**Pathways to Firesetting for Mentally Disordered Offenders: A Preliminary Examination**

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**Abstract**

The current study aimed to investigate the specific pathways in the offence process for mentally disordered firesetters. In a previous study (Tyler et al., 2013) an offence chain model was constructed (i.e., the Firesetting Offence Chain for Mentally Disordered Offenders, FOC-MD) using offence descriptions obtained from 23 mentally disordered firesetters; detailing the sequence of contextual, behavioural, affective and cognitive factors that precipitate an incidence of firesetting for this population. The current study examines the prevalence of the specific pathways to firesetting for the original 23 mentally disordered firesetters and a further sample of 13 mentally disordered firesetters. Three distinct pathways to firesetting are identified within the FOC-MD: *fire interest-childhood mental health*, *no fire interest-adult mental health*, *fire interest-adult mental health*. In this paper we describe these three pathways in detail using illustrative case studies. The practice implications of these identified pathways are also discussed.

Key Words: Firesetting, Arson, Mentally Disordered Offenders, Qualitative

Historically, there has been a distinct lack of evidence based treatment programmes for mentally disordered firesetters (Palmer, Caulfield, & Hollin, 2007). This may be due to the sparse amount of research and theory regarding dynamic risk factors associated with firesetting (Palmer, Hollin, Hatcher, & Ayres, 2010), the lack of understanding about the role that mental health plays in the offence process for mentally disordered firesetters (Hollin, 2012) and/or the assumption that firesetters are ‘generalists’ whose needs are met via general offending behaviour programmes (Gannon & Pina, 2010; Palmer et al., 2007). However, Haines, Lambie, and Seymour (2006) found that adult firesetters viewed themselves as a distinct group of offenders who directly requested treatment to focus more directly on their firesetting behaviour.

Leading offender rehabilitation theories contend that effective programmes should be tailored to target the criminogenic needs specific to the individual offender rather than assuming offender homogeneity (Andrews & Bonta, 2010; Ward, Mann, & Gannon, 2007). Thus, if effective treatment programmes are to be developed for firesetters then more knowledge is needed about the individual pathology of firesetters and their associated treatment needs (Horley & Bowlby, 2011).

At present there is little evidence based theory to guide practitioners in the identification of specific treatment needs for different subtypes of mentally disordered firesetters. One multifactor theory which offers some information on the specific treatment needs of different subtypes of firesetters is the Multi-Trajectory Theory of Adult Firesetting (M-TTAF; Gannon, Ó Ciardha, Doley, & Alleyne, 2012). The M-TTAF is a multifactorial model which aims to explain how individuals may come to commit an act of firesetting as well as detailing five prototypical trajectories/subtypes of firesetters and their associated treatment needs. The M-TTAF therefore provides practitioners with a way of meaningfully classifying firesetters based on four core factors: inappropriate fire scripts/fire interest, offence supportive cognition, self/emotional regulation issues, and communication problems. Whilst the M-TTAF provides a comprehensive theoretical basis on which to develop and tailor treatment programmes for mentally disordered firesetters it is also limited in its scope as it lacks detail regarding the proximal factors that precede an incidence of firesetting and how these may differ across offenders.

Micro-theories, such as offence chain models, which detail the offence process have been developed for both violent (Cassar, Ward, & Thakker, 2003; Chambers, Ward, Eccleston, & Brown, 2009; Murdoch, Vess, & Ward, 2010, 2012) and sexual (Gannon, Rose, & Ward, 2008; Polaschek, Hudson, Ward, & Siegert, 2002, Ward et al., 1995) offenders. Such models describe the cognitive, affective, behavioural, and contextual factors which precipitate and accompany an instance of offending. Further, distinct offence types or pathways have been identified within these offence chain models which have highlighted the heterogeneity of these populations. The identification of different offence types has, in turn, provided practitioners with highly valuable information to aid the tailoring of specific treatment programmes for offenders.

 In an earlier study we developed an offence chain model which outlined the offence process for firesetting in mentally disordered offenders – *The Firesetting Offence Chain Model for Mentally Disordered Offenders* (FOC-MD;Tyler, Gannon, Lockerbie, King, Dickens, & De Burca, 2013)*.* The FOC-MD was developed using qualitative research methods (i.e., grounded theory) and describes the offence process for male and female mentally disordered firesetters in a temporal sequence, based upon offenders’ narratives of their offences.

*The Firesetting Offence Chain for Mentally Disordered Offenders (FOC-MD)*

In brief, the FOC-MD can be divided into four main phases: (1) *Background Factors* (childhood and adolescent experiences up until age 18), (2) *Early Adulthood* (from age 18 up until approximately 1 year before the offence),(3) *Pre-Offence* *Period* (events occurring approximately 1 year before the event up until moments before), and (4) *Offence and Post-Offence Period* (covering the offence itself and factors immediately post offence). An abbreviated version of the FOC-MD is provided in Figure 1.

