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Adult Perpetrated Firesetting

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Firesetting, arson, pyromania, fire-misuse, fire-starting, fire-raising, offending behaviour, conduct disorder, sexual psychopathology

Key points

- Deliberate firesetting is frequently encountered by clinicians working in forensic mental health settings.

- The Multi-Trajectory Theory of Adult Firesetting (M-TTAF) represents the latest contemporary theory of adult firesetting to guide assessment and treatment of this behaviour.

- Individuals who set fires can be distinguished from non-firesetting individuals based on key clinical features (i.e., potential criminogenic needs).

- Rather than being directly causal, psychopathology is hypothesised to exacerbate pre-existing psychological vulnerabilities, increasing the risk of firesetting in certain contexts.

- A number of emerging firesetting specific risk assessment tools and intervention programmes are showing promising results, though much more research is needed.

Introduction

Deliberate firesetting by adults, is increasingly recognised as a significant international issue that has a considerable impact on the physical, psychological, and economic wellbeing of society. This chapter will first introduce key terminology and then outline the prevalence and incidence of this behaviour. An overview of contemporary theoretical explanations for deliberate firesetting will be provided followed by a discussion of demographic, developmental, and clinical features of individuals who set deliberate fires. Consideration is given to the role of psychopathology in the aetiology of firesetting, including

disorders where firesetting is detailed as a specific symptom (e.g., pyromania) and other psychopathological conditions identified as prevalent among those who set fires. Finally, the chapter will conclude with a discussion on current approaches to assessment and treatment.

Terminology

Historically, the terms *arson*, *pyromania* and *firesetting* have been used interchangeably, however, these are conceptually very different. *Arson* is a legal term that refers to a criminal offence involving the unlawful damage or destruction of property by fire, either recklessly or with intent (Gannon & Pina, 2010). *Pyromania* is a psychiatric disorder within the International Classification of Diseases (ICD-10; WHO, 2019) and the Diagnostic and Statistical Manual of Mental Disorders 5 (DSM-5; American Psychiatric Association, 2013) of which firesetting is a primary symptom. *Firesetting* is currently the preferred term in the literature and is used to describe all acts of intentionally set fires regardless of the individual's legal or medical status (Dickens & Sugarman, 2012; Gannon & Pina, 2010). Throughout this chapter, the term *firesetting* will be used unless referring to studies or research which specifically include individuals convicted of *arson* or diagnosed with *pyromania*.

Prevalence

Statistics published by fire and emergency services indicate that tens of thousands of fires are intentionally lit in the UK, USA, Australia and New Zealand every year (Campbell, 2017; Home Office, 2017; Fire and Emergency New Zealand, 2019; Smith et al., 2014). These fires are responsible for significant amounts human, property, economical, and societal harm. Despite the large numbers of deliberate fires, it is unclear how prevalent firesetting is as a behaviour, with little research directly examining this in the general population. Research examining data collected within the National Epidemiological Survey of Alcohol and Related

Conditions (NESARC) in the US, found that approximately 1% of adults reported a lifetime history of deliberate firesetting with 38% of these individuals reporting having engaged in firesetting past 15 years of age (Blanco et al., 2010; Vaughn et al., 2010). Whilst these findings indicate that a minority of people engage in deliberate firesetting, methodological limitations associated with the survey limit conclusions regarding the prevalence of this behaviour (e.g., lack of question specificity, risk of socially desirable responding with face-to-face data collection). Research with community samples in the UK, which sought to improve on the methodology of the NESARC, suggests that between 11% and 17.8% of adults report having intentionally set a fire over the age of 10 years for either antisocial or fire interest purposes (Barrowcliffe & Gannon, 2015, 2016; Gannon & Barrowcliffe, 2012).

