., Herbert, E., Duggan, C., Crawford, M., Joyce, E., … Maden, T. (2007). The quantification of violence scale: A simple method of recording significant violence. *International Journal of Social Psychiatry*, *53*(6), 485–497. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.932.5895&rep=rep1&type=pdf

Upreti, R., & Sharma, S. (2018). Emotional maturity of adolescents from orphanages, single parent families and intact families: A comparative study. *Indian Journal of Positive Psychology, 9*(1), 143–146. doi:10.15614/ijpp.v9i01.11760

U.S. Department of Health & Human Services (2018). *Child maltreatment 2016.* Retrieved from https://www.acf.hhs.gov/sites/default/files/cb/cm2016.pdf

Vanderminden, J., Hamby, S., David-Ferdon, C., Kacha-Ochana, A., Merrick, M., Simon, T. R., ... Turner, H. (2019). Rates of neglect in a national sample: Child and family characteristics and psychological impact. *Child Abuse & Neglect*, *88*, 256–265. doi:10.1016/j.chiabu.2018.11.014

van den Berg, L., Kalmijn, M., & Leopold, T. (2018). Family structure and early home leaving: A mediation analysis. *European Journal of Population, 34*(5), 873–900. Retrieved from https://link.springer.com/article/10.1007/s10680-017-9461-1

Vázquez-Nava, F., Vázquez-Rodríguez, E. M., Vázquez-Rodríguez, C. F., & Betancourt,

N. V. O. (2019). High school dropout: Association with family structure, maternal employment, and health-risk habits among female Mexican adolescents. *Journal of Child and Family Studies, 28*(12), 3307–3314. Retrieved from https://link.springer.com/article/10.1007/s10826-019-01505-6

Vettese, L., Dyer, C., Li, W., & Wekerle, C. (2011). Does self-compassion mitigate the association between childhood maltreatment and later emotion regulation difficulties? A preliminary investigation. *International Journal of Mental Health Addiction, 9*(5), 480–491. doi:10.1007/s11469-011-9340-7

Wakefield, S., & Wildeman, C. (2014). *Children of the prison boom: Mass incarceration and the future of American inequality*. New York, NY: Oxford University Press.

Walberg, M. (2009, December 17). Expert: Past abuse fueled killer's hatred. *Chicago Tribune.* Retrieved from https://www.chicagotribune.com/news/ct-xpm-2009-12-17-0912160902-story.html

Walters, B., Drislane, L., Hickey, E., & Patrick, C. (2014). Serial murder: Facts and misconceptions. *Science and the courts*. Bethesda, MD: National Institute of Mental Health, NIH.

Wang, Y., Zhang, M., & Chen, H. (2019). Self-injury among left-behind adolescents in rural China: The role of parental migration and parent-child attachment. *Frontiers in Psychology, 9,* 1–8. doi:10.3389/fpsyg.2018.02672

Waters, T. E. A., Ruiz, S. K., & Roisman, G. I. (2017). Origins of secure base script knowledge and the developmental construction of attachment representations. *Child Development, 88*, 198–209. doi:10.1111/cdev.12571

Watson, J. B., & Rayner, R. (1920). Conditioned emotional reactions. *Journal of Experimental Psychology, 3*, 1–14. Retrieved from https://pure.mpg.de/rest/items/item_2404117/component/file_2404116/content

Westphal, M., Leahy, R. L., Pala, A. N., & Wupperman, P. (2016). Self-compassion and emotional invalidation mediate the effects of parental indifference on psychopathology. *Psychiatry Research, 242*(30), 186–191. Retrieved from https://self-compassion.org/wp-content/uploads/2016/06/Westphal_etal_2016.pdf

Weymouth, B. B., Buehler, C., Zhou, N., & Henson, R. A. (2016). A meta-analysis of parent–adolescent conflict: Disagreement, hostility, and youth maladjustment. *Journal of Family Theory & Review,* 8(1), 95–112. doi:10.1111/jftr.12126

Widom, C. S. (2017). Long-term impact of childhood abuse and neglect on crime and violence. *Clinical Psychology: Science and Practice*, *24*(2), 186–202. doi:10.1111/cpsp.12194

Wiest, J. B. (2016). Casting cultural monsters: Representations of serial killers in US and UK news media. *Howard Journal of Communications*, *27*(4), 327–346. doi:10.1080/10646175.2016.1202876

Willmott, D., Boduszek, D., & Robinson, R. (2018). A psychodynamic-behaviourist investigation of Russian sexual serial killer Andrei Chikatilo. *The Journal of Forensic Psychiatry & Psychology*, *29*(3), 498–507. Retrieved from https://pure.hud.ac.uk/ws/files/10874548/Author_Accepted_Manuscript_JFPP_Willmott_Boduszek_Robinson.pdf

Woeckener, M., Boisvert, D. L., Cooke, E. M., Kavish, N., Lewis, R. H., Wells, J., . . .

