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The Relationship Between Bullying and Fire Setting in Juveniles and Young Adults

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Walden University

College of Social and Behavioral Sciences

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Isabel Tada

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Walden University
2021

Abstract

The Relationship Between Bullying and Fire Setting in Juveniles and Young Adults

by

Isabel Tada

MS Walden University, 2013

BS Ashford University, 2011

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Psychology

Walden University

May 2021

Abstract

The purpose of this research was to investigate the relationship between bullying and fire setting in juveniles and young adults. Bullying is a worldwide phenomenon that has negative effects on children's and adolescents' social, interpersonal, and psychological well-being. The damage caused by fire setting results in a tremendous amount of financial loss, bodily injury, and death each year in the United States. This study was viewed through the lenses of attachment theory, reintegrative shaming theory, arousal-seeking behavioral theory, and functional analytic theory. The key research questions addressed whether there is a significant relationship between bullying victimization and fire setting behavior; whether there are factors (i.e., personality characteristics, attachment styles, arousal seeking, and psychosocial stimuli) that predict fire setting behavior in juveniles and young adults; and what precipitating events (i.e., trauma, abuse, maltreatment, and bullying) predict fire setting behavior. This study used a correlational nonexperimental research design. Multiple linear regression was used to address the research questions for this quantitative study. The key results indicated that there was a positive correlation between bullying and fire setting. Negative attachment styles, psychosocial stimuli, and a history of trauma and bullying were identified as predictors of fire setting behavior. Future research is recommended on how bullying motivates fire setting in order to develop effective prevention and intervention programs for at risk fire setters and offenders. By providing meaningful insights into preventing bullying and fire setting, this study may contribute to positive social change.

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Chapter 1: Introduction to the Study

Bullying has become a worldwide phenomenon that negatively affects children and adolescents' psychological, interpersonal, and social well-being (Bryant, 2014; Mayes et al., 2017). Victimized youths often experienced underlying physical and mental health conditions, such as psychosomatic disorders, biopsychosocial issues, and maladaptive behaviors (Mishna et al., 2016). Bullying victimization has been well documented in behavioral and social science literature, where it is associated with longstanding adverse psychological and behavioral outcomes such as anxiety, depression, and suicidality (Dunbar, 2018). Those who bully may also suffer from bullying victimization, along with psychological and psychiatric disorders as well as delinquency and antisocial behavior, such as fire setting (Dunbar, 2018; Mishna et al., 2016).

Researchers have previously found that there is a link between fire setting and antisocial behavior (Stanley et al., 2016). Antisocial behavior has been linked with several psychosocial and environmental factors, such as child abuse, domestic violence, and school bullying (Palermo, 2015), which suggests that there is reason to believe that there might be a link between bullying and fire setting.

The damage caused by fire setting results in a tremendous financial burden for state and federal governments, yet little is known regarding the predictive characteristics of fire setters (Reilly & Johnson, 2016). Many educators, scholar practitioners, and fire investigators have indicated a belief that there are significant gaps in existing knowledge and understanding about the relationship between bullying and fire setting among juveniles and young adults (Ekbrand & Uhnnoo, 2015; Lambie et al., 2014). Moreover,

there is a clear gap in the literature about how bullying victimization might contribute to fire setting (Burnett & Omar, 2014; Green et al., 2014; Palermo, 2015; Turner et al., 2016; Valdebenito et al., 2017).

When children and adolescents suffer from bullying victimization, they often developed a maladaptive schema in order to make sense of the world as well as their relationships with others (Poon, 2016). A maladaptive schema developed in early life often leads to cognitive distortions, such as catastrophizing and polarized thinking. In many cases, these individuals lack a strong support system and positive coping skills to deal with emotional distress. Lacking such resources, they may respond to distress in a catastrophic manner through behaviors, such as fire setting (Gerlsma & Lugtmeier, 2018). Therefore, it is important to further investigate the relationship between bullying victimization and fire setting behavior, in the hope of helping to fill in the gaps between previous and present research, in order to prevent fire setting by juveniles and young adults.

In Chapter 1, I elaborate on the background of the present study, and outline the study's purpose, nature, theoretical framework, problem statement, research questions and hypotheses, methodology, assumptions, delimitations, limitations, and social significance.

Background

Traditional bullying, as well as cyber bullying, has grown to become a global concern. It is believed that the effects of bullying victimization on children and adolescents have longstanding repercussions that may last into adulthood (Arseneault,

2017). The damage caused by fire setting has resulted in a tremendous amount of financial loss, property damage, bodily injury, as well as mortality (Thomson et al., 2015). Evidence suggests that adolescents who deliberately set fires are part of a distinct high risk group, characterized by high rates of mental health problems, interpersonal difficulties, and substance use, as well as increased risk of suicidality (Tanner et al., 2016). Mental health problems, along with other personal, social, and interpersonal difficulties have also been established as important risk factors for adolescents engaging in fire setting (Tanner et al., 2016).

Previous studies have investigated the offender characteristics of fire setters, yet not many have investigated the predictive characteristics for fire setting behavior (Tanner et al., 2016). Hoerold and Tranah (2014) found that fire setters were characterized by callousness, high impulsivity, uncaring traits, and low cognitive empathy; additionally, the frequency of fire setting was accurately predicted by high impulsivity (Hoerold & Tranah, 2014). In another study, Watt et al. (2015) found that previous young offenders were 67.4% more likely to have previously set a fire, while non offending youths were only 37.5% likely to have previously set a fire; however, 20% of all participants indicated that they had set 10 or more fires previously, which suggested a high prevalence of fire setting behavior among youths. Watt et al. also found that the offender characteristics of fire setting behavior were significantly predicted by a history of delinquency, antisocial behavior, fire-related interests, and preoccupation with fire.

It is important to note that fire setting behavior should not be confused with pyromania, which is a mental disorder, or arson, which is a crime. Although these

behaviors may be closely related, they usually involve different motivations and outcomes (Watt et al., 2015). Nanayakkara et al. (2015) suggested that fire setting is not an expression of pyromania, contending that the psychopathological traits of fire setters are quite complex, and include a pathological degree of poor impulse control. Therefore, the purpose of this research was to investigate the possible predictive characteristics of fire setting behavior, such as bullying victimization, as well as the relationship between bullying and fire setting, in the hope of providing meaningful insights into preventing bullying and fire setting among juveniles and young adults.

Problem Statement

Juvenile fire setting causes a tremendous amount of property damage, financial loss, bodily injury, and death each year in the United States (Dalhuisen et al., 2017; Watt et al., 2015). Bullying has become a global epidemic that affects school age children and adolescents physically, mentally, emotionally, and socially (Bryant, 2014; Mayes et al., 2017).

There is a large body of previous research focused on bullying and suicide risk, yet little is known about the relationship between bullying and fire setting (Lambie et al., 2014). Moreover, there is a clear gap in the literature concerning how bullying victimization may be related to fire setting (Burnett & Omar, 2014; Green et al., 2014; Palermo, 2015; Turner et al., 2016; Valdebenito et al., 2017). Therefore, the problem that I sought to better understand through this research was the possible predictive characteristics of fire setting behavior, such as bullying victimization.

Purpose of the Study

The purpose of this study was to investigate the possible predictive characteristics of fire setting behavior, as well as the correlation between bullying and fire setting behavior, in order to determine the level of relationship between bullying victimization and fire setting behavior. By conducting this study, I sought to provide additional insights for educators, policy makers, and mental health practitioners related to developing prevention and intervention programs for bullying and fire setting.

The present study used a quantitative methodology to examine the relationship between bullying and fire setting among juveniles and young adults. Convenience sampling was conducted to select a minimum of 55 participants, based on the result of power analysis (see Appendix A). Power analysis indicated that a minimum sample size of 55 participants was needed to demonstrate statistical significance. This was the minimum number to achieve the required statistical power of 0.80 for a quantitative study, utilizing multiple linear regression analysis. This meant that the sample of the study needed to be comprised of at least 55 young adults who were 18 years of age or older.

The target population of this study was young adults with a history of being bullied and setting fires. These young adults had been enrolled in at risk youth, YMCA, and fire prevention programs in their teenage years, and had completed their program and become big brothers and sisters to newcomers to the program.

Data were collected from surveys, which the participants completed anonymously via Qualtrics Survey Software. Multiple linear regression analysis was conducted to determine the relationship between bullying victimization and fire setting behavior.

Research Questions and Hypotheses

RQ1 Is there a significant relationship between bullying victimization and fire setting behavior?

H₀₁ There is no significant relationship between bullying victimization and fire setting behavior.

H_{a1} There is a significant relationship between bullying victimization and fire setting behavior.

RQ2 Are there factors (i.e., personality characteristics, attachment styles, arousal seeking, and psychosocial stimuli) that predict fire setting behavior in juveniles and young adults?

H₀₂ Factors of personality characteristics, attachment styles, arousal seeking, and psychosocial stimuli do not significantly predict fire setting behavior in juveniles and young adults.

H_{a2} Factors of personality characteristics, attachment styles, arousal seeking, and psychosocial stimuli significantly predict fire setting behavior in juveniles and young adults.

RQ3 What precipitating events (i.e., trauma, abuse, maltreatment, and bullying) predict fire setting behavior?

H₀₃ Precipitating events do not significantly predict fire setting behavior in juveniles and young adults.

H_{a3} Precipitating events significantly predict fire setting behavior in juveniles and young adults.

Theoretical Framework of the Study

This study was viewed through the lenses of the following four theories: attachment theory, reintegrative shaming theory (RST), arousal-seeking behavioral theory, and functional analytic theory.

Attachment Theory

Attachment theory was developed through the research of John Bowlby and eventual collaboration with Mary Ainsworth (Bretherton, 1992). The theory posits that children are born with a set of built-in behavioral patterns that maintain and promote attachments within their interpersonal relationships and environments. The quality of these attachments, especially during the developmental stages, predicts a child's ability to establish and maintain healthy attachments with family members, community, and society (Bowlby, May, & Solomon, 1989). There are two fundamental aspects of attachment theory: (a) attachment as a motivational control system that aims to provide a feeling of security, and (b) attachment to individuals and authority figures as affording understanding of human behavior (Bretherton, 1985). Attachment theory, therefore, seems to provide explanations of how lack of adequate security, nurturing, and support may contribute to maladaptive behavior, such as fire setting.

Reintegrative Shaming Theory

According to Braithwaite (1989), RST involves the use of shaming, particularly when it is enforced by societal pressure. Applications of RST involve the use of shaming to elicit remorse from offenders in order to make them realize the negative effects of their behaviors on society as a whole (Fitch et al., 2018). Shaming can also be used as a tool to elicit guilt and shame from offenders into recognizing how their criminal behaviors have caused harm and danger to the public. Fitch et al. also claimed that the use of shaming might be used as a different approach to reduce criminal behavior. Therefore, the use of RST may help fire setters to better understand the negative consequences of fire setting behavior as well as to increase their motivations to change in the future.

Arousal-Seeking Behavioral Theory

Lambie, Randell, and McDowell (2014) suggested that the human brain functions in response to environmental stimuli: too little stimuli may cause boredom, whereas too much may cause anxiety. This conceptualization explains why arousal and thrill seekers are prone to engage in high risk and impulsive behaviors (Lambie et al., 2014). Hoerold and Tranah (2014) reported that juvenile fire setters were described as highly impulsive and reckless. Willis (2015) also claimed that there is a association between arousal seeking and fire setting. Therefore, arousal-seeking behavioral theory may provide insights into the potential influence of arousal-and thrill-seeking tendencies on juvenile fire setters.

Functional Analytic Theory

The functional analytic theory on fire setting posited by Williams and Kennedy (2012) indicates that psychosocial stimuli might play a role in fire setting, including previous inclination toward fire, prior experiences with fire, and propensity to set fire. These, along with a prior history of trauma, abuse, maltreatment, and bullying victimization might be predictive characteristics leading to future fire setting (Tyler et al., 2015). Functional analytic theory may provide insights into how psychosocial stimuli may increase the likelihood of fire setting behavior in adolescents.

Attachment theory, RST, arousal-seeking behavioral theory, and functional analytic theory were used as the theoretical framework for the present study, as well as to provide meaningful insights into the relationship between bullying and fire setting.

Nature of the Study

This study used a correlational nonexperimental research design. Quantitative methodology was used for statistical analysis and measurement. Quantitative methodology requires the use of quantitative measurement and statistical analysis to explain the phenomena investigated in a study, whereas qualitative methodology focuses on investigating how certain life events have impacted the experiences and perceptions of participants (Babbie, 2012; Yin, 2013). Quantitative methodology is commonly used when the goal of a study is to investigate the relationships between variables measured numerically (Mustafa, 2011). Quantitative methodology was deemed to be the appropriate research method for the present study due to the nature of the study's objective and process.

For this quantitative study, the independent variables (IVs) were bullying victimization, attachment styles, psychosocial stimuli, and personality characteristics. The dependent variable (DV) was fire setting behavior. A correlational nonexperimental research design was used for this quantitative study. It is important to note that causality cannot be determined with a correlational research design (Klugh, 2013). A correlational research design is used when the objective of the study is to investigate the relationship among variables or to determine the relationship among various IVs on a particular DV (Leedy & Omrod, 2013). Therefore, a correlational nonexperimental method was deemed to be the appropriate research design for the present study, given that this study involved neither any manipulations of the variables nor the use of any controlled environments and experiments (Sousa et al., 2007).

Multiple linear regression was used to address the research questions for this quantitative study. A convenience sampling procedure was conducted to recruit participants and collect data for this study. Convenience sampling is a nonprobability sampling method through which participants are chosen due to their accessibility, availability, and location (Sedgwick, 2015).

The participants were recruited from at risk youth, YMCA, and juvenile fire prevention programs in California. The target population of this study was young adults with a history of being bullied and setting fires. These young adults were enrolled in at risk youth, YMCA, and fire prevention programs in their teenage years, and had completed their program and become big brothers and sisters to newcomers to the program.

The data were collected through surveys that the participants completed anonymously via Qualtrics Survey Software. Multiple linear regression analysis was conducted to determine the relationship between bullying victimization and fire setting behavior.

Definitions

Arson: Arson is a criminal act of deliberately and maliciously setting fire to destroy properties (Grubb & Nobles, 2016). Arson occurs due to a variety of motivations on the part of the offenders, such as using fire as a means to destroy objects or properties in conjunction with another crime, as well as using fire for purpose of distraction, escape, and/or destruction of evidence to conceal a crime (Fritzon, 2018).

Bullying: Bullying refers to as intentionally inflicting physical and emotional harm on an individual or group, and ruin their reputations over a period of time, which can be done both in private and public (Smith, 2018). Bullying is characterized by specific criteria: (a) negative actions, (b) repetition over time, and (c) actions carried out in personal and professional relationships due to power imbalance (Schrooten et al., 2017).

Fire setting: Fire setting is an impulsive act that is not committed for personal gain or in conjunction with another crime, whereas arson is a criminal act. It should be noted, however, that the definitions of fire setting and arson tend to overlap in the literature as well as in practice (Thomson et al., 2015). Apart from arson, fire setting is one of the delinquent behaviors committed mostly by children and adolescents, rather than adults (Kolko & Foster, 2017).

Victimization: Victimization can be broadly defined as an aggressive behavior against an individual, a peer group, or a target population of a particular cultural and ethnic background (Smith, 2018). Although the term bullying victimization is repeatedly used in the present study; however, the definitions of bullying and victimization are entirely different.

Juvenile: The term juvenile applies to individuals between the ages of 12 and 18 years (Padmaja, 2017).

Young adults: For this study, young adults were defined as individuals between the ages of 18 and 34 years (Wachter, Thompson, Bender, & Ferguson, 2015). However, the literature is inconsistent in stipulating the age range for young adults, with the term potentially applying to individuals as young as 15, and as old as 39 years (Csath & Vinogradov, 2018; Peat et al., 2018).

Assumptions

The first assumption of this study was that at least 55 young adults had participated the present study, based on the result of power analysis (see Appendix A). The second assumption was that the participants were as honest as possible when answering the survey questionnaires that I used to investigate the relationship and possible predicative characteristics of bullying and fire setting. The third assumption was that the participants felt comfortable sharing their past experiences of being bullied and setting fire as a result of the confidentiality procedures that were set in place.

Scope and Delimitations

The delimitations of a study are the boundaries of the research (Hancock &

Algozzine, 2006). The findings of this study were delimited to young adults, as this was the only age group reporting on their actions and experiences. The findings were also delimited to young adults who were enrolled in at risk youth, YMCA, and fire prevention programs from which participants were recruited. Furthermore, the findings were delimited to young adults with a history of being bullied and setting fire; individuals who had no history of being bullied and setting fire were not included in this study. Finally, the study was delimited to California, due to the fact that California has the greatest prevalence of fire incidents, damage, and disasters (Federal Bureau of Investigation, 2020). Therefore, the findings may not be generalizable beyond this geographic area.

Limitations

Limitations are factors that may influence the findings of research and are beyond the control of researchers (Hancock & Algozzine, 2006). The first limitation of this study was the lack of elaboration regarding motivations from the participants. Because the participants completed an anonymous survey with pre set answers, the results may be limited regarding the underlying motives leading up to fire setting behavior. The second limitation was the generalizability of the findings, as the participants were only recruited from California. The third limitation was that the present study only explored the relationship and possible predicative characteristics of bullying and fire setting, while other factors were not taken into account.

Social Significance

The present study was conducted to contribute to the scientific body of research focusing on bullying victimization and fire setting behavior. Previous research focused on

offending characteristics, behavioral problems, psychiatric disorders, and dual diagnoses of fire setters, yet there was a limited amount of research focused on the predictive characteristic of fire setting behavior (Fritzon, 2018; Reilly & Johnson, 2016). Therefore, the findings of the present study were intended to expand knowledge regarding the predictive characteristics and psychosocial factors leading up to fire setting, as well as to provide quantifiable data regarding the relationship between bullying and fire setting.

Furthermore, the present study was intended to inform the identification of juveniles and young adults who are at risk of setting fires, as well as to suggest preventative interventions that may effectively educate and rehabilitate juvenile and young adult fire setters. These interventions could be implemented in schools and local communities to prevent fire setting (Dunbar, 2018; Reilly & Johnson, 2016).

Understanding the predictive characteristics and psychosocial factors leading up to fire setting may also help to inform theory development as well as intervention programs for bullying and fire setting.

The findings of the present study may lead to positive social change by providing meaningful insights for policy makers, law enforcement, school authorities, and mental health professionals regarding the potential risks and harmful effects of bullying and fire setting. It is recommended that further research be conducted to prevent bullying and fire setting in order to maintain public safety (Burnett & Omar, 2014; Shin et al., 2016).

