

JUVENILE FIRESETTING

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Introduction

When juvenile delinquency is mentioned, arson is not usually the first type of offense that comes to mind. However, between 2007 and 2011, the National Fire Protection Association (NFPA) reported that 282,600 intentional fires were reported to U.S. fire departments each year, with annual losses of 420 deaths, 1360 injuries, and \$1.3 billion in damaged property (Peters & Freeman, 2016). Moreover, 40 percent of individuals arrested for these events were less than 18 years of age (Peters & Freeman). Even more disturbing is that almost 85 percent of the victims of fires started by children are the children themselves, with 80 deaths and 860 injuries occurring annually (Campbell, 2014; Burn Institute, 2004). Although legal definitions of arson vary from state to state, a juvenile may be charged with arson when an evaluation of the event reveals sufficient evidence of malicious and willful firesetting (Office of Juvenile Justice and Delinquency Prevention [OJJDP], 1997).

Historically, juvenile firesetting has been viewed as a problem particular to “curious kids” (U.S. Fire Administration [USFA] of the Federal Emergency Management Agency [FEMA], 1997). Fires set by children playing with matches and lighters tend to be categorized as “accidental” or “child’s play.” However, juvenile firesetting includes the deliberate destruction of property by juveniles through fire, which sometimes results in casualties (USFA & FEMA). Researchers have attempted to characterize juvenile firesetters based on demographic, psychological, and psychiatric data. However, there is little consensus regarding specific risk factors or characteristics common to all juvenile firesetters because the factors are widely variable (Peters & Freeman, 2016). The evidence suggests that the cause for firesetting in juveniles is likely a complex interplay between environmental, psychological, and biological factors. The complex nature of juvenile firesetting necessitates an extensive intervention and a multidisciplinary array of services (Stadolnik, 2000).

Causes and Risk Factors

The general lack of consensus in medical, legal, sociological, and psychiatric fields on the topic of juvenile firesetting has contributed to the many myths about the disorder. Unfortunately, specific information is not available about the causes and risk factors of juvenile firesetting, as they are not definitively known. Most attention to firesetting has been included within broader categories of delinquency and aggression in children (MacKay et al., 2009). In the past two decades, professionals have attempted to conceptualize and develop theoretical underpinnings of juvenile firesetting behavior.

However, firesetting is an elusive and complex behavioral problem. In order to explain firesetting, both individual and environmental predictors must be assessed simultaneously.

The concept of fire interest has consistently been associated with firesetting behavior in multiple studies and has been identified as a risk factor for recidivism (Peters & Freeman, 2016). In a study of 343 psychiatric patients, firesetters were distinguished from non-firesetters by the intensity of their curiosity about fire. In addition, early experiences with fire, early exposure to firesetting, and previous intentional firesetting behaviors are associated with juvenile firesetting behavior (Kolko & Kazdin, 1989).

Being male is frequently reported as a risk factor for firesetting (Peters & Freeman, 2016). One particular study of 43,000 adults showed a 1.7 percent lifetime prevalence rate of firesetting in men and 0.4% in women (Hoerte et al., 2011).

Substance use, specifically alcohol and cannabis, is another common risk factor identified in firesetting. One large study of 3,965 students in grades 7 to 12 revealed that binge drinking and frequent cannabis use to be associated with firesetting behavior, and youth who use additional illicit substances are more likely to be high-frequency firesetters (MacKay et al., 2009).

Researchers have also evaluated the role of maltreatment in firesetting behavior. One particular study of children aged 4 to 17 years reported that 48 percent of those who set fires experienced maltreatment and, compared with youth who had not experienced maltreatment, were more likely to have a history of firesetting and have more access to ignition sources (Root et al., 2008). This is consistent with reports that children with emotional and physical abuse are more likely to have a history of firesetting than children who did not experience abuse.

The adult literature has suggested an association between psychiatric illness and firesetting behavior, particularly with affective disorders and substance use disorders (Peters & Freeman, 2016). Children with firesetting behaviors were more likely than other juvenile offenders to have received mental health treatment and to have had suicidal thoughts in the past (Rasanen et al., 1995). Conduct disorder and attention-deficit/hyperactivity disorder (ADHD) have been associated with juvenile firesetting in some studies (Becker et al., 2004). Research also suggests that firesetting may be an attempt by the youth to regulate difficult cognitive, social, and/or emotional experiences (Tanner, Hasking, & Martin, 2015). These actions may serve to change the youth's current state of feelings by deliberately setting a fire, which in turn changes their current negative sensation. Firesetting can become a sensation-seeking practice for youth (Tanner, Hasking, & Martin). Other studies have shown that firesetting may be a way of dealing with the internalization of psychopathology (Tanner, Hasking, & Martin).