Phase 1 of the model consists of four major categories. The first category in this phase is *caregiver experiences* whichdescribes mentally disordered firesetters’ relationships with their parents during childhood/adolescence. Mentally disordered firesetters reported these as being either generally positive or negative. *Separation experiences* is the second link in the model and refers to whether participants were removed from their primary caregivers or not. *Abusive experiences* is the third major category in Phase 1 of the model, at this point mentally disordered firesetters experienced either *physical*, *sexual*, *emotional* or *no abuse*. *Risk factors* describes key vulnerabilities that develop in childhood and/or adolescence that appear to put individuals at risk of firesetting as an adult. These risk factors include *maladaptive coping, mental health problems, antisocial activity, fire interest, strong affect towards fire*, and *early firesetting*. The development of *mental health problems* at this stage appeared to impact upon other existing risk factors making them more chronic.

[Insert Figure 1 about here]

Mentally disordered firesetters enter Phase 2 of the model (*Early Adulthood*) with a range of vulnerabilities which put them at risk of firesetting. *Early adulthood* consists of *problematic intimacy*, which refers to mentally disordered firesetters engagement in dysfunctional relationships during early adulthood. *Substance misuse* and *mental health problems* both negatively interact with *problematic intimacy* and each other (i.e., these either became more acute as a result of their relationship difficulties or were a direct cause of their relationship problems). It is important to note that our entire sample of mentally disordered firesetters passed through the major category of *problematic intimacy* in the model.

During Phase 3 of the model (*pre-offence period*), all mentally disordered firesetters experienced some deterioration in their mental health. Following this deterioration, mentally disordered firesetters reported experiencing a problem (i.e., being discharged from hospital and not being able to cope, committing a crime and needing to conceal it, not knowing how to recognise and deal with fire interest) and exhibited poor problem solving skills in relation to this. Following *poor problem solving*, mentally disordered firesetters reported developing motives for setting the fire which included *crime concealment, revenge/anger, cry for help, suicide/self-harm, protest, protection, boredom* and *fire interest.*. Mentally disordered firesetters engaged in some level of planning prior to the offence which was categorised as either *detailed explicit* (i.e., detailed planning days/hours before the offence), *low level explicit* (i.e., some explicit planning but proximal to the offence-minutes before), *implicit* (i.e., thoughts about setting the fire days before the offence but no planning), or *none*.

The final phase of the model refers to the *Offence* and *Post-Offence period*. There are three major categories in this phase of the model. The first major category is *fire ignition* which describes whether firesetters used previous/existing fire knowledge when setting the fire or not. Whether mentally disordered firesetters used their fire knowledge was generally affected by whether they had developed fire risk factors (i.e., *early firesetting, strong affect to fire, fire interest*) during childhood/adolescence. After having lit the fire mentally disordered firesetters reported experiencing *fire related affect/cognition* which could be *positive* (i.e., excitement, relief, happiness)*, mixed* (i.e., competing positive and negative affect), *negative* (i.e., fear, upset) or *ambivalent* (i.e., did not experience any strong arousal towards the fire*).* The final category in the FOC-MD describes whether participants watched the fire or not. This category is subdivided into *interested*, *circumstances did not allow*, and *not interested*.

In our previous study (Tyler et al., 2013) preliminary observations suggested that mentally disordered firesetters followed one of three distinct pathways to firesetting through the FOC-MD: *fire interest-childhood mental health*, *no fire interest-adult mental health*, *fire interest-adult mental health.* Participants who followed the ‘*fire interest–childhood mental health’* pathway appeared to be characterised by the development of at least two fire risk factors and mental health problems in childhood. They also appeared more likely to engage in detailed planning of the fire, experienced positive fire related affect, and watched the fire. Participants who followed the ‘*no fire interest-adult mental health’* pathway generally did not develop any fire risk factors in childhood and their mental health issues tended to onset in proximity to the fire. Participants who followed this pathway did not tend to engage in planning of the offence, however, if they did it was low level and proximal to setting the fire. They also tended to feel indifferent about setting the fire, and did not watch it. Finally, participants who followed the ‘*fire interest–adult mental health’* pathway developed at least two fire related risk factors in childhood, however, their mental illness did not onset until adulthood. This group of participants tended to engage in low level planning of the fire, and generally watched the fire unless contextual circumstances did not allow (i.e., wanted to avoid detection or were trying to protect themselves).

Whilst the FOC-MD provides a detailed account of the offence process and key factors that precede an incidence of firesetting for mentally disordered firesetters, it does not describe in detail the different offence patterns or pathways followed by mentally disordered firesetters to offending. This study therefore aims to test whether the pathways identified as part of our previous study are robust and also to examine the prevalence and associated treatment needs for each of the different subtypes of firesetter within the FOC-MD.

**Method**

**Participants**

This second phase of analysis consisted of the same interview data provided by the 23 mentally disordered firesetters reported in our first study (Tyler et al., 2013) plus an additional sample of 13 mentally disordered firesetters recruited from a UK prison; total sample size 36 (29 males, 7 females).