Historically, firesetting has been suggested to be over-represented among individuals with mental health issues and/or intellectual and developmental disabilities (IDD) (Henry & Chaplin, 2016; Tyler & Gannon, 2012). Research from the UK, Europe, and Scandinavia suggests that between 10 and 14% of individuals in forensic mental health services have a lifetime history of intentional firesetting (Coid et al., 2001; Fazel & Grann, 2002; Hollin et al., 2013; Repo et al., 1997). In samples of individuals with an IDD, the prevalence of firesetting has largely been estimated from unrepresentative samples and varies from 0.4% to 66.6%, depending on the recruitment and sampling strategy (Alexander et al., 2015; Burns et al., 2003; Ritchie & Huff, 1999). Despite an increased prevalence, there is insufficient evidence to support a direct association between mental health or IDD and firesetting (Henry & Chaplin, 2016; Tyler & Gannon, 2012).

Theoretical Explanations

There has been some attempt to apply single factor theories to firesetting (e.g., psychodynamic theory, social learning theory, displaced aggression, biological theory, and

communication), however, there is a distinct lack of comprehensive multi-factor theories to explain firesetting compared to other types of offending (e.g., sexual offending and violent offending). Fineman's Dynamic Behaviour Theory (Fineman, 1980; 1995) and Jackson, Hope and Glass' (1987) functional analytic theory represent two early developments in the literature. Fineman's Dynamic Behaviour Theory hypothesises that firesetting is the result of an interaction between factors that predispose an individual to engage in maladaptive behaviours, developmental experiences that reinforce firesetting as a normative behaviour, immediate environmental and contextual factors that support firesetting as an appropriate response (e.g., triggering event, crisis or trauma; cognition and affect), and internal and external perpetuating factors (e.g., reinforcers). Similarly, Jackson, Hope and Glass' (1987) functional analytic theory of recidivistic arson hypothesises that repeat firesetting results from a complex interaction between distal (i.e., psychosocial disadvantage, dissatisfaction with life and self, ineffective social skills, previous fire experiences) and proximal antecedents (i.e., triggering events, increased negative affect) and positive (i.e., gaining attention, power, influence over peers) and negative (i.e., punishment, and intense supervision) behavioural reinforcers.

A key strength of both Fineman's and Jackson's et al.'s multi-factor theories, is that they integrate established psychological theory (e.g., social learning theory, dynamic behaviour, functional analysis principles), empirical research, and clinical experience to provide overarching explanations of firesetting. However, both theories have been criticised for failing to include (a) a wide range of risk factors to account for myriad motivations associated with firesetting, (b) a detailed explanation of how various risk factors may interact to produce firesetting, and (c) factors that may be associated with desistance from firesetting (Gannon et al., 2012). Further, both theories draw heavily on literature using male psychiatric samples and lack empirical validation across other populations.

More recently, the Multi-Trajectory Theory of Adult Firesetting (M-TTAF; Gannon et al., 2012) was developed using a theory knitting approach (Kalmar & Sternberg, 1988) to address the issues associated with previous theories and provide a comprehensive overarching framework to explain adult firesetting. The resulting framework is a two-tiered multi-factor theory, describing the aetiology of firesetting (tier one) and five prototypical trajectories to firesetting (tier two).

Tier one of the M-TTAF hypothesises that *developmental factors and experiences* (e.g., caregiver experiences; social skills; learning about the forms and functions of fire; biological and cultural influences) predispose individuals to developing a range of *psychological vulnerabilities* (e.g., inappropriate interests, attitudes and associations with fire; cognitive rules about when and how to use fire; attitudes supportive of offending; self and emotional-regulation issues; interpersonal difficulties) which put them at risk of firesetting. Psychological vulnerabilities are suggested to be primed by *proximal factors/triggers* (i.e., life events; contextual factors; internal affect/cognition; cultural and biological influences) making these more chronic (i.e., *critical risk factors*), which in turn increase the risk of firesetting. *Moderating factors* (i.e., mental health and self-esteem) are hypothesised to be protective or exacerbate pre-existing psychological vulnerabilities. Tier two of the M-TTAF outlines five prototypical trajectories to firesetting that are characterized by their unique combination of psychological vulnerabilities and critical risk factors in tier one: *antisocial*, *grievance*, *fire interest*, *emotionally expressive/need for recognition*, and *multifaceted* (see Table 1 for case descriptions).

