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The Characteristics and Treatment Needs of Adult Male Imprisoned Firesetters

By

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Canterbury for the degree of Doctor of Philosophy

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Publications

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Barnoux, M., Gannon, T.A., & Ó Ciardha, C. (2015). An empirical evaluation of potential subtypes of adult male imprisoned firesetters. Manuscript submitted to *Journal of Abnormal Psychology*.

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Barnoux, M., Gannon, T.A., & Ó Ciardha, C. *A descriptive model of the offence chain for imprisoned adult male firesetters*. Paper presented to the Crime and Policing Analysis Unit, Home Office Science (Aug 2013).

Barnoux, M., and Gannon, T.A. *A new conceptual framework for revenge firesetting*. Paper presented at the European Association of Psychology and Law conference, Nicosia, Cyprus (Apr 2012).

Barnoux, M., and Gannon, T.A. *A new conceptual framework for revenge firesetting*. Paper presented at the BPS Division of Forensic Psychology Annual Conference, Portsmouth, UK (2011).

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Conventions Used in this Thesis

Numbering Studies

All of the studies in this thesis are numbered independently of the chapter in which they appear in.

Numbering Tables and Figures

All tables and figures are numbered in terms of the chapter in which they appear. They are numbered as figure or table *x.y*, with *x* referring to the chapter number, and *y*, the order that the figure or table is presented within that chapter.

Abbreviations

Abbreviations are described within the text.

Acronyms

The following acronyms are used throughout this thesis:

BPS: The Boredom Proneness Scale - Short Form (Vodanovich, Wallace, & Kass, 2005)

CFSEI: The Culture Free Self-Esteem Inventory (Battle, 1992)

DMAF: The Descriptive Model of the Offence Chain for Adult Male Imprisoned Firesetters (Barnoux, Gannon, & Ó Ciardha, 2014)

DSM-IV: The Diagnostic and Statistical Manual of Mental Disorders – IV (American Psychiatric Association, 2000)

DSM-V: The Diagnostic and Statistical Manual of Mental Disorders – V (American Psychiatric Association, 2013)

ELQ: The Revised UCLA Loneliness Scale (Russell, Peplau, & Cutrona, 1980)

FIPP: The Firesetting Intervention Programme for Prisoners (Gannon, 2012)

FOC-MD: Firesetting Offence Chain for Mentally Disordered Offenders (Tyler et al., 2014)

GT: Grounded Theory (Strauss & Corbin, 1998)

LoC: Nowicki-Strickland Locus of Control (Nowicki, 1976)

MCAA-Part B: The Measure of Criminal Attitudes and Associates - Part B (Mills & Kroner, 1999)

MCMII-III: The Millon Clinical Multi-Axial Inventory III (Millon et al., 1994)

M-TTAF: The Multi-Trajectory Theory of Adult Firesetting (Gannon, Ó Ciardha, Doley, & Alleyne, 2012)

NAS-PI: The Novaco Anger Scale and Provocation Inventory (Novaco, 2003)

NESARC: The National Epidemiological Survey of Alcohol and Other Related Conditions (Blanco et al., 2010; Vaughn et al., 2010)

PDS IM: The Impression Management Scale of the Paulhus Deception Scale (Paulhus, 1998)

SRAS: The Simple Rathus Assertiveness Scale - Short Form (Jenerette & Dixon, 2010)

Abstract

Deliberate firesetting is an international problem which has devastating financial and human consequences. However, the area has received little attention from researchers and practicing professionals compared to other types of offending, thus hindering our ability to recommend how firesetters should be detected, assessment, managed, and treated. In particular, very little is understood about firesetting in imprisoned offenders, particularly in terms of their characteristics and treatment needs, and whether these differ between subtypes of imprisoned firesetter. Theoretical efforts explaining firesetting in imprisoned offenders have also been poor, especially in terms of their empirical adequacy and understanding how the offence process might unfold.

The purpose of this thesis was to extend current knowledge of firesetting in adult male imprisoned offenders by examining the characteristics, treatment needs, and offence processes associated with different types of imprisoned firesetter. Four studies were conducted in this thesis. Study one examined whether specialist treatment is required for all imprisoned firesetters or whether more generic treatment approaches might be sufficient for some types of imprisoned firesetters. Study two evaluated the existence of different types of imprisoned firesetter based on the most comprehensive firesetting theory to date, the Multi-Trajectory Theory of Adult Firesetting (Gannon, Ó Ciardha, Doley, & Alleyne, 2012). Finally, studies three and four examined the offence process and the potential pathways imprisoned firesetters follow to offending.

The studies in this thesis highlight there are important differences between subtypes of adult male imprisoned firesetters. Three key conclusions were drawn

from the combined findings: (i) different types of imprisoned firesetter have different fire-related deficits; (ii) different types of imprisoned firesetter have different treatment needs; and (iii) the findings highlight the importance of considering different target populations and different types of firesetter in theory development and evaluation. Limitations and future research directions are considered.

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Chapter One

Deliberate Firesetting in Adult Imprisoned Offenders: Introduction, Terminology, and Prevalence

Introduction

Deliberate firesetting is rapidly being recognised as a pressing concern due to its' devastating financial and human consequences. In 2008, the associated economic cost of all fires in England stood at £8.3bn, of which £1.7bn was attributed to deliberately set fires, representing 14% of the total cost of fire to the economy (Department for Local Communities and Government, 2011). Within this, the costs of the consequences of deliberately set fires (e.g., fatal and non-fatal casualties, criminal justice system costs, costs to the Crown Prosecution Service, costs to the prison service, property damage, and business interruption costs) were estimated at £1.18bn and £524m was attributed to associated resource costs (e.g., cost of fire and rescue services responding to fires; Department for Local Communities and Government, 2011). However, these figures are not only dated but are not nationally representative, and exclude the environmental and social costs associated with deliberately set fires. As such the true cost of deliberate firesetting is likely to be substantially higher.

Over the last decade, the fire and rescue services in England have seen a steady decrease in the number of reported fires overall (i.e., accidental and deliberately set fires). In 2013-2014, the fire and rescue services in England attended a total of 170,000 fires overall; 24% lower than in 2011-12 (Department for Communities and Local Government, 2015). However, despite this steady decrease, the number of reported deliberately set fires

represented nearly half of all reported fires (i.e., 77,500 deliberate fires in 2013-2014; 46%), resulting in 64 deaths and 2,458 non-fatal casualties; a 13% increase in reported deliberately set fires since 2012-2013 (Department for Communities and Local Government, 2015). These figures are likely to be an underestimation of the numbers of deliberate fires as they are limited to England, are unlikely to include fires set in secure establishments (e.g., prisons and hospitals), and do not include the fatalities and/or casualties associated with fires set to premises other than dwellings (e.g., vehicles, people etc.). Despite evidence to suggest deliberate firesetting continues to be a significant problem and arson related crimes often appearing in news headlines (e.g., Derby fire deaths; BBC News, 2013), the area has received very little attention from researchers and practicing professionals compared to other types of offending (e.g., sexual and violent offending). Consequently, our knowledge and understanding of this behaviour is limited, thus hindering our ability to assess risk and rehabilitate individuals who have a history of deliberate firesetting.

Terminology

Arson, pyromania, and firesetting.

Arson, pyromania, and firesetting have typically been used interchangeably to refer to individuals who deliberately set fires. However, these terms vary in their definition and scope, and merit consideration before conducting a review of the literature.

In England and Wales, *Arson* is a legal term used to refer to the unlawful damaging or destruction of property either intentionally or recklessly by fire and currently falls under the Criminal Damages Act, 1971 (Criminal Damages Act, 1971). *Arson* is considered an aggravated form of damaging property and specific counts of arson are charged as

either *simple arson* (e.g., damage to property), *arson with intent to endanger life* (e.g., intentional damage to property and another human life), or *arson being reckless as to whether life would be endangered* (e.g., intentional damage to property and threat to another life; Crown Prosecution Service, 2013). For individuals convicted of *arson* – often referred to as *arsonists* – sentencing can be as high as life imprisonment (Criminal Damages Act, 1971). However, the current legal provision for arson related offences is limited to fires set to property and the associated consequences (i.e., dwellings, businesses, vehicles, bins, sheds etc.); it does not include other types of deliberately set fires (i.e., fires set to grasslands, woodlands, animals, people etc.). Further, under the Home Office Counting Rules for recorded crime¹ (Home Office, 2015), *arson* offences may be subsumed under more serious primary offences for which the individual receives a conviction (e.g., murder, where the individual sets fire to the body after the act in a bid to conceal the evidence). Finally, not all acts of intentional firesetting attract a conviction for arson. For example, in 2013/14 there were 18,579 police recorded arson offences in England and Wales, of which only 6% resulted in a conviction ($n = 1,136$; Ministry of Justice, 2014a). Consequently, the terms *arson* and *arsonist* are limited in scope and are unlikely to include all acts of deliberate firesetting.