Summary

The purpose of this quantitative, correlational, and nonexperimental research study was to investigate the relationship between bullying victimization and fire setting

behavior in juveniles and young adults. The problem that I sought to better understand through this research was the increased amount of fire-related disasters and bullying victimization caused by juveniles and young adults due to the high prevalence of bullying and fire setting among juveniles and young adults (Ekbrand & Uhnnoo, 2015).

This study was viewed through the lenses of the following four theories: attachment theory, RST, arousal-seeking behavioral theory, and functional analytic theory. Three research questions guided the study:

- RQ1 Is there a significant relationship between bullying victimization and fire setting behavior?
- RQ2 Are there factors (i.e., personality characteristics, attachment styles, arousal seeking, and psychosocial stimuli) that predict fire setting behavior in juveniles and young adults?
- RQ3 What precipitating events (i.e., trauma, abuse, maltreatment, and bullying) predict fire setting behavior?

In Chapter 1, I discussed the nature and purpose of the present study, through which I sought to expand knowledge regarding the predictive characteristics and psychosocial factors leading up to fire setting, as well as to provide quantifiable data regarding the relationship between bullying and fire setting. I also addressed social significance of the present study. Additionally, I suggested the development of preventative interventions that may effectively educate and rehabilitate juvenile and young adult fire setters. In Chapter 2, I provide a thorough literature review regarding the research topic.

Chapter 2: Literature Review

The problem that this research addressed was the increased amount of fire setting and bullying victimization by juveniles and young adults, due to the high prevalence of bullying and fire setting among juveniles and young adults (Ekbrand & Uhnnoo, 2015). The purpose of this quantitative, correlational, and nonexperimental research study was to investigate the relationship between bullying victimization and fire setting behavior in juveniles and young adults.

There is a large body of research that has focused on bullying and suicide risk, yet little is known about the relationship between bullying and fire setting (Lambie et al., 2014). Moreover, there is a clear gap in the available research literature about how bullying victimization might be related to fire setting (Burnett & Omar, 2014; Green et al., 2014; Palermo, 2015; Turner et al., 2017; Wolke & Lereya, 2015). To address this gap in the literature, I used a quantitative methodology to examine the relationship between bullying victimization and fire setting among juveniles and young adults.

In the initial section of Chapter 2, the literature search strategy, keywords and terms used in the literature search, and relevant literatures in this research field are discussed. The theoretical framework used to conceptualize the present study is also reviewed. Chapter 2 concludes with a summary section.

Literature Search Strategy

This section addressed what has been found in past research literature regarding the relationship between bullying victimization and fire setting. The following online database and search engines were used for the literature search: PsycINFO, Criminal

Justice Research Database, Google Scholar, Ingenta Connect, JSTOR: Journal Storage, ProQuest, Springer Link, Taylor & Francis Online, Wiley Online Library, and Sage Journals. The keywords *correlation, cause-and-effect, fire, fire setting, arson, bully, bullying, victimization, abuse, effects, trauma, predictors, revenge, and motive* were used to locate relevant literature. Previous research literatures that were considered to be relevant to the present study were included in the literature review. Among the sources identified as relevant to this study, 87% were published between the years 2014 and 2018. The remaining 13% of the sources that I used were seminal sources published no later than 1985.

Based on the literatures that are considered to be relevant to the present study, I located a number of sources in the research literature that addressed the association between bullying victimization and fire setting. I also found research data regarding psychological issues observed in juvenile fire setters, as well as the negative psychological impact of bullying on children and adolescents (Lambie et al., 2014).

In the succeeding sections, I discussed previous studies that are related to the present study, and organized in broad categories based on their subject matter. These categories are as follows: (a) mental health instability as a result of bullying victimization (Corcoran, Lader, & Smith, 2016), (b) bullying victimization increasing victims' propensity to engage in high-risk activities (Johnson & Netherton, 2016), (c) psychological and mental health issues that are evident among fire setters (Anderson, 2016; Fritzon, 2018), and (d) other known behaviors of fire setters (Arseneault, 2017;

Chan & Wong, 2015). Chapter 2 concludes with a summary section, in which I discuss how a research gap was established based on the literature review.

Theoretical Foundation

The present study was viewed through the lenses of the following four theories: Attachment Theory, Re-integrative Shaming Theory (RST), Arousal-seeking Behavioral Theory, and Functional Analytic Theory. These theories served as the basis to identify the relationship between bullying victimization and fire setting behavior, as well as to provide meaningful insights into understanding the background of bullying and fire setting behaviors. The background of each theory was discussed in the following sections.

Attachment Theory

Attachment theory posits that children are born with a set of built-in behavioral patterns that maintain and promote attachments within their interpersonal relationships and environments. The quality of these attachments, especially during developmental stages, predicts children's ability to establish and maintain healthy attachments with their family, community, and society (Bowlby, May, & Solomon, 1989). There are two fundamental ideas within attachment theory: (a) attachment as a motivational control system that aims to provide a feeling of security, and (b) attachment to other individuals and authority figures as providing an understanding of human behavior (Bretherton, 1985). In relation to the present study, early insecure attachment and subsequent behavioral problems in children were examined and found to have significant

associations (Bretherton, 1985). Recent studies that have addressed attachment theory in relation to a child's psychological development are discussed in the next section.

In a study by Kinniburgh, Blaustein, Spinazzola, and Van der Kolk (2017), attachment was considered as involving interactions between children and their caregivers (e.g. parents, relatives, legal guardians, and caretakers) that have enduring influence on children's identity development and their capacity to control their emotions. The authors proposed that the caregiving system within children's upbringing and environment might serve as the source of their concepts of stability and protection (i.e., positive attachments). Such caregiving system, on the other hand, might also serve as the source of children's concepts of stress, anxiety, and insecurity (i.e., negative attachments).

Kinniburgh et al. (2017) reported that long term exposure to negative attachments was significantly associated with negative behavioral outcomes. The long-term negative effects of a child's trauma, borne from negative attachments may be viewed as a precedent to a child's inappropriate behavior later on in life. This idea also supported by Horley and Bowlby (2011), suggested that children who lack parental involvement, emotional attachment, and family support may have an increase the likelihood of becoming victims of bullying, which supported the idea and hypotheses of the present study.

You and Kim (2016) also used attachment theory as a basis for understanding aggression in adolescents and young adults. They suggested that the quality of their attachments with loved ones and close friends can either positively or negatively

influence individual's social behaviors. These findings reaffirmed the study of Kinniburgh et al. (2017) indicating that loved ones and peer group attachments can both directly and indirectly influenced the presence of aggressive behavior (You & Kim, 2016). These researchers, therefore, emphasized the impact of the quality of individual's attachments on their social behaviors (Kinniburgh et al., 2017; You & Kim, 2016).

Briere et al. (2017) also based a study of disengaged parenting on attachment theory. The authors conjectured that disengaged parenting promotes negative attachments for a child, and might lead to adverse psychological impact, which is equally important to consider as other forms of child abuse. Briere et al. reviewed a large sample of child maltreatment cases using disengaged parenting and child abuse as variables to measure the factors of attachments. As a result, the authors found that although child abuse was a significant predictor of adverse psychological impact on a child, experiences of disengaged parenting might predict far more damaging effects.

The advancement in the validation of attachment theory proposed that negative attachment styles might influence as well as predict a child's misbehavior (Kinniburgh et al., 2017; You & Kim, 2016), which support the hypotheses of the present study. Based on the studies cited above, the principles of attachment theory provide some meaningful insights into the factors that may have enduring influence on the psychological development of a child exposed to negative attachments.

Re-integrative Shaming Theory

The use of shaming allows offenders to understand and recognize how other members of society can be resentful toward their negative and criminal behaviors

(Braithwaite, 1989). RST has been applied to research on predatory and non predatory offenses (Fitch et al., 2018). Fitch et al. explored the effectiveness of shaming regarding non predatory crimes, and raised concerns about whether the acknowledgment of shaming by an individual's peer group or society may lead to the reduction of non predatory offenses. The researchers conducted a study of 1,726 adolescent participants, and revealed that RST was an effective predictor of non predatory offending. Moreover, the acknowledgement of shaming by an individual's peer group could significantly predict the absence of non predatory offending. In contrast, a similar acknowledgement of parental shaming did not predict the absence of non predatory offending. Fitch et al. concluded that these findings substantiated the notion that shaming might be beneficial toward the reduction of non predatory offenses and other nonviolent criminal behavior.

Ttofi and Farrington (2008) further distinguished reintegrative shaming from disintegrative shaming. They described reintegrative shaming as a type of shaming that involves stigmatizing and rejecting offenses, but approving the offenders. Disintegrative shaming, on the other hand, is a type of shaming that involves stigmatizing and rejecting both the offenders and their offenses. Ttofi and Farrington further elaborated RST by investigating the connection of shaming to bullying. Their study involved an analysis of the behavior of children between the ages of 11 and 12 years, and their responses to the type of shaming that their parents used in response to their misbehavior. The results of their study were consistent with the principles of RST, in which the type of shaming used by a parent, more specifically by a mother, has a direct effect on the child's management of that shame. However, shaming from the father did not have a direct effect on the

child's management of that shame. Ttofi and Farrington further investigated RST by postulating that a child's relationship with the mother serves as the foundation of family functioning, and therefore, has a direct effect on shaming.

Similarly, a study by Mongold and Edwards (2014) posited that a social process takes place when offenders intend to be reintegrated into their family and community. Offenders seeking reintegration often face the challenge of being judged and shamed for the crime that they have committed. This challenge may promote repentance in the offender's conscience, as well as provide social control to deter any future misbehavior (Mongold & Edwards, 2014). RST provides meaningful insights into the impact of shaming on children's misbehavior.

Arousal-Seeking Behavioral Theory

A study by Lambie et al. (2014) explored arousal-seeking offending behavior and its effects on fire setting in adolescents. Lambie et al. examined a number of existing empirical qualitative and quantitative studies to determine which factors contribute to arousal-seeking offending behavior, such as copycat offenses. They found that personal, environmental, and media-related factors are the primary factors that influence copycat offenses in adolescents, followed by desensitization, observational learning, priming, and alteration of scripts as secondary factors. The researchers postulated that arousal-seeking behavior has a potential influence on fire setting tendencies in adolescents. Given the combination of personal, environmental, and media factors, along with the propensity toward fire setting, it is imperative to better understand what contributes to arousal seeking and its effects on fire setting in adolescents. Furthermore, Lambie et al.

highlighted the role of media in influencing copycat offenses and suggested that extra caution should be taken when reporting any details of fire setting offenses. This study also suggested that individuals who have arousal-seeking tendencies might be prone to a higher propensity to engage in high-risk activities, such as fire setting (Lambie et al., 2014). The arousal-seeking theory supports the variables examined in the present study, in terms of understanding whether arousal-seeking tendencies and behavior might be present within juvenile fire setters.

Functional Analytic Theory

A prior study conducted by Jackson et al. (1987) used functional analytic theory to study arson recidivism. Jackson et al. studied experiences of arsonists in a maximum-security hospital. Their findings were similar to the aforementioned findings of Williams and Kennedy later in 2012. Both teams of researchers concluded that psychosocial stimuli might influence an individual's inclination toward fire setting or committing arson. Jackson et al. also found that for some arsonists, committing crime is a way for them to change life circumstances that they have perceived to be boring, unimportant, and ineffective. Functional analytic theory provides insights into how psychosocial stimuli might play a role in fire setting, which may lead to a better understanding of fire setters' characteristics.

Literature Review

The research studies discussed in this section provide additional information about bullying victimization and fire setting behavior, as well as how they relate to each other. In presenting this information, I focused on what has been done in previous

research as well as what is currently known in the literature. I also identify gaps in the available literature that I attempted to explore in the present study, in order to better understand the behavior of bullying and fire setting (Kolko & Foster, 2017). There has been a dearth of evidence regarding the relationship between bullying and fire setting. Hence, the literature review in this chapter focuses on the relationship between bullying and fire setting, the effects of bullying victimization on mental health and cognitive-behavioral problems, and the correlations between bullying victimization and fire setting behavior.

Arson

The crime of arson is widespread, and it occurs for a variety of reasons with various motivations (Fritzon, 2018). An arsonist may deliberately set fire as a way to destroy a property, conceal a crime, or inflict harm (Grubb & Nobles, 2016). An arsonist may also use fire to destroy evidence in conjunction with another crime, or use fire as a distraction to escape a crime scene (Fritzon, 2018; Grubb & Nobles, 2016).

Over the course of an investigation, fire investigators usually rely on the criminal and psychological profiles of the perpetrators to better understand the underlying motives for the crime. Virtually all property crimes, including arson, have a psychological motivation. For some offenders, the motivation behind fire setting is to destroy property without causing harm to others; however, other offenders may have a malicious intention to inflict harm (Fritzon, 2018). Compared to most crimes, the motivation behind arson is rather complex, and this crime may not occur for easily discernible reasons (Fritzon, 2018; Grubb & Nobles, 2016).

Research performed in Los Angeles by Grubb and Nobles (2016) uncovered an interesting fact about arson: Multiple fires tended to occur closer together (i.e., in both physical and temporal proximity). In other words, arsonists tended to set fires in nearby locations and were likely to strike again in the near future. These types of arsonists usually have a fascination with fire, and are more likely to commit copycat crimes (Grubb & Nobles, 2016). These findings suggest that arson is often committed for a complex of reasons, rather than for personal pleasure or to satisfy a pathological need (Grubb & Nobles, 2016).

Furthermore, arson is often connected to hate crimes, in which offenders burn buildings or other structures associated with a particular group (e.g., ethnic, religious, political, etc.), which might be a convenient way of expressing hatred toward the particular group (Corcoran et al., 2016). In many cases, individuals have been targeted in this manner by an arsonist seeking to destroy anything that has a significant or sentimental value for them (Corcoran et al., 2016).

In addition to targeting individuals, arsonists may destroy something that has symbolic meaning for them, such as something that reminds them of someone whom they have resentment for or hold a grudge against. In a study set in Chicago, McCutcheon et al. (2017) found that arson tended to be committed in low socioeconomic status (SES) neighborhoods. The most common targets were vehicles and residential houses, and in many cases, arsonists knew their victims personally. The authors observed that the crime of arson had been examined mostly from a psychological standpoint and not from a social perspective. They observed that excitement or vandalism were the primary motivators for

youth and adolescent arsonists, whereas adult arsonists tended to focus more on revenge or destruction (McCutcheon et al., 2017).

These observations had led to a general perception that arson is often an impulsive, even irrational act, and often committed by individuals with poor impulse control (Anderson, 2016). Anderson suggested that oftentimes, the damage caused by an act of arson is often far more extensive that goes beyond the intention and anticipation of the perpetrator, such as the case of widespread wildfires. This means that discerning the motivation of the arsonist is far more complex, because the arsonists often set fires for more than just committing a crime (Fritzon, 2018).

Pathology

Aside from a coldly calculated act of arson for personal gain, such as burning down a building for financial reward or insurance compensation, some arsonists set fires simply due to passion (Grubb & Nobles, 2016). However, there are no definitive answers to explain the motivation behind each case of arson (Anderson, 2016; Fritzon, 2018).

Palermo (2015) suggested that a distinction should be drawn between arson, fire setting, and pyromania. Although both arson and pyromania are related to fire setting; however, the motive for fire setting is not necessarily to destroy (Palermo, 2015). Likewise, a pyromaniac simply enjoys the sight of the burning flame and often do not care about what is being destroyed (Johnson & Netherton, 2016). Therefore, it is important to note that arson is a criminal offense, whereas fire setting and pyromania are not (Johnson & Netherton, 2016; Palermo, 2015).

However, other researchers characterized the above three acts differently. Johnson and Netherton (2016) characterized pyromania as an act of poor impulse control. In other words, individuals without pyromaniac tendency may enjoy fire at the right place and right time, such as setting up a campfire, bonfire, or in a fireplace at home, whereas pyromaniacs simply enjoy fire at anytime and anywhere. Such notion also raises the concern of whether fire setters or arsonists are pyromaniacs (Johnson & Netherton, 2016).

The question of whether fire setters or arsonists are pyromaniacs are discussed by Palermo (2015) suggested that both type of offenders often repeated their acts without having the mental disorder of pyromania. Ciardha, Tyler, and Gannon (2017) noted that there is lack of evidence-based treatment and intervention for pyromania. The authors also noted that while pyromania has been classified as a mental disorder, not enough research and practice were done regarding evidence-based treatment and intervention for pyromania (Ciardha et al., 2017).

The psychopathology of arson has found to have common characteristics of all types of fire setting behavior, such as poor impulse control; however, there could be significant differences between the genders in this regard. Alleyne et al. (2016) compared two groups of convicted male and female arsonists who were serving time in prison, and found that for female arsonists, major depression and an internal locus of control were common characteristics. Male arsonists, on the other hand, did not show any symptoms of clinical depression, but an external locus of control were common characteristic. The

findings suggested that there might be a gender-distinctive pathological pattern for both male and female arsonists.

A further consideration leads to whether an act of fire setting or arson committed by a pyromaniac should be considered as a criminal offense, or simply a manifestation of a mental disorder, in which an individual with a mental disorder often cannot control their thoughts and behavior (Cid & Folino, 2017). These researchers agreed with Johnson and Netherton and Palermo, in which one major difference between fire setting and arson is that the former act often not to be repeated, whereas the later act is often repetitive. They also agreed with Alleyne et al. (2016) that the specific elements of psychopathology in arsonists are differed by gender; however, the authors did not identify the specific elements.

While law enforcement authorities might interpret arson and fire setting as identical or similar offenses due to the distinction between an act and a criminal offense; however, both arson and fire setting are involved in the same act of setting a fire, and it is often resulted in causing harm and damage to the victims, even death.

Synthesis

Fire setting, arson, and pyromania are in many ways share the same behavior of setting a fire, as well as associated with a pathological affinity toward fire. The literature suggested that the general elements of psychopathology are present in all three types of misconducts. In the same way, the general elements of psychopathology are present in other types of misconducts, depending upon the degree of the misconducts. For instance, a law-abiding person may have materialistic desires and behave unethically but not

unlawfully in order to acquire goods, whereas kleptomaniacs are driven by an impulsive and uncontrollable urge to steal. Henceforth, fire setters, arsonists, and pyromaniacs are different from one another, and therefore, should be treated, understood, and rehabilitate differently.