Harper, J. M. (2018). Parental rejection and antisocial behavior: The moderating role of testosterone. *Journal of Criminal Psychology, 8*(4), 302–313. doi:10.1108/JCP-04-2016-0016

Wolff, K. T., & Baglivio, M. T. (2017). Adverse childhood experiences, negative emotionality, and pathways to juvenile recidivism. *Crime & Delinquency, 63*(12), 1495–1521. doi:10.1177/0011128715627469

Wolff, K. T., Baglivio, M. T., & Piquero, A. R. (2017). The relationship between adverse childhood experiences and recidivism in a sample of juvenile offenders in community-based treatment. *International Journal of Offender Therapy and Comparative Criminology, 61*(11), 1210–1242. doi:10.1177/0306624X15613992

Woods, S. E., Menna, R., & McAndrew, A. J. (2017). The mediating role of emotional control in the link between parenting and young children's physical aggression. *Early Child Development and Care, 187*(7), 1157–1169. doi:10.1080/03004430.2016.1159204

Yaksic, E. (2015). Addressing the challenges and limitations of utilizing data to study serial homicide. *Crime psychology review*, *1*(1), 108–134. doi:10.1080/23744006.2016.1168597

Yaksic, E. (2018). The folly of counting bodies: Using regression to transgress the state of serial murder classification systems. *Aggression and Violent Behavior, 43,* 26–32. doi:10.1016/j.avb.2018.08.007

Yaros, A., Lochman, J. E., & Wells, K. (2016). Parental aggression as a predictor of boys' hostile attribution across the transition to middle school. *International*

Journal of Behavioral Development, 40(5), 452–458. doi:10.1177/0165025415607085

Zerr, A. A., Newton, R. R., Litrownik, A. J., McCabe, K. M., & Yeh, M. (2019). Household composition and maltreatment allegations in the US: Deconstructing the at-risk single mother family. *Child Abuse & Neglect, 97,* 104123. doi: 10.1016/j.chiabu.2019.104123

Zhang, Y., Zhang, J., & Ding, C. (2019). Investigating the association between parental absence and developmental trauma disorder symptoms. *Journal of Traumatic Stress, 32*(5), 733–741. doi:10. 1002/jts.22446

Zientek, L. R., & Thompson, B. (2009). Matrix summaries improve research reports: Secondary analyses using published literature. *Educational Researcher*, *38*(5), 343-352. doi:10. 3102/0013189X0933905

Appendix A: Comprehensive List of Keywords Searched

absence

absent

acceptance

ACE

adulthood

adverse childhood experiences

adverse experiences

affection

affective

aggression

aggressive

analysis of variance

Andre Crawford

anger

antisocial behavior

antisocial personality

anxiety

archival data

associated

association

behavior

behavioral consequences

behavioral outcomes

biological parent

birth parent

brutal

brutality

child

childhood

children

child abuse

child neglect

child outcomes

cognitive

cognitive outcomes

consequence

coping

crime

criminal behavior

data analysis

dependent variable

depression

disadvantage

disengagement

Donald "Pee Wee" Gaskins

duration

dysfunctional household condition

Ed Kemper

effect

effect size

emotion

emotional

emotional attachment

emotional consequences

emotional needs

emotional outcomes

emotional problems

emotional support

expose

exposure

external validity

externalize

father

financial hardship

financial instability

frequency

frequent

growing up

harsh parenting

homicide

hostile

hostility

hostility and aggression

household dysfunction

impulse control

independent variable

indifference

instrumentalize

intense

intensity

intent

internal validity

internalize

Interpersonal Acceptance and Rejection Theory

IPARTheory

interpersonal problems

interpersonal violence

juvenile delinquency

juvenile offending

kill

killer

lack of supervision

link

long-term violence

magnitude of violence

maladaptive

manifestation

maternal

maternal absence

maternal abuse

maternal acceptance

maternal aggression

maternal hostility

maternal disengagement

maternal neglect

maternal indifference

maternal rejection

maternal warmth

mother

multivariate analysis of variance

murder

murderer

neglect

number of victims

offender

offense

operationalization of constructs

outcomes

parent

parents

parental

parental absence

parental abuse

parental acceptance

parental aggression

parental hostility

parental disengagement

parental neglect

parental indifference

parental rejection

parental responsiveness

parental warmth

paternal

paternal absence

paternal abuse

paternal acceptance

paternal aggression

paternal hostility

paternal disengagement

paternal neglect

paternal indifference

paternal rejection

paternal warmth

Pavlov

perception of parental acceptance

perception of parental rejection

permanent absence

perpetrator

poverty

predict

predictor

psychological distress

psychological impact

psychological outcomes

psychology

purposive sampling

quantitative research

quantitative study

Radford/FGCU Serial Killer Database

raised

random sampling

reliability

risk

risk factor

Rohner

scale

scale of violence

self-esteem

Seligman

serial homicide

serial killer

serial murder

serial murderer

severity

severity of violence

sexual

single father

single mother

single parent

single parent household

social consequences

social outcomes

socioeconomic disadvantage

socioeconomic status

solo male serial killer

substance abuse

supervision

temporary absence

threats to validity

trauma

undifferentiated rejection

United States

upbringing

validity

verbal aggression

victim

violence

violence intensity

violence severity

warmth

warmth and affection

well-being

withdrawn parenting

Appendix B: Data Access Agreement

Hi Jennifer,

It was great seeing you at the conference and am glad to hear you are interested in conducting research on serial killers. We have three standard conditions for researchers using the database. We ask them to agree to:

1. Cite the source as the Radford/FGCU Serial Killer Database
2. No share the database with anyone outside of your dissertation committee. We want to make sure only legitimate researchers have access to the data.
3. Let us know if you encounter any errors in the database.

If those conditions are acceptable, let me know and I will send you an Excel file with the most current data.

Take care,

Mike

.....

Hi, Mike. Great to see you, too! So nice to come full circle academically.

I would absolutely agree to these conditions, and am happy to credit you and the other researchers for its development, as appropriate.

I look forward to seeing you again at future SPCP conferences.

Regards,
Jennifer