Pyromania refers to a clinical diagnosis within the Diagnostic and Statistical Manual of Mental Disorders-V classified as an *impulse control disorder not otherwise specified* (312.33, p. 476, *DSM-V*; American Psychiatric Association, 2013). Individuals diagnosed with pyromania under DSM-V are those considered to repeatedly set intentional fires to either relieve tension or affective arousal, or to experience instant gratification. The

¹ Only the most serious type of crime is counted where the sequence of crimes in an incident contains more than one type of crime.

diagnostic criteria for pyromania within the DSM-V excludes those individuals who set fires for financial gain, revenge, political protest, crime concealment, to change living circumstances, and those who set fires as a result of substance abuse or certain mental disorders (e.g., delusions, hallucinations, neurobiological, or intellectual impairment). Due to the rigid criteria, diagnoses for *Pyromania* are in fact rare; research has supported this with reported prevalence rates ranging between zero (Geller & Bertsch, 1985; O'Sullivan & Kelleher, 1987) and 10% of samples studied (American Psychiatric Association, 2013; Lindberg, Holi, Tani, & Virkkunen, 2005; Ritchie & Huff, 1999). Consequently, *Pyromania* refers to a very limited number of individuals in the context of deliberate firesetting and is thus too restrictive to refer to the wide range of individuals who set fires.

In the context of the limited scope of *arson* and *pyromania*, the term *firesetting* has now been widely adopted in the literature to describe all acts of deliberately set fires which may or may not have resulted in a conviction for arson or in the context of pyromania (Dickens & Sugarman, 2012a; Gannon & Pina, 2010). Firesetting is intended to include intentional fires set to all types of property and land (e.g., dwellings, business, vehicles, bins, grasslands etc.), to other people (e.g., grievous bodily harm, murder, manslaughter), and to individuals themselves (e.g., self-harm, suicide). Thus, in the context of this thesis, *firesetting* refers to the broad range of individuals who may have deliberately set a fire; where other terms are referenced (e.g., *arson*, *arsonist*, *pyromania*), these refer to specific studies where the samples used consist solely of these individuals.

Imprisoned offenders.

The term *imprisoned offender* refers to any offender who has been convicted of an offence punishable by imprisonment in the UK who has not been given a Hospital Order under sections 37, 41, 48, and/or 49 of the Mental Health Act 1983/2007 (Crown Prosecution Service, 2015). Mentally disordered offenders who have been diverted from the courts and/or prisons to psychiatric services to receive specialist treatment above that offered as part of the criminal justice system (e.g., prison mental health in-reach teams) are therefore excluded under this definition (Halleck, 1987). Thus, in the context of this thesis the term *imprisoned firesetter* refers to any offender detained in custody within the criminal justice system, sentenced or unsentenced, who has a history of deliberate firesetting which may or may not have resulted in a conviction for arson. *Imprisoned firesetters* include those who may have a diagnosis of a mental disorder and/or are in contact with mental health services within the criminal justice system but are not subject to a Hospital Order under the Mental Health Act 1983/2007.

Prevalence of Firesetting

Historically, firesetting has typically been associated with crimes perpetrated by children and adolescents (Kolko, 2002). Studies using community samples report approximately 5-10% of all children under 12 years have set intentional fires (Chenn, Arria, & Anthony, 2003; Dadds & Fraser, 2006; Martin, Bergen, Richardson, Roegar, & Allinson, 2004) and these rates increase to a third in adolescence (Lambie & Randall, 2011). Studies further report between 40% and 45% of arson offences in the US and UK are attributed to juvenile offenders (Arson Prevention Bureau, 2003). Despite children and adolescents accounting for a significant proportion of deliberately set fires, over half of all arson offences are also perpetrated by adults (Arson Prevention Bureau, 2003).

Lifetime prevalence.

The National Epidemiological Survey of Alcohol and Other Related Conditions (NESARC) examined the prevalence and correlates of intentional firesetting behaviour in the United States from a nationally representative community US sample aged 18 years and over ($n = 43,093$; Blanco et al., 2010; Vaughn et al., 2010). Firesetting behaviour was embedded as an individual item in the section assessing prevalence of Anti-Social Personality Disorder according to the DSM-IV diagnostic criteria (APA, 2000). Individuals were asked *"In your entire life, did you ever start a fire on purpose to destroy someone else's property or just to see it burn?"*. Lifetime prevalence rates of firesetting among US adults were reported to range between 1.0% and 1.13 % (Blanco et al., 2010; Vaughn et al., 2010) and of these, 38% had continued to set fires after 15 years old. Dickens and Sugarman (2012a) estimate that these figures translate to approximately 200,000 UK adults who have a history of firesetting. Despite the commendable scale and representativeness of the NESARC study (Blanco et al., 2010; Vaughn et al., 2010), the survey suffered from a number of limitations. The definition of firesetting did not include other types of deliberately set fires other than those set to property (i.e., fires set to grasslands, animals, people etc.) and may have also included legal and controlled firesetting (i.e., camp fires, bonfires etc.). Further, reliability statistics were not calculated for individual question items and the survey was likely to suffer from limitations associated with self-reported data (i.e., memory and response biases, social desirability). Finally, prison and hospital populations were not sampled as part of the survey. Consequently, the findings from the NESARC study are likely to have led to an under-estimation of the true prevalence of deliberate firesetting in the US.

In a subsequent UK study, Gannon and Barrowcliffe (2011) conducted an anonymous survey of 158 adults (49 males, 109 females) sampled from the community to

examine the prevalence of self-reported deliberate firesetting. Participants were asked whether they had ever set a fire and were instructed to exclude fires set as part of organised events, fires set before the age of 10 years, or fires started accidentally. Participants who were found to have engaged in deliberate firesetting were subsequently asked about their firesetting history: number of fires set, age of first firesetting, motive for firesetting, family history of firesetting, place of firesetting, and behaviour pre- and post-firesetting. Gannon and Barrowcliffe (2011) found that 11% of their community sample reported having intentionally set a fire since the age of 10, and of these less than 1% had set a deliberate fire as adults ($n = 2$). Gannon and Barrowcliffe's sample size was less representative of the general adult population than the NESARC study and female participants were over represented, thus limiting the generalisability of the findings (Dickens & Sugarman, 2012a; Gannon & Barrowcliffe, 2011). However, the tighter definition of deliberate firesetting and increased rigor of the design to minimise biased responding (e.g., assured participant anonymity, repeated measures design) increase the reliability of the findings (Dickens & Sugarman, 2012a). Taken together, the findings from both studies represent the first important attempts to measure the prevalence of firesetting in the general adult population and whilst estimations may not be exact, they do hint at the scale of the problem (Dickens & Sugarman, 2012a). Certainly, replication studies are required in the UK and overseas, using more nationally representative samples and tighter methodologies.

Prevalence of firesetting in imprisoned offenders.

There has been no known published research to date examining the prevalence of firesetting amongst imprisoned populations in the UK using a nationally representative sample. Given the lack of data available from existing research, UK government statistics

drawn from prison and probation services may provide an initial baseline against which to gauge the scale of the problem. In 2014, a total of 1,790 offenders in England and Wales were serving a sentence for an index offence of arson either in prison ($n = 672$; Ministry of Justice, 2014b) or under probation service supervision ($n = 1,118$; Ministry of Justice, 2014c); representing approximately 1% of the total number of offenders managed by prison and probation services in England and Wales in 2014 ($n = 302,765$; Ministry of Justice, National Offender Management Service, & HM Prison Service, 2014). These figures appear in line with existing lifetime prevalence estimates of deliberate firesetting in community samples (Blanco et al., 2010; Gannon & Barrowcliffe, 2011; Vaughn et al., 2010) and suggest the number of imprisoned offenders convicted of an index offence of arson represent a small, yet non-negligible proportion of all imprisoned offenders in England and Wales.

However, these statistics are likely to severely underestimate the true prevalence of firesetting in imprisoned offenders in the UK. First, the figures drawn from prisons and probation services are not nationally representative (i.e., limited to England and Wales). Second, as previously mentioned, not all acts of intentional firesetting attract a conviction for arson and a certain proportion of acts of intentional firesetting may be diluted under other offences (i.e., Home Office Counting Rules for Recorded Crime; Home Office 2015). Finally, official statistics do not include those offenders who may have a previous conviction for arson or those offenders who may have a history of unconvicted firesetting (e.g., undetected fires, cell fires). Consequently, the prevalence of deliberate firesetting among imprisoned offenders in the UK is likely to be substantially higher and future prevalence studies are desperately needed to accurately assess the true scale of the problem.

