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A Descriptive Model of the Offence Chain for Imprisoned Adult Male Firesetters (DMAF)

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Accepted Version

Abstract

Purpose: Firesetting has devastating consequences. Although some theoretical efforts have been made to explain firesetting (i.e., a small number of multi- and single-factor theories), little effort has been devoted to understand how deliberate firesetting unfolds across time (i.e., micro or offence chain theories). This research aimed to produce the first descriptive offence chain theory for incarcerated adult male firesetters.

Methods: Thirty-eight adult male firesetters—recruited from prison establishments in England and Wales—were interviewed about the events, thoughts and feelings leading up to, surrounding, and immediately following a deliberate incident of firesetting.

Results: Using Grounded Theory analysis, the *Descriptive Model of Adult male Firesetting* (DMAF) was developed documenting the cognitive, behavioural, affective and contextual factors leading to a single incident of deliberate firesetting.

Conclusions: New information generated from the DMAF is presented and its contributions to the current evidence base are highlighted. Clinical implications, limitations and future research directions are also discussed.

Introduction

In order to effectively research, assess and treat individuals who set deliberate fires, a good theoretical understanding of firesetting aetiology is important. Ward and Hudson (1998b) suggested theory formation occurs on three levels: multi-factor (Level 1), single-factor (Level 2) and micro-theories (Level 3). Ultimately, the purpose of theory generation at different levels is to develop a global theory of the behaviour in question, explaining its onset, development and maintenance.

Unfortunately an evidence-based, all-encompassing theory of firesetting¹ is still some way off. Rather, existing research is characterised by the proliferation of typological classifications and a handful of multi- and single-factor theories (Gannon & Pina, 2010). In line with Ward and Hudson's (1998b) framework, three multi-factor Level I theories exist. First, *Functional Analysis Theory* (Jackson, Glass, & Hope, 1987)—an interaction based model—views firesetters as ineffective individuals, unable to satisfy their emotional and social needs through appropriate behaviour. Jackson et al. (1987) identified the factors that direct an individual towards firesetting in particular as previous fire experience (especially when associated with a significant emotional event) and the inhibition of alternative behaviours. Firesetting is triggered by an emotionally significant event (e.g., social rejection or abuse), which leads to a desire to change the situation. A perceived or real inability to effect that change is also considered an important factor in the process (Jackson et al., 1987).

Second, *Dynamic Behaviour Theory* (Fineman, 1980; 1995) outlines the range of variables (historical factors and immediate environmental contingencies) suggested to

¹The term 'firesetting' accounts for the many different types of deliberately set fires that may or may not have resulted in an arson conviction (Criminal Damages Act, 1971; Dickens & Sugarman, 2012).

pre-dispose, reinforce and encourage the occurrence of firesetting. Firesetting is hypothesised to be the result of: historical actions that predispose anti-social actions (e.g., social disadvantage); previous and existing environmental reinforcers associated with firesetting (e.g., childhood firesetting); and instant environmental reinforcers associated with firesetting (e.g., crime scene features). Dynamic-behaviour theory goes beyond Jackson et al.'s 1987 explanation by attempting to define the exact sequence of variables that lead to firesetting.

Finally, the *Multi-Trajectory Theory of Adult Firesetting* (M-TTAF; Gannon, Ó Ciardha, Doley, & Alleyne, 2012), proposes that multiple factors interact to produce firesetting. Developmental factors (e.g., caregiver environment, attachments), biological factors (e.g., brain structure, cognitive functioning), cultural factors (e.g., fire beliefs and attitudes), social learning factors (e.g., fire experiences, social, aggressive and coping scripts) and contextual factors (e.g., life events and other contextual triggers) are hypothesised to contribute to firesetting. As a result, distinct patterns of psychological vulnerabilities develop (i.e., fire interest, offence supportive attitudes, emotional regulation issues, communication problems). Firesetters are conceptualised as belonging to one of five main subtypes or trajectories: *anti-social cognition*, *grievance*, *fire interest*, *emotionally expressive/need for recognition*, and *multifaceted* (Gannon et al., 2012).

Three main single-factor Level II theories exist (see Gannon & Pina, 2010). First, *Psycho-Analytical Theory* (Freud, 1932) which suggests firesetting originates from an urethral or oral fixated drive. Second, *Biological Theory* (Barnett & Spitzer, 1994), which focuses on biological and neurobiological impairment in order to explain firesetting. Third, *Social Learning Theory* (Bandura, 1976; Vreeland & Levin, 1980) which suggests

firesetting is a manifestation of reinforcement contingencies and learning through modelling or imitations.

Interestingly, there is an almost complete absence of micro-theories (Level III). Micro-theories provide the touchstone for all other theoretical work. Generally associated with quantitative techniques and methodologies, Ward and Hudson (1998a) proposed that multi-factor and single-factor theories explain the 'why' of offending behaviour (i.e., infer causality), which is described qualitatively in micro theories via a temporal sequence to explain the 'how' of offending (e.g. how offending occurs over time). If multi- and single-factor theories are unable to account for the offence processes described in micro theories, these then require further development (Ward & Hudson, 1998a).