Whilst the M-TTAF represents the latest comprehensive theory of firesetting, the framework is limited by inherent weaknesses in the extant literature and the paucity of research on risk factors for firesetting and various subgroups (e.g., females, IDD). Further, the mechanisms by which psychological vulnerabilities/critical risk factors influence

deliberate firesetting are yet to be empirically tested. Thus, the M-TTAF is likely to require further refining and evaluation as new knowledge is generated.

Table 1: Case descriptions of the M-TTAF trajectories

Trajectory	Case description
Antisocial	General antisocial lifestyle (e.g., presence of antisocial peers, antisocial personality traits, attitudes and beliefs that support general offending, long and diverse criminal history). Fire is often used out of convenience as part of antisocial or criminal pursuits. Individuals likely have a cognitive script that fire is the best way to get rid of evidence as well as poor impulse control and problem solving. Likely motivators include boredom, vandalism, crime concealment, financial gain, and retribution.
Grievance	Poor self-regulation particularly in relation to feelings of anger, hostility, and aggressive responding. Likely to have poor interpersonal skills, issues with anger rumination, and a cognitive script for using fire as a powerful messenger. Likely motivators include revenge and retribution.
Fire interest	Inappropriate interest or fascination with fire, attitudes/beliefs that support firesetting (e.g., firesetting as normal, fire is controllable), be highly impulsive and have a script around using fire to cope with/manage negative affect. Likely motivators include fire interest, thrill/sensation seeking, stress or boredom.
Emotionally expressive/ Need for recognition	This trajectory reflects two subgroups who both have primary risk factors associated with poor interpersonal skills (e.g., intimacy, communication, social interactions), poor problem solving, and cognitive scripts around fire as a powerful messenger (e.g., to draw attention to emotional needs) and as a coping mechanism. Emotionally expressive individuals have additional risk factors of poor coping and emotional regulation and likely motivators include cry for help, self-harm, and suicide. Need for recognition individuals are likely to have additional risk factors associated with narcissistic personality traits, and a surplus in self-regulation. Their likely motivator is need for recognition.
Multi-faceted	A unique combination of risk factors that reflect both an intrinsic interest/fascination with fire and entrenched offense-supportive attitudes. Also likely to have issues with anger, hostility, rumination, poor problem solving, impulsivity and communication. For these individuals, fire is their preferred "tool" for solving a range of different problems and therefore likely hold various cognitive scripts around how and where fire should be used as well as multiple motivations for firesetting.

Characteristics of Adults who Set Fires

The majority of research has focused on either describing those who set fires or distinguishing them from non-firesetting individuals on various demographic and background factors. Research suggests firesetting is predominantly a male perpetrated crime, with gender ratios around 6:1 male to female (Gannon & Pina, 2010). However, women who set fires appear to be over-represented in forensic mental health samples, with ratios reported as low as 1.5:1 males to females, depending on the sample and setting (Enayati et al., 2008; Hollin et al., 2013; Swinton & Ahmed, 2001). Further, research suggests that women who set fires have significantly higher rates of firesetting incidents on record and are significantly more likely to be reconvicted of arson upon their discharge than their male counterparts (Hollin et al., 2013; Tyler et al., 2015; Wyatt et al., 2019).