Conclusions

Deliberate firesetting is an international problem which has devastating financial and human consequences. The number of deliberately set fires account for a significant proportion of all fires in the UK and appear to be following an upwards trend. Legal and psychiatric provisions for intentional acts of firesetting only reflect a certain proportion of individuals who set dangerous or damaging fires. Although traditionally associated with children, adults are responsible for approximately half of all deliberately set fires. There has been no known research to date examining the prevalence of firesetting amongst imprisoned populations in the UK. Official UK government figures hint at the scale of the problem and suggest imprisoned firesetters are placing demands on prison and probation services. Yet, the area of deliberate firesetting has received little attention from researchers and practicing professionals compared to other types of offending, thus hindering our ability to recommend how firesetters should be detected, assessment, and managed. The following two chapters will review the literature pertaining to the known characteristics of imprisoned firesetters and existing theoretical efforts in the field. The literature review will be followed by an outline of the rationale and research agenda for this thesis.

Chapter Two

The Characteristics and Treatment Needs of Adult Male Imprisoned Firesetters

Introduction

A key issue in the firesetting literature is whether individuals who intentionally set fires should be considered a separate offender group who share characteristics and treatment needs distinct from non-firesetting offenders. Currently, the literature is divided as to whether firesetters should be considered as generalist or specialist offenders. Proponents of the generalist approach argue firesetters are not a unique offender category (Doley, Fineman, Fritzon, Dolan, & McEwan, 2011; Ducat, McEwan, & Ogloff, 2013a; Gannon et al., 2013; Hill et al., 1982; Ritchie & Huff, 1999; Sapsford, Banks, & Smith, 1978; Soothill & Pope, 1973; Soothill, Ackerley, & Francis, 2004). Instead, firesetting is conceptualised to co-exist with a wide array of criminally versatile behaviour in which fire is one of many tools available to offenders (Sapsford et al., 1978; Soothill et al., 2004). Consequently, firesetting behaviour is hypothesised to diminish as a result of more general treatment approaches targeting the broad range of factors associated with offending (i.e., criminogenic needs, social context, behavioural elements, and mental disorder; Palmer, Caufield, & Hollin, 2007). Conversely, proponents of the specialist approach argue firesetters are a unique offender category. Firesetting is posited to result from a combination of characteristics and treatment needs unique to firesetters – particularly in terms of fire-related deficits – which require specialised assessment and treatment (Gannon et al., 2013; Hollin, 2012; Taylor, Thorne, Robertson, & Avery, 2002; Swaffer, Haggett, & Oxley, 2001).

In light of the divide in existing research between the generalist and specialist approach to firesetting, it is not surprising that much of the literature has been devoted to establishing the common characteristics associated with deliberate firesetters. In particular, research has focused on elucidating their socio-demographic, background, developmental, and offending characteristics as well as efforts to determine treatment needs in terms of their key psychological features, psychopathologies, and risk factors. In order to review the existing literature pertaining to the characteristics and treatment needs of adult male imprisoned firesetters, a complete search of the firesetting literature, limited to English, was conducted using both electronic databases (e.g., *PsychINFO*, *PsychArticles*, *Web of Science*, *Google Scholar*, and *PubMed*) and reference lists from empirical articles and edited books. First, all articles, book chapters, and commentaries in English that had either employed samples of adult male firesetters or discussed firesetting in relation to this population were retained and the literature pertaining to juvenile and female firesetting was excluded. Second, the literature was carefully examined and classified according to type of sample used and/or discussed (i.e., community samples, criminal justice samples, prison based samples, psychiatric samples). This process revealed the majority of existing efforts in the firesetting literature have been derived from research conducted with community samples (i.e., general population), criminal justice samples (i.e., arrest and/or conviction data from crime records or pre-trial psychiatric assessment data), or psychiatric samples (i.e., offenders detained under Hospital Orders). Only a small proportion of empirical findings are based on research conducted exclusively with imprisoned firesetters (Duggan & Shine, 2001; Gannon et al., 2013; Hurley & Monaghan, 1969; Ó Ciardha et al., 2015a; Prins, Tennent, & Trick, 1985; Sapsford et al., 1978) or sub-samples of imprisoned firesetters (O'Sullivan & Kelleher, 1987; Soothill & Pope, 1973; Ritchie & Huff, 1999). Unfortunately, findings from psychiatric samples are

unlikely to be generalisable to imprisoned firesetters as they are limited to firesetters for whom the severity of their mental disorder precludes them from going to prison. Findings from criminal justice samples are likely to be more applicable; there is some research to suggest between a third and half of all individuals convicted of arson go to prison (Soothill & Pope, 1973; Soothill et al., 2004). However, studies using criminal justice samples will also include offenders who have been acquitted, received community sentences, or who have been diverted to specialist psychiatric services, and thus must be treated with caution.

In this chapter I will address two key aims: First, I will first establish the current evidence base regarding the common characteristics and treatment needs of adult male imprisoned firesetters. Second, I will establish the extent to which adult male imprisoned firesetters differ from other non-firesetting imprisoned offenders. This chapter will focus on research conducted with community and criminal justice samples, with particular attention given to research conducted with imprisoned firesetters and those studies which have used comparative samples. Unless otherwise stated, research conducted with psychiatric samples reflects similar findings to those from community, criminal justice, and imprisoned samples.

The Characteristics of Adult Male Imprisoned Firesetters

The literature indicates that deliberate firesetting is predominantly a male perpetrated crime amongst imprisoned offenders. Official UK government statistics indicate that approximately 92% of all offenders serving a prison sentence for an index offence of arson in England and Wales in 2014 were male ($n = 619$; Ministry of Justice, 2014b). Research conducted with community and criminal justice samples report gender ratios (i.e., male: female) ranging between 4:1 and 9:1 (Anwar, Långström, Grann, & Fazel, 2011; Blanco et al., 2010; Lewis & Yarnell, 1951; Soothill et al., 2004; Vaughn et al., 2010).

Where gender ratios are not reported, the majority of research results are generally based on samples of firesetters or convicted arsonists where males are overrepresented (Dickens & Sugarman, 2012a). Consequently, unless otherwise stated, the following section will focus on the characteristics of adult male imprisoned firesetters over the age of 18. For the wider research pertaining to female firesetting, please see Gannon, Tyler, Barnoux and Pina (2012) for a review.

Socio-demographic characteristics.

Existing research with community and criminal justice samples suggests adult male firesetters are typically young, single, poorly educated, and likely to come from disadvantaged backgrounds (Barnett, Richter, Sigmund, & Spitzer, 1997; Blanco et al., 2010; Gannon & Barrowcliffe, 2011; Lewis & Yarnell, 1951; Soothill & Pope, 1973; Soothill et al., 2004; Vaughn et al., 2010) compared to offending controls (Bradford, 1982; Ducat et al., 2013a) and community controls (Anwar et al., 2011). The NESARC study reported the majority of undetected firesetters to be aged between 18 and 35 years (e.g., 51%, Blanco et al., 2010; Vaughn et al., 2010) compared with 31% of non-firesetter population controls. Gannon and Barrowcliffe (2011) found undetected firesetters to be statistically younger ($M_{age} = 27$ years) compared to non-firesetters ($M_{age} = 30$ years). More recently, Ducat et al. (2013a) examined the court files of all offenders convicted of a firesetting offence between 2004 and 2009 in Australia ($n = 207$) and compared them to a group of non-firesetting offenders ($n = 197$). In contrast to other findings, Ducat et al. (2013a) failed to find any significance difference in age at time of index offence between convicted firesetters ($M_{age} = 30.5$) and offending controls ($M_{age} = 30.7$). Some research has also reported firesetters to be significantly older than offending controls (Bradford, 1982), although these findings were based on a small, unrepresentative sample of pre-trial arsonists under psychiatric

assessment ($n = 34$). Further, research with community samples has failed to find any significant differences between self-reported firesetters and population controls in terms of education, marital status, and income (Blanco et al., 2010; Gannon & Barrowcliffe, 2011; Vaughn et al., 2010)

Imprisoned firesetters have also generally been found to be younger compared to non-firesetting imprisoned offenders. Hurley and Monahan (1969) found imprisoned firesetters in a UK based prison were younger ($M_{age} = 25.10$ years) than non-firesetting offending controls ($M_{age} = 33$ years). In a sample drawn from crime records in Germany, Barnett et al. (1997) found convicted imprisoned firesetters to be significantly younger ($M_{age} = 29.5$) compared to mentally disordered firesetters ($M_{age} = 34$). However, Hurley and Monaghan (1969) were unable to differentiate imprisoned firesetters from non-firesetting imprisoned offenders on the basis of socio-economic status, thus limiting our ability to ascertain whether imprisoned firesetters are different to other imprisoned offenders on these factors (Dickens & Sugarman, 2012a).

Background characteristics.

Existing research examining the childhood experiences and family backgrounds of firesetters is sparse. To date, there is no known longitudinal research which has sought to follow juvenile firesetters through to adulthood (Dickens & Sugarman, 2012a). Findings from community samples indicate a family history of anti-social behaviour among self-reported firesetters is common compared to non-firesetting community controls (Vaughn et al., 2010). Gannon and Barrowcliffe (2011) reported a higher prevalence of psychiatric problems among the parents of self-reported firesetters (44.5%) compared to community controls (30%), but the findings failed to reach statistical significance (Gannon & Barrowcliffe, 2011).