Fire Setting Behavior

It is important to note that the definitions of fire setting and arson tend to overlap in the literature as well as in practice (Tanner, Hasking, & Martin, 2015). For the purpose of this discussion, fire setting is considered as a behavior, rather than a crime as arson, in which fire setting is referred to as an impulsive act and not committed for personal gain or in conjunction with another crime (Tanner, Hasking, & Martin, 2015).

Previous studies on fire setting behavior have often focused on recidivism, in terms of how likely is the offender to repeat fire setting behavior. Thomson et al. (2015) conducted a study of the psychopathology of fire setters. They concluded that while certain common psychopathological traits were present in fire setters, the prevalence of such traits had no relationship to later recidivism. In a follow-up study conducted three years later, they found that recidivism was not prevalent in comparison to the general criminal offender population, whereas arson offenders, by contrast, often tend to reoffend (Thomson et al., 2015; Thomson et al., 2018).

One unique feature of fire setting is that this particular offense usually committed more by children and adolescents, and less than adults (Kolko & Foster, 2017). These fire researchers commented that the reasons behind fire setting behavior were poorly understood due to the lack of research and public knowledge. As fire setting is often

viewed and understood as an act of poor impulse control, it makes sense that children and adolescents usually have poorer impulse control in comparison to adults (Kolko & Foster, 2017; Thomson et al., 2018).

Thomson et al. (2017) suggested that there is a relationship between fire setting and pyromania, whereas Nanayakkara et al. (2015) suggested that fire setting is quite different from pyromania, and its psychopathology was in fact quite complex, which was not in agreement with Thomson et al. (2017). Nanayakkara et al. identified several elements that were in common with those found by other researchers, including poor impulse control to a pathological degree (Kolko & Foster, 2017; Nanayakkara et al., 2015).

Ducat et al. (2013) remarked that the popular perception of fire setters was that they were dangerous recidivists. However, they found that in terms of reoffending, specifically for fire setters, the rate of first-time offenders for recidivism was very low (5.3%) compared to the general population of offenders (55.4%). This further supports the profiling of the fire setters, in which the fire setting is primarily an impulsive act, rather a premeditated act.

There is an interesting perspective, claiming that fire setting by children and adolescents are related to non suicidal self-harm behavior (Tanner et al., 2015), in which adolescents who engage in fire setting behavior often also engage in self-harm, such as skin cutting. These researchers found that both self-injury and fire setting were related to psychological problems, such as depression, anxiety, negative life events, poor emotion and mood regulation, and negative coping. These findings suggest that the commonality

of both pathologies might shed light into the diagnosis and intervention in adolescents who have a tendency toward fire setting and skin cutting.

Another pathology that often exhibited by children and juvenile fire setters is animal cruelty (Baglivio et al., 2017). Tanner et al. (2015) also emphasized that animal cruelty could be a sign of deep-seated emotional and behavioral problems in children and adolescent fire setters. Baglivio et al. (2017) found that fire setting and animal cruelty occurred together 0.17% of the time in adolescents. Although this is a small percentage, but nevertheless, the coincidence between both behaviors should be taken into account. The authors also found that sexual abuse in male children and adolescents was associated with fire setting and animal cruelty. These findings suggested that there is a connection between abuse and fire setting, which supports one of the research hypotheses of the present study.

Synthesis

Fire setting is a dangerous behavior that appears to be an expression of youth and adolescent's emotional and behavioral difficulties, such as anger, aggressiveness, poor impulse control, and hostility. For the present study, it is worthwhile to note that the similar emotional difficulties can also be present when a child or adolescent was abused and/or bullied. The findings of these studies suggested that the relationships between these behaviors are worth exploring. While it is perhaps too soon to posit a correlation between bullying victimization and fire setting, further research is needed to explore the correlation between these variables.

Mental Instability

Mental health problem can also be a key contributor to bullying and fire setting. Traditional bullying, as well as cyber-bullying, has become a global concern (Arseneault, 2017; Chan & Wong, 2015). The effects of bullying victimization are known to have enduring consequences, even after the bullying has stopped (Arseneault, 2017). The studies examined in this section were focused on exploring how bullying victimization affects one's mental health stability. As mentioned previously, this may potentially establish a link to fire setting tendencies by exploring how mental health issues may serve as one of the predictors of fire setting behavior.

Scratching the surface of the psychological effects of bullying victimization, Steiner and Rasberry (2015) reported that one common effect of adolescents being bullied at school is the increase of the likelihood of missing school. However, there are more substantial correlations between bullying victimization and mental health problems discussed in the literature. Moore et al. (2017) noted that there is a variety of mental health problems resulted in bullying victimization. In lights of supporting the serious need for schools to implement stringent anti-bullying interventions, Moore et al. conducted a study to establish mental health implications related to bullying victimization. The authors reviewed 165 empirical studies and scholarly journals, they found that the problems occurred from bullying victimization were the combination of the following disorders: depression, anxiety, suicidal tendencies, and substance abuse. Nevertheless, three out of five empirical studies suggested the effects of bullying victimization were related to one's psychological well-being, according to these authors.

While the target population in this study may not be solely focused on juveniles or young adults, it is believed that bullying victimization may lead to enduring psychological effects. These results may provide insights into the present study, particularly on the impact of bullying victimization on mental health stability.

Another study claimed that mental instability defined by psychiatric disorders were evident with those who had previously experienced bullying (Sourander et al., 2016). They investigated how being bullied can lead to psychiatric disorders between the ages of 8 and 29 years. 5,034 Finnish children were observed, and the details of their bullying experiences were recorded from themselves, as well as their parents and teachers. Information on psychiatric disorders were obtained from a nationwide hospital register, including inpatient and outpatient facilities (Sourander et al., 2016). The researchers found that patients who received treatments for psychiatric disorders had also been bullied frequently. More specifically, a significant percentage of those who had frequently exposed to bullying were also treated for depression. The findings also suggested that the bullied victims were prone to have a higher risk for psychiatric disorders, and often required to be treated until adulthood, specifically if the child was exposed to bullying starting from as early as eight years of age, and continues by the age of 29, which is the socially-considered age for juveniles and young adults (Cohen et al., 2015). The findings of Sourander et al. supported the hypotheses of the present study, in which a significant relationship between bullying victimization psychiatric disorders might be evident.

Catone et al. (2017) also suggested that certain mental conditions, such as paranoia and other psychotic symptoms were present in those who have experienced physical and verbal bullying. Catone et al. studied the psychotic-like experiences (PLEs) in young adults, with a particular relationship to bullying victimization. Furthermore, they sought to understand the effects of sex and age of bullying victimization and its effects on PLE. Three hundred twenty-four participants were assessed for PLEs and completed required evaluations. Out of the 324 adolescent participants, 50 (15.4%) exhibited PLEs, mostly represented by paranoia and verbal bullying. The results further indicated that there is a significant relationship between paranoia with grandiosity and physical bullying, while verbal bullying showed a relationship with negative psychotic symptoms. Late adolescents were also the ones mostly caught in social stigmatization and negative psychotic symptoms. Catone et al. also proposed an additional variable, that is, the sex or gender of the participants. Their conclusions, however, did not suggest that the results were differed significantly if the participants were male or female. The results derived by Catone et al. provided a valuable and appropriate information regarding the effects of bullying on young adults, irrespective of sex, which was the present study attempted to investigate.

In a similar study, Cunningham et al. (2016) sought to further explore the relationship between trauma and psychosis by analyzing the existing literatures to determine the correlation between bullying and psychosis. Cunningham et al. utilized the eligibility and quality assessment criteria to examine ten studies that met these criteria, using meta-analysis and narrative synthesis to review data. As a result, the majority of the

reviewed data validated the presence of a direct correlation between psychosis and bullying. The researchers further concluded that enough information was available to ascertain that although psychosis was not an initial aftereffect of bullying; however, bullying was a predictor of late onset of psychosis. The results did not, however, specifically ascertain the age that psychosis was most likely to manifest in victims of bullying. Nevertheless, this study indicated the negative effects of bullying on mental health problems, which supports the hypotheses of this present study.

A similar claim was stated by Silberg et al. (2016). They theorized that bullying victimization experienced during childhood had serious and long-lasting impact on mental health problems, such as anxiety, depression, and suicidality. Their study was aimed to determine the associations between bullying victimization and the aforementioned psychiatric disorders. Silberg et al. analyzed data from 145 bully-discordant monozygotic (MZ) juvenile twin pairs from the Virginia Twin Study of Adolescent Behavioral Development (VTSABD). They suggested that the bullied MZ twin may have more mental health issues in comparison to the non bullied twin. The results of their study revealed that psychiatric disorders were, in fact, evident in bullied adolescents. Moreover, further effects of bullying victimization were uncovered, including the presence of social anxiety, unipolar depression, and suicidality. Silberg et al. further concluded that bullied adolescents are more likely to suffer from unresolved trauma, which may leads to serious impact on their mental health. These findings support the potential linkages between the effects of bullying victimization and precipitated life-events on dangerous behavior, such as fire setting, which supports the hypotheses that

this present study intends to identify. Although Silberg et al. focused their investigation solely on monozygotic twin pairs; however, the results may potentially explain how bullying affects adolescents in general.

Mental health problems were also cited by Schwartz et al. (2015), as they investigated the effects of peer victimization during adolescence. Schwartz et al. conducted a longitudinal study as part of their ongoing multisite investigation. They examined 388 adolescents of 198 males and 190 females, with an average age of 8.5 years old participated in their study. The data were gathered from questionnaires answered by participants' mothers, and a followup clinical interview was conducted with each participant. As a result, Schwartz et al. found that peer victimization was significantly associated with internalizing problems among adolescents. Additionally, the results indicated that peer victimization and peer bullying were closely related to mental health problems among adolescents. Schwartz et al. also found that unipolar depression was present for participants in their later adolescent years. These findings provide a better understanding of the negative effects of peer victimization, which often related to peer bullying. It is likely that the results claimed by Schwartz et al. may be in congruence with the hypotheses of the present study.

To further explore the effects of peer victimization on adolescents' overall well-being, Bifulco et al. (2014) conducted a similar research to examine how bullying victimization may lead to adolescents' difficult home life, peer relationship, and academic performance. Bifulco et al. utilized standardized retrospective in-depth interviews as a method to gather data. This was applied to 160 participants from the ages

of 16 to 30 in high-risk neighborhoods in the UK. More specifically, the effects of bullying on (with or without) aggression were studied. The researchers conducted a clinical interview to assess mental disorders that were apparent in the teenage years. The results indicated that both bullying victims and aggressive victims had experienced parental mistreatment. Also, bullying victimization was linked to the experience of internalizing disorders, such as major depression and anxiety. These results support the hypotheses of this present study, in terms of bullying victimization may be linked to aggressive behaviors, such as fire setting behavior.

To further establish the relationship between bullying victimization and psychological well-being, Fullchange and Furlong (2016) analyzed the data from the California Healthy Kids Survey. The survey was completed by around 14,000 high school students, aimed to understand the children's socio-emotional state in relation to their experiences of victimization defined by bullying and harassment. The factors of belief-in-self, emotional competence, belief-in-others, and engaged living were further examined as they related to the experiences of victimization. The results indicated that bullying and harassment increased the likelihood of lesser belief-in-others and higher suicidality. Moreover, those who have experienced frequent victimization of bullying had negative effects on belief-in-self and engaged living, and subsequently resulted in self-doubt and depression. Their findings, along with Bifulco et al. provided important insights into the effects of bullying victimization on psychological and socio-emotional well-being in adolescents.

As indicated above, there is a considerable amount of research data indicating a direct and negative effects of bullying victimization on mental health outcomes (Bifulco et al, 2014; Catone et al, 2017; Cunningham et al, 2016; Fullchange et al, 2016; Moore et al, 2017; Schwartz et al, 2015; Silberg et al, 2016; Sourander et al, 2016). These studies concluded that either one or a combination of mental health disorders such as depression, anxiety, suicidality, trauma, and psychosis were evident in individuals who have experienced bullying victimization.

Bullying Victimization Seemingly Increases the Propensity to Engage in High-Risk Activities

Apart from effects on the individual's mental stability, the succeeding studies also examined how bullying victimization may increase an individual's likelihood of engaging in high-risk activities. These findings may support the hypotheses relevant to this present study, considering the fact that fire setting might be one of the high-risk activities.

Poon (2016) analyzed previous studies and suggested that bullying victimization may lead to high-risk behavior in adolescents, while there was no study investigated the risk-taking patterns among the bullies and bullied victims, and therefore, Poon's study was attempted to fill in this gap. 136 Chinese adolescent participants answered a Cognitive Appraisal of Risky Events (CARE) questionnaire to ascertain their propensity to be involved in high-risk activities. The participants were separated according to identity, such as bully, bullied victim, and control. The results indicated that both bullies and bullied victims were experienced higher than normal tendencies to engage in high-risk behavior. Moreover, the bullied victims exhibited higher bullying scores, which

implied that they participated in a wider range and more recurrent bullying activity. Poon found that, among these bullying identities, bullied victims, in particular, were exhibited the highest tendencies to engage in risky activities. Poon further investigated the risk-taking behaviors of the bullies and their victims, which led to the conclusion that while the bullies had a higher tendency to engage in risky behavior, those who were bullied also had a higher tendency. The results allow for a better understanding of risk-taking propensities for bullying identities, which may provide important insights into aided prospective bullying prevention and intervention programs.

McCuddy and Esbensen (2017) performed a similar study to establish the relationship between delinquency and bullying. Their study explored the effects of the different types of bullying victimization, such as traditional, cyber, and dual-bullying victimization on the probability of later delinquent behavior. McCuddy and Esbensen used a hybrid random effects model to assess data from the Gang Resistance Education and Training (GREAT) program on 3,271 middle school students. Their analysis was centered on the effects of the types of bullying victimization on general delinquency, violent and nonviolent delinquency, and use of illegal substances. They discovered that for those who have experienced cyber-bullying were more likely to use illegal substances and to commit nonviolent delinquencies in comparison to the traditional bullied students. General delinquency was observed with those who experienced both traditional and cyber-bullying over time. McCuddy and Esbensen further concluded that victims of cyber-bullying had higher propensity to engage in different types of delinquent behaviors, rather than the victims of traditional bullying. Their findings, however, isolated those

who were cyber-bullied as the ones who had the higher tendencies for engaging in delinquent behaviors in comparison to those who were traditionally bullied.

The correlation between bullying victimization and high-risk behavior was noted in a study by Turner et al. (2016). The authors theorized that those individuals who had been bullied during childhood had a higher probability to be gun-carriers later on in life. Turner et al. examined children who experienced bullying victimization before the age of 12 and while in their adolescent years had a significant tendency to carry firearms through the course of their lifetime. Turner et al. further investigated the propensity of bullied victims committing a gun-related crime, as opposed to high-risk behavior in general. However, gun-related crime may be directly construed as one of the high-risk behavior as well as fire setting behavior, as both behaviors may cause harm, damage, even death to the victims.

According to Willis (2015), fire setting behavior was significantly associated with inherent risks and high-risk activity. Hoerold and Tranah (2014) also claimed that adolescent fire setters were described as highly impulsive and reckless. While there was scarcity of data directly associating bullying victimization to fire setting, Hoerold and Tranah suggested that examining fire setting tendencies of an individual who have prior experience of being bullied may provide additional insights into the fire setting propensity among juvenile fire setters.

The first two sections of this literature review examined scholarly research performed in order to establish how bullying victimization affects one's mental health outcomes. The previous discussions above have also established the common behavioral

effects observed among those who have experienced bullying victimization. The following sections had discussed the characteristics of mental state and common behavior among fire setters and those who have fire setting tendencies.

Psychological and Mental Health Issues Were Evident Among Fire Setters

While there are known theories proposed that environmental factors are associated with criminal activity, only a few were focused on the impact of psychological and mental health issues on criminal activity (Fox & Farrington, 2016). Previous studies on criminology suggested that fire setting might be a result of mental instability (Nanayakkara et al., 2015). In recent studies, however, had been focused on the impact of psychological and mental health issues on deliberate fire setters (Barnoux et al., 2015).

Bowling (2013) intended to fill in the gap of available literature regarding the correlation between one's academic performance and self-reported fire setting among adolescents. Furthermore, Bowling aimed to identify the characteristics of fire setters. The Factor Analysis Dataset from the Achenbach System for Empirically Based Assessment (ASEBA) was used to gather and review the data using logistic regressions. The results indicated that those students who have poor academic performance were more likely to set fires. Moreover, those who were observed to exhibit unpleasant attitude towards school by skipping classes or violating school policies were even more likely to set fires. Bowling identified that attention deficit problems, such as Attention Deficit Hyperactivity Disorder (ADHD) was also a predictor of fire setting behavior.

Lambie and Krynen (2017) also supported this claim by studying the behavioral patterns of juvenile fire setters. The authors suggested that adolescent fire setters were

found to be more likely to be diagnosed with clinical hyperactivity or attention impediments, along with the factors that predict fire-setting behavior, such as bullying victimization, mental health problem, and delinquent behavior (Barnoux et al., 2015).

Given that there was insufficient available literature regarding how psychotic disorders are associated with fire setting behavior, Dalhuisen et al. (2015) explored the distinct factors evident in psychotic and non psychotic fire setters. The researchers conducted the study in Netherlands with 30 psychotic and 94 non psychotic fire setters who had been sent for pre-trial forensic mental health assessment. Using binary and multivariate statistical analysis, the participants' socio-demographic, pathological, judicial and event-related characteristics were evaluated. Dalhuisen et al. found that psychotic fire setters had exhibited mental health issues in the past that were related to drug abuse and weak self-dependence. Demographically, the psychotic fire setters were much older, single, and unemployed. Non psychotic fire setters, on the other hand, were observed to have a number of prior convictions, committed fire setting crimes mostly on their own, and were less likely to set fires under the influence of drug or alcohol. The researchers determined that for non psychotic fire setters, childhood experiences of physical abuse and alcohol abuse were less common. The findings of Dalhuisen et al. provided insights into the factors that may likely to predict fire setting tendencies, in which the present study was attempted to explore.

Green et al. (2014) emphasized that there was not enough research done regarding the mental health issues and fire setting tendencies. Green et al. identified psychiatric symptoms exhibited in fire setters. They reviewed existing data collected from 59 arson

offenders who had been sent to a mental health court over a ten-year period, and found that 68% of the arson offenders exhibited persecutory delusions. The researchers also found that there were three main themes that motivated these offenders to set fire: (a) psychosis (88%), (b) revenge or anger (34%), and (c) suicidal thoughts (20%). The researchers also noted that 58% of the fire setting had been done either within or nearby offenders' residence. The findings of their research may provide important insights into assessing and profiling mentally ill fire setters. The findings of this research also support the hypotheses of this present study.