Researchers and clinicians are attempting to gather data about children who are firesetters and their families, the factors driving their behavior, and the number of firesetting incidents associated with the child—even if a fire department has never responded to any of the fires (Wilcox, 2000). Motivational typologies are often the most popular and simplest method by which practitioners and researchers attempt to understand juvenile firesetting (Stadolnik, 2000; Dittman, 2004). The various motivational typologies are listed in the following paragraphs.

Curiosity-motivated firesetting is “driven by a child’s desire to learn or master fire through actual experimentation or play” (Stadolnik, 2000). Although some curiosity may be considered normative at certain developmental levels, extreme levels of curiosity are linked to later problematic firesetting behaviors. Recent empirical work has supported the importance of curiosity as an important factor (MacKay et al., 2006). Young children who play with fire often try to hide burned paper and lit matches (Dittman, 2004a).

Crisis-motivated firesetting describes a juvenile who feels “ineffective, anxious, and seemingly powerless in a world that they often experience as being out of their control” (Stadolnik, 2000). For these children,

fire, as a powerful element, may offer a sense of mastery and competence. Depression, ADHD, or family stress may accompany this type of firesetting (Dittman, 2004b).

Delinquent-motivated firesetting conceptualizes the use of fire as one way of acting out against authority. These children rarely show empathy but tend to avoid harming others (Dittman, 2004a). Given that firesetting is one of 15 symptoms for conduct disorder, it makes sense to explore the relationship between delinquency and firesetting.

Pathological-motivated firesetting is the rarest of the motivations seen by practitioners in this field and describes a severely disturbed juvenile. It includes those who are actively psychotic, acutely paranoid or delusional, or who have lived in chronically disturbed and bizarre environments. A small, rare subtype of this group may meet criteria for pyromania (i.e., a pattern of deliberate firesetting for the pleasure/satisfaction derived from the relief of tension experienced before the fire-setting).

While motivational typologies can be useful in assessment and treatment interventions, many youth present with seemingly complex and multiple motivations for firesetting behavior. This limits a practitioner's ability to assign him or her within the current simplified models. Variables linked to juvenile firesetting include peer pressure, curiosity, mental health and substance abuse problems, and lack of adult supervision (Burn Institute, 2004; MacKay et al., 2009). Research has also found a relationship between involvement in firesetting and parents/caregivers who smoke, due to the availability of matches and cigarette lighters and because the purposive use of fire is familiar to the juvenile (Porth & Hughes, 2000).

Comorbidity

Clinical studies that have examined juvenile firesetters found that many have conduct and aggression problems. One study that researched conduct disorders (CD) and firesetting found that approximately 30 percent of youth participating in firesetting have been diagnosed with CD (Becker et al., 2004). Kolko (2002) found that early childhood firesetters often exhibit multiple behavioral problems and externalizing behaviors, such as rule-breaking, aggression, destruction, and ADHD.

Approximately 15 percent of firesetting youth are females (MatchBook Journal, 2016). A study investigating the prevalence of self-reported firesetting determined that female firesetters are more likely to have serious antisocial behaviors, participate in risk-taking activities, and have a substance abuse problem (Becker et al., 2004; Martin et al., 2004). Another study, which researched a potential link between juvenile firesetting and delinquency, found that firesetters are more likely than non-firesetters to be delinquent, while adolescents who continue in the practice of firesetting tend to be chronically criminal (Becker et al.). Another significant finding is that firesetting may be related to extreme antisocial behavior that is not always accounted for by the presence of CD (Becker et al.). Finally, a relatively recent study by MacKay et al. (2009) demonstrated a clear link between firesetting and mental health and substance use, and suggested that a history of firesetting was associated with psychopathology during adolescence.

Assessment

Overall, individual and family-related factors that may predispose the firesetting youth should be identified in order to effectively treat this behavior. Assessing personality structure and individual characteristics, family and social circumstances, and immediate environmental conditions allow for more effective treatment (Williams & Clements, 2007). Factors to be considered include history or frequency of incidents, method, motive, ignition, target, and behavior (Sharp et al., 2005). It is important to gather data not only to plan treatment, but also to discover the motivation behind the firesetting behavior (Sharp, Blaakman, & Cole).