Evidence from criminal justice samples comes from a small handful of studies. Frisell, Lichtenstein, and Langstrom (2011) found siblings of convicted arsonists in Sweden had a significantly higher propensity towards firesetting compared to community controls. Other comparative studies report firesetters are more likely to come from large families, single parent households, characterised by unstable or poor parenting styles (i.e., absent parents, abusive experiences, conflictual family environment) compared to population controls (Anwar et al., 2011) and offender controls (Bradford, 1982; O'Sullivan & Kelleher, 1987). However, research conducted exclusively with imprisoned offenders has failed to find any significant differences between imprisoned firesetters and non-firesetting imprisoned offenders based on family background features (Hurley & Monaghan, 1969). Further, these features are often found in general offending populations (Frodi, Dernevik, Sepa, Philipson, & Bragesjo, 2001; Ross & Pfäfflin, 2007; Ward, Hudson, & Marshall, 1996), thus limiting our ability to ascertain whether imprisoned firesetters' background characteristics are unique to them as an offending population (Dickens & Sugarman, 2012a).

Developmental and neurobiological features.

There has been virtually no research examining the prevalence of intellectual difficulties in adult firesetters derived from community or criminal justice samples. Existing comparative studies report firesetters under pre-trial psychiatric assessment were characterised by low levels of intelligence and higher rates of intellectual disability and difficulties compared to offending controls (Bradford, 1982; Hill et al., 1982; Räsänen, Hirvenoja, Hakko, & Väisänen, 1994). However, research conducted with imprisoned firesetters has found them to be in the normal range for intelligence (Hurley & Monaghan, 1969). Further, findings are limited in their comparability and reliability as intelligence

levels were derived from different measures between studies (Hurley & Monaghan, 1969; Räsänen et al., 1994) and learning disabilities were rarely formally assessed, largely relying on self-reported data (Dickens & Sugarman, 2012a; Hill et al., 1982).

There is also very little evidence from community and criminal justice samples that neurobiological disorders are prevalent among firesetters. A handful of studies report abnormal Electroencephalography (E.E.G.) readings to be common among firesetters referred for pre-trial psychiatric assessment compared to offending controls (Bradford, 1982; Hill et al., 1982). There is also very little evidence to support these findings in imprisoned firesetters. Hurley and Monaghan (1969) found a small number of their imprisoned firesetters had abnormal chromosome constitutions ($n = 3$), Klinefelter's syndrome ($n = 1$) and abnormal E.E.G. results ($n = 21$). However, our ability to ascertain whether these characteristics are unique to imprisoned firesetters is limited due small sample sizes and lack of subsequent cross validation studies.

Offence histories.

Existing research among community and criminal justice samples has generally found self-reported adult male firesetters to have a history of anti-social behaviour. In the NESARC study (Blanco et al., 2010; Vaughn et al., 2010) self-reported lifetime firesetting was associated with a wide range of other anti-social behaviours (e.g., truancy, repeated lying, loss of driving license). Ducat et al. (2013a) reported behavioural problems in childhood were more prevalent in their sample of convicted firesetters ($n = 207$) compared to non-firesetting offenders ($n = 197$). Similar findings have been reported for imprisoned firesetters. Imprisoned firesetters have been found to be characterised by increased childhood behavioural problems compared to non-firesetting imprisoned offenders

(Hurley & Monaghan, 1969) and mentally disordered firesetters (O'Sullivan & Kelleher, 1987).

Firesetters have also been found to be characterised by generally criminally versatile offence histories. The NESRAC study (Blanco et al., 2010; Vaughn et al., 2010) found self-reported lifetime firesetting was associated with a wide range of non-violent (e.g., acquisitive offences, criminal damage) and serious violent crime (e.g., interpersonal violence, possession of offensive weapons, sexual offending). Similar findings have been reported among criminal justice samples. Soothill et al. (2004) examined the past convictions of 3,335 firesetters convicted in England and Wales between 2000 and 2001. The majority (43%) had at least one previous conviction; common offences included theft (28%), criminal damage (23%), violence (20%), motoring offences (18%), and 11% had a previous conviction for arson. Hurley and Monaghan (1969) report similar findings for imprisoned firesetters: the majority had at least one previous conviction (94%, $n = 47$) and were generally versatile in their offence histories; although imprisoned firesetters were found to hold significantly greater numbers of property offences (26%, $n = 13$) compared to non-firesetting imprisoned offenders (7%, $n = 7$).

However, whilst imprisoned firesetters appear to be criminally versatile offenders, our ability to ascertain whether they differ in their offence histories compared to other imprisoned offenders is limited. Evidence from criminal justice samples is mixed. Hill et al. (1982) found firesetters referred for pre-trial psychiatric assessment ($n = 38$) were less violent than violent offenders ($n = 24$) but more violent than property offenders ($n = 30$). However, Ducat et al. (2013a) found no significant differences between their sample of convicted firesetters in Australia ($n = 207$) and offending controls ($n = 197$) on number of previous offences, age at first conviction, or type of previous offences (i.e., violent and non-violent offending). Conversely, Hurley and Monaghan (1969) found UK imprisoned

firesetters to have significantly fewer custodial experiences (42%; $n = 21$) and previous convictions ($M_{previous\ conviction} = 6$) compared to non-firesetting offending controls (77%; $n = 77$; $M_{previous\ conviction} = 9$), and only 10% ($n = 5$) had a previous conviction for arson related offences.

Finally, there is some evidence to suggest there are discreet differences between different types of firesetter in terms of their offence histories. In a sample drawn from crime records, Barnett et al. (1997) found mentally healthy convicted firesetters in Germany were less likely to have a history of firesetting (3%; $n = 5$) compared to mentally disordered convicted firesetters (11%; $n = 25$). Further, Ducat et al. (2013a) compared the characteristics of exclusive firesetters (i.e., solely convicted of arson; 20.9%, $n = 43$), predominant firesetters (i.e., arson convictions in a majority; 32.5%, $n = 67$), and mixed firesetters (i.e., criminally versatile convictions; 46.6%, $n = 97$). Ducat et al. (2013a) found exclusive firesetters to be older at the time of their first conviction ($M_{age} = 30.97$) compared with mixed firesetters ($M_{age} = 18.8$) and non firesetters ($M_{age} = 23.74$). Exclusive firesetters were also found to have significantly fewer previous convictions ($M_{previous\ convictions} = 0$) compared to mixed firesetters ($M_{previous\ convictions} = 8.2$) and non firesetters ($M_{previous\ convictions} = 4.2$). However, there was no significant difference between the exclusive, predominant, or mixed firesetters on number of previous firesetting offences (Ducat et al., 2013a).

The Treatment Needs of Adult Male Imprisoned Firesetters

In order to assess and treat imprisoned offenders who deliberately set fires, practicing professionals within the criminal justice system require evidence based information to ascertain what unique features they hold, if any, which can be targeted as part of treatment (Gannon et al., 2013). In particular, understanding how imprisoned firesetters differ from other offending populations in terms of key psychological features,

clinical features, risk factors, and research to evidence what works in terms of treatment initiatives with this population is crucial in terms of rehabilitation.

Key psychological features.

Fire interest.

Historically, the perception that firesetters were a unique group with specific needs originated in the relationship between firesetting and specific diagnostic categories, in particular pyromania (Fineman, 1995; Lewis & Yarnell, 1951; Vreeland & Levin, 1980). However, as seen in Chapter One, diagnoses for pyromania are exceptionally rare (Geller & Bertsch, 1985; O'Sullivan & Kelleher, 1987). Consequently, there is a growing body of research which has turned to examining less pathological forms of fire interest and fascination among firesetting populations.

In their study with self-reported firesetters in the community, Gannon and Barrowcliffe (2011) developed two measures to examine the antisocial and fire interest factors associated with self-reported firesetters (i.e., The Fire Setting Scale) and their propensity to be attracted to, aroused by, behaviourally inclined, and antisocially motivated to light fires (i.e., The Fire Proclivity Scale). Gannon and Barrowcliffe (2011) found self-reported firesetters were significantly more likely to exhibit anti-social traits, report increased fascination and arousal to fire, and were more likely to engage in firesetting behaviour compared to non-firesetters. However the authors note the findings are only preliminary and given the relatively small sample size ($n = 158$), future cross validation is necessary (Gannon & Barrowcliffe, 2011).

In the only known study to date which has empirically examined fire interest and attitudes towards fire in imprisoned firesetters (i.e., convicted and unconvicted), Gannon et

al. (2013) compared the treatment needs of 68 UK adult male imprisoned firesetters to a matched non-firesetter offender control group. As part of a wider battery of psychometric assessments, Gannon et al. (2013) used a five factor scale developed by Ó Ciardha et al., (2015b) measuring identification with fire, interest in serious fires, knowledge of fire safety, interest in everyday fires, and normalising the criminal uses of fire. Their results suggested that compared to non-firesetting offending controls, imprisoned firesetters showed a higher identification with fire, more interest in serious firesetting activities, less perceived fire safety awareness, more interest in every day firesetting activities, and more acceptance of firesetting as normal (Gannon et al., 2013). Follow up discriminant analyses revealed identification with fire, firesetting as normal, fire safety awareness, and serious fire interest significantly distinguished imprisoned firesetters from non-firesetting imprisoned offenders (Gannon et al., 2013).