All participants in the sample had at least one recorded incident of deliberate firesetting in their offence history (convicted or unconvicted) and had a current psychiatric diagnosis. Psychiatric diagnoses included personality disorders (i.e., borderline personality disorder, dissocial personality disorder, antisocial personality disorder, *n =* 15), schizophrenic disorders (i.e., schizophrenia and schizoaffective disorder, *n =* 19), other psychotic illnesses (*n =* 3), mood disorders (i.e., bipolar affective disorder, depression; *n =*  6), intellectual/developmental disability (*n =* 2), substance misuse (*n =* 2), mental and behavioural disorder (*n* = 1), obsessive compulsive disorder (*n =*  1), and hyper mania (*n =*  1). Participant ages at the time of interview ranged from 24-64 years (*M* = 39.13, *SD* = 11.52) and the majority were White British/Irish (86.1%; *n =* 31). Further, the majority of participants had more than one incidence of firesetting in their offence history (63.8%; *n =* 23). Accounts of participants’ firesetting were obtained either via a semi-structured interview with one of the researchers or were copied from participants’ hospital/prison files, where consent was provided (e.g., from clinical interviews/assessments, risk assessment reports, end of treatment reports). For the prison sample all accounts were obtained from documents held in participant’s prison files where they had spoken about their firesetting before. Information was collected on participants’ life histories (including the behavioural, contextual, and affective factors) up to and including one of their firesetting instances that they could recall well.

**Method of Analysis**

Each individual participant’s offence narrative was traced through the model by the researcher and a second rater—independent to the research—who had little knowledge of the existing firesetting literature. This process involved two stages; first both raters independently plotted each of the 36 participants’ offence accounts through each stage of the FOC-MD, allocating each offence account to a subcategory for each of the stages of the model. Following this the two raters categorised each participant as belonging to one of the three observed pathways identified in our first study (Tyler et al., 2013) using the descriptions of the pathways presented in Table 1.

If the rater felt that a participant did not fit one of the predefined pathways then this was noted down so that any new pathways that emerged were accounted for. Three participant’s records (1 male prison, 1 male hospital, and 1 female hospital) did not contain sufficient information to be tracked through the background and pre-offence period of the FOC-MD. These individuals were therefore excluded from analysis leaving a total sample size of 33 participants (male hospital = 10, male prison = 17, female hospital = 6).

[Insert table 1 about here]

**Inter-rater Reliability**

Inter-rater reliability was calculated using the Kappa statistic for overall pathway allocation. Agreement between rater’s was interpreted according to the following criteria by Landis and Koch (1977) and Fliess (1981): <0.40 poor agreement, 0.40-0.75 fair to good agreement, and >0.75 excellent agreement. Overall, inter-rater reliability for pathway allocation was fair to good: Kappa = .67, *p*<.001, 95% CI (0.46, 0.88). Inter-rater reliabilities for each of the categories within the pathways were also examined and showed satisfactory-excellent inter-rater for all of the distinguishing pathway categories. The reliabilities were as follows: *early firesetting*, Kappa = 0.81, *p* <.001, 95% CI (0.61, 1.01); *fire interest*, Kappa = 0.61, *p* <.001, 95% CI (0.39, 0.82); *strong affect to fire*, Kappa = 0.85, *p* < .001, 95% CI (0.64, 1.05); *childhood mental health problems*, Kappa = 0.64, *p* <.001, 95% CI (0.39, 0.90); *planning*, Kappa = 0.56, *p* <.001, 95% CI = 0.34, 0.75); *fire ignition*, Kappa = 0.82, *p* < .001, 95% CI (0.63, 1.01); *fire related affect*, Kappa = 0.50, *p* < .001, 95% CI (0.28, 0.72); *watched fire*, Kappa = 0.61, *p* < .001, 95% CI (0.39, 0.84). Key disagreements between raters related to timing of events, due to the sporadic nature in which events were discussed, and also interpretation of expressed fire interest and fire related affect by participants. However, these were resolved easily upon discussion between the two raters.

**Results**

 The primary focus of this study was to examine, in detail, the route each participant followed through the FOC-MD so as to test whether the three pathways to firesetting identified in Tyler et al. (2013) are robust and can accommodate the offence styles of an additional population of mentally disordered firesetters who reside in prison rather than hospital. Evidence was found to support all three of the proposed preliminary pathways from our original study; no new pathways were identified. Forty-eight percent of the samplewere classified intothe *fire interest-childhood mental health* (*n* = 16). The second most prevalent pathway, accounting for 27.2% of the sample (*n =* 9), was the *no fire interest-adult mental health* pathway. The *fire interest-adult mental health* pathway accounted for 24.2% of participants (*n =* 8).

The three pathways identified as part of our first study could be distinguished by several major categories within phase 1 - *childhood/background,* phase 3 *- pre-offence period,* and phase 4 - *offence/post-offence period* of the model. The distinguishing major categories were: *risk factors* (phase 1; specifically *mental health problems, fire interest, strong affect towards fire, early firesetting*)*, planning* (phase 3), *fire ignition* (phase 4),and *watched fire* (phase 4; See Table 1 for a summary). Interestingly, neither sex nor detention status (i.e., prison or hospital) appeared to act as differentiating factors for pathway membership. However, the majority of women in our sample appeared to follow the *fire interest-childhood mental health* pathway (83.3%, 5/6). The proportion of women who followed the *fire interest-childhood mental health* pathway was also considerably larger than the proportion of men who followed this pathway (40.7 %, 11/27). However, this difference was not significant [χ2 (2, *N* = 26) = 1.87, *p* = .17].