Other Known Behaviors That Are Linked to Fire Setters and Fire Setting

Tendencies

A study by Tanner et al. (2016) supported the assertions of how mental health problems, along with other known behaviors, such as interpersonal difficulties and academic challenges may serve as one of the many indications for adolescents engaging in deliberate fire setting. Another study by Barrowcliffe and Gannon (2016) targeted on the prevalence and behavior of un-apprehended fire setters. The researchers posited that fire setting was more common among young people in their adolescence. The researchers recruited two hundred thirty-two participants, and 225 of them were asked to fill out the online questionnaire. The researchers analyzed the data and found that 17.78% of these 225 participants had taken part in deliberate fire setting and remained un-apprehended. In comparison to apprehended fire setters, the un-apprehended fire setters displayed the following distinct behaviors: (a) having a greater likelihood of self-reporting of their deliberate fire setting, (b) having been diagnosed with mental illness or behavior

problems, (c) having experienced suspension from school, (d) having previously attempted to commit suicide, (e) having an interest in experimenting with fire before reaching ten years old, and (f) having a family member who was also a deliberate fire setter.

Another known behavior noted by Bowling et al. (2013) stated that fire setters tended to have academic challenges. The researchers also delved further into assessing how academic challenges may influence the likelihood of engaging in high-risk activities, such as fire setting. Bowling et al. also found that one of the common behaviors among fire setters was low academic performance, based on the previous findings that determined the associations between juvenile fire setting and academic performance and attention difficulties. The Factor Analysis Dataset from the Achenbach System for Empirically Based Assessment (ASEBA) was utilized to gather and review the data. The results from 975 assessments indicated that there was a direct correlation between academic performance and the likelihood of setting fires, in which the poorer the academic performance, the higher the likelihood of setting fire. The National Survey Dataset comprising of 1158 assessments was also reviewed to determine whether school children and adolescents who exhibited higher levels of attention problems also have the likelihood of settings fires. As a result, children and adolescents who exhibited higher levels of attention problems may also experience internalizing and externalizing difficulties in comparisons to the non fire setting counterparts.

Another study explored other known behaviors of fire setters was conducted by Baglivio et al. (2017). Baglivio et al. examined the factors associated with the related

occurrences of animal cruelty and fire setting. The researchers reviewed 292,649 juvenile delinquents with a history of criminal background, mental health issues, and family histories of offending in order to understand behaviors associated with animal cruelty and fire setting. The results indicated that 0.59% juvenile delinquents were involved in animal cruelty, whereas 1.56% in fire setting. The involvement of both behaviors was as low as 0.17%, but was twice more than what was expected (0.009%). A significant observation was noted regarding the prevalence of both behaviors were higher in males, older youth, and Whites. Moreover, those with a history of criminal background, mental health issues, and a family history of offending were more likely to be linked to animal cruelty and fire setting. In addition, a history of criminal background was considered to be the strongest connection to animal cruelty and fire setting. This study also discussed mental health issues as a predictor of fire setting, which supports the hypotheses of the present study.

To further understand the potential behaviors that might separate fire setters from other offenders, Ducat et al. (2013) conducted a study with 207 deliberate fire setters who appeared before courts between the years of 2004 and 2009. The researchers conducted a four-way-comparison analysis among offenders with and without a history of setting fires in order to explore the distinctive factors associated with fire setting and non fire setting crimes. The four-way-comparison analysis includes exclusive fire setters (i.e., offenders who only committed arson offenses), predominant fire setters (i.e., offenders who committed arson predominantly, and with other offenses), mixed fire setters (i.e., versatile offenders, including arson), and non fire setters (i.e., non fire setting offenders).

The researchers found that deliberate fire setters (exclusive fire setters) and versatile offenders (mixed fire setters) were much alike, and exclusive fire setters were mostly unemployed as well as more likely to have been diagnosed with mental health disorders. Furthermore, the researchers concluded that for exclusive fire setters, there was little difference in overall behavior and mental state when compared to non fire setters. These findings allow more gaps for this present study to fill in, such as the possible predictive characteristics of the fire setters, which support the hypotheses of this present study.

Tyler et al. (2015) supported the results found by Ducat et al. (2013) and suggested that there were many character-based similarities among mentally disordered offenders, regardless of whether they were fire setters or not. Tyler et al. emphasized that there were only a few studies that have sufficiently investigated the personalities of mentally disturbed fire setters, and compared them to mentally disturbed non fire setting offenders. Moreover, there was a scarcity of information about what characteristics would distinguish repeat fire setting offenders. In their study, Tyler et al. aimed to identify the similar and different characteristics of mentally disturbed fire setters vs. mentally disturbed non fire setting offenders. The researchers also intended to identify the similarities and differences of one-time fire setters and repeat fire setters. In order to further assess these characteristics, the researchers studied 77 mentally disturbed offenders of which 43 were fire setters and 34 were non fire setters to explore the predictability of repeat fire setting. The results indicated that there were many character similarities among mentally disturbed offenders regardless of whether they were fire

setters or not. However, Tyler et al. noted that mentally disturbed fire setters often exhibited interests in explosives and were diagnosed with schizophrenia. The researchers further concluded that the most significant predictor for repeat fire setting was the interest in explosives or fire. While the authors claimed that fire setters are much like non fire setters in terms of behavior, they ascertained that mental disorders, along with an attraction to explosives or fire might be a predictor of the likelihood of engaging in fire setting.

Another study by Tyler and Gannon (2017) investigated whether mental health issues might predict the likelihood to commit fire setting. Twenty-three mentally disordered fire setters were examined regarding the specified progression of contextual, behavioral, affective, and cognitive factors that lead to committing a fire setting offence. A Fire setting Offence Chain for Mentally Disordered Offenders (FOC-MD) model was utilized in this study. The same 23 participants were examined repeatedly in this study, along with the additional 13 mentally disturbed fire setters. According to the results of the FOC-MD, the authors found three main pathways that ultimately lead to fire setting: (a) if there was fire interest and the state of mental health as a child, (b) if there was no fire interest and the state of mental health as an adult, and (c) if there was fire interest and the state of mental health as an adult. While fire interest was a common factor and the identified theme in this study, mental health issues were the main factors that predict fire-setting tendencies.

Watt et al. (2015) conducted a study with the Youth Fire Behaviors and Interests Scale to identify fire setting behavior between sentenced offenders and non offenders.

Watt et al. studied 138 juvenile delinquents on community service and from a youth detention facility in comparison to 136 adolescents from private schools in Queensland, Australia. The results showed that the offenders exhibited a greater likelihood (67.4%) of setting a fire in comparison to non offending adolescents (37.5%). Watt et al. further suggested that repeat fire setters extensively experienced antisocial behavior and exhibited an interest or preoccupation with fire. Watt et al. concluded that about 20% of the fire setters would most likely to repeat the offense.

In line with the hypotheses proposed in this present study, Sharp et al. (2009) were the pioneer researchers investigated the relationship between school bullying and fire setting. Sharp et al. identified common predictors for adolescent school fire setters in relation to their experiences of being bullied or setting fires. The researchers intended to understand the differences and characteristics of school fire setters in comparison to those who had set fires outside of school. Three hundred seventy-nine fire setters, between five and seventeen years old, filled out a modified Peer Relations questionnaire to gather the desired data. The findings indicated that about one-third of the participants revealed having set fires at school. Moreover, the researchers found that for those who had set fires at school were also experienced bullying victimization in comparison to those who had set fires outside of school.

This section further discussed other known behaviors and factors among juvenile fire setters, such as poor academic performance, prior history of setting fires, and a strong interest in fire or explosives were the common predictors of fire setting. Although Sharp et al. raised the concerns of school fire setting; however, there is a clear gap regarding the

relationship between bullying and fire setting, which allows the development of the hypotheses of the present study.

High-Risk and Transgressive Behavior in Adolescents

While certain high-risk behaviors are common among adolescents, such as oppositional-defiant and rebellious behaviors against the authority figures; however, these high-risk behaviors can be persistent into adulthood, such as juvenile fire setters turning into adult arsonists (Moffitt, 2017).

Questions concerning whether high-risk behavior is the result of a pathology, or simply a rebellious behavior? The followup question is whether a pathology, if present, is due to internal or external influences, in which internal influences include mental health problems, abuse, and trauma, whereas external influences include family history, school environment, and socioeconomic status (Vézina et al., 2015). These factors can affect the likelihood of an individual engaging in high-risk behavior, such as setting fire.

Likewise, for those who have strong interest or fascination with fire should not be confused with pyromania, or a predilection toward criminal behavior, given that pyromania is a mental disorder that involves having the urge of setting fire, whereas fascination with fire is not necessarily involves the act of setting fire (Kolko & Foster, 2017).

Vézina et al. (2015) and Layne et al. (2014) both posited that early exposure to trauma, regardless of mental or physical, might increase the likelihood of engaging in high-risk behavior, such as fire setting. The researchers used a national dataset to collect information about high-risk behavior in adolescents, and concluded that traumatic

experiences may increase the likelihood of fire setting, especially for those who exhibited antisocial personality traits (Layne et al., 2014).

Synthesis

The literature discussed above suggested that adolescents' being victimized by bullying may also be engaging in fire setting. The literature also suggested that childhood abuse and trauma may increase the likelihood of high-risk behavior, such as fire setting. The literature suggested that there might be a correlational linkage between bullying victimization and fire setting behavior, which supports the hypotheses of the present study.

Revenge-Motivated Fire Setting Behavior

Revenge is an intentional act, which involves inflicting harm or fear to a person or a group of people for the purpose of retaliation. The act of fire setting can be used as one of the methods for revenge or retaliation (Gerlsma & Lugtmeyer, 2018). Furthermore, the location of the fire and the degree of the damage can reflect on a fire setter's motive and intention, such as revenge-motivated fire setting behavior (Dalhuisen et al., 2017).

Revenge-motivated fire setting should be treated differently from unmotivated or amusement fire setting, and pyromania. For instance, the Dutch penal code imposes much more severe penalties for revenge fire setting than for other types (Dalhuisen et al., 2017; Gerlsma & Lugtmeyer, 2018).

Revenge-motivated fire setting can be viewed as an extreme behavior, often driven by perceived harm or injustice, and the fire damage inflicted by the perpetrator is usually much greater than planned (Barnoux & Gannon, 2014). Barnoux and Gannon recommended several factors related to revenge-motivated fire setting, such as

contextual, affective, cognitive, volitional, and behavioral factors. Moreover, the researchers noted that revenge fire setting should be viewed as an expression of an emotional pathology, rather than an actual expression of revenge per se.

It is believed that when adolescents feel they have been victimized or suffered from injustice, they often perceived the situation as black-and-white and all or nothing, and therefore, they may retaliate in a catastrophic manner (Gerlsma & Lugtmeyer, 2018). Furthermore, Gerlsma and Lugtmeyer found that offenses driven by revenge were often far more severe than common criminal offenses (e.g., violence, threats, and theft) and transgressions (e.g., immorality, indirect aggression, ostracism, and exclusion), which suggests that the damage caused by revenge-motivated fire setting might be more severe than an actual crime.

Synthesis

Setting fire for revenge is a dangerous act, and the harm inflicted by the perpetrator is usually much greater than planned, because fire usually travels and expands far more distant than the original flame, especially when strong winds or toxic substance were present at the site (Gerlsma & Lugtmeyer, 2018). With regard to the act of revenge, the feelings of rage, anger, and injustice were often experienced by the victims of bullying, which may lead to an intense behavioral reaction, such as fire setting.

While setting fire for revenge may seem to be extreme, it should be noted that many victims of bullying have no direct way to express their anger and frustration, and they were often lack of adequate family or social support, and therefore, they might strike

back by setting fires to inflict fear and harm, or simply use fires to destroy something valuable and meaningful to their attackers.

Criminal Behavior by Bullying Victims

It is worthwhile to examine how being a victim of bullying can lead to cognitive and behavioral problems in children and adolescents, in terms of becoming more vulnerable to commit crimes in adult life. A study by DeCamp and Newby (2015) found that there is an overlap between bullying victims and deviant behavior. Using a national longitudinal survey that dated back to 1997, they found that victims of bullying were considerably more likely than the general population (almost twice as likely) to commit criminal offenses later in life. In particular, they were more likely to become a bully after being the victims of bullying. The researchers further suggested that being a victim of bullying often resulted in a lower self-esteem, and it is well documented that delinquent acts are often linked to self-esteem and social identity issues, especially when committed by adolescents (DeCamp & Newby, 2015).

Juvonen and Graham (2014) conducted a research to investigate high school students' experiences of bullying, and found that bullying had a multiplicative effect, in which those who were bullied might exhibit an increased tendency to bully others after being victimized. The researchers also emphasized the significance of social media on bullying, particularly on cyber-bullying, in which the negative criticism can be widely transmitted and disseminated among viewers around the world instantaneously (Juvonen & Graham, 2014).

Research on juvenile delinquency suggested that there is a connection between bullying and criminal behavior (Wolke & Lereya, 2015), whereas researchers on bullying suggested that most bullies have had experiences of being bullied, and therefore, the victims of bullying might evolve from being a victim to a bully, depending upon the types of bullying and the severity of victimization (Juvonsen & Graham, 2014).

Synthesis

Bullying, almost without exception, causes psychological damage to the victim. The degree and type of the damage may vary, but they rarely healed automatically or disappeared completely. A victim of may be traumatized for years. Therefore, gives the rise of the hypotheses for this present study, that is, the level of relationship between psychological trauma and fire setting. The literatures suggested that fire setting is an irrational act. They also suggested that most property crime or delinquent behavior is due to cognitive and behavioral problems, such as fire setting.

The literature review provides evidence and background of the bullying victims and fire setters as well as the negative consequences caused by both dangerous behaviors. Therefore, it is important to understand the possible predictive characteristics of fire setting, such as trauma, abuse, and bullying victimization, in which the present study was attempted to investigate.

Summary

The literature review discussed in Chapter 2 has revealed a number of findings regarding the negative effects of bullying victimization and fire setting (Cunningham et al., 2016; Moore et al., 2017; Sourander et al., 2016). The literature also reveals that

childhood abuse and trauma may increase the likelihood of fire setting, especially for those who exhibited antisocial personality traits (Fox & Farrington, 2016; Layne et al., 2014).

There is a considerable amount of research data indicated that there is a direct and negative effect of bullying victimization on mental health outcomes (Bifulco et al, 2014; Catone et al, 2017; Cunningham et al, 2016; Fullchange et al, 2016; Moore et al, 2017; Schwartz et al, 2015; Silberg et al, 2016; Sourander et al, 2016). These studies concluded that either one or a combination of mental health disorders such as depression, anxiety, suicidality, trauma, and psychosis were evident in individuals who have experienced bullying victimization.

A significant observation regarding the prevalence of animal cruelty and fire setting were known to be higher in males, older youths, and Whites (Baglivio et al., 2017). Moreover, those with a history of criminal background, mental health issues, and a family history of offending were more likely to be linked to animal cruelty and fire setting (Tanner et al., 2015).

Other known behaviors and factors among juvenile fire setters, such as poor academic performance, prior history of setting fires, and a strong interest in fire or explosives were the common predictors of fire setting (Gerlsma & Lugtmeyer, 2018).

The researchers further suggested that being a victim of bullying often resulted in a lower self-esteem, and it is well documented that delinquent acts are often linked to self-esteem and social identity issues (DeCamp & Newby, 2015). Other studies investigated high school students' experiences of bullying, and found that bullying had a

multiplicative effect, such as the significance of social media on bullying, particularly on cyber-bullying (DeCamp & Newby, 2015; Juvonsen & Graham, 2014).

It should be noted that the victims of bullying were often lack of adequate family or social support, and therefore, they might strike back by setting fires to inflict fear and harm to their attackers, such as revenge-motivated fire setting. Setting fire for revenge is a dangerous act, and the harm inflicted by the perpetrator is usually much greater than planned (Gerlsma & Lugtmeyer, 2018).

Researchers on juvenile delinquency suggested that there was a connection between bullying and criminal behavior (Wolke & Lereya, 2015), whereas researchers on bullying suggested that most bullies have had experiences of being bullied (Juvonsen & Graham, 2014).

While there is no evidence suggested that fire setting is directly connecting to bullying, many fire setters who have prior experience of abuse and trauma were also reported being victims of bullying (DeCamp & Newby, 2015).

Nevertheless, it is evident that there are various types of psychological damage caused by bullying victimization, such as personality disorders, mental health issues, identity crisis, and diminish of the victims' self-esteem (DeCamp & Newby, 2015; Juvonsen & Graham, 2014).

The literature review in Chapter 2 discussed the evidence and background of bullying and fire settings as well as the negative consequences caused by both dangerous behaviors. Therefore, it is important to better understand the correlational relationship between bullying and fire setting, as well as the possible predictive characteristics of fire

setting, such as trauma, abuse, and bullying victimization, in which this present study was attempted to investigate.

Chapter 3 included the discussion of the research design and methodology for this present study, along with the target population, data collection plan, and statistical analysis. Ethical procedures were also discussed.

Chapter 3: Research Methodology

The purpose of this study was to investigate the relationship between bullying victimization and fire setting behavior in juveniles and young adults. The reason why this research topic was chosen is that there is a large body of previous research focused on bullying and suicide risk, yet little is known about the relationship between bullying and fire setting (Lambie et al., 2014). Furthermore, there is a clear gap in the literature about how bullying victimization might be related to fire setting (Burnett & Omar, 2014; Green et al., 2014; Palermo, 2015; Turner et al., 2016; Valdebenito et al., 2017). Therefore, the problem that this research aimed to address was a better understanding of the possible predictive characteristics of fire setting behavior, such as bullying victimization.

Bullying has become a worldwide phenomenon that negatively affects children's and adolescents' psychological, interpersonal, and social well-being (Bryant, 2014; Mayes et al., 2017). The damage caused by fire setting results in a tremendous financial burden to state and federal governments, yet little is known regarding the predictive characteristics of fire setters (Reilly, & Johnson, 2016). Therefore, it is important to further investigate the relationship between bullying victimization and fire setting behavior, in the hope of helping to fill in the gaps between previous and present research, in order to prevent fire setting in juveniles and young adults.

Previous research has focused on offending characteristics, behavioral problems, psychiatric disorders, and dual diagnoses of fire setters; a limited amount of research has focused on the predictive characteristic of fire setting behavior (Fritzon, 2018; Reilly & Johnson, 2016). Therefore, the purpose of the present study was to expand knowledge

regarding the predictive characteristics and psychosocial factors for fire setting, as well as to provide quantifiable data regarding the relationship between bullying and fire setting. The findings of the present study may provide meaningful insights for policy makers, law enforcement, school authorities, and mental health professionals regarding the potential risks and harmful effects of bullying and fire setting.