To date, only one known micro theory of firesetting behaviour exists. Tyler et al., (2013) developed an offence chain model for mentally disordered firesetters. The model highlighted the importance of early childhood experiences of fire and the onset of mental illness as precursors to firesetting. Participants' firesetting was directly linked to their mental health problems, which appeared to exacerbate pre-existing vulnerabilities/risk factors. Whilst the development of Tyler et al.'s (2013) model represents a significant milestone in current firesetting theory, it is limited to offenders who were formally diagnosed with a mental health disorder at the time of the fire. Further, reliability checks were not employed in order to ensure strong levels of accuracy, reliability and validity.

The lack of micro theories to explain firesetting is hampering future theory development. This further has an impact on clinical practice and the generation of

treatment programmes. Thus, the aim of the current research is to develop a descriptive model of the offence chain for imprisoned adult male firesetters.

Method

Participants

Using records from seven prison establishments in England and Wales, offenders with at least one recorded firesetting incident were identified and individually approached. Thirty-eight male offenders volunteered to participate²; the majority of whom were White UK/Irish ($n = 28$). Ages ranged from 18 to 63 years ($M = 34.24$; $SD = 12.57$). Sentence length ranged from 1 month to indeterminate³ ($M = 90.51$; $SD = 72.95$). and number of previous offences ranged from 0 to 129 ($M = 24.92$; $SD = 29.53$). Forty-two per cent ($n = 16$) of participants had engaged with mental health services and 31.6% ($n = 12$) reported a mental health diagnosis⁴ before ($n = 4$), at the time ($n = 1$) or after ($n = 7$) the fire. Diagnoses for these twelve participants were: Depression ($n = 5$ ⁵), Bipolar Disorder ($n = 1$), ADHD ($n = 2$) and Schizophrenia ($n = 1$). A small minority were diagnosed with Personality Disorder ($n = 3$) and two participants were diagnosed with Learning Disabilities.

Procedure

Informed consent was obtained for each participant and demographic and background information was collected via questionnaire. A semi-structured interview schedule was adapted from schedules used in previous offence process research (e.g. Gannon, Rose & Ward, 2008). Participants were first asked to describe their childhood

² No incentives were offered.

³ Indeterminate sentences were not included in the mean.

⁴ Mental health diagnoses as defined in the DSM-V.

⁵ Two participants had a dual diagnosis: depression and schizophrenia; depression and ADHD.

and adult experiences, focusing on any important incidents (e.g. home and school environment, peer relationships, intimate experiences, early experiences with fire, and major life events). Subsequently, participants were asked to detail the events, thoughts, and feelings leading up to, surrounding, and immediately following a recorded firesetting offence they could recall in detail. All interviews were recorded via digital audio recorder (*Mean length* = 47.29 minutes; *SD* = 20.19). Nineteen interviews were transcribed verbatim for preliminary model development. Detailed notes were made on the remaining nineteen interviews for model validation. To assure data validity, the background questionnaires and interviews were verified, where possible, against confidential file information containing sentencing information, witness statements, offence histories and psychological assessments. This ensured, as far as possible, that information provided was a truthful account of each offender's firesetting.

Data Analysis

Grounded Theory (GT; Strauss & Corbin, 1998) is considered the most appropriate technique for developing offence chain models (Ward, Loudon, Hudson & Marshall, 1995). GT is a set of systematic qualitative procedures that use the logic of induction to move from the detail of individual cases to a theoretical model that holds true for all the cases under consideration (Gordon-Finlayson, 2010). The model that is produced is not intended to generalise, but rather reflect a descriptive account of the individuals sampled within one particular study (i.e., in this case how firesetters come to set a fire and the different pathways they may follow).

Model development.

GT (Strauss & Corbin, 1998) was employed to analyse each participant's offence chain narrative for half of the interviews ($n = 19$). Data were broken down into conceptual components (termed *open coding*) and these concepts arranged into categories (termed *axial coding*). The relationships between categories were identified (*selective or theoretical coding*) and chronologically ordered, culminating in a preliminary model of the offence chain process (Strauss & Corbin, 1998).

Reliability and Validity

Reliability checks were employed during the study in order to ensure strong levels of accuracy and reliability. First, inter-rater reliability checks were conducted during the first stage of *open coding*. Two independent raters familiar with GT were enlisted; IR1 and IR2. In order to assess the reliability and validity of the open coding performed by the first author on the interview transcripts, IR1 was asked to independently perform open coding on four randomly selected pages (start, middle and end) from each interview ($n = 19$). An independent reliability check was subsequently performed by IR2 by comparing the interview transcript codings of IR1 and the first author (e.g. for similarity/differences in coding); an inter-rater agreement of 80.4% was achieved.