As outlined by Stadolinik (2000), several domains are crucial to a comprehensive evaluation of firesetting behavior and the development of a risk factor model for assessing this behavior:

- Fire incident;
- Fire history;
- Motives and precipitants;
- Consequences/family discipline;
- Developmental level/IQ;
- Psychiatric disorders and history;
- Family environment;
- The child’s cognitive behavior repertoire;
- Parent functioning and practices;
- Social supports;
- Service availability; and
- Treatment outcome.

Assessment of a juvenile firesetter should include a comprehensive structured interview with the young person and their parents, with a view to getting information on family function, supervision, and discipline practices (Dolan et al., 2011). A number of firesetting assessment models, specific instruments, and protocols have been developed and are currently utilized by practitioners and researchers in the field. These tools are summarized in Table 1.

Table 1
Suggested Screening and Assessment Tools
for Juvenile Firesetting

Name of Measure	Measure Type	Who Completes	Generated Information
Children’s Firesetting Inventory (CFI)	Semi-Structured Interview	Clinician/Youth	Six dimensions related to firesetting behavior
Firesetting Risk Inventory (FRI)	Semi-Structured Interview	Clinician/Parents	Personal, familial, and social dimensions related to firesetting
F.I.R.E Protocol	Semi-Structured Interview	Clinician/Parents and Youth	Assessment of threat; risk of recidivism; specific treatment needs
Juvenile Firesetter Needs Assessment Protocol (JFNAP)	Semi-structured Interview	Clinician/Parents and Youth	Mental health needs; firesetter typology
Firesetting Incident Analysis (FIA-C) Child and Parent forms	Structured and Semi-Structured Interview	Clinician/Parents	General and fire-specific variables (e.g., firesetting motives, response to fires)
Firesetters Analysis Worksheet	Semi-Structured Interview	Clinician	Risk level/risk of recidivism
Firesetting History Screen (FHS)	Structured Interview	Clinician/Parents and Youth	Evidence of firesetting activities

Supplementary signals that clinicians may look for include the following:

- An appearance or lack of remorse may signal emotional issues when remorse is not present;
- Impulse control, frequent anger, and poorly managed emotions; and
- Frequency of firesetting (Community Health Strategies, 2015).

Treatments

Currently, there are no evidence-based treatment approaches for the juvenile firesetting population (Kolko, Herschell, & Scharf, 2006). However, the Office of Juvenile Justice and Delinquency Prevention identified seven components common to juvenile firesetting programs as successful (1997):

1. A program management component to make key decisions, coordinate interagency efforts and foster interagency support;
2. A screening and evaluation component to identify and evaluate children who have been involved in firesetting;
3. An intervention services component to provide primary prevention, early intervention, and/or treatment for juveniles, especially those who have already set fires or shown an unusual interest in fire;
4. A referral component to link the program with agencies that might help identify juvenile firesetters or provide services to them and their families;
5. A publicity and outreach component to raise public awareness of the program and encourage early identification of juvenile firesetters;
6. A monitoring component to track the program's identification and treatment of juvenile firesetters; and
7. A juvenile justice system component to forge relationships with juvenile justice agencies that often handle juvenile firesetters.

Additional treatment components that have been suggested in the literature are fire service collaboration and fire safety education, behavioral interventions, family therapy, and hospitalizations, residential placement, and/or medication (Stadlnik, 2000). Unfortunately, there is no single identified treatment that is considered effective for treating this behavior. However, many treatments have proven beneficial in the management of this behavior. These treatments are appropriately applied to firesetters with consideration for their age (Slavkin, 2000) and are outlined in Table 2.

Cognitive Behavioral Therapy, Fire Safety Education, and Firefighter Home Visits

Cognitive Behavioral Therapy (CBT) and Fire Safety Education (FSE) were found to significantly curtail firesetting and match play behaviors up to a year after intervention (Kolko, 2001). Firefighter Home Visits (FHV) have also been shown to significantly decrease the likelihood of juvenile firesetting (Kolko, Herschell, & Scharf, 2006). However, structured treatments designed to intervene with children who set fires were still found to have greater effect in the long-term than brief visits with a firefighter (Kolko). Both CBT and FSE were also shown to be effective at reducing other activities associated with firesetting, such as playing with matches and being seen with matches or lighters (Kolko).