The present study used a correlational nonexperimental research design. Quantitative methodology was used to examine the relationship between bullying and fire setting. Multiple linear regression was used to address the research questions for this quantitative study.

A convenience sampling procedure was conducted to recruit participants and collect data for this study. The target population of this study was young adults with a history of being bullied and setting fires. These young adults were enrolled in at risk youth, YMCA, and fire prevention programs in their teenage years, and had completed their program and become big brothers and sisters to newcomers to the program. Data were collected through surveys that the participants completed anonymously via Qualtrics Survey Software. Multiple linear regression analysis was conducted to determine the relationship between bullying and fire setting.

In Chapter 3, I discuss the methodology and research design for the study, present the research questions addressed by the study, describe the target population and sampling procedures, and outline the data collection procedures. The following sections provide information on the methodological components that operationalized this study's

variables and the instruments used to measure the variables. The final section of Chapter 3 contains a discussion of ethical procedures.

Research Design and Rationale

The study used a correlational nonexperimental research design. A correlational research design requires the use of statistical analyses to explore the relationship between variables (Szijarto, 2014). Multiple linear regression analysis was conducted to address the research questions and analyze the data.

Quantitative methodology was used to examine the relationship between bullying and fire setting. The quantitative approach is commonly used when the goal of a study is to investigate the relationships between variables measured numerically (Babbie, 2012). Quantitative methodology requires the use of quantitative measurements and statistical analyses to obtain numerical data in order to better understand the phenomena investigated in a study (Mustafa, 2011). Due to the nature of the study's objective and processes, quantitative methodology was preferred for this study.

For the present study, the IVs were bullying victimization, psychosocial stimuli, and precipitating events; the DV was fire setting behavior. Multiple linear regression was used to address the research questions for this quantitative study. The research questions and hypotheses were as follows:

RQ1 Is there a significant relationship between bullying victimization and fire setting behavior?

H₀₁ There is no significant relationship between bullying victimization and fire setting behavior.

Ha₁ There is a significant relationship between bullying victimization and fire setting behavior.

RQ2 Are there factors (i.e., personality characteristics, attachment styles, arousal seeking, and psychosocial stimuli) that predict fire setting behavior in juveniles and young adults?

Ho₂ Factors of personality characteristics, attachment styles, arousal seeking, and psychosocial stimuli do not significantly predict fire setting behavior in juveniles and young adults.

Ha₂ Factors of personality characteristics, attachment styles, arousal seeking, and psychosocial stimuli significantly predict fire setting behavior in juveniles and young adults.

RQ3 What precipitating events (i.e., trauma, abuse, maltreatment, and bullying) predict fire setting behavior?

Ho₃ Precipitating events do not significantly predict fire setting behavior in juveniles and young adults.

Ha₃ Precipitating events significantly predict fire setting behavior in juveniles and young adults.

A correlational nonexperimental research design was used for this quantitative study. A correlational research design is used when the objective of the study is to investigate the relationship among variables or to determine the relationship among various IVs on a particular DV (Leedy & Omrod, 2013). It is important to note that causality cannot be determined in a correlational research design (Klugh, 2013).

Therefore, a correlational nonexperimental method was deemed as the appropriate research design for the present study, because this study involved neither any manipulations of the variables nor the use of any controlled environments and experiments (Sousa, Driessnack, & Mendes, 2007).

Methodology

Population

The targeted population for this study was young adults with a history of being bullied and setting fires. The participants were recruited from at risk youth, YMCA, and juvenile fire prevention programs in California. Each program provides education, prevention, and intervention for at risk youths and young adults. Specifically, the target population of this study consisted of young adults aged 18 years and older; these young adults were enrolled in these programs in their teenage years, and completed the program when they turned 18 years old. These young adults continued to contribute to their programs as mentors, educating newcomers who struggled with the same problems that they used to have (i.e., being bullied and setting fires). As the researcher in this study, I collected information regarding participants' prior experiences of being bullied and setting fires.

Sampling and Sampling Procedures

A convenience sampling procedure was used to recruit the participants for this study as well as to address data collection time restrictions and limited resources. Convenience sampling is a nonprobability sampling method, in which the participants were chosen due to their accessibility, availability, and location (Sedgwick, 2015).

According to Etikan et al. (2016), convenience sampling is considered to be a more efficient sampling technique than random sampling. However, the validity of convenience sampling may be limited by a higher likelihood of bias. This limitation may, in turn, impede the researcher from drawing inferences about the general population (Etikan et al., 2016).

I began the sampling process after obtaining approval from Walden University's Institutional Review Board (IRB# 07-09-20-0126668) for this study's procedures involving human participants. Afterward, I obtained permission from at risk youth, YMCA, and fire prevention programs to post a participant recruiting announcement for this study. Only individuals who qualified for and were willing to participate in the study were included.

The sample size computation was based on the following factors: Cohen's effect size, the level of significance, and the statistical power or the probability of rejecting false null hypotheses. The number of participants required for this study was calculated through a power analysis, using G*Power software (see Appendix A). This power analysis yielded a minimum sample size of 55 participants to be able to demonstrate statistical significance (see Appendix A). This meant that sample for this study needed to be comprised of at least 55 young adults who were 18 years of age or older, were enrolled in the fire prevention and at risk youth programs before they turned 18 years old, and had a history of being bullied and setting fires.

Multiple linear regression analysis was conducted for this study. An a priori power analysis was conducted with the following factors: (a) statistical test of multiple

linear regression: fixed model, single regression coefficient with eight number of predictors; (b) statistical power of 0.80, which is normally used in quantitative studies (Faul et al., 2009); (c) medium effect size of 0.15 for a *linear regression* analysis; (d) level of significance of 0.05; and (e) two-tailed test. This is the minimum to achieve the required statistical power for a quantitative study of 0.80, using a multiple linear regression analysis. However, a greater sample number was used to increase the statistical power of the results. The final sample included 70 participants, which was more than the 55 required from the power analysis.

Procedures for Recruitment, Participation, and Data Collection (Primary Data)

An invitation was sent to young adults with a history of being bullied and setting fires. An introductory letter included an explanation of the background of the study, the purpose of the study, and the methodology used for the study. Participants were recruited from at risk youth, YMCA, and fire prevention programs in California. Only those who fit the inclusion criteria for this study and responded positively to an informed consent document were included as participants in the final sample.

A survey questionnaire was used for the data collection instrument. The participants completed the survey through an online process. Survey instruments enumerated in the instrumentation section were uploaded in the online survey tool of Qualtrics Survey Software, a web-based survey instrument. An anonymous survey link was posted in the invitation letter.

An introductory letter appeared on the first page when the participants entered the Qualtrics website. The introductory letter included a welcome statement, an explanation

of the purpose of the study, and instructions to take the anonymous survey. The second page included the informed consent form. The third page included a demographic survey that collected data on age, race/ethnicity, gender/sex, and educational level (see Appendix B). My contact information was posted in the introductory letter for participants to use if they had any questions or concerns related to the study and the survey instrument.

Prior to taking the anonymous survey, the participants underwent the process of informed consent by providing their agreement. The process of informed consent provided each participant with the opportunity to review the purpose of the study, identify areas of concern, and ask questions about the study to assist in the decision-making process about participating in the study completely (Fisher, 2013). Each participant was informed that any information collected through the anonymous survey would remain confidential. No personally identifying information was collected or recorded, including participants' IP address. Participants could withdraw from the study at any time. Once informed consent was obtained, participants were redirected to the next section to answer the survey questionnaires.

First, participants answered questions designed to screen out any individuals who did not meet the requirements for the study. Participants then, completed a demographic questionnaire that gathers information about their race/ethnicity, age, gender, highest educational level completed, and so forth. Third, participants completed the main survey questionnaires. The survey questionnaires took approximately 30 minutes to complete. There was no time limit for the participants to complete the survey questionnaires. After a participant completed the survey, a message stating "thank you for participating the

study” was included on the last page of the survey. The survey responses of each participant were automatically uploaded to the Qualtrics database once the participant exited the survey link.

I planned to obtain data from a minimum of 70 participants. The Qualtrics database automatically stores complete and incomplete survey questionnaires. Qualtrics notified me via email regarding how many responses were collected each week. Only I was allowed to access the survey responses by entering my username and password as the legal user of the Qualtrics account. Participants’ personal information and IP address were not collected or recorded from the anonymous survey link in order to ensure their privacy and confidentiality. The data will remain stored within a password-protected computer for the appropriate amount of time as specified by the IRB.

After the data collection process was completed, the answers to the surveys were downloaded from the online survey hosting website and entered into Microsoft Excel to facilitate data analysis. The Excel data were uploaded to SPSS, a software program that provides statistical analysis.

Before conducting statistical analysis in SPSS, I reviewed the dataset to identify any outlier data. These outlier data were removed in order to have a complete dataset. In order for a participant’s data to be included in the complete dataset, the participant needed to have answered all questions on the survey questionnaires. The participants were notified before taking the survey that their personal information and responses would remain anonymous and confidential. By offering this assurance, I sought to help participants feel comfortable and safe when sharing their prior experiences of being

bullied and setting fires. I discarded data from individuals who do not meet the inclusion criteria, as well as data that indicated incomplete survey responses. I checked the demographic responses to ensure that all participants met the inclusion criteria.

Instrumentation and Operationalization of Constructs

Numerical data for the study variables were collected using survey instruments. The survey instruments incorporated items from three validated surveys: Child Behavior Checklist–Youth Self-Report (YSR; Roe-Sepowitz & Hickie, 2011); Millon Adolescent Clinical Inventory (MACI; Ducat et al., 2013); and Fire Setting Scale (FSS; Gannon & Barrowcliffe, 2012). The YSR and MACI are available for purchase from their publishers, and the FSS is available in the public domain. These survey instruments were used as measurement tools to examine the multifaceted trajectories of fire setting, such as psychosocial stimuli, arousal seeking, personality characteristics, attachment styles, precipitating events, and prior history of trauma and abuse.

Child Behavior Checklist: Youth Self-Report

The YSR by Achenbach (1991) is a self-report survey used to measure children's social and behavioral problems. It was designed as a multi axial assessment to assess two subscales of social competence and behavioral problems in adolescents in a standardized format. Items can be responded by using a 3-point Likert scale from 0 (*Not true in the last six months*) to 2 (*very often or often true in the last six months*). For this study, only the behavioral problems scale was used to measure the IV of bullying. The behavior problems checklist consisted of an eight core syndromes scale, including withdrawn,

somatic complaints, anxious/depressed, social problems, thought problems, attention problems, delinquent behavior, and aggressive behavior.

The behavioral problems can be grouped into two broader scales of the internalizing and externalizing scales. The internalizing grouping consists of the sum of the scores of the withdrawn, somatic complaints, and anxious/depressed scales. The externalizing grouping consists of the sum of the scores of the delinquent and aggressive behavior scales. The other scales of social problems, thought problems, and attention problems scales are not included in either the internalizing or externalizing groupings, but are included in the total Problems score, which includes all 8-core syndrome scales. However, for this study, only the externalizing scales were used to measure the IV of bullying. Bullying for this scale is a continuous measure using the summed scores of the two externalizing scales of delinquent and aggressive behavior scales. The score of bullying can range from 0 to 4.

With regard to reliability, according to Achenbach (1991), internal consistency for the YSR was good to excellent with Cronbach's Alpha ranging from 0.63 to 0.94. With regard to validity, there were significant correlations between the YSR from *T scores* and other select outcomes (i.e., T scores from the Trauma Symptom Checklist and Child Behavior Checklist) with correlation coefficients ranging between 0.07 and 0.56 (Achenbach, 1991), indicating that the YSR has acceptable construct validity (Roe-Sepowitz & Hickle, 2011).

Millon Adolescent Clinical Inventory

The MACI by Millon and Grossman (2006) is a 160-item self-report survey that assesses personality patterns, clinical syndromes, and expressed concerns. This instrument was used to measure the IV of personality characteristics, attachment styles, arousal seeking, psychosocial stimuli, and precipitating events. Each item was responded by answering either true or false response. The MACI test consists of a total of 31 scales, which are comprised of 12 personality patterns scales, eight expressed concerns scales, seven clinical syndrome scales, three modifying indices (which assess particular response styles), and one validity scale. The expressed concerns scales focus on feelings and attitudes about issues that tend to concern most troubled adolescents. The clinical syndromes scales assess disorders frequently seen in adolescent populations.

For the scoring of the MACI, scores for each of the four scales of personality patterns, expressed concerns scales, clinical syndrome, and modifying indices were used. Raw scores for every scale are converted to base rate scores from 0 to 115. The base rate scores are based on prevalence rate of personality pattern. Base rate scores from 75 to 84 for a characteristic indicates that this characteristic was clinically present for that participant. Base rate scores below 85 indicate a characteristic was clinically prominent meaning that the presence of personality pattern was likely at an impairing level. Thus, the different measures of personality characteristics, attachment styles, arousal seeking, psychosocial stimuli, and precipitating events were measured on a continuous scale.

In terms of the reliability for the MACI, Millon et al. (2006) suggested that the Cronbach's alpha ranged from 0.73 to 0.91 for the different scales showing acceptable

internal consistency. In terms of validity, individual scales of the MACI were correlated with the Beck Depression Inventory, Beck Hopelessness Scale, Beck Anxiety Inventory, and Eating Disorder Inventory, and the results showed a significant moderate correlation between the MACI and the other instruments (Millon et al., 2006). This result showed that the MACI has acceptable discriminant validity.

Fire Setting Scale

The FSS by Gannon and Barrowcliffe (2012) is a 20-item survey, which contains two 10-item subscales developed to measure antisocial behavior and fire interest. This instrument was used to measure the DV of fire setting. Examples of antisocial behavior items include “I like to engage in acts that are dangerous” and “I am a rule breaker.” Examples of fire interest items include “I get excited thinking about fire” and “I like to watch and feel fire.” Each of the 20-items was scored on a 7-point Likert scale from 1 (Not at all like me) to 7 (Very strongly like me). For this study, the average scores of all 20 items in the FSS including antisocial behavior and fire interest were used to measure fire setting. Fire setting was measured continuously. The average score of fire setting is ranged from 1 to 7.

Internal consistency for the overall FSS was (0.86), for the two subscales of antisocial behavior was (0.78), and for the general fire interest was (0.80), which showed acceptable Cronbach’s alpha coefficients (Gannon & Barrowcliffe, 2012).

In terms of reliability, the test-retest reliabilities for the FSS and Fire Proclivity Scale were ($r = 0.86$ and 0.88), and for the Impression Management subscale was ($r = .82$), which showed good test-retest reliability (Gannon & Barrowcliffe, 2012).

In terms of validity, Gannon and Barrowcliffe (2012) examined the psychometric properties of the scales, using MANOVA and Discriminant Function Analysis. The overall score on the FSS was not significantly related to impression management scores of the Balanced Inventory of Desirable Responding (BIDR-6) across the whole sample ($r = -0.01$); however, when these correlations were computed for fire setters and non fire setters separately, scores on the FSS were significantly negatively related to impression management scores for the fire setters ($r = -0.64$; $p = 0.01$), which indicated that both the Fire Setting and Fire Proclivity Scales represented reasonably valid and reliable measures (Gannon & Barrowcliffe, 2012). The results suggested that Fire Setting and Fire Proclivity Scales are reliable measurements for detecting the characteristics and sensory stimuli of the fire setters in this present study (Gannon & Barrowcliffe, 2012).

In summary, this study incorporated items from the three validated survey instruments as previously described. First, the YSR was used to measure the IV of bullying. Bullying was measured on a continuous scale using the summed scores of the two externalizing scales of delinquent and aggressive behavior scales. Second, the MACI was used to measure the IV of personality characteristics, attachment styles, arousal seeking, psychosocial stimuli, and precipitating events. The different measures of personality characteristics, attachment styles, arousal seeking, psychosocial stimuli, and precipitating events were measured on a continuous scale using the base rate scores of the four scales of personality patterns, expressed concerns scales, clinical syndrome, and modifying indices. Lastly, the FSS was used to measure the DV of fire setting. Fire setting was measured on a continuous scale, using the average scores of the 20 items in

the FSS.

Data Analysis Plan

The main purpose of this quantitative study was to determine the relationship between bullying and fire setting. Multiple linear regression was used for statistical analysis to address the research questions in the present study.

Descriptive Statistics Summaries

Descriptive statistics (i.e., percentage, frequency, mean, and standard deviation) was used to summarize the responses in the different survey questionnaires to measure the IV of bullying, which include personality characteristics, attachment styles, arousal seeking, psychosocial stimuli, and precipitating events; and the DV of fire setting behavior. Central tendency measures of mean, standard deviation, and minimum and maximum values were used to summarize the continuous measured variables. Frequency and percentage summaries were used to summarize the data of the categorical measured variables.

Test of Required Parametric Assumptions of Regression Analysis

The required assumptions for a parametric test of regression analysis must be tested first before its use. The assumptions that must be tested include: (a) the variables involved should be continuously measured using interval or ratio level, (b) there should be independence of errors (residuals), (c) there should be homoscedasticity of residuals or equal error variances, (d) normality or the DV should be approximately normally distributed, (e) linearity or there should be a linear relationship between the IV(s) and the

DV, (f) there should be no multicollinearity, and (g) there should be no presence of multivariate outlier (Sedgwick, 2015).

The first assumption was satisfied since all the variables involved in the regression analysis were those measured on a continuous scale. The second assumption of independence of errors (residuals) was investigated via an analysis of the Durbin-Watson statistics. Durbin-Watson statistic is a test for autocorrelation in the residuals from a regression analysis. The Durbin-Watson statistic is range between 0 and 4. As a rule, values of $1.5 < d < 2.5$ show that there is no independence of error in the data. The third assumption of homoscedasticity was tested using Levene's test of homogeneity of variance. The p -value of the Levene's test should be greater than the level of significance value of 0.05 to show homoscedasticity. The fourth assumption of normality was tested using Shapiro-Wilk test in order to detect if all study variables comply with the normality assumption (Siddiqi, 2014). The p -value of the Shapiro-Wilk test should be greater than the level of significance value of 0.05 to show normality. The fifth assumption (i.e., linearity) was visually tested using scatterplot between the IVs and the DV to examine for a linear relationship between the two variables to make sure the mean of the DV for each increment falls on a straight line. There is linear relationship between variables if there is an increasing (positive linear relationship) or decreasing (negative linear relationship) pattern in the scatterplot. The sixth assumption of no multicollinearity among the different IVs as predictors was investigated using the collinearity statistics of tolerance and Variance Inflation Factor (VIF). It should be noted that tolerance values that are less than 0.10 require further investigation (O'Brien, 2007). The VIF is computed as

1/tolerance and as a rule of thumb, an IV with a value greater than 2.5 shows multicollinearity (Cohen, Cohen, West, & Aiken, 2013). The final assumption of no presence of multivariate outliers was investigated through the Mahalanobis Distance statistics. These different assumptions must be met in order to implement a regression analysis.