The novel findings from Gannon et al. (2013) highlight fire related deficits are important psychological features unique to imprisoned firesetters. Further, the development of Ó Ciardha et al.'s (2015b) five factor scale allowed for the measurement of different types of fire-related deficits prevalent in firesetters. Such discreet differences in fire-related deficits are likely to further inform key correlates of deliberate firesetting (Ducat et al., 2013a), the factors related to repeat firesetting (Ducat, McEwan, & Ogloff, 2015), and the potentially different treatment responses to differing fire-related deficits (Gannon, Ó Ciardha, Doley, & Alleyne, 2012). However, no research to date has considered whether there are different types of imprisoned firesetter who experience different degrees of fire related deficits. For example, some imprisoned firesetters may view fire as their preferred tool for offending and thus normalise the criminal uses of fire (e.g.,

generalists), whereas others may have a more deep seated interest in, and fascination with fire (e.g., specialists).

Personality and other associated traits.

Very little research has examined the personality and psychological traits associated with firesetters. There is no evidence from studies conducted with community and criminal justice samples; rather the findings are drawn from a handful of studies conducted with imprisoned firesetters. Hurley and Monaghan (1969) reported imprisoned firesetters to be more impulsive, less assertive, have more anger related problems, and experiences of emotional loneliness compared to non-firesetting imprisoned offenders. In a subsequent UK based study, Duggan and Shine (2001) compared a group of imprisoned firesetters ($n = 87$) to other non-firesetting imprisoned offenders ($n = 504$) on their scores on four psychometric tests: the Personality Diagnostic Questionnaire, 4th version (Hyler, 1994), the Hostility and Direction of Hostility Questionnaire (Caine, Foulds, & Hope, 1967), the Eysenck Personality Questionnaire Revised (Eysenck & Eysenck, 1991), and the Culture Free Self-Esteem Inventory (Battle, 1992). Results indicated imprisoned firesetters had significantly higher levels of inwardly directed hostility and anxiety, and lower levels of self-esteem compared to non-firesetting imprisoned offenders (Duggan & Shine, 2001). However, in an Ireland based study, O'Sullivan and Kelleher (1987) found their sample of imprisoned firesetters ($n = 17$) were more likely to externalise their aggression compared to mentally disordered firesetters who were more likely to internalise aggression ($n = 37$).

In Gannon et al.'s (2013) recent study, imprisoned firesetters and non-firesetting imprisoned offenders also completed psychometric questionnaires on measures pertaining to emotional regulation (i.e., anger, provocation), self-concept (i.e., self-esteem, emotional loneliness), social competency (i.e., assertiveness, locus of control), offence supportive

attitudes, and boredom proneness. Compared to non-firesetting imprisoned offenders, Gannon et al. (2013) found imprisoned firesetters showed increased inwardly directed hostility, increased anger arousal, lower tolerance towards frustration and provocation, lower general self-esteem, and an external locus of control (Gannon et al., 2013). However, imprisoned firesetters and non-firesetting imprisoned offenders did not differ on measures pertaining to social competence and boredom proneness. Follow up discriminant analyses revealed — in addition to the fire-related deficits reported earlier — inwardly directed hostility and general self-esteem best distinguished imprisoned firesetters from non firesetting imprisoned offenders (Gannon et al., 2013).

The findings from these three studies suggest certain personality and psychological traits are unique to imprisoned firesetters compared to non-firesetting imprisoned offenders. Further, Gannon et al.'s (2013) sample was not limited to convicted firesetters, thus providing greater generalisability to the findings. However, more research is needed in this area as the findings are based on relatively small sample sizes in all three studies (Duggan & Shine, 2001; Hurley & Monaghan, 1969; Gannon et al., 2013) and some research has produced conflicting findings. For example, Day (2001) failed to find any significant differences between imprisoned arsonists ($n = 20$), imprisoned sex offenders ($n = 20$) and imprisoned violent offenders ($n = 20$) on measures pertaining to self-esteem, social desirability, impulsivity, rumination, assertiveness, or emotional loneliness in his small UK prison based study. Further, no research has examined whether different personality and psychological traits are associated with different types of imprisoned firesetter.

Mental health.

The connection between poor mental health and firesetting has consistently been made throughout the literature. Research conducted with community samples has found

self-reported firesetters to report increased lifetime mental health problems compared to non-firesetting community controls. Results from the NESARC study found self-reported firesetters were more likely to report a lifetime history of at least one psychiatric diagnosis (95.1%) compared to non-firesetters (53.5%) and the strongest association between firesetting and any psychiatric diagnosis was for Anti-Social Personality Disorder (Blanco et al., 2010). Other diagnoses strongly associated with a lifetime history of firesetting included alcohol and substance misuse disorders, impulse control disorders, and personality disorder (Vaughn et al., 2010).

Similar findings are reported in research conducted with criminal justice samples. Previous psychiatric treatment and/or hospitalisation has been reported as more common in convicted firesetters compared to non-firesetting community controls (Anwar et al., 2011) and non-firesetting offending controls (Ducat, Ogloff, & McEwan, 2013b; Hill et al., 1982). Relative to other offenders, convicted firesetters have been found more likely to have a diagnosis for Schizophrenia (Anwar et al., 2011), Psychosis (Anwar et al., 2011; Enayati, Grann, Lubbe, & Fazel, 2008), personality disorder (i.e., Anti-Social and Borderline Personality Disorders; Bradford, 1982; Ducat et al., 2013b), affective disorders (i.e., Depression; Ducat et al., 2013b), and alcohol and substance misuse disorders (Bradford, 1982; Ducat et al., 2013b; Enayati et al., 2008). Interestingly, Ducat et al. (2013a) found mixed firesetters in their sample were more likely to have a personality disorder (31.4%, $n = 22$) and substance misuse disorder (58.9%, $n = 43$), compared to exclusive firesetters (respectively, 7.4%, $n = 2$; 10.3%, $n = 3$). However, there were no significant differences between exclusive, predominant, and mixed firesetters on the presence of psychotic disorders (Ducat et al., 2013a).

Research conducted with imprisoned firesetters has also found previous psychiatric treatment and/or hospitalisation to be more common in imprisoned firesetters compared to non-firesetting imprisoned offenders (Hurley & Monaghan, 1969). Relative to other imprisoned offenders, imprisoned firesetters have been found more likely to have a diagnosis for Personality Disorder (i.e., Borderline Personality Disorder, Duggan & Shine, 2001), and alcohol and substance misuse disorders (Hurley & Monaghan, 1969). More recently, Ó Ciardha et al. (2015a) compared the psychopathology of UK male imprisoned firesetters to non-firesetting imprisoned offenders using the Millon Clinical Multiaxial Inventory III (MCMI-III; Millon, Millon, Davis, & Grossman, 1994). The authors found imprisoned firesetters ($n = 112$) were more likely to exhibit clinically significant traits for at least one personality disorder and/or clinical syndrome compared to non firesetting imprisoned offenders ($n = 113$). In line with previous findings, closer examination of each of the subscales of the MCMI-III revealed borderline personality traits significantly discriminated between imprisoned firesetters and non-firesetting imprisoned offenders, greater than any other subscale.

However, despite an apparent high prevalence of mental health problems emerging from the research conducted with convicted and imprisoned firesetters, it is worth noting that in all the samples, the vast majority of firesetters were not found to have any psychiatric diagnosis. For example, less than half of the imprisoned firesetters in Ó Ciardha et al.'s (2015a) sample reached the clinical threshold for a clinical syndrome or personality disorder on the MCMI-III and less than a third of convicted firesetters in Ducat et al.'s (2013b) sample had a psychiatric diagnosis, suggesting that poor mental health is not characteristic of all imprisoned firesetters. Rather, it appears there is a certain sub-section of imprisoned firesetters for whom specific mental disorders may be more prevalent.

Risk and recidivism.

Research examining recidivism in imprisoned firesetters is important for determining the risk factors associated with future firesetting offences, and thus identifying which imprisoned firesetters are most likely to need specialist treatment. Unfortunately, no research has been conducted into recidivism in deliberate firesetting exclusively with imprisoned offenders. However, findings from community and criminal justice samples suggest that overall, convicted firesetters are more likely to recidivate generally, rather than committing further firesetting offences. For example, Soothill and Pope (1973) followed 67 convicted arsonists in England and Wales between 1951 and 1971. They found only 4% ($n = 3$) of the recidivists were reconvicted of an arson offence. However, the rate of general recidivism was much higher: 34% for whom the index offence of arson was the first conviction and 66% for whom the index offence was not the first conviction. However, Soothill and Pope (1973) found few differences between recidivist convicted firesetters and those who had no history of firesetting, and concluded prior offending and age of onset of offending were the best predictors for future offending (i.e., general and firesetting).