Regardless of the seriousness of an incident or the child's motive in starting a fire, education regarding fire should be part of the intervention strategy. Education should include information about the nature of fire, how rapidly it spreads, and its potential for destructiveness (USFA, 1997; Campbell, 2014). Information about how to maintain a fire-safe environment, utilize escape plans and practice, and use fire

appropriately has been shown to be an effective component of comprehensive arson intervention programs, at least for younger youth (USFA).

Social skills training may also help juveniles who have trouble expressing their emotions. These skills include asking for help, making friends, solving problems, responding to failure, answering complaints, expressing affection, and negotiating (Cole et al., 2006).

Table 2
Summary of Treatments for Juvenile Firesetting

What Works	
There are no evidence-based practices at this time.	
What Seems to Work	
Cognitive behavioral therapy (CBT)	Structured treatments designed to intervene with children who set fires. Because firesetting is a maladaptive behavior, CBT is a reasonable intervention to consider for behavior modification.
Fire safety education (FSE)	Education includes information about the nature of fire, how rapidly it spreads, and its potential for destructiveness, as well as information about how to maintain a fire-safe environment, utilizing escape plans and practice, and the appropriate use of fire.
Firefighter home visit (FHV)	Firefighters visit homes and explain the dangers of playing with fire to at-risk juveniles.
What Does Not Work	
Ignoring the problem	Leaving youth untreated is not beneficial because they typically do not outgrow this behavior and ignoring these behaviors may increase dysfunctional behavior patterns.
Satiation	Satiation, the practice of repetitively lighting and extinguishing fire, may cause the youth to feel more competent around fire and may actually increase the behavior.
Burning the juvenile	Burning a juvenile to show the destructive force of fire is illegal and abusive. It will not decrease the likelihood of the juvenile setting fires or actually treat the problem.
Scaring the juvenile	Scare tactics may produce the emotions or stimulate the actions the clinician is trying to prevent, particularly when family or social issues may trigger firesetting. Scare tactics may also trigger defiance, avoidance, or may even increase the likelihood that firesetting traits continue.

Treatment Settings

Sometimes it is determined that the juvenile should be confined to a secure facility, residential treatment center, or hospital, although treatment for firesetting usually occurs in the least restrictive environment, depending on the seriousness of the offense and on the needs of the child (USFA, 1997). Although many juvenile firesetters can be maintained in the community with appropriate supervision, careful assessment

is crucial in order to provide the appropriate level of care (USFA). Such an assessment must consider the child, family, environment, facts about the fire and fire history, including the child's reaction to the fire and sense of accountability (USFA). Furthermore, consideration should be given to ensuring that the child does not pose a risk to others and public safety is protected.

Residential Facility

Many programs will not admit a child with a history of firesetting for fear the child will set a fire in the facility (USFA, 1997). However, residential treatment can provide a safe and comprehensive setting for treatment to firesetters, as well as treatment for any co-occurring or familial issues.

Foster Care

There is a strong link between neglect and abuse and firesetting, so placing a child in a safe, supervised family setting can be very effective in situations where there are unsubstantiated findings of abuse and neglect. When firesetting occurs as a result of neglect or abuse, the removal of the outside stressors can often cause the firesetting behavior to cease (USFA, 1997). Certain foster homes can be classified as "intensive" foster homes to allow for these difficult types of placements (USFA). Considerable attention is placed on fire safety practices and the foster parents receive in-depth training in working with difficult adolescents. Such training includes communication and problem-solving skills, supervision, behavior management, and fire safety education for prevention and intervention (USFA). Children in foster care receive counseling and additional support services, and the firesetter's parents are included as a component in the treatment plan (USFA). It is very important that the risk be acknowledged in this and any other community-based treatment intervention. Emphasis is placed on training and making the firesetter aware of the potential dangers of firesetting (USFA).

Inpatient Hospitalization

Although inpatient facilities may also be reluctant to accept children with a history of firesetting, inpatient treatment may be effective if an effective treatment protocol is in place (USFA, 1997). For example, Kolko (2002) has reported success using CBT to treat firesetting in an inpatient setting.