Adults who set fires are frequently reported to lack intimate relationships (Dickens et al., 2009; Rice & Harris, 1991; Rix, 1994), come from low socio-economic backgrounds (Rice & Harris, 1991; Ritchie & Huff, 1999), have poor educational attainment (Anwar et al., 2011; Räsänen et al., 1996), and have a history of unemployment (Anwar et al., 2011; Rice & Harris, 1991). Difficult developmental contexts are reportedly common including histories of abuse and parental substance abuse (Alexander et al., 2015; Dickens et al., 2007; Jayaraman & Frazer, 2006; Repo et al., 1997; Root et al., 2008). A history of previous antisocial behaviour and criminal convictions, including firesetting, has also been frequently identified in adults who set fires (Hill et al., 1982; Rice & Harris, 1996; Soothill et al., 2004) with research suggesting that firesetting adults are criminally versatile (Ducat, McEwan, & Ogloff, 2013).

Clinical Features

Psychopathology

The relationship between firesetting and psychopathology is complex. Several psychiatric conditions have been proposed over the years, which have listed firesetting as a core symptom (e.g., conduct disorder in youth; pyromania in adults) (Nanayakkara et al., 2014). Second, research has sought to examine the prevalence and relationship between firesetting and a range of other mental health conditions, to understand the contribution of psychopathology to the aetiology of firesetting. Due to these complexities, it is important to distinguish between adult psychiatric conditions where firesetting is a primary symptom and those conditions that have been found to be associated with firesetting.

Pyromania. Pyromania is classified within the *Disruptive, Impulse-Control and Conduct Disorders* section of the DSM-5 (APA, 2013) and the *Habit and Impulse Disorders* section of the ICD-10 (WHO, 2019). Unlike conduct disorder in youth, intentional firesetting is the sole behavioural symptom for pyromania. Under the DSM-5, the diagnostic criteria for pyromania are comprised of four clusters of positive symptoms and two clusters of exclusionary criteria. Positive symptoms include (a) multiple episodes of deliberate and purposeful firesetting, (b) tension or affective arousal before setting a fire, (c) fascination, interest, curiosity, or attraction to fire, fire paraphernalia, its uses or consequences, and (d) experiencing pleasure, gratification, or relief when setting, witnessing the effects of, or participating in its aftermath of a fire. Exclusionary criteria include (e) fires set for monetary gain, an expression of socio-political ideology, to conceal a crime, as an expression of anger or revenge, to improve one's living circumstances, or in response to delusions or hallucinations, and (f) the firesetting is better explained by conduct disorder, a manic episode, or antisocial personality disorder (APA, 2013). Symptoms under the ICD-10 are broadly similar to those specified in the DSM-5, although the exclusion criteria vary and include *"firesetting by or in (a) adult dissocial personality disorder, (b) alcohol or psychoactive substance intoxication, (c) as the reason for observation for suspected mental disorder, (d)*

conduct disorders, (e) organic mental disorders, or (f) schizophrenia" (WHO, 2019).

Although deliberate firesetting is the essential behavioural feature of pyromania, due to the

strict diagnostic criteria, diagnoses of the condition are rare. Research examining the

prevalence of pyromania has either found no *true* cases (Leong, 1992; Prins et al., 1985; Rice

& Harris, 1991; Ritchie & Huff, 1999) or reported very small estimates in psychiatric

samples, ranging from 3% to 10% (Grant et al., 2005; Lindberg et al., 2005; Lejoyeux et al.,

2002; McElroy et al., 1994). It is therefore unsurprising that the DSM-5 states that primary

diagnoses of pyromania are very rare (APA, 2013). Given the rarity of pyromania, it has been

suggested that firesetting may be better explained by other psychopathology (Gannon & Pina,

2010; Nanayakkara et al., 2014).

  General psychopathology. Early writings implied a direct link between firesetting and

poor mental health. However, research suggests that whilst mental health issues and/or IDD

may be factors related to firesetting for some, most individuals who set fires do not have a

mental illness, personality disorder, or IDD (Henry & Chaplin, 2016; Tyler & Gannon, 2012).

Although the majority of adults who set fires do not have a mental illness or IDD, research

indicates increased rates of psychopathology and contact with mental health services (Ducat,

Ogloff, & McEwan, 2013).