Multiple Linear Regression

A multiple linear regression analysis was conducted to address the research questions and hypotheses for this study, as well as measure the relationship between multiple IVs and DV. The main objective is to determine the relationship between bullying victimization and fire setting behavior. Other objectives, such as whether the factors of personality characteristics, attachment styles, arousal seeking, psychosocial stimuli, and precipitating events (i.e., trauma, abuse, maltreatment, and bullying) can predict fire setting behavior. Hence, a complete list of the IVs includes bullying, personality characteristics, attachment styles, arousal seeking, psychosocial stimuli, and precipitating events.

For the results of the regression analysis, first, the ANOVA via the *F*-test was used to determine whether the combined impacts of the different IVs are significant in predicting the DV. The significance of the ANOVA has determined whether the regression model created is good and effective to predict the DV of fire setting behavior.

Second, the *r*-square of the regression, which measures the degree of the variability captured by the model in the prediction of the DV was investigated. The *r*-square measures the combined effect size of the different IVs on the DV. The *r*-square

value can range between 0 and 1. A higher r -square value, that is, closer to 1, was confirmed that the regression model can strongly predicts the DV. This meant that there was a high combined effect of the different IVs in predicting the DV.

The significance of the individual predictive relationship of each IV with the DV was investigated. If the regression model was significant based on the ANOVA result, then, the significance of the predictive relationship of each IV with the DV would be examined. There was a significant predictive relationship between the IV(s) and DV if the p -value is less than or equal to the level of significance value (i.e., 0.05 in the current study). The null hypotheses of the different research questions were rejected if the p -value was significant. The unstandardized beta coefficients were used to determine the direction (positive or negative relationships) and magnitude of the relationship or prediction of the IVs on the DV. It should be noted that each of the IVs has an unstandardized beta coefficient to explain the relationship with the DV. A positive beta coefficient means a positive relationship or prediction indicating that the DV would increase if the IV increases. A negative beta coefficient means a negative relationship or prediction indicating that the DV would decrease if the IV increases.

Threats to Validity

External Validity

External validity includes anything within a study that reduces the generalizability of the results (Pearl, 2015). A power analysis using G*power resulted to a minimum sample requirement of 55 young adults who enrolled in the fire prevention programs before they turn 18, and have a history of being bullied and setting fires. Conducting

power analysis to determine the correct sample size can help the researcher to recruit a sufficient amount of participants to represent the target population. However, a larger sample size might be more sufficient to represent the target population, which allows the researcher to be more confident in generalizing the data (Stangor, 2011) as well as increase the generalizability of the results (Pearl, 2015). Therefore, a larger sample size of 70 participants were included in the final sample in order to increase the statistical power of the results, which is more than the 55 requirements from the power analysis.

The use of convenience sampling is another threat to external validity since there could be high vulnerability to section bias and also to high levels of sampling error. Convenience sampling is a nonprobability sampling technique where participants are selected because of their convenience, accessibility, and proximity to this study. The use of convenience sampling can limit the generalization of conclusion about the whole population. Since the sample does not include the representative of the population, the results of the study cannot speak for the entire population, which may result in lower external validity of this study.

Internal Validity

This study involves the use of self-report survey questionnaires. Therefore, it is subject to potential response bias. A threat to the internal validity of the study was participants' attitude or honesty towards answering the survey, which may result in untruthful and inaccurate responses (Simon & Goes, 2013). In addition, the participants may answer the questionnaire carelessly or in a random manner. It is possible that some participants may fill out the questionnaires without fully understand each item. It is

assumed that the participants in this study would not be deceptive with their answers in the survey questionnaires, and that the participants would complete the survey honestly. Given that their identity will remain anonymous, and therefore, the participants may feel safe to share prior experiences of being bullied and setting fires.

In addition, using an online survey tool may facilitate the ability to keep the participants' identities anonymous. Additionally, inadvertent data disorganization involving missing data due to collection situation may also be a threat to validity. This involves if any of the data collected may be accidentally deleted or altered in the dataset during data handling (Remler & Van Ryzlin, 2014). Therefore, it is important to check the data carefully before finalizing them to data analysis.

The threat in relation to the chosen research design has already been acknowledged. The findings of this study were not included the causal relationships between the variables, only the significance of the correlational relationships between the variables were included for further investigation. The nature of a correlative examination of isolated variables can reveal correlation but not causation. The inability to adjust the IV(s) to determine the impact on the DV means a cause and effect relationship cannot be established. It has already been acknowledged that the use of a correlational research design cannot include conclusions regarding causal relationships between the variables.

Construct Validity

Construct validity refers to the extent to which the validity and reliability of the test instrument are acceptable that this present study was intended to measure (Trochim, & Donnelly, 2008). The three test instruments used in this study were: the YSR, MACI,

and FSS are known to have acceptable validity and reliability as explained in the instrumentation section. Thus, there is no issue or threat to construct validity in this study.

Ethical Procedures

IRB approval involves obtaining actual documents of the IRB application. IRB approval was obtained (IRB# 07-09-20-0126668) prior to conducting the recruitment and data collection process for this study. The main objective of the IRB requirement was to ensure the safety and welfare of the human subjects in relation to the study. The researcher has taken necessary steps to ensure ethical procedures as well as mitigate ethical risks given the study was involved human subjects.

The methodology of this study has met the requirements prescribed by the Human Subjects Review Committee. Given that each participant in the study had agreed voluntarily to take the survey and undergone the informed consent process in order to be included in the study. The informed consent process was conducted by asking the participants to give consent. The participants were not allowed to complete the survey questionnaires if they failed to give consent.

Under no circumstance the participants were coerced to provide answers to the survey questionnaire nor pressured to change the content of their responses. The survey answers were kept confidential at all times. With regard to privacy and confidentiality, the survey was designed to be anonymous, in which no personal identifying information were collected and recorded from the participants.

The researcher has taken extra precaution to minimize risk that might be associated with participating in this study. By doing so, the researcher provided information about a 24-hour/toll-free crisis counseling and support hotline for consultation, in case of any participants having flashback and/or experiencing emotional distress while reflecting on their prior experiences of being bullied and setting fires. Moreover, data obtained through the course of the study were kept confidential and would not be used to against any participants. There was no conflict of interest, and the design of an anonymous survey for this present study was to ensure the privacy, confidentiality, and anonymity of the participants.

Only I was allowed to access the survey responses by entering the username and password as the legal user of the Qualtrics account. The electronic copies of the survey response are stored in a password protected external hard drive in my office. Any documents used for the study will be permanently deleted after five years.

Summary

Chapter 3 includes the discussion of the research design and methodology, population and sampling, procedures for recruitment, instrumentation and operationalization of constructs, data collection and analysis plan, threats to validity, and ethical procedures. The purpose of this study was to investigate the relationship between bullying victimization and fire setting behavior in juveniles and young adults. This study used a quantitative methodology and a correlational nonexperimental research design. The sample of this study included young adults with a history of being bullied and setting fires. These young adults were enrolled in at risk youth, YMCA, and fire prevention

programs in their teenage years, and had completed their program when they turned 18 years old.

The YSR (Roe-Sepowitz & Hickle, 2011), MACI (Ducat et al., 2013), and FSS (Gannon & Barrowcliffe, 2012) were used as the survey instrument and measurement tools. The survey questionnaires were uploaded through the online survey tool of Qualtrics. An anonymous survey link was provided to the participants to ensure their privacy, confidentiality, and anonymity.

Multiple linear regression was conducted to address the research questions and hypotheses of the study, as well as to investigate the relationships between variables. The SPSS software was utilized to analyze the data. The results of this study was presented and discussed thoroughly in Chapter 4.

Chapter 4: Results

The purpose of this study was to investigate the relationship between bullying victimization and fire setting behavior in juveniles and young adults. The IVs were bullying victimization, personality characteristics, attachment styles, arousal seeking, psychosocial stimuli, and precipitating events (i.e., trauma, abuse, maltreatment, and bullying). The IVs were measured via two scales: the YSR and the MACI. The DV was fire setting behavior, which was measured using the FSS. Multiple linear regression analyses were conducted to address the research questions and test the corresponding hypotheses.

The research questions and hypotheses for the study were as follows:

RQ1 Is there a significant relationship between bullying victimization and fire setting behavior?

H₀₁ There is no significant relationship between bullying victimization and fire setting behavior.

H_{a1} There is a significant relationship between bullying victimization and fire setting behavior.

RQ2 Are there factors (i.e., personality characteristics, attachment styles, arousal seeking, and psychosocial stimuli) that predict fire setting behavior in juveniles and young adults?

H₀₂ Factors of personality characteristics, attachment styles, arousal seeking, and psychosocial stimuli do not significantly predict fire setting behavior in juveniles and young adults.

Ha₂ Factors of personality characteristics, attachment styles, arousal seeking, and psychosocial stimuli significantly predict fire setting behavior in juveniles and young adults.

RQ3 What precipitating events (i.e., trauma, abuse, maltreatment, and bullying) predict fire setting behavior?

Ho₃ Precipitating events do not significantly predict fire setting behavior in juveniles and young adults.

Ha₃ Precipitating events significantly predict fire setting behavior in juveniles and young adults.

In this chapter, I discuss the results and data collection procedures, research questions and hypotheses, descriptive findings, assumptions testing, and hypotheses testing for the present study. In the final section of Chapter 4, I present a summary of the findings and a brief introduction to Chapter 5.

Data Collection

The time frame for data collection was three and a half months. During this time frame, it was peak fire season in California (i.e., Summer to Fall). Survey responses were collected via Qualtrics. The anonymous survey link went live in August and stopped being available in October. The survey consisted of five sections. The first part was the informed consent section; the second part was the demographic section containing three questions about race, gender, and education; the third section was the FSS; the fourth section was the YSR; and the last section was the MACI. Eighty-four participants took the survey within the data collection frame, which exceeded the ideal number of 70

participants according to the recruitment plan. Among the 84 participants, some clicked the survey link without answering any questions or answered the first couple of sections of the survey but did not finish it. Seventy completed survey questionnaires were included in the final analysis, which aligned with the plan presented in Chapter 3.

Survey responses were extracted from Qualtrics to Excel. Recoding was conducted for responses to the FSS, YSR, and MACI. The recoding was based on each survey's scoring method. The FSS score was computed as an average of all survey items in the scale. The YSR subscale scores were computed as a sum of all survey items related to the subscale of rule-breaking behavior and aggressive behavior. Lastly, the MACI base rate subscale scores were computed based on the seven subscales of clinical syndromes. Raw scores for all scales were converted to base rate scores from 0 to 115. All study variables were measured in continuous form.

Results

Descriptive Findings

A total of 70 participants completed the survey. A plurality of the survey respondents was White ($n = 17, 24.3\%$), followed by Hispanic ($n = 15, 21.4\%$), Asian ($n = 11, 15.7\%$), and Black or African American ($n = 11, 15.7\%$). Almost two thirds of the survey respondents were male ($n = 51, 72.9\%$). The highest educational attainments of most of the survey respondents were associate's degree ($n = 23, 32.9\%$), followed by high school ($n = 29, 41.4\%$). Table 1 presents frequency and percentage data for the demographical information of the survey respondents.

Table 1*Frequency and Percentages for Demographic Information*

	<i>N</i>	%
Race		
American Indian or Alaska Native	5	7.1%
Asian	11	15.7%
Black or African American	11	15.7%
Hispanic	15	21.4%
Native Hawaiian or Other Pacific Islander	6	8.6%
White	17	24.3%
Two or more races	5	7.1%
Gender		
Female	17	24.3%
Male	51	72.9%
Transgender	2	2.9%
Highest educational attainment		
Junior high school	9	12.9%
High school	29	41.4%
Associate's degree	23	32.9%
Bachelor's degree	9	12.9%

All of the study variables were continuous. Table 2 presents the descriptive statistics (i.e., minimum, maximum, mean, standard deviation) for the study's variables. The DV, fire setting behavior, was computed as an average score of the FSS survey items. From the survey responses, the minimum fire setting behavior score was 1.0 while the maximum was 7.0. The mean fire setting behavior score was 4.3 ($SD = 1.7$), which indicates that on average the survey respondents were likely to exhibit fire setting behavior. The IVs were computed as summative scores of the items in the YSR and MACI. The minimum, maximum, mean, and standard deviation of all of the IVs are shown in Table 2.

Table 2

Descriptives of Continuous Variables

	<i>N</i>	Min	Max	<i>M</i>	<i>SD</i>
Bullying victimization	70	0.0	8.0	5.1	2.1
Personality characteristics	70	1.0	7.0	4.1	1.4
Attachment styles	70	0.0	9.0	4.2	2.8
Arousal seeking	70	0.0	3.0	2.2	0.8
Psychosocial stimuli	70	0.0	5.0	3.1	1.3
Abuse & maltreatment	70	1.0	8.0	5.4	1.9
Trauma & bullying	70	0.0	12.0	6.8	3.2
Fire setting behavior	70	1.0	7.0	4.3	1.7

Assumptions Testing

The use of multiple linear regression analysis requires data to meet eight assumptions. These eight assumptions are as follows: criterion variable(s) measured on a continuous scale, predictor variables measured on a continuous scale, independence of observations, linearity, homoscedasticity, multicollinearity, no significant outliers, and normality. Each of these assumptions was tested before conducting the regression analysis, and the results are shown in the succeeding discussion.

Assumption 1: Criterion Variable(s) Measured on a Continuous Scale

In this study, there was one criterion variable, and it was measured using the FSS. As discussed in Chapter 3, the FSS uses a 7-point Likert scale to rate its survey items. Survey items that are measured using a Likert scale produce ordinal variables, which can be treated as continuous variables under some conditions. Specifically, the score for the criterion variable was obtained by summing up all of the numerical ratings related to the criterion variable. Therefore, the assumption that the criterion variable(s) should be measured on a continuous scale was met.

Assumption 2: Predictor Variable(s) Measured on a Continuous Scale

In this study, there were seven predictor variables measured using the YSR and MACI. As discussed in Chapter 3, the YSR uses a 3-point Likert scale to obtain a summative score for personality characteristics, attachment styles, arousal seeking, and psychosocial stimuli, while the MACI uses a true-false rating to obtain a summative score for abuse & maltreatment and trauma & bullying. This indicates that all predictor

variables were measured in continuous form. Therefore, the assumption that the predictor variable(s) should be measured on a continuous scale was met.

Assumption 3: Independence of Observations

To test this assumption, the Durbin-Watson coefficient (D) was calculated. The statistic D ranges in value from 0 to 4. When the error terms are independent, D is expected to be close to 2. The calculated Durbin-Watson coefficients for the multiple linear regression models were 1.966 for RQ1, 1.608 for RQ2, and 1.938 for RQ3. The statistic D on both research questions was close to 2; therefore, it may be concluded that the assumption of independence of observations was met.

Assumption 4: Linearity

The linearity assumption refers to the linear relationship between two variables. This assumption can be tested using the linearity test in SPSS that compares the means of any two variables. Per Table 3, the results showed that the deviation from linearity was insignificant (i.e., p value is greater .05) for all pairings, and therefore, it can be concluded that the linearity assumption was met.

Table 3

Deviation From Linearity Test

	Sum of squares	df	Mean square	F	Sig.
BV*FSB	22.14	7	3.16	1.30	.27
PC*FSB	1.47	5	.29	.13	.98
ATS*FSB	12.67	8	1.58	.82	.59
ARS*FSB	4.11	2	2.05	.86	.43

PS*FSB	2.81	4	.70	.30	.88
A&M*FSB	5.55	6	.92	.33	.92
T&B*FSB	18.47	11	1.68	.64	.79

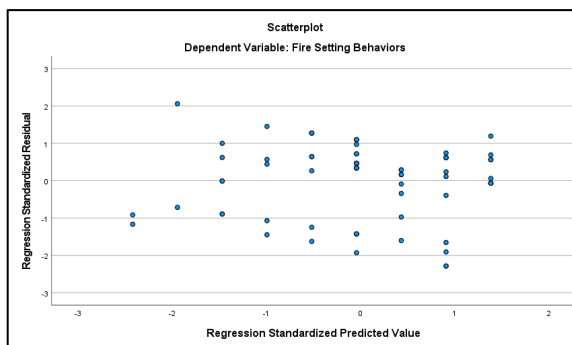
Note. BV = Bullying victimization; FSB = Fire-setting behavior; PC = Personal characteristics; ATS = Attachment styles; ARS = Arousal styles; PS = Psychosocial stimuli; A&M = Abuse & maltreatment; T&B = Trauma & bullying

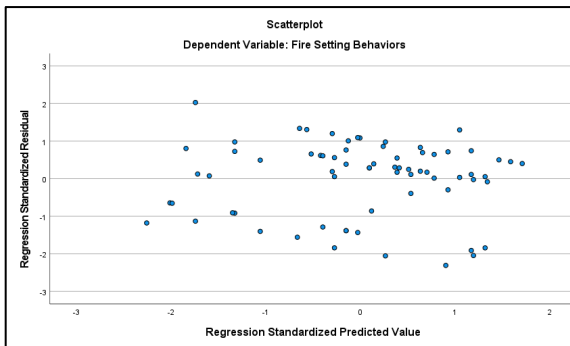
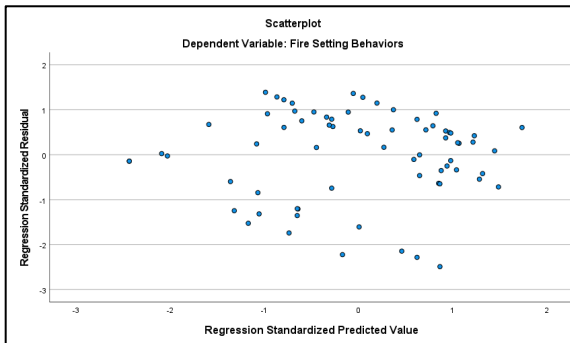
Assumption 5: Homoscedasticity

Homoscedasticity refers to whether residuals are equally distributed, or whether they tend to bunch together at some values, at other values, or spread far apart. To determine this, scatterplots between standardized residuals and standardized predicted values were developed. Figure 1 indicated that there was not an obvious pattern, as there were points equally distributed above and below 0 on the X-axis, and to the left and right of 0 on the Y-axis. Therefore, it can be concluded that the assumption of homoscedasticity was met.