Second, reliability checks were conducted during the *axial* and *theoretical coding* stage of the analysis by both the second and third authors. The analytic process was reviewed for each step until agreement was reached between all three authors on the categories identified and the relationships between them, culminating in a preliminary model of the offence chain. Subsequently, the second half of the data ($n = 19$) was used to provide cross-validation and reliability of the classification of categories developed using the first half of the data. The offence chains of the subsequent interviews were

assessed for whether the information contained in each could be fitted into the existing categories of the model without requiring any new categories, properties or relationships. This acted as a test of scope and completeness (i.e., *saturation*; Ward, Fon, Hudson, & McCormack, 1998). One additional category was created and the existing categories were modified and refined conceptually four times using the subsequent nineteen interviews, ensuring the descriptive model was sufficiently comprehensive.

Results

Within the model we outline the temporal sequence of contextual, behavioural, cognitive and affective events culminating in a single firesetting incident. The model is divided into four phases: (a) background factors – experiences up to the age of eighteen, (b) adulthood experiences leading up to the days before the offence, (c) the pre-offence period, and (d) the offence and post-offence period. The model is presented in Figures 1, 2, 3, and 4 respectively. Participants flow through the model in unique and dynamic ways. This is reflected by individuals experiencing multiple sub stages within one overarching stage of the model (e.g., Abusive experiences).

Phase 1: Background Factors (Figure 1)

Childhood environment.

The childhood environment of participants was subcategorised based on the influence of *caregiver experiences* and *social environment*. Caregivers include primary (e.g. biological family) and secondary caregivers (e.g. adoptive, foster or step parents). A small number of caregiver experiences ($n = 14$) were found to be negatively influenced by one or more of family mental health problems, alcohol abuse or substance abuse.

Caregiver experiences were identified as either positive, characterised by a relatively stable home environment and positive relationships ($n = 11$), or negative, with participants identifying experiences such as poor inter-personal relationships or adverse events, as having impacted their early development ($n = 27$).

The social environments of participants were characterised by three factors. First, peer influences were identified as positive, negative or absent. Positive peer influences ($n = 11$) refer to positive socialisation. Negative peer influences ($n = 25$) refer to influences towards anti-social behaviour (e.g. truancy and fighting) and engaging in criminal activities (e.g. theft and kindred offences and drug offences). A minority of individuals reported an almost complete lack of formation of friendship ties and/or isolation ($n = 2$). Second, fire experiences were reported ($n = 10$) referring to experiencing unconventional uses of fire in the offender's environment (e.g. witnessing cars or bins being set on fire by third parties in the community). Third, some participants ($n = 11$) reported violent experiences, which differ from abusive experiences as they were not events suffered, but rather present and observed in individuals' wider social environments (e.g. outside of the home).

Abusive experiences.

Many participants experienced abuse perpetrated by someone known or unknown, arising from caregiver experiences, social environments, or both. These experiences were categorised as (1) emotional abuse/neglect ($n = 26$) in the form of verbal or psychological abuse, bullying by peers, witnessing domestic violence, or neglect; (2) physical abuse ($n = 26$) in the form of excessive physical punishment or physical conflict with adults; or (3) sexual abuse ($n = 4$). The majority of participants

experienced multiple forms of abuse ($n = 21$) while six reported no abuse. No participant reported abuse involving fire.

Vulnerability Factors

A number of psychological vulnerabilities appeared to arise from offenders' childhood environments and abusive experiences. These factors are hypothesised to interact with each other, acting as a latent influence during individuals' progression into adulthood and leading up to their offence.

Personality/Emotion.

Certain personality traits emerged and were interpreted as potentially problematic for later stages in the offence process. These were passive traits such as low assertiveness ($n = 10$), aggressive traits ($n = 28$), and impulsive traits ($n = 12$) such as boredom proneness and thrill-seeking tendencies. Impulsiveness seemed to co-occur with aggressive tendencies.

Social cognitive development.

Participants identified or demonstrated potentially problematic areas of social cognitive development including skill development (poor communication skills and problem-solving abilities; $n=8$), learning difficulties (self-reported special needs; $n = 15$) and the development of certain norms and schemas, possibly pre-disposing interviewees to engage in offending behaviour (e.g. offence supportive attitudes, $n = 21$; normalisation of violence, $n=18$; aggressive norms, $n = 17$; loyalty norms, $n = 12$).

Social and behavioural.

Participants appeared to use a combination of avoidant and active coping strategies in response to the stress of their environment. Avoidant coping strategies included alcohol and/or substance abuse ($n = 18$) and active disengagement (e.g. truancy, running away from home or isolating themselves; $n = 26$). More active coping strategies included aggressive behaviour ($n = 29$) and early offending ($n = 24$).

Fire.

A range of fire related vulnerability factors were found to develop among offenders during their childhood: an excessive interest in fire⁶ typically associated with strong positive affect ($n = 11$), the normalisation of unconventional uses of fire⁷ ($n = 10$), engaging in early deliberate juvenile firesetting ($n = 24$, either alone [$n = 9$], as part of a group [$n = 8$], or both [$n = 7$]), and negative experiences involving fire and the family home ($n = 5$). Thirty-three men were found to have at least one of these fire factors. Only five participants did not report any identifiable childhood fire-related experiences (e.g. criminal or otherwise). However for these men, fire factors appeared to emerge during their adult experiences.