In another UK based study, Dickens et al. (2009) examined the case notes from 167 firesetters referred for pre-trial assessment to a secure unit over a 24 year period. Compared to one-time firesetters, Dickens et al. (2009) found a number of factors were related to repeat firesetting in their sample: being younger and single, holding a disturbed childhood background, having a diagnosis of personality disorder or psychosis, being younger at age of first criminal conviction, holding higher levels of previous convictions for property offences than violent offences, and increased levels of fire interest and fascination. More recently, Edwards and Grace (2014) followed 1,250 convicted firesetters over 10

years in New Zealand between 1985 and 1995. During the follow-up period 6.2% of the sample were convicted for a new arson offence ($n = 77$), 48.5% were convicted for a new violent offence ($n = 606$), and 79.3% were convicted for a new non-violent offence ($n = 997$). Edwards and Grace (2014) found offenders were more likely to recidivate by committing arson if they were under 18 years, had multiple arson offences at the time of first conviction, and had more prior offences for vandalism. In another Australia based study, Ducat et al. (2015) examined the psychiatric and criminal histories of 1052 convicted firesetters over an average of 6.9 years. Consistent with previous research, Ducat et al. (2015) found that convicted firesetters were more likely to recidivate by committing another offence other than firesetting (55.4% versus 5.3%). Further, in line with Dickens et al. (2009) and Edwards and Grace (2014), Ducat et al. (2015) found that recidivist firesetters significantly differed from non-recidivist firesetters on several key factors: being younger at time of index offence and first criminal conviction, holding a greater number of previous convictions, holding a greater number of arson convictions, being criminally versatile, and presenting higher levels of mental disorder. Ducat et al. (2015) found the presence of a mental disorder, a history of previous offending other than firesetting, and a history of previous firesetting positively predicted firesetting recidivism.

However, existing findings are limited in their comparability due to differing follow up periods, ranging from 1 to 37 years (Dickens & Sugarman, 2012b), and varying definitions of repeat firesetting (i.e., any history of repeated firesetting, reconviction for arson, repeat offending; Dickens et al., 2009; Ducat et al., 2015; Edwards & Grace, 2014; Soothill & Pope, 1973). Further, the majority of studies have failed to examine factors other than offence history (e.g., demographic factors, historical factors, psychological features), and few employed comparison groups, thus limiting their usefulness in determining other

potential risk factors for firesetting recidivism and whether firesetters recidivate differently to other offenders. However, there is some evidence to suggest the risk factors and reoffending characteristics of one time and repeat firesetters are different (Dickens et al., 2009; Ducat et al., 2015), suggesting there may be discreet differences between different types of firesetter.

Treatment initiatives.

Research evaluating treatment initiatives conducted with imprisoned firesetters is vital for understanding what works in terms of rehabilitation, in particular to ascertain whether imprisoned firesetters benefit from, and thus require specialist assessment and treatment. Unfortunately, treatment initiatives for deliberate firesetters have been relatively sparse to date. Palmer et al. (2007) conducted a national survey in the UK examining the availability of treatment interventions for both juvenile and adult firesetters. The survey was distributed to 327 organisations in the UK which included Fire and Rescue Services, Forensic Mental Health Services, HM Prison Service, and the Home Office. From the 144 responses received, Palmer et al. (2007) identified 70 interventions for firesetters. The majority were developed for juvenile firesetters, seven came from forensic mental health services, and none were identified in the prison service for imprisoned firesetters.

Treatment initiatives with mentally disordered firesetters in forensic mental health services have yielded some encouraging findings. For example, Swaffer et al. (2001) describe a mixed-sex group intervention underpinned by Jackson, Glass, and Hope's (1987) Functional Analysis Theory for 10 mentally disordered firesetters within a high secure hospital in the UK. Treatment effectiveness was presented via a detailed case study of one patient's positive progress through the first two modules of the programme. However, information on post treatment gain was not available due to ongoing problems with the

programme and the small sample size. In a subsequent UK based study, Taylor et al. (2002; 2006) implemented a group based firesetting intervention with male ($n = 8$) and female ($n = 6$) intellectually disabled firesetters based at a UK forensic mental health low secure unit. The programme was run weekly over a period of 40 weeks and also adopted Jackson et al.'s (1987) functional analysis framework to treatment with modules covering fire education, offending behaviour, coping strategies, family relationships, and relapse prevention. Pre- and post-treatment psychometric assessments were completed by patients on measures pertaining to fire interest/attitudes (Fire Interest Rating Scale, Murphy & Clare, 1996; Fire Attitude Scale, Muckley, 1997), goal attainment (Goal Attainment Scale, Kiresuk & Sherman, 1968), anger (Novaco Anger Scale, Novaco, 1994), self-esteem (Culture Free Self Esteem Inventory-2, Battle, 1992), and depression (Beck Depression Inventory, Beck, 1972). Significant treatment gains across all areas, with the exception of the Beck Depression Inventory, were reported by Taylor et al. (2002, 2006). Whilst the findings are encouraging, they are limited in their comparability to other generic treatment interventions as no control treatment group was included. Further, the research was limited to a small sample of mentally disordered firesetters and is unlikely to be generalisable to imprisoned firesetters.

There are no known accredited² offender behaviour programme specifically designed for imprisoned firesetters in England and Wales. However, a recent specialised firesetting treatment programme has been piloted and evaluated in the UK prison service. The Fire Intervention Programme for Prisoners (Gannon, 2012; FIPP) consists of a 28 week cognitive-behavioural treatment programme (i.e., group and individual sessions) for participants who have a history of firesetting. The FIPP adopted a Good Lives approach to

² Accreditation by the National Offender Management Service shows programmes are evidence based and congruent with the 'what works' literature (Ministry of Justice, 2014d).

treatment and was theoretically underpinned by the Multi-Trajectory Theory of Adult Firesetting (i.e., described in Chapter Three; Gannon et al., 2012). The main areas covered within the programme are fire related factors (i.e., fire interest and identification, fire safety), offence supportive attitudes, social competence (i.e., self-esteem, communication, relationships), self-management/coping, and relapse prevention.

Psychometric assessments were completed by participants pre-, post-, and three months after treatment on measures pertaining to fire interest/identification (Fire Interest Rating Scale, Murphy & Clare, 1996; Identification with Fire Questionnaire, Gannon, Ó Ciardha, & Barnoux, 2011; Fire Attitude Scale, Muckley, 1997), offence supportive attitudes (Measure of Criminal Attitudes and Associates, Mills & Kroner, 1999), social competency (Culture Free Self Esteem Inventory-2, Battle, 1992; Revised UCLA Loneliness Scale, Russell, Peplau, & Cutrona, 1980; Simple Rathus Assertiveness Scale – Short Form, Jenerette & Dixon, 2010), emotional regulation (Novaco Anger Scale and Provocation Inventory, Novaco, 1994; Nowicki Strickland Locus of Control, Nowicki, 1976), and relapse prevention (Beckett, Fisher, Mann, Thornton, & Gannon, 2011). Psychometric scores of those who completed the FIPP ($n = 54$) were compared to a control group of imprisoned firesetters ($n = 45$) who had not completed the FIPP. Gannon et al. (2015) report positive pre-post treatment gains for imprisoned firesetters who completed the FIPP compared to the control group in terms of problematic fire interest and associations with fire, attitudes towards violence, and anti-social attitudes. Treatment effects were sustained at three months follow up.

The FIPP is the first ever specialised firesetting programme developed for, and evaluated with imprisoned firesetters using a comparative control group of untreated imprisoned firesetters. Treatment outcomes were encouraging and suggest specialised treatment targeting offenders' perception of, and relationship with fire is required for

imprisoned firesetters which would not be adequately targeted in more generic treatment programmes provided by the UK prison service. However, given the current divide between the generalist and specialist approach to treating firesetters, there is currently no research which has examined the heterogeneity of imprisoned firesetters' treatment needs in terms of what works in treatment initiatives; in particular whether different types of imprisoned firesetter may require different types of treatment (i.e., generalist or specialist treatment).

Conclusions

There is a paucity of research examining the characteristics and treatment needs of adult male imprisoned firesetters. Existing research would suggest adult male imprisoned firesetters tend to be young offenders, characterised by impoverished and unstable backgrounds, low levels of education, poor occupational and marital adjustment, and intellectual difficulties and disabilities. They appear to be criminally versatile, engaging in extensive and varied anti-social and offending behaviours, including violent and non-violent crime. However, it is unlikely socio-demographic characteristics, background and developmental features, and offending histories are useful in distinguishing imprisoned firesetters from other offending populations. Studies were often limited to small, unrepresentative samples of convicted firesetters (e.g., Bradford, 1982; Hurley & Monaghan, 1969; O'Sullivan & Kelleher, 1987) and are unlikely to be generalisable to all imprisoned firesetters as not all instances of firesetting attract a conviction. Further, existing comparative studies have not always found significant differences between imprisoned firesetters and other imprisoned offenders (e.g., Hurley & Monaghan, 1969)

and many of the reported characteristics are common to all offenders (Frodi et al, 2001; Ross & Pfäfflin, 2007; Ward et al, 1996).