Figure 1

Scatterplots of Standardized Residuals





Assumption 6: Multicollinearity

The presence of multicollinearity was tested and inspected through tolerance/VIF analysis, which assures that criterion variables are perfectly collinear and that the error terms for the variables meet the necessary requirement of normalcy and homoscedasticity. A VIF value above 2.5 indicates a violation of the multicollinearity. The collinearity diagnostics feature of SPSS was run, and the results showed that the VIF values for the regression model were 1.00 for RQ1, 1.26 to 2.05 for RQ2, and 1.48 for RQ3 for all the predictors. Therefore, it can be concluded that the assumption of multicollinearity was met.

Assumption 7: No Significant Outliers

Outliers are single data points within the data that do not follow the usual pattern. The problem with outliers is that they can have a negative effect on the one-way

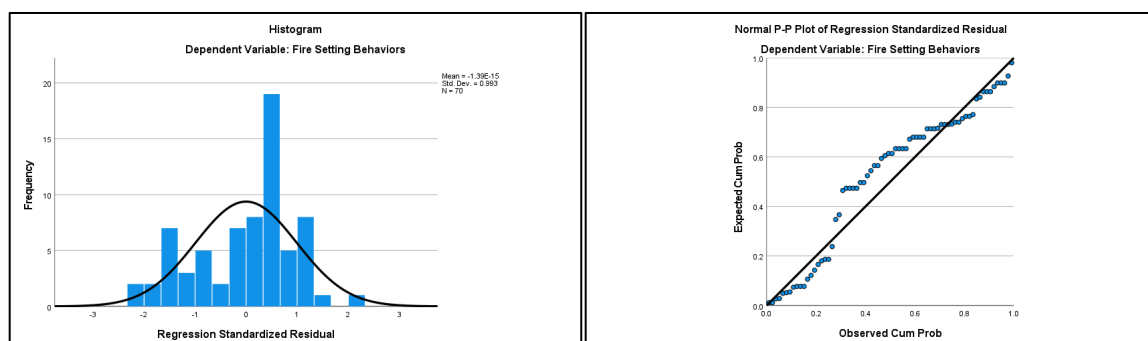
independent samples t test, reducing the validity of the results. However, it must be noted that not all outliers are bad, in which only those that are significantly different from other data. To test for any significant outliers, case-wise diagnostics were done, and Cook's distance was observed for any influential outliers. If a case has a Cook's distance of greater than 1, it may be an overly influential case that warrants exclusion from the analysis. The results showed that the maximum Cook's distance was .17 for RQ1, .10 for RQ2, and .10 for RQ3. Therefore, the assumption of no significant outliers was met.

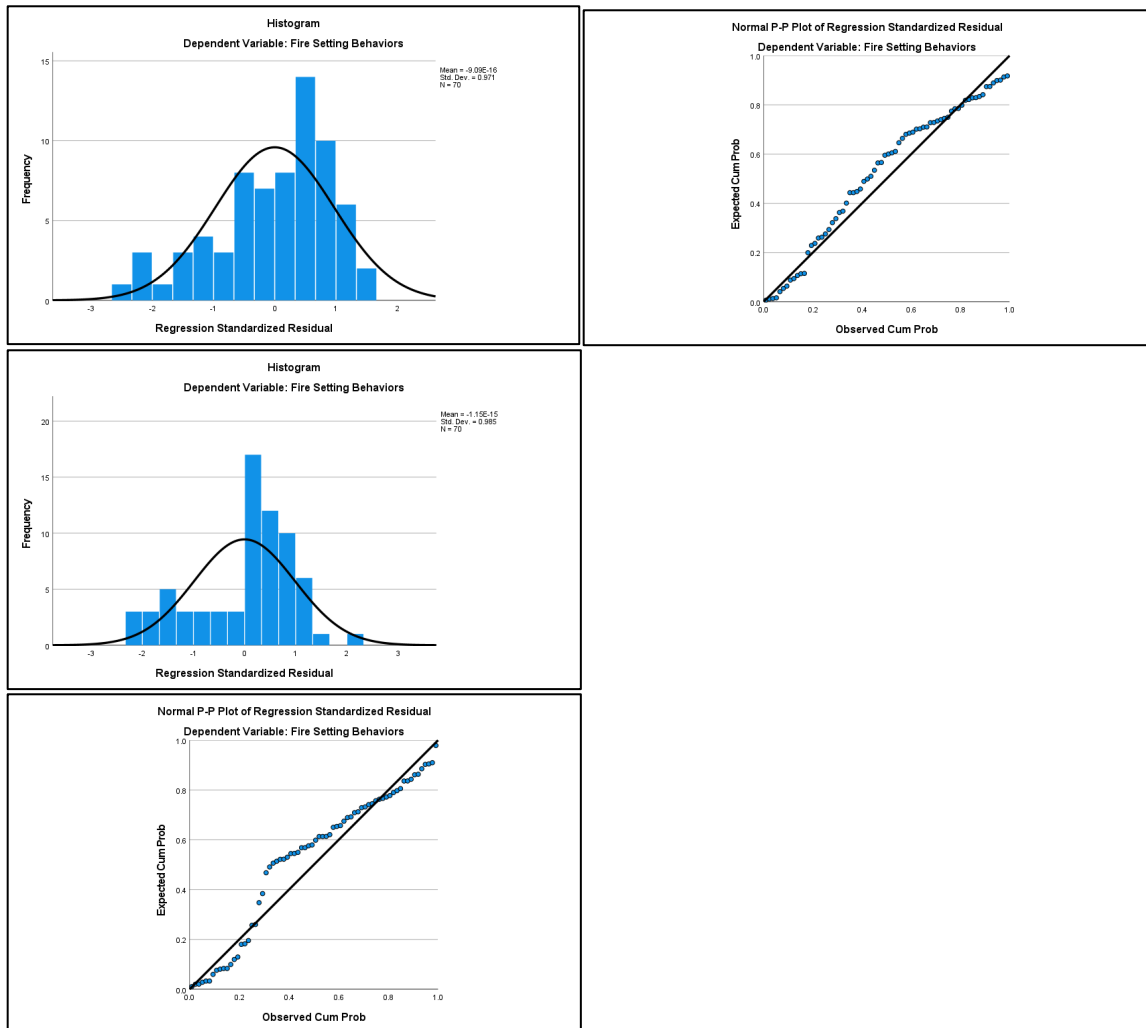
Assumption 8: Normality

To make valid inferences from the regression model, the residuals of the model should follow a normal distribution (i.e., bell-shaped distribution). The histograms and normal P-P plots suggest that the dependent variables were approximately normally distributed (see Figure 2). The plots show no deviation from normality between the observed cumulative probabilities. Therefore, the assumption of normality was met.

Figure 2

Histograms and Normal P-P Plots





Hypotheses Testing

Multiple linear regression analyses were conducted to test the three sets of hypotheses. All hypotheses testing were conducted using a 95% significance level. The following were the results of the hypotheses testing for the three research questions.

Research Question 1

Is there a significant relationship between bullying victimization and fire setting behavior? The IV was bullying victimization and the DV was fire setting behavior. Based on Table 4, the multiple regression equation developed was statistically significant

($F(1,68) = 9.652, p = .003$), with an $R^2 = .124$. The result provided sufficient evidence to reject the null hypothesis.

Table 4

Analysis of Variance Results for Research Question 1

	Sum of squares	<i>df</i>	Mean square	<i>F</i>	Sig.
Regression	24.269	1	24.269	9.652	.003
Residual	170.971	68	2.514		
Total	195.239	69			

To know how exactly bullying victimization is relative to fire setting behavior among young adults, the coefficients of this IV in the significant multiple linear regression equation is shown in Table 5. The regression equation is: fire setting behavior is equal to $2.849 + (0.282 * \text{Bullying Victimization})$. The bullying victimization was found to be statistically and significantly related with fire setting behavior ($p = .009$). It can be inferred from the equation that as bullying victimization increases, the fire setting behavior of young adults also increases. Therefore, the results suggested that bullying victimization has a positive relationship with fire setting behavior among the study's participants.

Table 5

Coefficients for Research Question 1

	Unstandardized Coefficients	Standard Coefficients	<i>t</i>	Sig.

	B	Std. Error	Beta		
Constant	2.838	0.324		8.760	0.000
Rule Breaking Behavior	0.107	0.040	0.622	2.686	0.009
Aggressive Behavior	-0.001	0.040	-0.004	-0.016	0.987

Research Question 2

Are there factors (i.e., personality characteristics, attachment styles, arousal seeking, and psychosocial stimuli) that predict fire setting behavior in juveniles and young adults? The IVs were personality characteristics, attachment styles, arousal seeking, and psychosocial stimuli. Based on Table 6, the multiple regression equation developed was statistically significant ($F(4,65) = 12.493, p < .05$), with an $R^2 = .435$. The result provided sufficient evidence to reject the null hypothesis.

Table 6

Analysis of Variance Results for Research Question 2

	Sum of squares	df	Mean square	F	Sig.
Regression	84.861	4	21.215	12.493	0.000
Residual	110.379	65	1.698		
Total	195.239	69			

The coefficients of these IVs in the significant multiple linear regression equation is shown in Table 7. The regression equation is: fire setting behavior is equal to $-1.294 +$

(0.224 * Personality Characteristics) + (.210 * Attachment Styles) + (0.068 * Arousal Seeking) + (0.337 * Psychosocial Stimuli). The attachment styles and psychosocial stimuli were found to be statistically and significantly related with fire setting behavior ($p < 0.05$) but not personality characteristics ($p = 0.163$) and arousal seeking ($p = 0.789$). Specifically, attachment styles and psychosocial stimuli have a positive relationship with fire setting behavior. This indicates that the higher the attachment styles or psychosocial stimuli, the higher the fire setting behavior among the study's participants.

Table 7

Coefficients for Research Question 2

	Unstandardized		Standard	<i>t</i>	Sig.
	coefficients		coefficients		
	B	Std. error	Beta		
Constant	1.294	0.585		2.212	0.031
Personality characteristics	0.224	0.159	0.188	1.410	0.163
Attachment styles	0.210	0.080	0.347	2.627	0.011
Arousal seeking	0.068	0.252	0.032	0.268	0.789
Psychosocial stimuli	0.337	0.138	0.256	2.449	0.017

Research Question 3

What precipitating events (i.e., trauma, abuse, maltreatment, and bullying) predict fire setting behavior? The IVs were abuse & maltreatment and trauma & bullying. Based on Table 8, the multiple regression equation developed was statistically significant

($F(2,67) = 5.453, p < .05$), with an $R^2 = .140$. The result provided sufficient evidence to reject the null hypothesis.

Table 8

Analysis of Variance Results for Research Question 3

	Sum of squares	<i>df</i>	Mean square	<i>F</i>	Sig.
Regression	27.333	2	13.667	5.453	0.006
Residual	167.906	67	2.506		
Total	195.239	69			

The coefficients of these IVs in the multiple linear regression equation were shown in Table 9. The regression equation is: fire setting behavior is equal to $2.709 + (.077 * \text{Abuse \& Maltreatment}) + (.169 * \text{Trauma \& Bullying})$. Trauma & bullying was found to be statistically and significantly related with fire setting behavior ($p < 0.05$) but not abuse & maltreatment ($p = 0.531$). It can be inferred from the equation that as trauma & bullying increases, the fire setting behavior of young adults also increases. Therefore, the results suggested that trauma & bullying have a positive relationship with fire setting behavior among the study's participants.

Table 9

Coefficients for Research Question 3

	Unstandardized coefficients	Standard coefficients	t	Sig.
	B	Std. error	Beta	

Constant	2.709	0.593		4.569	0.000
Abuse & maltreatment	0.077	0.123	0.087	0.629	0.531
Trauma & bullying	0.169	0.073	0.318	2.309	0.024

Summary

The purpose of this study was to determine the relationship between bullying victimization and fire setting behavior in juveniles and young adults. Three instruments were used to measure the study's variables. YSR and MACI were used to measure the IVs of bullying victimization, personality characteristics, attachment styles, arousal seeking, psychosocial stimuli, and precipitating events (i.e., trauma, abuse, maltreatment, and bullying). Meanwhile, FSS was used to measure the DV of fire setting behavior. Multiple linear regression analyses were conducted to test the three sets of hypotheses.

The results indicated that there was enough statistical evidence to reject the $H1_0$, $F(1,68) = 9.652$, $p < .05$ and conclude that bullying victimization was statistically and significantly related with fire setting behavior. Bullying victimization has a positive relationship with fire setting behavior among the study's participants. Moreover, the results indicated that there was enough statistical evidence to reject the $H2_0$, $F(4,65) = 12.493$, $p < .05$ and conclude that attachment styles and psychosocial stimuli were statistically and significantly related with fire setting behavior. Attachment styles and psychosocial stimuli have a positive relationship with fire setting behavior.

Lastly, the results showed that there was enough statistical evidence to reject the $H3_0$, $F(2,67) = 5.453$, $p < .05$ and conclude that trauma & bullying were statistically and

significantly related with fire setting behavior. Trauma & bullying have a positive relationship with fire setting behavior among the study's participants. Chapter 5 includes the discussion of the conclusion of this study and the recommendations for future research.

Chapter 5: Discussion, Conclusions, and Recommendations

Bullying is a worldwide phenomenon that has negative effects on juveniles' social, interpersonal, and psychological well-being (Byrant, 2014; Mayes et al., 2017). Victims of bullying often suffer from longstanding mental health problems, such as antisocial behavior, anxiety, depression, and suicidality (Dubar, 2018). These individuals may lack a strong support system and positive coping skills to deal with emotional distress, and thus, may respond to distress in a catastrophic manner, such as setting fires (Gerlsma & Lugtmeyer, 2018).

The purpose of this study was to investigate the relationship between bullying victimization and fire setting behavior in juveniles and young adults. Given that juvenile fire setting poses a large financial burden on state and federal governments, and little is known regarding the predictive characteristics of fire setting behavior (Reilly & Johnson, 2016). Furthermore, knowledge and research gaps regarding how bullying victimization may contribute to fire setting have limited the effectiveness of intervention strategies targeting at risk groups (Ekbrand & Uhnnoo, 2015; Lambie et al., 2014). Therefore, it is important to investigate the relationship between bullying and fire setting to better understand how to prevent bullying and fire setting among juveniles and young adults to ensure public safety.

The following research questions guided the study:

RQ1 Is there a significant relationship between bullying victimization and fire setting behavior?

- RQ2 Are there factors (i.e., personality characteristics, attachment styles, arousal seeking, and psychosocial stimuli) that predict fire setting behavior in juveniles and young adults?
- RQ3 What precipitating events (i.e., trauma, abuse, maltreatment, and bullying) predict fire setting behavior?

In order to answer these questions, a correlational, nonexperimental research design was used. The IVs were bullying victimization, attachment styles, psychosocial stimuli, and personality characteristics. The DV was fire setting behavior. Because the goal of this study was to determine the relationship between various IVs and one DV, a correlational design was considered appropriate (Leedy & Omrod, 2013). Convenience sampling was chosen in order to select and recruit participants for this study.

The target population for this study was young adults over the age of 18 years who had a history of being bullied and setting fires. The study's participants were previously enrolled in at risk youth, YMCA, or fire prevention and intervention programs in their teenage years, and had become "big brothers" and "big sisters" for newcomers in these programs. Based on a G*Power analysis, the minimum sample size needed for this study was 55 participants; however, in order to increase the power of the sample size, 70 participants were chosen instead of 55. After obtaining IRB approval, I recruited participants from eligible programs by posting recruitment announcements, explaining the study's background, purpose, and methodology. In the end, 70 participants successfully completed the study. Participants completed a four-part anonymous survey through Qualtrics. The survey consisted of a demographics section; the YSR (Roe-

Sepowitz & Hickle, 2011) to measure bullying; the MACI (Ducat et al., 2013) to measure personality characteristics, attachment styles, arousal seeking, psychosocial stimuli, and precipitating events; and the FSS (Gannon & Barrowcliffe, 2012) to measure fire setting behavior.

Multiple linear regression was conducted for statistical analysis. As the result indicated, bullying victimization had a positive relationship with fire setting behavior among the study's participants. Additionally, while attachment styles and psychosocial stimuli were significantly related to fire setting behavior, personality characteristics and arousal seeking behavior were not. The findings of this study also indicated that trauma and bullying were significant factors predicting fire setting behavior.

Interpretation of the Findings

This study was grounded in attachment theory (Bowlby et al., 1989), RST (Braithwaite, 1989), arousal-seeking behavioral theory (Lambie et al., 2014), and functional analytic theory (Williams & Kennedy, 2012). Within these theoretical frameworks, the quality of the attachment styles established in early childhood can influence an individual's emotions and behaviors later in life (Bretherton, 1985), whereas fire setting behavior might be a consequence of environmental stimuli (Lambie et al., 2014) or psychosocial stimuli (Williams & Kennedy, 2012). Therefore, the application of these theories to the study may lead to a better understanding of bullying and fire setting behavior. The following section situates the results of this study within the existing literature using ideas from these theories.

Research Question 1: Is There a Significant Relationship Between Bullying Victimization and Fire Setting Behavior?

The first research question addressed the relationship between bullying victimization and fire setting behavior. The results from multiple linear regression indicated that there is a significant relationship between bullying victimization and fire setting behavior. It can be inferred from the resultant regression equation that as bullying victimization increases, fire setting behavior also increases. Therefore, the results suggested that bullying victimization had a positive relationship with fire setting behavior among the study's participants.

Green et al. (2014) identified psychosis, revenge, anger, and suicidal thoughts as the main motivators for fire setting behavior. Although few studies have directly linked bullying victimization to fire setting (Bifulco et al., 2014; Cunningham et al., 2016; Willis, 2015), fire setting, particularly as an act of revenge, has been identified as high-risk and antisocial behavior, in which the victims of bullying may be engaged (Hoerold & Tranah, 2014).

Because bullying is associated with antisocial behavior, depression, and suicidal thoughts (Dunbar, 2018; Green et al., 2014), it is believed that bullying victimization may be a predictor of fire setting behavior. As the data indicated, participants who have experienced bullying may also engage in high-risk and antisocial behavior as a means to seek attention or to get even with those who hurt them. This finding aligns with previous research suggesting that bullying victimization can lead to mental health instability

(Bifulco et al, 2014; Cunningham et al., 2016) as well as the tendency to engage in high-risk and antisocial behavior, such as setting fires (Poon, 2016; Willis, 2015).