Phase 2: Adulthood Experience (Figure 2)

Adulthood experiences, consisting of three main categories, reflect the outcomes of individuals' childhood experiences and progression up to their offence from the age of eighteen.

Lifestyle outcome.

⁶ Fire interest was defined as an elevated and/or deep seated fascination with fire, fire paraphernalia and/or the consequences of fire.

⁷ Such as setting fire to cars or small animals etc.

Lifestyle outcome is described as either anti-social or pro-social. Anti-social lifestyles ($n = 27$) were characterised by high levels of unemployment, unstable home lives, continued offending behaviour, violent relationships, alcohol and substance misuse. Conversely, pro-social lifestyles were characterised by on-going stability in most of these areas ($n = 11$).

Major life stressors.

A considerable majority of participants experienced one or more major life stressors ($n = 30$), marking the start of a notable deterioration in their psychological well-being and lifestyle. Three main subcategories were identified: (1) social exclusion, characterised by isolation and/or rejection from significant others and/or custodial experiences ($n = 19$); (2) inter-personal relationships, characterised by significant on-going problems in individuals' relationships (personal or professional; $n = 9$); and (3) trauma (e.g. loss of loved one, a major illness and/or being the victim of a crime; $n = 14$). Eight participants did not report any major life stressors; however, most of these men had adopted largely criminal lifestyles.

Proximal vulnerabilities.

Major life stressors feed into the next category, proximal vulnerabilities, comprised of three sub-categories. First, *increased behavioural problems* refer to some of the pre-existing vulnerability factors, exacerbated following lifestyle outcome and major stressors experienced. These include increased alcohol/substance use ($n = 17$), aggression ($n = 11$) and/or increased offending ($n = 19$). Offenders displaying these increased behavioural problems were likely to have been leading anti-social lifestyles which became more deep-seated, and for many, characterised by a criminal career,

especially where no major life stressors were reported. Second, *absence of support* refers to isolation characterised by the lack of a network of peers, family or public services to help cope with life stressors ($n = 17$). Third, *mental health problems* (self-reported symptoms and/or diagnosed) were largely described as symptomatic of mood disorders, particularly depressive episodes ($n = 16$).

Phase 3: Immediate pre-offence period (Figure 3).

Proximal triggers.

Proximal triggers marked the start of events immediately leading up to the offence. These triggers, combined with the earlier vulnerability factors (Phase 1) and the proximal risk factors (Phase 2), seem to be central to understanding how these men came to set their fires. The vast majority of interviewed men ($n = 35$) identified at least one trigger to which they attributed their offending, which we broke down into three subcategories: *moral transgression*, *conflict/provocation* and *unmet needs*. For moral transgression ($n = 12$), participants reported experiencing an injustice, either personally or towards a significant other. Conflict/provocation ($n = 21$) involved an argument or personal attack. Unmet needs were characterised by a problem perceived as unsolvable ($n = 9$). Those without identifiable triggers ($n = 3$) set fires in the context of their wider offending behaviour, symptomatic of a generally anti-social lifestyle.

Affective response.

Proximal triggers generated three main affective responses: (1) *anger* at the situation, others, and/or themselves ($n = 27$), (2) *fear* associated from being in an unwanted/life-threatening position ($n = 6$), and (3) *frustration* due to feeling blocked from achieving goals or unmet expectations ($n = 12$). Some participants experienced

more than one of these emotions. It is hypothesised these emotional responses contribute to the development of offence related goals (e.g. motives) in the final phase of the model.

Phase 4: Offence and Post-Offence Period (Figure 4)

External influences: alcohol and substance use.

Alcohol and/or substance use at the time of goal formation appeared to impact how some participants ($n = 14$) set and executed their offence goals, by disinhibiting offenders' rational thinking and promoting aggressive and/or impulsive responses.

Offence related goal development.

Goal formation, resulting from the proximal triggers and subsequent affective responses, was pivotal in how participants came to set their fires. For participants without an identifiable trigger (see phase 3; $n = 3$), offence-related goals seemed to be formed as a result of anti-social lifestyle outcomes, major life stressors and/or the development of proximal risk factors. These participants appeared to set their fires in the context of general offending.

For the remaining participants ($n = 35$), two pathways for goal development were identified. Those who formed a *non-fire related goal* ($n = 12$) planned to commit an offence other than firesetting (e.g. shooting, burglary etc) in order to fulfil their aims. These aims included protection ($n = 2$), escape ($n = 2$), economic gain ($n = 2$), revenge ($n = 4$), thrill-seeking ($n = 2$), and communication ($n = 2$)⁸. These individuals went on to develop fire-related goals during the execution of their offence-related goals. These fire-

⁸ Two participants reported two motives for their non-fire related goals.

related goals included solving a criminal problem (e.g. concealing evidence; $n = 5$) or killing a target ($n = 2$). For the remaining men ($n = 5$), their goals did not change, with the exception of one. For these men their fires were either unplanned or immediately planned during the commission of the offence.