Unproven and Contraindicated Treatments

It is important to understand that leaving the child untreated is not beneficial because firesetters typically do not outgrow this behavior (Waupaca Area Fire District, 2002). Ignoring firesetting is unwise because it communicates disinterest in the child's well-being and experiences, which is likely to escalate dysfunctional behavior patterns (Sharp et al., 2005). Moreover, the problems must be addressed to prevent future fires.

Satiation, the practice of repetitively lighting and extinguishing fire, was once thought to be a deterrent to firesetting, based on the idea that a child curious about fire will tire of the exposure. However, the more practice a child has with fire, the more competent he or she may become, which may make the child more likely to increase the behavior (Sharp et al., 2005). Satiation, therefore, should not be used with firesetters.

Attempts at scaring a child from setting new fires by allowing one fire to get out of control is also not an appropriate treatment. This may trigger the emotions or stimulate the actions the clinician is trying to prevent, and this is more likely true in instances when family or social issues may trigger firesetting (Cole et al., 2009). Scare tactics may also trigger defiance or avoidance, or may even increase the likelihood that firesetting traits continue (Cole et al.). Burning a juvenile on the hand is also not an acceptable deterrent for firesetters. It is illegal and abusive and should, under no circumstances, ever be used as a means to stop a child from setting fires (FEMA, 2011).

There are no medications indicated for the treatment of firesetting behaviors. Providers should consider firesetting behavior as a component of another psychiatric disorder until proven otherwise (Peters & Freeman, 2016). Diagnoses to consider include the disruptive behaviors as well as mood, anxious, and psychotic disorders. Substance use is also over-represented in the adolescent population of firesetters (Peters & Freeman). Identifying and treating a comorbid psychiatric condition may alleviate the firesetting behaviors.

Overview for Families

Families can prevent firesetting by following a few rules, such as the following from the U.S. Fire Administration (2012):

1. Teach children that matches and lighters are not toys.
2. Never allow children to play with lighters or matches. About half of fires started by children are caused by children playing with matches and lighters.
3. Keep all matches and lighters out of the reach of children. Store in a high cabinet, preferably locked.
4. Do not leave young children unattended.
5. Teach young children to tell a grown-up when they see matches or lighters. Praise children when they tell you about found matches and lighters.
6. If a child is overly interested in fire, has played with matches and lighters, or has started a fire, the family must address this natural curiosity immediately and teach the child about the dangers of fire. In this event, call your local fire department and ask if they have a juvenile firesetters intervention program.

Children set fires for a variety of reasons, including curiosity about fire, crying for help, or engaging in delinquent behavior. Some of the reasons youth set fires include the following reason outlined in Table 3.

**Table 3
Reasons for Juvenile Firesetting**

Reasons	Description
Curiosity	A child sets a fire to learn more about fires and how they can be set
Crisis motivated	A child sets a fire because they feel they have lost power. The fire gives them a false sense of mastery
Delinquent firesetting	A child sets a fire to rebel against authority
Pathological firesetting	A severely disturbed youth may set fires because of a severe mental disorder
Cognitive impairment	A cognitively-impaired child may set a fire because they lack good judgment
Sociocultural firesetting	A child sets a fire because of peer pressure, external pressures, or religious motives

Sources: Dittman, 2004b; Porth & Hughes, 2000.

If a school-age child intentionally sets fires, even after being appropriately punished, families must consider getting professional help. Intervention is even more important if the child is setting fires to larger items or in instances where the flames can easily spread, causing injury and damage (Kids Health, 2014).

Conclusion

Current theories suggest that juvenile firesetting behaviors appear to stem from a complex interplay of individual and environmental factors. Given their unique circumstances and characteristics, individual firesetters require extensive evaluation to determine the best course of treatment. An appropriate review of firesetting should include an examination of the firesetter's history, such as prior fire learning experiences, cognitive and behavioral reviews, and parent and family influences and stressors (Slavkin, 2000).

Resources and Organizations

Federal Emergency Management Agency (FEMA)

U.S. Fire Administration

<https://www.usfa.fema.gov/>

Office of Juvenile Justice and Delinquency Prevention (OJJDP)

<https://www.ncjrs.gov/>

Virginia Department of Fire Programs (VDFP)

<https://www.vafire.com/>

Youth Firesetting Information Repository & Evaluation System (YFIRES)

<https://yfires.com/>

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DISCLOSURE STATEMENT

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