 In this second study, each subtype of mentally disordered firesetter is described in detail with particular focus on the factors that contribute to pathway membership. Further, illustrative case studies are provided for each pathway. Participant details and offences have been amended to protect their identity. Possible differences between the pathways based on basic demographic variables were examined using Kruskal-Wallis non-parametric testing (see Table 2). No significant differences were found between the pathways on current age or number of previous firesetting convictions, number of total fires set, age at first contact with mental health services or number of previous hospital admissions. Significant differences were observed between the three pathways on the number of previous convictions held by participants. *Fire interest–adult mental health* firesetters were found to have a significantly higher number of previous convictions than *fire interest-childhood mental health* and *no fire interest-adult mental health* firesetters, including holding a significantly higher number of previous convictions for sexual offences. *Fire interest-adult mental health* firesetters also showed a non-significant trend towards holding a higher number of previous convictions for violent (*p* = .06) and non-violent (*p* = .08) offences compared to participants allocated to the other two pathways. However, given the small sample size, such information should be interpreted with some caution.

[Insert Table 2 about here]

**Final Pathway Descriptions and Case Studies**

Descriptions of the key features of each of the three pathways are presented below. Each description focuses on all pathway descriptors as outlined in Table 1. Unique features and associated treatment needs are also highlighted towards the end of each pathway description and an illustrative case study is provided.

*Pathway 1: Fire interest–childhood mental health (N = 16)*

Firesetters who followed the *fire interest-childhood mental health* pathwaywere predominantly male (*n* = 11, 68.75%), with both those residing in hospital and in prison being equally represented. The majority of participants who followed the *fire interest-childhood mental health* pathway developed at least two fire related risk factors during childhood/adolescence. For example, they may have engaged in early firesetting during this time (87.5%, *n* = 14), developed an interest in fire (i.e., become excited or fascinated by fire; 87.5%, *n* = 14), or have developed strong affect towards fire as a result of their early experiences with fire (100%, *n* = 16). This affect could be predominantly positive (e.g., exciting, calming/soothing) or negative (e.g., fear).

The majority of participants who were characterized by this pathway developed maladaptive coping strategies in childhood/adolescence (e.g., substance misuse, firesetting, interpersonal aggression; 75%, *n* = 12) and a large proportion also developed mental health problems before the age of 18 (75%, *n* = 12) relative to participants who followed the other two pathways (see Table 2). These mental health problems appeared to exacerbate other risk factors held by these individuals (i.e., maladaptive coping). The majority of *fire-interest childhood-mental health* offenders had generally been admitted to hospital on multiple occasions over their lifetime and had either had a hospital admission or were engaged with mental health services in the year prior to setting the fire (81.3%, *n* = 13). Motives for firesetting held by these participants were mostly *revenge/anger* (56.3%, *n =* 9), *cry for help* (43.8% *n = 7*), or related to participants’ fire interest (25%, *n* = 4). Participants who followed this pathway were most likely to have engaged in some form of explicit planning prior to the offence (*n =* 11) be that several days/hours before or in the few minutes beforehand. The development of fire related risk factors in childhood/adolescence appeared to influence how some participants went about setting the fire. For example, a large proportion of participants within this pathway used their fire knowledge when starting the fire (e.g., used accelerants/specific flammable materials; *n* = 11). In addition, approximately half of participants watched the fire due to their interest in fire more generally (*n =* 8) and of those who did not watch, the majority did not do so because the circumstances did not allow (e.g., they wanted to avoid detection; *n =* 7). Interestingly, a large proportion of *fire interest-childhood mental health* firesetters held a diagnosis of borderline personality disorder (37.5%; see Table 2), more so than the other two pathways. Participants who followed this pathway also tended to have multiple admissions to psychiatric hospitals and to have also have set multiple fires as an adult, although not significantly more than those who followed the other two pathways. Further, women were particularly over-represented in the *fire interest-childhood mental health* pathway compared to the other two pathways, accounting for 31.25% of participants in this pathway (*n* = 5) and 71.42% of all women in the sample.

Due to developing fire related risk factors in childhood and adolescence, *fire interest-childhood mental health* firesetters are likely to require treatment focussing on managing fire interest and urges to set fires. In addition to this, firesetters characterized by this pathway are likely to have developed specific offence supportive attitudes/thoughts about fire from their early childhood experiences (e.g., beliefs that fire is exciting, beliefs that fire can be used positively as a weapon), reflected in their development of strong affect towards fire (positive or negative). This group are also likely to have developed specific scripts of how and when to use fire (e.g., when bored to elicit excitement or as a coping strategy).

Thus, it is likely that these individuals will require specific treatment to recognise and challenge such thoughts/attitudes about fire. Since individuals who follow this pathway are likely to have a pervasive history of firesetting, exploration of any patterns in their firesetting is also likely to be beneficial. More generally, firesetters who follow this pathway may have treatment needs in the areas of communication, problem solving and emotional regulation since the motives for their firesetting appear to be related to problems with communicating and regulating emotions (i.e., expressing anger, cry for help) or an interest/fascination with fire.