The second pathway ($n = 26$) involved *fire-related goals*. Reported motives included protection ($n = 1$), escape ($n = 3$), revenge ($n = 10$), power ($n = 6$) and protest ($n = 6$). The majority of participants on this pathway planned their firesetting before they committed the offence ($n = 18$).

Materials.

Once participants' fire-related goals were formed, materials used to set the fire were either *sourced* or *available*. Sourced materials were acquired ahead of the fire or immediately before and were largely associated with planned offences ($n = 24$). Available materials were already at the scene of the crime and used impulsively, largely associated with unplanned offences ($n = 13$).

The Fire.

Following the formation of fire-related goals and the acquisition or identification of fire lighting materials, participants set their fires either as a lone act ($n = 19$) or with a partner/group ($n = 18$)⁹. Fourteen men set their fires with the intention of harming themselves, another individual or group of individuals. The majority of fires set were to occupied domestic dwellings, businesses or other property ($n = 19$). Other targets included empty dwellings, businesses or other property ($n = 8$), another person ($n = 4$) and prison cells ($n = 7$).

⁹ Details of the fire were unavailable for one participant.

Affective response.

Once the fire had been set, the majority of participants ($n = 37$) reported experiencing an emotional reaction to the fire, *positive* (e.g. excitement, happiness and/or satisfaction; $n = 18$) or *negative* (e.g. fear, panic, anger, frustration and/or disappointment; $n = 19$).

Behavioural response.

Affective responses to the fire were followed by a behavioural response observed as either *approach* or *avoidant*. Approach responses ($n = 17$) included: watching the fire, wanting but being unable to watch the fire, or being confined in proximity to the fire (e.g. cell fires) but feeling in control. Avoidant behavioural responses ($n=20$) included: fleeing the fire, or wanting to flee but being trapped.

Goal appraisal.

The final stage in the model is goal appraisal, where participants ($n = 26$) appraised the relative success and/or failure of their fire in terms of earlier goals. Eighteen reported *positive* goal appraisal where their fires were deemed successful, whereas eight participants appraised their goals *negatively*, reporting their fires as not fulfilling the goals they had originally set out to attain.

Pathways followed by the sample

Each individual's progression through the DMAF was examined to identify any specific patterns or pathways taken by participants, indicative of discrete subtypes of firesetters. This process revealed two distinct pathways characterising offenders'

progression through the model: Approach Firesetters and Avoidant Firesetters. Tables 1 and 2 provide concrete examples of the two pathways identified in the DMAF.

Approach Firesetters

The first pathway comprised offenders who aggressively approached their offence behaviour to achieve their goals. Individuals on this pathway appeared to show a pattern of outwardly expressing their opinions or feelings, identifying and meeting their needs often by resorting to aggression and/or violence.

These offenders were characterised by troubled childhood experiences and high levels of aggression/violence and anti-social characteristics (e.g. early offending) were evident. The majority of men following this pathway displayed multiple fire factors emerging in childhood (i.e. two or more) and nearly all engaged in childhood firesetting. Their adulthood experiences were all characterised by anti-social lifestyles, and men on this pathway were likely to have anti-social peers, endorse criminal sentiments and values and exhibit a host of anti-social and criminal activities and behaviours. Most identified some form of major life stressor and trigger to their offence. Anger was the most commonly reported response to the triggering event and the majority of motives for setting the fire (fire-goals) were to exact revenge for a real or perceived injustice, to escape the situation they were in or to protest against a situation they could not resolve through other means. Their fires were often planned and intentionally life threatening (e.g. setting fire to occupied premises) and they were likely to describe positive affect/behaviour after the offence.

Table 1, Case Study: Mr X

Approach Firesetter
Mr X set fire to an occupied dwelling with his co-defendant killing all three occupants, when he was 17 years old. He has three previous offences: arson, a theft and kindred

offence and a miscellaneous offence.
1. Background Factors
<p>Mr X grew up with his mother, step-father and three siblings. His step-father was in and out of prison for drug offences (history of family substance abuse). He didn't get on with his biological father, who was serving a prison sentence for manslaughter, and on one occasion, tried to kill him during an argument (negative caregiver experiences/aggression). He was close to his mother – “you don't disrespect my mum, that's the one rule I had at the end of the day” (loyalty norms). He was diagnosed with ADHD (learning difficulties) and frequently fought with other children in school (aggressive traits/negative peer influences). He was bullied by other children (emotional abuse) and believed everyone got bullied when they were younger (normalised violence). He often lost his temper and reacted violently (impulsive traits).</p> <p>Mr X described vicarious fire experiences in his wider social environment – he was “brought up around fires, [he] was used to seeing fires or cars getting burnt out, houses on fire, that's how it were where [he] lived” (fire norms). He did not have any real fascination with fire but was arrested for setting fire to a stolen motorcycle (deliberate firesetting).</p>
2. Adulthood Experiences
<p>Mr X's early adulthood was characterised by a largely anti-social lifestyle. He did not describe any major life stressors, but engaged in frequent criminal activities, mainly theft, kindred and drug offences (anti-social lifestyle/increased behavioural problems).</p>
3. Immediate Pre-Offence Period

The day before the offence he found out a male known to him had sexually assaulted a friend's child (proximal trigger: moral transgression). When he found out he went "mad" (affective response: anger).