Research Question 2: Are There Factors (i.e., Personality Characteristics, Attachment Styles, Arousal Seeking, and Psychosocial Stimuli) that Predict Fire Setting Behavior in Juveniles and Young Adults?

In order to answer the second research question, multiple linear regression was performed to determine if certain factors such as personality traits, attachment style, arousal seeking behavior, or psychosocial stimuli may influence fire setting behavior. Based on the statistical analysis of the survey results, attachment styles and psychosocial stimuli were predictors of fire setting behavior, while personality characteristics and arousal seeking were not significantly related to fire setting. Specifically, attachment styles and psychosocial stimuli had a positive relationship with fire setting behavior. This suggests that the stronger the attachment styles or psychosocial stimuli, the greater the fire setting behavior among the study's participants.

Attachment Style and Fire Setting

According to attachment theory, the quality of the attachments formed in early childhood between children and their caretakers may influence children's behaviors as well as their ability to control their emotions later in life (Kinniburgh et al., 2017). Attachment styles are associated with individuals' ability to maintain healthy relationships with their family, community, and society (Bowlby et al., 1989). An inability to develop healthy and secure attachments may lead to maladaptive and risk-taking behaviors, such as fire setting.

Attachment theory suggests that the quality of the attachments is associated with individuals' capacity to emotionally respond to their family, community, and society in an appropriate manner (Bowlby et al., 1989). For instance, Briere et al. (2017) found that disengaged parenting promoted the development of negative attachment styles, which served as a predictor of adverse psychological impact on increased propensity for misbehavior. Briere et al. also found that although child abuse was a significant predictor of adverse psychological impact to the child, experiences of negative attachments may predict far worse damaging effects on the child.

While a direct link between attachment styles and fire setting behavior has not yet been established, it is clear that the nature of the attachments formed in early childhood has a significant impact on individuals' mental health and behavioral outcomes later in life. The finding of this study align with previous research (Briere et al., 2017; Kinniburgh et al., 2017) suggested that children exposed to maltreatment, trauma, and bullying in early life are more likely to develop negative attachments (i.e., insecure or passive-aggressive attachment styles) and subsequently are more likely to respond to adversity or a hostile environment in a maladaptive manner, such as setting fires.

Psychosocial Stimuli and Fire Setting

Psychosocial input from the environment or emotional stimulation may also influence fire setting behavior. An analysis of pathological arson and normal fire setting revealed that certain psychosocial stimuli, coupled with the appropriate contextual conditions, may lead to a predisposition toward fire setting behavior (Jackson et al., 1987). Psychosocial factors such as prior experiences with or inclinations toward fire

may also play a role in fire setting (Williams & Kennedy, 2012), particularly when combine with other factors such as bullying victimization, trauma, and maltreatment (Tyler et al., 2015). Watt et al. (2015) found that the offender characteristics of fire setting behavior were significantly predicted by a history of delinquency, antisocial behavior, fire-related interests, as well as preoccupation with fire.

Mental health problems, along with other personal, social, and interpersonal difficulties, have also been established as risk factors for deliberate fire setting (Tanner et al., 2016). For instance, Tyler et al. (2015) found that repeat fire setters are more likely to be diagnosed with schizophrenia, as well as to express a fascination with fire and/or explosives. Although I did not explore diagnoses from the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (American Psychiatric Association, 2013) in the present study; however, I did investigate the possible predictive characteristics of fire setting behavior in order to gain a better understanding of how to prevent bullying and fire setting among juveniles and young adults.

Research Question 3: What Precipitating Events (i.e., Trauma, Abuse, Maltreatment, and Bullying) Predict Fire Setting Behavior?

In order to answer the third research question, multiple linear regression was performed to determine whether trauma, abuse, maltreatment, and bullying were predictors of fire setting behavior. Based on the statistical analysis of the survey results, trauma and bullying were predictors of fire setting, while abuse and maltreatment were not significantly related to fire setting. It can be inferred from the equation that as trauma and bullying increase, fire setting behavior also increases. Therefore, the results

suggested that trauma and bullying had a positive relationship with fire setting behavior among the study's participants.

While there is no evidence that fire setting is a direct response to trauma and bullying, previous research focused on the characteristics of juvenile fire setters indicated that most fire setters have a prior history of psychological trauma and bullying victimization (Kinniburgh et al., 2017). The finding of this study align with previous research (Burnett & Omar, 2014; Green et al., 2014; Palermo, 2015; Turner et al., 2016; Valdebenito et al., 2017) suggested that individuals who have experienced psychological trauma and bullying victimization are more likely to lash out or strike back at those who hurt them in an aggressive and hostile manner, such as setting fires.

Trauma, Bullying, and Fire Setting

Trauma may relate to fire setting behavior through the formation of negative attachments, poor mental health outcomes, and bullying victimization (Kinniburgh et al., 2017). Kinniburgh et al. emphasized that the caregiving system meant to serve as a child's source of security and comfort might also be a trigger of stress and anxiety if it serves as a focal point of trauma. The long-term deleterious effects of trauma borne out of negative attachments in a child's early life may therefore be a precedent to inappropriate behavior such as fire setting later in life.

Bullying, almost without exception, causes psychological damage to the victim. Even though such psychological damage may vary in degree and type, it rarely disappears completely. Therefore, the victim of bullying might be traumatized for years,

which led to the third research question of this study, addressing whether there is a direct connection between bullying victimization and psychological trauma among fire setters.

Although it may not be clear that reducing trauma and bullying results in large-scale and long-run reductions in fire setting, reducing trauma and bullying may have significant benefits for schools, communities, and society. Henceforth, it might be worthwhile to redirect school and fire authorities' efforts to pay close attention to children's and adolescents' experiences of bullying victimization and psychological trauma as possible predictive characteristics of fire setting, in order to prevent bullying and fire setting among juveniles and young adults.

In summary, in addressing the research questions of this study, I attempted to investigate the relationship between bullying and fire setting, as well as the possible predictive characteristics of fire setting behavior. The findings of this research may be able to provide educators, mental health professionals, fire authorities, and policy makers with additional information regarding the potential risks and harmful effects of bullying and fire setting, in the hope of preventing bullying and reducing fire setting to ensure public safety.

Limitations of the Study

Research on the link between bullying victimization and fire setting is still in the early stages of development. Although the results of the present study provide some statistical evidence of the significant relationship between bullying and fire setting, along with the predictive characteristics of fire setting such as attachment style, psychosocial stimuli, a prior history of trauma, and bullying; however, it is also important to examine

the limitations in the design and execution of this study to determine how future research might be improved.

The first limitation of the present study was the lack of elaboration regarding motivations from the participants. As a result of this, the results were limited regarding the underlying motives leading up to fire setting behavior. The second limitation was the generalizability of the findings, as the participants were only recruited from California. The third limitation was that the present study only explored the relationship and possible predicative characteristics of bullying and fire setting; other factors were not taken into account.

Limitations in the Research Design

This study used a correlational, nonexperimental design to examine the relationship between bullying victimization and fire setting. This research design was considered appropriate since the purpose of this study was to investigate the relationship between a number of IVs and one DV (Leedy & Omrod, 2013).

A quantitative methodology is also useful for determining the existence of statistically significant relationships among variables using data drawn from a large sample population. However, there were two important limitations to the utility of a quantitative, correlational design. The first was that while the results of quantitative research reveal information about the relationships between variables, they provide fewer insights into why these relationships exist. For instance, while the results suggested that bullying victimization can act as a predictor of fire setting, without undertaking further research, it is difficult to draw a firm conclusion regarding why bullying victimization

increases an individual's propensity to engage in fire setting behavior. The other important limitation of correlational designs was that correlation does not imply causation (Klugh, 2013). As a result, it is difficult to determine if factors such as trauma and bullying are direct causes of fire setting without further investigation. Confounding variables, such as prior experiences with fire and criminal history could also influence fire setting behavior.

The use of a survey to obtain data posed another limitation to the study results. As noted in Chapter 1, the use of a survey to gather information about participants' motivations to set fires prevents the collection of richer and more nuanced data. Because participants had to answer based on a set of pre-determined responses, more in-depth information about the events leading up to fire setting can remain unknown. As a result, data obtained from survey-based research alone does not necessarily reveal a holistic understanding of the phenomenon in question. Using other methods such as interviews might yield more nuanced information about why people set fires. Therefore, future research should employ a mixed methods approach in order to capture a more nuanced understanding of how bullying victimization is related to fire setting.

Limitations to the Generalizability of the Findings

While quantitative research typically generates findings that are more generalizable than those generated in qualitative research, there is still a limit to how widely the results can be applied. This limitation originates from the manner in which the researcher recruited study participants. In this study, the researcher recruited participants

through convenience sampling by contacting at risk youth, YMCA, and juvenile fire prevention and intervention programs in California.

While convenience sampling is an effective way of recruiting participants, the results cannot be generalized to the wider fire setting population. In other words, the data gathered from this research is specific to individuals who have enrolled in the programs in their teenage years, and therefore, it does not necessarily translate to young adults enrolled in other programs or fire setters who have not enrolled in any intervention programs. Additionally, since this study's sample population consisted of people 18 and older, the results were not applicable to juvenile fire setters.

The findings of this research may cover a wider range of population if (a) the sample population includes individuals who have no history of being bullied and setting fire, (b) participants were recruited in addition to California, (c) investigate deeper issues leading up to fire setting behavior, such as motivation, and (d) explore the relationship beyond bullying victimization and fire setting behavior.

Recommendations

There is a large body of literature that focuses on the negative effects of bullying victimization, but rarely has fire setting been discussed as a possible outcome of bullying (Turner et al., 2016; Valdebenito et al., 2017). This study intends to provide a significant contribution towards this gap, but further research is necessary in order to develop a more holistic understanding of the relationship between bullying victimization and fire setting.

One way in which the future research is recommended to improve upon this study was to increase the sample size. While 84 participants took the anonymous survey, only

70 surveys were used in the data analysis due to the submission of incomplete surveys or errors in survey submission. Furthermore, 70 participants is a relatively small sample size for quantitative research, which typically involves the analysis of large data sets in order to generate generalizable conclusions. Therefore, future studies on bullying victimization and fire setting is recommended to recruit more participants so that the results can be more generalizable. Additionally, participants should be recruited from more than one geographical area to maximize variation in the data.

Quantitative approach was helpful because it guided the researcher to determine whether there is a statistically significant relationship between two or more variables while minimizing potential biases. Anonymous survey design was also helpful in minimizing bias; particularly when studies involve asking participants about sensitive topics like bullying, fire setting, or other inappropriate behaviors. Since the participants are not directly interviewed, and therefore, might be more likely to disclose sensitive information honestly. Therefore, employing other methodological approaches to the study of bullying and fire setting might be fruitful due to the limitations of anonymous survey design that mentioned previously. For instance, future studies could employ a qualitative, phenomenological approach to acquire a more in-depth understanding of whether bullied victims and fire setters believe their experiences of bullying may be contributed to their fire setting behavior or not. While such a study would have to be done on a smaller scale, interviews with fire setters who have a history of being bullied could help flesh out more information on the possible mechanisms through which bullying contributes to fire setting behavior.

Implications

The findings of this study contained significant implications for positive social change, in terms of identifying youths who are at risk of engaging in fire setting behavior, as well as developing prevention and intervention strategies for this population. Based on the results of multiple linear regression analysis, negative attachment style, psychosocial stimuli, trauma, and bullying were predictors of fire setting behavior. These results can be used to identify youths who are at risk of engaging in fire setting behavior. These results can also be used to develop early prevention and intervention strategies for youths who have a history of trauma and bullying. These strategies can be implemented in schools and youth centers to prevent fire setting. Furthermore, developing a better understanding of the motivations behind fire setting behavior can inform both theory development and intervention programs (Reilly & Johnson, 2016). Finally, enrolling at risk fire setters in the appropriate intervention programs may help to reduce the prevalence of juvenile fire setting, and potentially decreased property damage, financial loss, bodily injury, and even death that were caused each year by fire setting.

Conclusion

Bullying and fire setting have become a widespread phenomenon that has long-lasting repercussions for mental health problems, financial loss, and bodily injury (Arseneault, 2017; Tanner et al., 2016; Dalhuisen et al., 2017; Watt et al., 2015). Previous research has focused on mental health and behavioral problems in fire setters, rather than the predictive characteristics of fire setting behavior, or on how bullying contributes to fire setting (Lambie et al., 2014; Tanner et al., 2016). Therefore, the purpose of this study

was to investigate the predictive characteristics of fire setting behavior as well as the correlation between bullying and fire setting behavior.

A quantitative, correlational design was chosen to identify the predictive characteristics of fire setting behavior and the relationships between bullying and fire setting. This study was grounded in a four-pronged theoretical framework that drew on attachment theory (Bowlby, May & Solomon, 1989), RST (Braithwaite, 1989), arousal-seeking behavioral theory (Lambie, Randell, & McDowell, 2014), and functional analytic theory (Williams & Kennedy, 2012).

Participants recruited from YMCA, at risk youth, and fire prevention programs in California had filled out the survey questionnaires that measured bullying, personality characteristics, attachment styles, arousal seeking, psychosocial stimuli, precipitating events, and fire setting behavior. The results of this study indicated that there was a positive correlation between bullying victimization and fire setting behavior. Furthermore, negative attachments styles, psychosocial stimuli, and a history of trauma and bullying were identified as predictors of fire setting behavior. These results provided a set of core criteria that can be used to identify youth who are at risk of engaging in fire setting behavior. By identifying these youths and enrolling them in early intervention programs, fire setting behavior may be prevented and reduced, and their mental health issues may be more effectively addressed. Additionally, the heavy financial burden that fire setting poses to state and local governments can be reduced by developing more effective intervention programs.

While the results of this study identify distinct predictor variables and the relationship between bullying and fire setting, future research is recommended to focus on developing a more holistic method to investigate how bullying motivates fire setting in order to develop effective prevention and intervention programs for at risk fire setters and offenders. Chapter 5 concluded this study.

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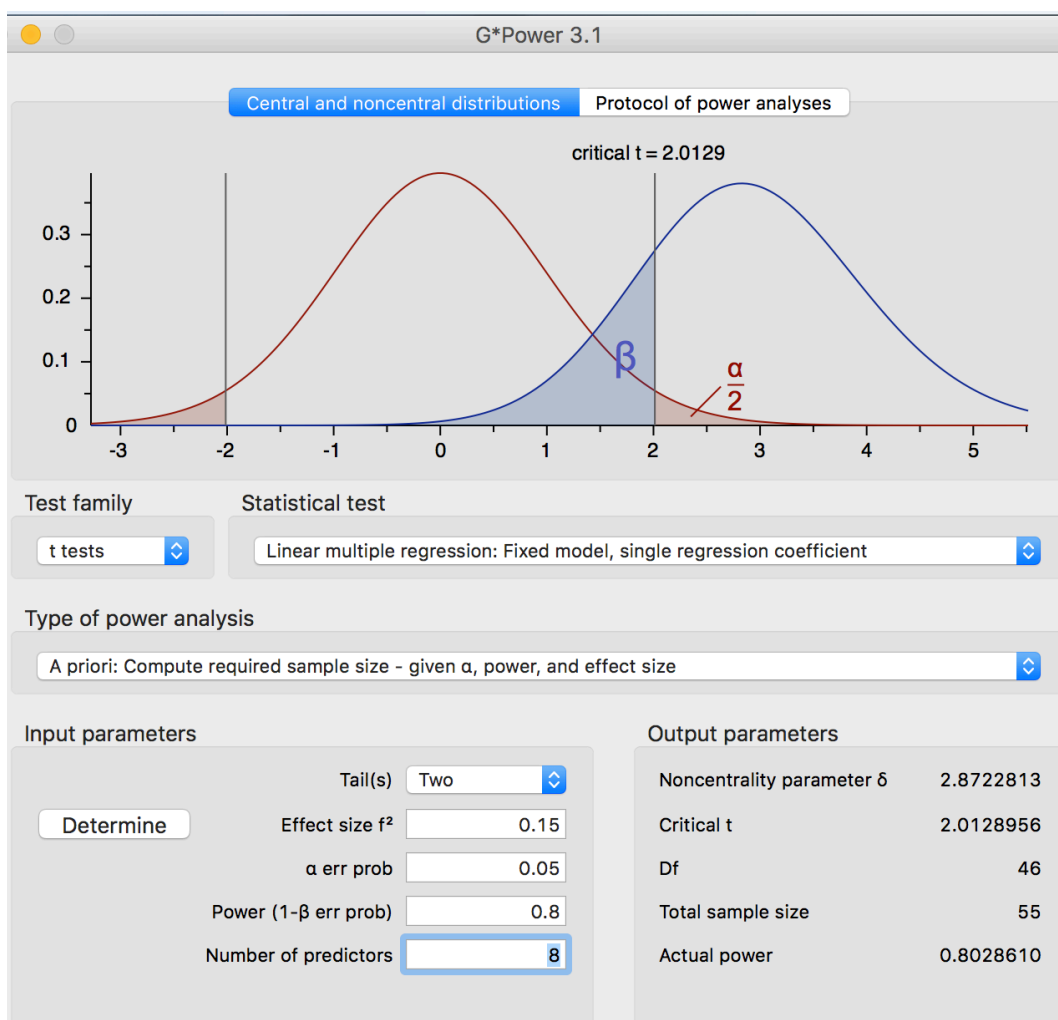
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Appendix A: Results of Power Analysis



Note. The results of power analysis yielded a minimum sample size of 55 participants as being needed to be able to demonstrate statistical significance. This means that the sample of this study should be comprised of at least 55 young adults who are 18 years of age or older. This is the minimum to achieve the required statistical power for a quantitative study of 0.80, using a multiple linear regression analysis.

Appendix B: Demographic Survey

1. Age: What is your age?
 - a. 18-25
 - b. 25-30
 - c. 30-35
 - d. 35 or older

2. Ethnicity (or Race): Please specify your ethnicity:
 - a. Hispanics of any race
 - b. American Indian or Alaska Native
 - c. Asian
 - d. Black or African American
 - e. Native Hawaiian or Other Pacific Islander
 - f. White
 - g. Two or more races

3. Gender: What is your gender?
 - a. Male
 - b. Female
 - c. Transgender

4. Education: What is the highest level of education you have completed?
 - a. Junior high school
 - b. High school
 - c. Associate degree
 - d. Bachelor's degree
 - e. Master's degree
 - f. Doctorate