**Case Study – Pathway 1.** Andrew is a 27 year old male with a diagnosis of paranoid schizophrenia, his index offence is for Grievous Bodily Harm*.* Andrew has a reported history of repetitive firesetting although he has not been convicted of any firesetting incidents. Andrew experienced a difficult childhood; his father and step-mother drank heavily, his mother was absent from the age of 7 after splitting with his father and he had a problematic relationship with his step-mother – who did not want Andrew or his brother (**Caregiver Experiences – Negative)**. Andrew was sent to live with his grandparents for a while **(Separation Experiences)** and then moved out of the family home age 14 years to live on his own. It was at this point that Andrew began engaging in offending behaviour; predominantly acquisitive in nature, to fund his lifestyle **(Risk factors – Antisocial Activity).** Andrew had already begun setting fires with friends at this point, this started around age 4 years **(Risk Factors – Early Firesetting)** and continued throughout his teenage years and into adulthood. Andrew reports finding setting fires exciting and amusing **(Risk Factors – Strong Fire Affect – Positive)** and that he would return after setting a fire to watch the fires and the fire brigade **(Risk Factors – Fire Interest).** During early adolescenceAndrew began to experience mental health problems in the form of paranoid hallucinations and suicidal ideation **(Risk Factors – Mental Health).** Andrew did not have any intimate relationships prior to his last firesetting incident (**Problematic Intimacy**) and his opportunities to form intimate relationships were affected by his recurring mental health problems and substance misuse. Andrew was discharged from hospital three months prior to setting his last fire and was engaged with community mental health services at the time. Upon discharge from hospital, Andrew’s mental health quickly deteriorated due to non-compliance with his medication **(Mental Health Deterioration)**. Andrew reported feeling under a lot of pressure from his family at the time to do well in a new job and, similarly to his earlier life, Andrew used alcohol to cope with this pressure **(Poor Problem Solving).** Andrew decided that he wanted to return to hospital so he could start afresh, get away from where he was living, and relieve himself of the immense pressure he was under **(Motive – Cry for Help).** He opted to set fire to his flat as he was feeling stressed about the situation and saw it as the only way to get out of it **(Poor Problem Solving).** Andrew ensured that he closed all of the curtains on his flat so that the fire would not be detected immediately, stacked all his furniture in one room **(Planning – Low Level Explicit),** and poured alcohol over the furniture to get the fire started **(Fire Ignition-Use of Fire Knowledge).** Andrew reported feeling “awful” about the fire after he had set it and how his actions would have upset his family, however, he wanted to watch the fire as he found it soothing **(Fire Related Affect/Cognition – Mixed).** He left the flat and hid in a bush opposite the building so as to watch the fire **(Watched Fire – Interested).**

*Pathway 2: No Fire Interest-Adult Mental Health (N = 9)*

Firesetters who followed the *no fire interest-adult mental health* pathwaywere predominantly male (*n* = 8, 88.8%), with both those residing in hospital and in prison being equally represented. Firesetters who followed this pathway did not tend to develop any fire related risk factors (88.8%, *n =* 8) nor did they tend to develop mental health problems in childhood/adolescence (66.6%, *n =* 6). Instead, the onset of their mental health problems occurred proximal to their firesetting; thus firesetters who followed this pathway showed a non-significant trend of being older at the time of onset of their mental health problems than those who followed pathway one (see Table 2). Participants who followed the *no fire interest-adult mental health* pathway were less likely to be engaged with mental health services the year before the fire than participants who followed the other two pathways (88.8%, *n* = 8). This may suggest that for these firesetters, the onset of their mental health problems may act as a catalyst for their firesetting. Motives for firesetting held by *no fire interest-adult mental health firesetters* were quite varied, however, the most common motives were revenge (44.4%, *n* = 4), cry for help (22.2%, *n* = 2), and suicide/self-harm (22.2%, *n* = 2). In contrast to the other pathways, a large proportion of participants that followed this pathway did not engage in any planning of the offence (77.7%; *n =* 7) and did not use existing fire knowledge when starting the fire (77.7%, *n* =7), suggesting that their firesetting was generally impulsive in nature and not driven by fire related risk factors. Further, the majority of participants reported feeling indifferent about the fire (88.8%; *n =* 8) and did not watch the fire, either because they were not interested or because the circumstances did not allow. In addition, participants who followed this pathway were most likely to be one-time firesetters, being more likely to have previous convictions for non-violent offending than other types of offences (see Table 2).

 It is unlikely that individuals who follow the *no fire interest-adult mental health* pathway would require any specific treatment surrounding attitudes that support firesetting or fire interest as these do not appear to be particular features of their firesetting. It is also unlikely that these individuals will hold pre-existing fire scripts, however, the behavioural consequences of firesetting may act as reinforcers for this behaviour (i.e., a sense of power and satisfaction from getting revenge, attracting attention) and lead to the development of a fire script which may in turn facilitate future firesetting. Thus, some consideration should be given to the development of fire scripts when assessing firesetters who follow this pathway. Although firesetters who follow this pathway may not require treatment for fire specific factors they may benefit from generalised treatment that focuses on understanding their mental illness and signs of relapse in addition to work around self-regulation and coping due to the impulsive nature of their firesetting.