However, findings from a handful of studies have provided some convincing evidence that imprisoned firesetters share unique treatment needs compared to other non-firesetting imprisoned offenders and there are also likely to be differences between different types of imprisoned firesetter. Evidence would suggest psychological features unique to imprisoned firesetters include fire related deficits (Gannon et al., 2013), anger related problems (Duggan & Shine, 2001; Gannon et al., 2013), poor self-concept (i.e., Hurley & Monaghan, 1969; Duggan & Shine, 2001; Gannon et al., 2013), poor social competency (Hurley & Monaghan, 1969; Gannon et al., 2013), and impulsivity (Hurley & Monaghan, 1969). Mental health problems appear prevalent for a sub section of imprisoned firesetters compared to other imprisoned offenders, particularly in relation to personality disorder, affective disorders, and alcohol and substance misuse disorders (Ducat et al., 2013b; Ó Ciardha et al., 2015a). Existing research also suggests risk factors for firesetting recidivism may include: being younger at time of first criminal conviction, a history of previous offending and previous firesetting, and presence of a mental disorder (Dickens et al., 2009; Ducat et al., 2015; Edwards & Grace, 2014). Findings from the only treatment initiative piloted with imprisoned firesetters suggest specialist treatment is likely to be required, particularly in relation to fire interest and associations with fire (Gannon et al., 2015). Finally, there is preliminary evidence to suggest subtypes of firesetter may differ in terms of offence histories (Ducat et al., 2013a; Barnett et al., 1997), repeat firesetting (Dickens et al., 2009; Ducat et al., 2015), prevalence of mental health problems (Ducat et al., 2013b), and anger-related problems (O'Sullivan & Kelleher, 1987). However, no research has examined whether there may be any discreet differences between different types of imprisoned firesetters in terms of their characteristics or

treatment needs. Further, whilst Gannon et al.'s (2015) findings make a significant contribution towards the need for specialist treatment for imprisoned firesetters, no research has considered whether specialist treatment is required for all imprisoned firesetters or whether more generic treatment approaches might be sufficient for some imprisoned firesetters (i.e., generalists or specialists).

Chapter Three

Theories of Deliberate Firesetting

Introduction

Advances in psychological research rely entirely on the generation of new ideas and theories, without which the assessment and treatment of individuals who intentionally set fires would not progress. Ward and Hudson (1998) suggested theory formation occurs on three levels. Level I, multi-factorial theories, offer a comprehensive overview of offending behaviour, providing a detailed account of how the various factors interact and subsequently might result in offending behaviour (Gannon & Pina, 2010). Level II, single-factor theories, attempt to explain unique factors thought to be associated with the broader phenomena and its causal relationship (e.g., the role of social learning in firesetting; Gannon & Pina, 2010). Finally, Level III, micro-theories, attempt to describe the offence process or phenomena as it unfolds across time (Cassar, Ward, & Thakker, 2003). Level III theory is not explanatory, but rather descriptive accounts of offending behaviour based on data provided by offenders themselves (Gannon & Pina, 2010). Generally associated with quantitative techniques and methodologies, Ward and Hudson (1998) proposed that multi-factor and single-factor theories explain the 'why' of offending behaviour (i.e., infer causality), which is translated qualitatively in micro theories via a temporal sequence to explain the 'how' of offending (i.e., how offending occurs over time). 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.

However, an evidence based, all-encompassing theory of firesetting is still some way off. Rather, existing research has been characterised by the proliferation of typological classifications of firesetters and a handful of multi-factor, single-factor, and micro theories.

The first major attempts at reducing the heterogeneous nature of firesetters resulted in a number of firesetting taxonomies, with categories based on one overriding characteristic. Typological classifications are not directly specified in Ward and Hudson's (1998) theory conceptualisation, in part due to their lack of sophistication (Gannon & Pina, 2010). However, these classification systems may play a guiding role in treatment interventions and serve to further inform more complex theories of deliberate firesetting (Gannon & Pina, 2010). In line with Ward and Hudson's (1998) framework, three Level I multi-factor theories exist: *Functional Analysis Theory* (Jackson, Glass, & Hope, 1987), *Dynamic Behaviour Theory* (Fineman, 1980; 1995), and the *Multi-Trajectory Theory of Adult Firesetting* (M-TTAF; Gannon et al., 2012). At the next level (i.e., Level II), three main single-factor theories exist: *Psycho-Analytical Theory* (Freud, 1932), *Biological Theory* (Virkkunen, 1984; Virkkunen, Goldman, Nielsen, & Linnoila, 1995; Virkkunen, Nuutila, Goodwin, & Linnoila, 1987), and *Social Learning Theory* (Bandura, 1976; Vreeland & Levin, 1980). Finally, at Level III, only one known micro-theory exists, *The Descriptive Model of the Offence Chain for Mentally Disordered Offenders* (FOC-MD; Tyler et al., 2014). In this Chapter, a review of existing typological classifications and theories of deliberate firesetting will highlight two key deficits: (i) existing theories remain limited in their empirical adequacy with imprisoned firesetters thus limiting their ability to inform evidence based practice; and (ii) there is a paucity of theoretical explanations of firesetting in imprisoned offenders relating to how the offence process unfolds in a temporal dimension.

Typological Classifications of Deliberate Firesetters

The heterogeneous nature of firesetters as a population has led to a vast proportion of existing research seeking to reduce these individuals into more manageable homogenous subtypes. Existing efforts are characterised by a plethora of different types of firesetter proposed as part of simplistic classificatory systems, all designed to subdivide firesetters according to one overriding characteristic. Proposed typologies within the literature range from comprising as little as two categories of firesetter (Faulk, 1988; Scott, 1974) through to in excess of eight different types of firesetter (Prins, 1994; Rix, 1994). Taken together, around sixteen different types of firesetter may be identified, and classified according to four overarching features: (i) socio-demographic features (i.e., gender, age); (ii) behavioural features (i.e., offence and crime scene characteristics); (iii) pathological features (i.e., mental disorder, physical disorders); and, (iv) motivational features (i.e., motive for setting the fire). Table 3.1 summarises proposed subtypes of firesetter drawn from existing typological classifications of firesetters.

Table 3.1
Proposed Subtypes Of Firesetter From Existing Typological Classifications

Overarching Feature of Classification	Summary Proposed Subtypes of Firesetter	Supporting Research
Socio-Demographic Features	Juvenile Firesetters (i.e., under 16). Female Firesetters.	Barker, 1994; Bradford, 1982; Icové & Estepp, 1987; Lewis & Yarnell, 1951; Prins, 1994; Prins et al., 1985; Rautaheimo, 1989; Scott, 1974; Vreeland & Levin, 1980; Wood, 2000.
Behavioural Classifications	Serial Firesetters. Organised/Disorganised Firesetters. Solo/Group Firesetters. Instrumental/Expressive Firesetters.	Canter & Fritzon, 1998; Almond, Duggan, Shine, & Canter, 2005; Douglas, Burgess, Burgess, and Ressler, 2013; Faulk, 2000; Levin, 1976; Kocsis, Irwin, & Hayes, 1998; Lewis & Yarnell, 1951; Muckley, 1997; Vreeland & Levin, 1980; Wood, 2000.
Pathological Classifications	Mental Disorder. Physical Impairment (e.g., biological, intellectual difficulties).	Bradford, 1982; Cooke & Ide, 1985; Dennett, 1980; Hurley & Monahan, 1969; Icové & Estepp, 1987; Inciardi, 1970; Kocsis, 2002; Lewis & Yarnell, 1951; O'Sullivan & Kelleher, 1987; Prins, 1994; Prins et al., 1985; Rautaheimo, 1989; Rider, 1980; Rix, 1994; Scott, 1974; Wood, 2000.
Motivational Classifications	Revenge (e.g., animosity, rage, retribution). Self-Gratification (e.g., sensual/sexual satisfaction, pyromania). Personal Gain (e.g., profit). Protest (e.g., social, political, religious). Anti-Social (e.g., crime concealment). Murder (e.g., attempted, premeditated). Mental Illness (e.g., delusions) Suicide/Self Harm (e.g., self-immolation). Recognition (e.g., cry-for-help, heroism). Thrill Seeking (e.g., excitement, boredom). Mixed/Unclear/ Motiveless.	Barker, 1994; Barnett & Spitzer, 1994; Bourget & Bradford, 1989; Bradford, 1982; Canter & Fritzon, 1998; Cooke & Ide, 1985; Dennet, 1980; Faulk, 2000; Geller, 1984; Geller & Bertsch, 1985; Glancy, Spiers, Pitt, & Dvoskin, 2003; Hill, et al., 1982; Holmes & Holmes, 1996; Hurley & Monahan, 1969; Icové & Estepp, 1987; Inciardi, 1970; Kidd, 1997; Kaufman, Heims, & Reiser, 1961; Kocsis, 2001, 2002; Koson & Dvoskin, 1982; Leong, 1992; Levin, 1976; Lewis & Yarnell, 1951; Lindberg et al., 2005; Molnar, Keitner, & Harwood, 1984; Murphy & Clare, 1996; Muckely, 1997; O'Sullivan & Kelleher, 1987; Prins, 1994; Prins et al., 1985; Rautaheimo, 1989; Rider, 1980; Rice & Harris, 1991, 1996; Ritchie & Huff, 1999; Rix, 1994; Scott, 1974; Shea, 2002; Vreeland & Levin, 1980; Wood 2000; Woodward, 1994.