4. Offence and Post-Offence Period

The next day, Mr X and his friend were going to go and "smash" the man's property up and beat him up (non-fire related goal: revenge). Mr X's friend subsequently had the idea to set fire to the house, so they acquired accelerants (fire-related goal: revenge/materials sourced). They went round to the victim's house and set the fire – they didn't care if anyone was inside (intentional harm). They left the scene immediately and felt "okay" about the fire (positive affect). He watched the consequences of the fire on the news the next day (approach behaviour) and realised a number of people had died. He wasn't satisfied by the damage the fire had done and wasn't upset the victims had died, preferring they had stayed alive to face the consequences of their actions (negative goal appraisal).

Avoidant Firesetter

The second pathway identified offenders who passively approached their offence behaviour to achieve their goals. Individuals on this pathway appeared to show a pattern of avoiding expressing their opinions or feelings or identifying and meeting their needs. They seemed to allow grievances and annoyances to mount and were possibly prone to explosive outbursts (e.g. setting a fire), usually out of proportion to the triggering incident.

These offenders typically displayed troubled childhood backgrounds (e.g. poor family environments). Passive traits characterised by a lack of assertiveness were common and relatively few engaged in early criminal activities. They showed lower numbers of fire-

factors compared to the Approach Firesetter group (e.g. one or less). Those offenders with no discernible fire factors and those who reported negative experiences around fire were all found to follow this pathway. Firesetters typically developed pro-social lifestyles progressing through adulthood and the majority experienced significant life stressors. Whilst the majority identified a trigger to their offending, fear and frustration as a response were more common in this group. The majority of motives for setting their fires were to solve a criminal problem, to exert their power or authority or in protest at a situation they were unable to resolve through other means. Their fires were indirectly approached (e.g. putting themselves in a situation where they could/had to offend) and not intentionally harmful (e.g. setting fire to unoccupied premises). They often seemed to display negative affect/behaviour afterwards, returning to a more passive disposition.

Table 2, Case Study: Mr Y

Avoidant Firesetter
Mr Y and a friend set fire to his business after repeated failed attempts to sell the premises to repay increasing debts and evacuate squatters. He was 53 years old at the time of the fire and has no previous convictions.
1. Background Factors
Mr Y described a very traumatic childhood. He had a very difficult relationship with his father (negative caregiver experiences), who was mentally unwell (family mental health problems) and often behaved in a physically abusive way (witnessed domestic violence). He felt conflicted about his father: he was often physically disciplined and bullied (physical and emotional abuse) but his father also spoilt him with gifts. He described feeling ashamed, accepting the gifts and tolerating the abuse in exchange (passive traits). Mr Y didn't focus on school work due to a speech impediment (learning

difficulties/disengagement), but was popular with his peers (positive peer influences).

When he was six years old, he started a fire in the family home to get his parents' attention as they were often absent working (early firesetting). He did not describe any interest or fascination with fire.

2. Adulthood Experiences

Mr Y described a largely pro-social lifestyle, characterised by steady employment. However, he described several major life stressors. He went through two failed marriages (major life stressor – inter-personal relationships) and over the course of the two years before he set the fire, he lost all his immediate family (major life stressor – trauma). Subsequently Mr Y was diagnosed with Bipolar Disorder (mental health problems) and leading up to the fire he felt extremely isolated (absence of support).

3. Immediate Pre-Offence Period

Proximal to the offence, squatters had repeatedly broken into his business which had been closed. He tried to resolve the situation by involving the police, and through his own means, both unsuccessfully (proximal trigger: unmet need). In the six months running up to the fire he felt no one was listening to him (affective response: frustration).

4. Offence and Post-Offence Period

He wanted to get rid of the business and thought about setting fire to it to teach the police a lesson for ignoring him - he wanted to be heard (fire-related goal – protest).

He told a male friend about his intentions. His friend (co-defendant) had set fires before and agreed to help. His co-defendant played a leading role in planning the fire (materials sourced/passive involvement in planning) – they did not want anyone to get hurt (no intention of harm). Initially his friend (co-defendant) and an associate were going to set the fire for him but the associate pulled out and Mr Y had to help set the fire (passive approach to offence). On the night of the offence, his friend started the fire on the business premises. His co-defendant died in the fire and Mr Y was badly injured. He felt scared and panicked (negative affect) and wanted to run away from the property (avoidant behaviour).