**Case Study - Pathway 2.** Beth is a 40 year old female with a diagnosis of bipolar, her index offence is for arson with recklessness as to endangering life. Beth’s index offence is the only incidence of firesetting that she has engaged in. Beth grew up with both of her parents (**Separation Experiences – None**), although had an unsettled childhood. Her father suffered from depression following a family bereavement and became very aggressive towards Beth and her siblings **(Care Giver Relationships – Negative).** Beth’s father was often violent towards her **(Abusive Experiences)** and to cope with this she became violent towards other children at school **(Risk Factor - Maladaptive Coping).** She also began engaging in shop lifting, taking substances, and drinking alcohol **(Risk Factor – Antisocial Activity).** Beth did not engage in any firesetting as a child and did not report having any interest in fire growing up. Throughout adolescence and adulthood, Beth engaged in both highly promiscuous behaviour as well as abusive relationships with men **(Problematic Intimacy).** These relationships were impacted upon by her use of drugs. Beth began to experience mental health problems when she was 25 years old and was first admitted to a psychiatric hospital the following year. In the year prior to her index offence, aged 27, Beth was highly addicted to drugs and her mental health started to deteriorate again, although she did not seek support with this **(Mental Health Deterioration).** The day of the offence, Beth found out that her partner had cheated on her. She did not want him to leave her and asked him to stay with her, however, he rejected her. Feeling low Beth went out drinking with a friend **(Poor Problem Solving),** and got into a fight. She was hearing voices **(Motives – Hallucinations)** telling her to set fire to her flat**.** On her way back to her flat she saw her partner’s car and felt that she just wanted to be removed from the situation **(Motives – Cry for Help).** Beth went home and spontaneously set fire to a newspaper in her flat **(Planning – None; Fire Ignition – No Use of Fire Knowledge;** she did not report experiencing any thoughts or feelings specific to the fire at the time **(Fire Related Affect/Cognition – Ambivalent).** After setting the fire Beth went outside to wait for the police or mental health services to pick her up **(Watch Fire – Did Not Watch Fire: Not Interested)**.

*Pathway 3: Fire Interest–Adult Mental Health (N = 8)*

 *F*iresetters who followed the *fire interest-adult mental health* pathway were predominantly male (*n* = 7, 87.5%), with no difference between the number who resided in hospital and prison. The *fire interest-adult mental health* pathway is characterized by mentally disordered firesetters who developed fire related risk factors in childhood but whose mental health problems did not onset until adulthood. Similarly to the *childhood mental health-fire interest* pathway, the majority of firesetters who followed pathway 3 developed at least two fire related risk factors in childhood/adolescence (75%, *n* = 6) but generally (87.5%, *n* = 7) did not develop any mental health problems during this period. Within this pathway, mental health problems did not tend to onset until early adulthood, however, this was less likely to be as proximal to the offence when compared to those participants who followed the *no fire interest-adult mental health* pathway. Further, although participants who followed this pathway developed mental health problems during early adulthood, they did not tend to be engaged with mental health services at the time of their relapse the year prior to the offence (62.5%, *n =* 5). *Fire interest-adult mental health firesetters* were generally motivated to set the fire out of fire interest (25% *n* = 2) or boredom (25%, *n* = 2) and approximately half experienced some sort of negative affect in relation to the fire after setting it (62.5%; *n =* 5). Just over a third of participants who followed this pathway stayed to watch the fire after lighting it because they were interested (37.5%, *n* = 3). Further, firesetters who followed this pathway tended to be more antisocial than firesetters who followed the other two pathways, showing a significant trend for having a higher total number of previous convictions in addition to a non-statistically significant trend for holding a higher number of non-violent and violent offences and having set multiple fires (see Table 2).

Mentally disordered firesetters who follow the *fire interest-adult mental health* pathway appear to be generally more antisocial than firesetters who follow the other two pathways and are therefore hypothesised to hold attitudes that support offending more generally. Further, as a result of having developed fire related risk factors during childhood/adolescence, firesetters who are characterized by this pathway are also likely to hold beliefs and attitudes that endorse firesetting specifically. Thus these individuals may benefit from specific treatment addressing their general antisocial behaviour and their attitudes towards both offending more generally and firesetting more specifically. Firesetters who follow this pathway may also require specific treatment around recognising and managing fire interest and urges to set fires as firesetting for these individuals is likely to occur as a result of being unable to manage fire interest or as a way to relieve boredom. In relation to this, these individuals may also hold scripts for setting fires related to their fire interest. Firesetters who follow the *fire interest-adult mental health* pathway are likely to have multiple fires (see Table 2), although not statistically more so than those who follow the other two pathways; these individuals therefore may have used fire to serve a variety of different needs over time. Accordingly, treatment that explores any patterns in these individuals’ firesetting is likely to be of benefit, in particular whether these individual hold any scripts for using fire in specific circumstances.

**Case Study - Pathway 3.** Chris is a 26 year old male with a diagnosis of paranoid schizophrenia, his index offence is for arson with intent to endanger life. Chris has a history of firesetting as a child but no other incidents of firesetting as an adult, bar his index offence. Chris had a disruptive childhood, his father was an alcoholic and separated from his mother when Chris was young after which they did not have contact **(Care Giver Relationships – Negative).** Chris spent time in and out of care throughout his childhood and adolescence **(Separation Experiences).** He began engaging in antisocial and criminal behaviour during his teenage years **(Risk Factors – Antisocial Activity).** Part of his criminal behaviour as a teenager involved stealing cars and burning them out **(Risk Factors – Early Firesetting).** Chris also has a history of playing with fireworks and reports finding them exciting **(Risk Factors – Fire Interest).** Chris began to use drink and drugs to cope with his family problems in late adolescence **(Risk Factors – Maladaptive Coping).** Throughout adolescence and early adulthood Chris had problems maintaining intimate relationships due to his criminal behaviour resulting in him being sent to prison on several occasions **(Problematic Intimacy).** In the year before the offence his mental health problems onset affecting his relationships due to his increasing paranoia **(Mental Health Deterioration).** In the weeks proximal to the offence Chris had been having some problems with a neighbour who had been complaining about his dog barking.On the day of the offence Chris received a letter from the council threatening eviction based on the neighbour’s complaints. Chris was angered by this and wanted to get back at the neighbour who had reported his family to the council **(Poor Problem Solving; Motives – Revenge/Anger).** Chris went to his neighbours’ flat to check if he was in and, upon finding he was out, collected lighting materials and accelerant **(Planning – Low Level Explicit);** and put a lit rag through his neighbours’ letter box **(Fire Ignition – Use of Fire knowledge).** Chris reported feeling positive after he had set the fire that he had got back at his neighbour but concerned about how much damage it would have caused **(Fire Related Affect/Cognition – Mixed).** Chris did not stay to watch the fire as he did not want to get caught **(Watch Fire –Circumstances Did Not Allow).**