  Several mental and behavioural disorders have been identified as being comorbid with

firesetting including schizophrenia, mood disorders, personality disorder, IDD, and substance

dependence (Gannon & Pina, 2010; Nanayakkara et al., 2014; Tyler & Gannon, 2012).

Studies that have compared firesetting and non-firesetting samples (both general population

and other offending groups) have found significantly higher rates of schizophrenia, psychosis

large, borderline personality traits, drug dependence and major depression, IDD and

antisocial personality disorder (Anwar et al., 2011; Ó Ciardha et al., 2015). These findings

suggest that a range of psychopathological conditions are commonly identified in individuals

who set fires and that such issues are more prevalent amongst those who set fires than both non-firesetting offending groups and the general population. However, whilst these findings suggest a possible association between mental health and/or IDD and firesetting it does not suggest that firesetting is caused by these conditions (McEwan & Ducat, 2016). Contemporary theories of firesetting suggest that mental health and/or IDD may in fact be indirectly associated with firesetting behaviour, interacting with and reflecting other pre-existing psychological vulnerabilities and making these more chronic (Gannon et al., 2012). It is therefore important to formulate the role that psychopathology plays in an individual's firesetting alongside other psychological factors.

Psychological Characteristics

There has been limited research exploring the psychological characteristics of individuals who set fires, with the majority of existing studies using small and highly selected samples (e.g., those residing in prisons or forensic mental health setting). However, the extant literature suggests that individuals who set fires are characterized by low levels of assertiveness and poor communication skills (Jackson et al., 1987), low self-esteem (Jackson et al., 1987; Räsänen et al., 1996), high impulsivity (Dolan et al., 2002; Räsänen et al., 1996), poor interpersonal skills (Jackson et al., 1987; Rice & Chaplin, 1979), and difficulties with initiating and maintaining relationships (Dickens et al., 2007; Rice & Harris, 1991; Ritchie & Huff, 1999). More recently, research has focused on identifying psychological characteristics that are able to distinguish those who set fires from non-firesetting individuals. Gannon et al. (2013) examined the treatment needs of 68 imprisoned males with a history of firesetting and compared these to a matched control group of non-firesetting imprisoned males. Compared to the non-firesetting controls, participants with a history of firesetting reported significantly higher levels of anger arousal and cognition (i.e., rumination), identification with fire, and serious fire interest. They also reported a more external locus of control, lower levels of self-

esteem, and poorer fire safety awareness. These findings suggest that adults who set fires have a distinct set of psychological needs that should be targeted as part of prevention and intervention efforts.

Motivations

Multiple motive-based classification systems for firesetting have been proposed in the literature. Commonly identified motivations include anger or revenge, fire interest or "pyromaniac tendencies", stimulation (e.g., excitement, boredom), crime concealment, profit, financial reward or insurance fraud, attention seeking/cry for help, suicide or self-harm, and as a result of psychotic symptoms (Dickens & Sugarman, 2012; Gannon and Pina, 2010). Although the prevalence of motives vary across studies depending on the sample, setting, and the way in which datapoints are defined and coded, anger and revenge have consistently been identified as one of the most prevalent motives for firesetting, with estimates of around 33% (Rix, 1994). These findings suggest that people set fires for a variety of different reasons.

Risk factors for Reoffending

As noted earlier, individuals who set deliberate fires often engage in a range of antisocial and offending behaviours (Ducat et al., 2013; Dickens et al., 2009). Thus, unsurprisingly, research suggests that this group are highly likely to reoffend (Ducat et al., 2015; Edwards & Grace, 2014; Rice & Harris, 1996). Individuals who set fires are more likely to reoffend with either a violent or non-violent offence than with fire (Ducat et al., 2015; Edwards & Grace, 2014; Rice & Harris, 1996) with estimations of reoffending with fire ranging between 4% and 16% (Ducat et al., 2015; Edwards & Grace, 2014; Rice & Harris, 1996).