Discussion

Using imprisoned male firesetters' offence chains, a descriptive model of adult male firesetting (DMAF) was developed. The DMAF has important strengths. In particular, it is the first data driven study examining the offence chain of incarcerated adult male firesetters. It provides a clear, yet detailed, account of firesetting; documenting the contributory roles of cognitive, behavioural, affective and contextual factors. It is sufficiently developed to document similarities between firesetters, whilst sensitive enough to account for offender heterogeneity. In the following section, the ability of existing single- and multi-factor theories to satisfactorily account for the DMAF are discussed. The clinical implications and limitations of the model are then considered.

First, the DMAF highlights the importance of the offender's wider social environment during childhood, in particular in terms of vicarious fire experiences. This

supports the idea that firesetting, in part, may be learned. Fire experiences (i.e., legitimate and illegitimate) in the offender's wider environment are comprehensively accounted for by *Social Learning Theory* (Bandura, 1976) as well as being echoed in smaller studies suggesting firesetters are raised in environments where the use of fire is more pervasive (e.g., rural locations; Wolford, 1972) and offenders' families hold a history of firesetting (Rice & Harris, 1991). All three existing multi-factor theories account for fire experiences in offenders' environments (Fineman, 1980, 1995; Gannon et al., 2012; Jackson et al., 1987). However existing theories do not specify the different types of environmental fire experiences or the impact they may subsequently have.

Second, the emergence of fire factors (fire interest, normalisation of fire, deliberate firesetting and negative fire experiences) as vulnerabilities arising in childhood points to the pivotal role that childhood experiences of fire may play in terms of future firesetting. Recent empirical research has found that firesetters are clearly distinguishable from non-firesetters on three groups of conceptually related measures pertaining to fire, emotional/self-regulation, and self-concept. In particular, firesetters displayed higher levels of interest in serious fires, identification with fire and lower levels of perceived fire safety awareness (Gannon, Ó Ciardha, Barnoux, et al., 2013). *Social Learning Theory* (Bandura, 1976) and all three multi-factor theories (Fineman, 1980, 1995; Gannon et al., 2012; Jackson et al., 1987) do highlight the importance of fire related experiences during childhood. However, whilst *Functional Analysis Theory* (Jackson et al., 1987) and *Dynamic Behaviour Theory* (Fineman, 1980; 1995) account for the presence of these fire factors, only the M-TTAF (Gannon et al., 2012) clearly articulates their explanatory value. Consequently, with the exception of the M-TTAF, existing firesetting theories need to provide more explanatory depth to early

experiences of fire in offenders' backgrounds in order to satisfactorily account for the processes described in the DMAF.

Third, the DMAF highlights the presence of contextual triggers and of associated emotional responses. How the offender interacts with his environment and copes with adverse events, particularly in terms of problem solving, is integral to understanding the offence process. *Social Learning Theory* (Bandura, 1976) and all three multi-factor theories successfully account for the presence of proximal events and/or triggers leading up to firesetting. For example, Pettiway (1987) found environment to be more important than race or age in distinguishing different types of firesetters and hypothesised that individuals from low socio-economic backgrounds were more likely to perceive authorities as unresponsive to their problems, resorting to crimes of self-help (e.g. firesetting as a result of an *unmet need*). Multi-factor theories refer to *impulsivity triggers* (e.g. rejection or trauma; Fineman, 1980; 1995), *internal and/or external triggers* (Jackson et al., 1987) and *proximal life events* and *contextual factors* as possible triggers (Gannon et al., 2012). Thus, the DMAF serves to provide a more detailed account of the types of triggers offenders' may experience (e.g. *moral transgression, conflict/provocation, and/or unmet need*) and their associated affective responses (e.g. *anger, fear and/or frustration*).

Lastly, the discovery of new motives and how firesetters form their offence goals both make an important and novel contribution to the existing literature. The DMAF may suggest motive (i.e., the reason preceding the firesetting behaviour) is better conceptualised as an offence goal (i.e., the result towards which the firesetting is directed), whereby firesetting is the chosen goal directed behaviour. Existing single and multi-factor theories provide very little detail on motive, with the Tier 2 trajectories of

the M-TTAF perhaps providing the most detailed explanation (Gannon et al., 2012). However, motive has been extensively examined within the numerous typological classifications of firesetting behaviour (see Gannon & Pina, 2010). Within the DMAF, eight offence goals were reported in line with existing findings: *revenge* (Lewis & Yarnell, 1951), *economic gain* (Barker, 1994), *thrill seeking* (Icove & Estepp, 1987), *communication* (Canter & Fritzson, 1998), *crime concealment* (i.e. a criminal problem in the DMAF; Inciardi, 1970), *vandalism* (i.e. thrill-seeking in the DMAF; Inciardi, 1970), *protection* (Tyler et al., 2013) and *protest* (Rix, 1994). *Revenge*, in line with the literature, was found to be the most prominent offence goal, accounting for a third of the sample (see Barnoux & Gannon, 2013 for a review). However, the DMAF identified three new fire-related offence goals which require incorporation into existing theoretical developments: *escape*, where firesetting serves to free the offender from their current situation, *murder*, where firesetting serves to remove someone's life and finally *power*, where fire is used to exert the offender's own authority.