**Discussion**

The findings of the current study highlighted that mentally disordered firesetters appear to follow one of three distinct pathways through the FOC-MD: (1) *fire interest-childhood mental health*, (2) *no fire interest-adult mental health*, and (3) *fire interest-adult mental health*. Support was found for all three pre-existing pathways that were identified as part of the previous study (Tyler et al., 2013) with no new pathways being identified. Key factors such as the development of fire related risk factors and the age at time of onset of mental health problems appear to be particularly helpful in distinguishing between the offence processes of different sub-types of mentally disordered firesetters.

*Fire interest childhood-mental health* firesetters represented the largest sub-group of firesetters in our sample. Although neither sex nor detention status was found to be a key differentiating factor between the pathways generally, female firesetters were particularly over-represented in this pathway. Mentally disordered firesetters characterized by this pathway are likely to have set multiple fires and have developed specific cognitive rules for the use of fire. Researchers have hypothesized that if fire has elicited positive consequences (e.g., in the form of attention, excitement, or power) in the past then individuals are likely to revert back to this when faced with a similar situation (Gannon et al., 2012; Jackson et al., 1987). Further, fire interest and early firesetting have also been identified in the literature as factors that are predictive of repeat firesetting (Dickens et al., 2009; Tyler, Gannon, Dickens, & Lockerbie, in press). Firesetters who were characterized by this pathway had generally set multiple fires which may suggest that the development of fire related risk factors in childhood, including fire interest and early firesetting, may account in part for these individuals engaging in repeat firesetting. Research has also found that women set significantly more fires than men (Dickens et al., 2007; Long et al., 2013; Tyler et al., in press) and tend to be motivated by revenge, anger, or cry for help (Dickens et al., 2007; Stewart, 1993)., which may account for the overrepresentation of females in this pathway. In general treatment for these individuals is likely to centre on recognising and managing fire interest as well as identifying and exploring fire coping scripts.

The *no fire interest-adult mental health* pathway represented just under a third of mentally disordered firesetters in our sample. These firesetters had generally only ever set the one fire and are likely to have engaged in other types of offending. The absence of fire related risk factors and mental health problems in childhood are distinctive features of these individuals. Therefore fire is likely to have been viewed by these individuals as the best available tool at the time, however, they are unlikely to have any specific affiliation to fire. Further, firesetters who follow the *no fire interest-adult mental health* pathway also appear to set their fires in the context of mental illness (i.e., the onset of their mental health problems coincides with them setting the fire). Firesetters who follow this pathway are unlikely to require fire-specific treatment; thus, general interventions that focus on understanding mental illness, self-regulation and coping are likely to be beneficial for this group.

The final pathway – *fire interest-adult mental health* - accounted for the smallest number of mentally disordered firesetters in our sample. Key distinguishing features of this pathway include fire interest, general criminality, and the onset of mental health problems in adulthood. This sub-group of firesetters are also likely to have set multiple fires, although not significantly more than the other pathways, and are hypothesized to have general offence supportive attitudes as well as attitudes that support firesetting more generally; thus being more likely to use fire to serve a wide range of goals. In line with this, *fire interest-adult mental health* firesetters are likely to benefit from treatment which addresses their general offence supportive attitudes as well as how to recognise and manage fire interest.

Although the pathways identified show some promise for assisting with the treatment and assessment of mentally disordered firesetters there are some limitations to the study that should be considered. First, the current study relies upon self-reports of offence accounts from offenders, which are susceptible to both socially desirability as well as memory distortion. During initial data collection steps were taken to minimise the effects of such issues; participants’ accounts were corroborated with other reports in their hospital and prison files to look for any inconsistencies in the accounts provided, any inconsistent information was removed from analysis. This process helped to strengthen and maintain the validity of the FOC-MD and therefore the validity of pathways identified as part of this study. A further limitation relates to the small sample size from which the FOC-MD was developed and how the sample consists of predominantly male mentally disordered firesetters. It is therefore inevitable that several types of firesetters were under-represented in the sample (i.e., females, those who had engaged in self-immolation and attempted suicide by fire, and those who had set fire for personal gain or to conceal a crime). In addition, the small numbers in each pathway mean that any conclusions drawn about the pathways are limited and should be taken with caution. Thus, future research would benefit from validating the FOC-MD and the corresponding pathways further, particularly with female mentally disordered firesetters, to ensure that different offence styles are accounted for.