Little research has examined risk factors associated with deliberate firesetting. Most studies involve retrospective file reviews comparing factors which distinguish between

firesetting and non-firesetting individuals and "one-time" and repeat firesetting. Factors that have been consistently associated with repeat firesetting include an expressed interest in fire/explosives (Tyler et al., 2015; Rice & Harris, 1996), history of relationship problems (Dickens et al., 2009; Rice & Harris, 1996), the presence of a mental illness (Dickens et al., 2009; Ducat et al., 2015; Lindberg et al., 2005), a history of childhood firesetting (Rice & Harris, 1996), medication non-compliance (Ritchie & Huff, 1999; Wyatt et al., 2019), and social isolation (Repo & Virkkunen, 1997; Wyatt et al., 2019).

Clinical Applications: Assessment and Treatment of Firesetting

There is a lack of validated assessment and intervention protocols for deliberate firesetting. As a result, there has been little guiding information for clinicians to inform case formulation and treatment planning for those who set fires. Given that fire-specific interests, associations and attitudes appear to be important psychological factors associated with firesetting, some attention has been given to developing measures to assess these constructs. These include the *Fire-setting Assessment Schedule* (FAS; Murphy & Clare, 1996), *Fire Setting Scale* (FSS; Gannon & Barrowcliffe, 2012), *Fire Proclivity Scale* (FPS; Gannon & Barrowcliffe, 2012), and *Four Factor Fire Scales* (FFFS; Ó Ciardha et al., 2015; Ó Ciardha, et al., 2016). Although validation studies for the above measures are limited, the latter three measures have been found to discriminate between firesetting and non-firesetting adults; representing potentially helpful aids for experienced clinicians to inform assessment and treatment.

In the absence of a validated risk assessment tool for firesetting, several frameworks have been developed to guide the collection of clinical information to inform firesetting risk assessment and treatment planning: Pathological Firesetters Interview (Taylor, Thorne, & Slavkin, 2005), St Andrew's Fire and Arson Risk Instrument (SAFARI; Long et al., 2014), and the Northgate Firesetter Risk Assessment (Taylor & Thorne, 2005). These frameworks

aim to provide clinicians with a helpful guide to factors associated with firesetting to identify relevant risk and treatment needs. However, the ability of these frameworks to predict future firesetting has yet to be assessed.

There has been little focus on developing and evaluating specialist interventions for firesetting. Most published evaluations represent small single cohort studies (e.g., Annesley et al., 2017; Taylor, Thorne, Robertson, & Avery, 2002; Taylor, Robertson, Thorne, Belshaw, & Watson, 2006). More recently, two specialist interventions underpinned by the M-TTAF were developed: the Firesetting Intervention Programme for Prisoners (FIPP; Gannon, 2012) and the Firesetting Intervention Programme for Mentally Disordered Offenders (FIP-MO; Gannon & Lockerbie, 2011). The FIPP and FIP-MO are semi-structured interventions that target the psychological vulnerabilities associated with firesetting. Both interventions have been subject to quasi-experimental multisite evaluations with participants who attended the interventions demonstrating larger improvements pre-post treatment, relative to a treatment as usual comparison group, across the majority of treatment targets. Whilst the FIPP and FIP-MO evaluations represent emerging evidence regarding "what works" in firesetting treatment, research is still required to establish their suitability for subgroups with complex needs (i.e., IDD), the effectiveness of the interventions in reducing reoffending, and to understand any potential unintended effects associated with partial or non-completion of the programmes.

Conclusions

Whilst there have been significant advancements in our understanding of adult firesetting in recent years, more research is required to further our understanding of aetiology and approaches to assessment and treatment. For example, little is known about the relationship between cultural factors and fire misuse, gender-specific factors, or the needs of individuals with IDD. In addition, research on factors that influence the maintenance and

desistance process for fire setting will aid the construction of valid and reliable risk assessment tools and ensure individualized treatment approaches are evidence-led . This will also ensure that treatment efforts evolve to meet the needs of individuals who have set fires regardless of the treatment setting.

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