The DMAF suggested goal formation occurs on two levels: offenders either form a non-fire related goal first and then a fire related goal; or they form a fire related goal directly. Offenders who formed fire-related goals immediately seemed to plan their fire in advance to varying degrees of detail. Conversely, offenders who formed non fire-related goals first, did not seem to plan their fire in any depth or detail. This finding sheds light on how fire is chosen, and is poorly addressed in existing theoretical developments on deliberate firesetting. The conceptualisation of offence goals is briefly mentioned in *Dynamic Behaviour Theory* (e.g. in terms of the crime scene features that might provide guidance regarding the goals of firesetting; Fineman, 1980; 1995) and the *M-TTAF* (e.g. within the *grievance* trajectory fire may be used to achieve the over-

arching goal of revenge; Gannon et al., 2012). However, these conceptualisations are not sophisticated enough to account for the dual-level processes described in the DMAF and require further development.

Linked to goal formation is goal appraisal post offence. The DMAF suggests offenders appraise the relative success of the fire in achieving their original offence goals. This could be relevant in terms of desistance or reinforcement. If offenders assess their original goal achieved by the fire, this may positively reinforce the use of fire and subsequently place them at higher risk of future firesetting. Reinforcement has been addressed theoretically by all three multi-factor theories of deliberate firesetting, in terms of its critical role in the maintenance of firesetting behaviour (Fineman, 1980, 1995; Jackson et al., 1987; Gannon et al., 2012). However, the *M-TAFF* further elaborates to explain the perceived positive consequences of firesetting (e.g. instrumental gains) are likely to reinforce and increase the likelihood of firesetting re-occurring (Gannon et al., 2012). Conversely, those who negatively evaluate their fire may remain one-time firesetters; only two out of the eight participants who negatively evaluated their fire had a previous conviction for firesetting (e.g. the majority were in fact one time firesetters). The literature reports a history of multiple firesetting as an indicator for future firesetting (Hurley & Monahan, 1969; Koson & Dvoskin, 1982) and as such the lack of previous firesetting among those offenders who negatively appraise their goals in the DMAF may help distinguish the characteristics of one-time firesetters and repeat firesetters. Thus, understanding how offenders appraise their fire may require further attention, both theoretically and empirically.

Currently there is no accredited¹⁰ offender behaviour programme specifically designed for incarcerated firesetters in England and Wales. However, some of the existing generalist programmes may benefit this group of offenders by targeting certain problematic areas identified in the DMAF: aggression and anger (e.g. Controlling Anger and Learning to Manage it); alcohol and substance misuse (e.g. Alcohol Related Violence Programme etc.); poor coping strategies, problem solving, communication, and anti-social belief systems (e.g. cognitive-behavioural interventions; Thinking Skills Programme). However, these programmes do not cover the range of factors outlined in the DMAF (e.g. life stressors, triggers, offence related goal development and appraisal) and most importantly none target the presence of fire factors in this population. However, a recent treatment programme specifically tailored for firesetters has been piloted in the prison service and is currently under evaluation. The Fire Intervention Programme for Prisoners (Gannon, 2013; FIPP) consists of a 28 week cognitive-behavioural treatment programme for participants who have a history of firesetting. The main areas covered within the programme are fire related factors, offence supportive attitudes, social competence, and self-management/coping. The programme represents a positive step towards addressing the specific treatment needs of the firesetting population, particularly in terms the presence of fire factors among offenders.

A second, highly related implication of the DMAF for clinical practice lies within the similarities and differences noted between the pathways firesetters follow.

Treatment formulation may be different for offenders following different pathways.

Approach Firesetters may benefit from cognitive based treatment initiatives addressing

¹⁰ Accreditation by the National Offender Management Service shows the programmes are evidence based and congruent with the 'what works' literature (Ministry of Justice, 2012).

areas such as anger and emotional regulation. Conversely Avoidant Firesetters may require treatment initiatives addressing areas such as assertiveness, effective communication and problem solving. For example, offenders may benefit from being provided with the skills to support alternative styles of thinking and acting, particularly in terms of positively communicating their emotions and concerns without resorting to offending.

Despite the strengths and potential clinical utility of the DMAF, there are limitations which require discussion. First, data collection can be subject to participant and researcher biases. Data often rely on retrospective self-reports, which may have suffered distortions, self-deception and recall inferences, as well as demand characteristics. Efforts were made to minimise these by checking the veracity of firesetters' interviews with collateral information available (prison files and reports). Second, samples in offence chain models tend to be small. Although they do not need to be representative, a sample of 38 men does pose problems as to the generalisability of the findings. Although a range of firesetting offences were sought for the sample, some offender types may not be included (e.g. self-immolation) and the sample is limited to males. Nevertheless, a core strength of grounded theory methodology is its ability for future modification in response to additional data. The DMAF may thus be utilised in future research with additional samples (e.g., for cross validation) and different samples (e.g., juvenile firesetters and female firesetters) in order to develop and refine the model further by incorporating important findings from different groups of firesetters.

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