To our knowledge, this is the first attempt to examine in detail the different offence styles of mentally disordered firesetters. The Risk-Need-Responsivity Model (Andrews & Bonta, 2010) states that interventions that are effective in reducing reoffending should target the criminogenic needs which are specific to the individual offender. Thus, the three pathways identified as part of the current study may be particularly useful to clinicians working with mentally disordered firesetters in terms of assessing individual’s specific treatment needs based on their offence process. In other areas of offending, descriptions of the different pathways to offending have proved highly valuable in assisting practitioners in the development of specific treatment programmes which are tailored to individual offenders’ specific criminogenic needs. Thus the pathways identified as part of this study show some promise of being equally as useful for the development of tailored interventions for mentally disordered firesetters, which are distinctly lacking at present. Although the current study is a preliminary investigation into the offence pathways of mentally disordered firesetters the findings provide a basis for future research and treatment focussed around the offence styles of mentally disordered firesetters.

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**Figure 1: Abbreviated Version of the FOC-MD**

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**Table 1: Description of pathways to firesetting in mentally disordered offenders**

|  |  |
| --- | --- |
|  | Pathway |
| Phase of Model | Fire Interest – Childhood Mental Health | No Fire Interest-Adult Mental Health | Fire Interest – Adult Mental Health |
| **1.Background** | Risk factors present:Early firesetting Fire interest Strong affect to fire (\*at least 2 of above fire factors)Childhood mental health problems | No fire related risk factorsNo risk factor of mental health (childhood) | Risk factors present:Early firesettingFire interestStrong affect to fire(\*at least 2 of above fire factors)No risk factor of mental health (childhood)  |
| **2.Pre-Offence Period** | Detailed-Explicit planning of offence OR Low level Explicit | No planning of offence (as impulsive) | Low level explicit/implicit planning OR None (as opportunistic) |
| **3.Offence Period** | Ignition – used fire knowledgePositive or Mixed situational affect/cognition | Ignition – did not use fire knowledgeAmbivalent – situational affect/cognition | Ignition – used fire knowledge |
| **4.Post Offence Period** | Watched fire – interested (fire risk factors generally impacted upon this) | Did not watch fire – not interested/circumstances did not allow | Watched fire – interested unless circumstances did not allow |

**Table 1: Demographic Information for each of the identified pathways[[1]](#footnote-1)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  **Table 2: Demographic Information for each of the identified pathways** | Pathway |   |   |  |
| Demographic Information | Fire Interest-childhood mental health *M (SD)*(*N* = 16) | No fire interest-adult mental health *M (SD)*(*N* = 10) | Fire Interest-adult mental health *M (SD)*(*N* = 8) | Kruskall Wallis *p* |
| Male | 11 (68.75%) | 9 (90%) | 7 (87.5%) | - |
| Female | 5 (31.25%) | 0 (0%) | 1 (12.5%) | - |
|  |  |  |  |  |
| Age | 38.50 (11.53) | 38.20 (9.06) | 39.25 (13.96) | .98 |
|  |  |  |  |  |
| Psychiatric Diagnosis[[2]](#footnote-2) |  |  |  |  |
|  Schizophrenic Disorders | 10 (62.5%) | 5 (50%) | 4 (50%) | - |
|  Mood Disorders | 2 (12.5%) | 2 (20%) | 1 (12.5%) | - |
|  Borderline Personality Disorder | 6 (37.5%) | 2 (20%) | 2 (25%) | - |
|  Antisocial Personality Disorder | 1 (6.25%) | 0 (0%) | 0 (0%) | - |
|  Intellectual/Developmental Difficulties | 1 (6.25%) | 1 (10%) | 0 (0%) | - |
|  Drug/Alcohol Dependency | 2 (12.5%) | 0 (0%) | 0 (0%) | - |
|  Personality Disorder (Other) | 3 (18.75%) | 0 (0%) | 2 (25%) | - |
|  Obsessive Compulsive Disorder | 1 (6.25%) | 0 (0%) | 0 (0%) | - |
|  |  |  |  |  |
| No. Total Previous Convictions\* | 13.25 (16.88) | 16.90 (18.84) | 40.00 (40.54) | .05 |
| No. Violent Convictions | 2.18 (2.28) | 2.40 (2.67) | 18.14 (37.04) | .06 |
| No. Sexual Convictions\* | 0.00 (0.00) | 0.00 (0.00) | .50 (1.06) | .03 |
| No. Non-Violent Convictions | 10.43 (15.91) | 14.10 (18.43) | 20.85 (9.08) | .08 |
| No. Firesetting Convictions | .68 (1.07) | .50 (.84) | .75 (1.03) | .79 |
| No. Total Fires Set | 3.50 (2.79) | 1.60 (.69) | 5.00 (2.43) | .18 |
|  |  |  |  |  |
| Age at Time of First Contact Mental Health Services | 17.50 (8.06) | 21.90 (9.24) | 21.50 (10.32) | .30 |
| No. Previous Hospital Admissions | 3.31 (3.19) | 1.44 (1.13) | 3.25 (2.43) | .30 |

\*Significant *p* < .05

1. All variables were missing no more than 2.9% missing data with the exception of ‘No. total fires set’ which had 17.9% missing data (*n* = 4). This was due to not being able to quantify the exact number of total fires these participants had set. [↑](#footnote-ref-1)
2. The majority of patients had more than one diagnosed psychiatric disorder. [↑](#footnote-ref-2)