Despite the sheer volume and diversity of these categories, some basic convergences can be drawn from existing typological classifications. Existing classifications have provided some useful information regarding common motives and crime scene characteristics reported for individuals' firesetting. However, the majority of these findings are drawn from crime records, samples of firesetters under pre-trial psychiatric assessment, or psychiatric samples; only a very small minority used samples of imprisoned firesetters (Almond et al., 2005; Hurley & Monaghan, 1969; O'Sullivan & Kelleher, 1987; Prins et al., 1985; Ritchie & Huff, 1999). Thus, our ability to draw definitive conclusions regarding the motives and/or crime scene characteristics of imprisoned firesetters is limited.

Nevertheless, there appears to be some convincing empirical evidence for firesetting motivated by *revenge, personal gain, recognition, self-harm/suicide, anti-social, thrill seeking, mental illness, tension reduction, murder, and mixed motives*. These motives for firesetting in imprisoned offenders appear to be in relatively high prevalence with the majority of estimates falling between 10% and 30% of samples studied, with some as high as 50% (e.g., Hurley & Monahan, 1969; O'Sullivan & Kelleher, 1987; Prins, 1994; Prins et al., 1985; Ritchie & Huff, 1999). There is, however, less evidence supporting imprisoned firesetters motivated by *self-gratification* (e.g., no concrete evidence; O'Sullivan & Kelleher, 1989; Prins et al., 1985) or *political protest* (e.g., less than 2% of cases; Prins, 1994; Prins et al., 1985). Further, there is some support from existing behavioural classifications in terms of imprisoned firesetters' crime scene characteristics. For example, Canter and Fritzon (1998) examined 175 solved cases of UK firesetting from police records for evidence of distinct crime scene characteristics between different types of firesetter. Canter and Fritzon found evidence of four main themes characterising the actions of firesetters that

varied according to motive (i.e., instrumental or expressive) and target (i.e., person or object). The same four themes were validated with imprisoned firesetters in a subsequent study (Almond et al., 2005), suggesting there may be subtypes of imprisoned firesetter who differ in their modus operandi according to their victim/target (i.e., known to them, themselves, property), method of lighting the fire (i.e., use of accelerants, opportunistic firesetting), and/or presence of a psychiatric disorder.

However, overall, where typological classifications of firesetters intend to make theory and evidence based practice more manageable (Helfgott, 2008), they in fact do little to reduce the heterogeneity of firesetters due to a number of important conceptual and methodological limitations, and thus also limiting their contribution to higher order theories in deliberate firesetting. First, many of the samples used have conflated children, men, women, psychiatric samples, convicted firesetters, unconvicted firesetters (e.g., those sent for pre-trial assessment), and community samples in their research (Inciardi, 1970; Lewis & Yarnell, 1951), thus making it difficult to draw definitive conclusions or make comparisons between populations. Further, with the exception of Almond et al.'s (2005) study, none of the proposed typologies have been exclusively derived with imprisoned firesetters, thus limiting our ability to ascertain the extent of their relevance for this particular group.

Second, a vast proportion of existing typological classifications suffer from poor empirical adequacy. The majority of samples used in existing classifications were limited in size, making the generalisability of the findings questionable (O'Sullivan & Kelleher, 1987). Further, most studies often used retrospective records, interviews and files, and relied entirely on professional observations (Dennet, 1980; Douglas et al., 2013; Icove & Estep, 1987; Inciardi, 1970; Lewis & Yarnell, 1951; Rautaheimo, 1989), thus threatening both the

internal and external validity of findings. Reliability is also often poor as studies have failed to report inter-rater reliability figures or empirically validate existing classifications making it difficult to compare and contrast findings (Gannon & Pina, 2010).

Third, large numbers of the classifications lack mutual exclusivity. Offenders could be classified in several categories due to differing and unclear membership criteria between typologies (e.g., mentally disordered firesetters may also fall into various motivational categories). Consequently, classifications have suffered from an inherent overlap between typologies (Cooke & Ide, 1985; Inciardi, 1970; Levin, 1976; Lewis & Yarnell, 1951; Vreeland & Levin, 1980) or parsimony was sacrificed by proposing greater numbers of categories to overcome these difficulties (Inciardi, 1970; Prins, 1994).

Finally, classifying firesetters according to one overriding characteristic assumes potential firesetting subtypes as driven by a single factor rather than a more complex and multifaceted approach (Prins, 1994). Consequently, existing typologies are invariably incomplete. Interestingly, many lack the provision of psychological implications for proposed categories (Lewis & Yarnell, 1951), failing to outline key psychological traits, risk factors, clinical features, or treatment suggestions (Rix, 1994), and are thus limited in their clinical utility.

Level I Multi-Factor Theories in Deliberate Firesetting

There are three known multi-factor theories of deliberate firesetting: Functional Analysis Theory (Jackson et al., 1987), Dynamic-Behaviour Theory (Fineman, 1980, 1995), and the Multi-Trajectory Theory of Adult Firesetting (M-TTAF; Gannon et al., 2012).

Functional Analysis Theory (Jackson et al., 1987).

Functional Analysis Theory (Jackson et al., 1987) is an interaction based model that identifies the antecedents of firesetting (i.e., previous situational factors) and considers the variables that serve to maintain and reinforce the behaviour (i.e., consequences of firesetting behaviour). Jackson et al., (1987) identified the antecedents that direct an individual towards firesetting as: (i) psychosocial disadvantage (e.g., adverse developmental experiences and psychological vulnerabilities); (ii) life dissatisfaction and self-loathing (e.g., depression and self-esteem problems); (iii) social incompetency (e.g., poor problem solving); (iv) fire experiences (e.g., legitimate or illegitimate uses of fire in their immediate environment); and (v) firesetting triggers (e.g., internal or external emotionally significant events). Jackson et al. (1987) hypothesise firesetting behaviour is maintained through both positive and negative reinforcement contingencies linked to the consequences of the firesetting (i.e., attention received from their peers or caregivers as a result of their firesetting; punishment resulting in an increased sense of personal inadequacy). The type of reinforcement has been suggested to be related to the likely outcome of treatment, with firesetting undertaken for external reinforcement (i.e., arson for profit) and internal cognitive reinforcement (i.e., arson for peer attention) more easily treatable than arson undertaken for internal sensory reinforcement (Jackson et al., 1987).

Overall, Functional Analysis Theory (Jackson et al., 1987) successfully integrates the central tenets of theoretical approaches to firesetting (e.g., Social Learning Theory, Bandura, 1976) and its underlying principles are well supported by the existing literature in terms of the antecedents of firesetting found in imprisoned firesetters (e.g., poor social skills, depression, low self-esteem; Duggan & Shine, 2001; Gannon et al., 2013; Hurley & Monahan, 1969). Further, the theory's focus on the individual's developmental experiences

and likely factors contributing to repeat firesetting shows clear strengths in terms of its clinical utility for practising professionals (Gannon & Pina, 2010).

However, Jackson et al.'s theory is not without limitations. First, the functional analytic paradigm lacks empirical adequacy. The model was developed on the basis of the authors' accumulated clinical experiences with mentally disordered firesetters and thus was not developed for imprisoned firesetters. However, one empirical study did apply functional analysis to firesetting in female imprisoned offenders (Stewart, 1993). In a UK prison based study, Stewart (1993), examined the psychological and situational antecedents to firesetting in a group of 28 female convicted firesetters, compared to 28 female control offenders. Evidence was found for adverse developmental experiences, low self-esteem, depression, poor communication skills, and poor emotional regulation (Stewart, 1993). However, the findings are unlikely to be generalisable to adult male imprisoned firesetters. Further, Stewart (1993) did not seek to evaluate the reinforcement contingencies linked to the consequences of the firesetting in their sample and as such the findings only provide partial empirical support for Jackson et al.'s theory.

Second, Functional Analysis Theory lacks explanatory depth (i.e., detailed and intricate explication of the intended phenomena; Hooker, 1987; Newton-Smith, 2002). Jackson et al. (1987) do not incorporate existing typological knowledge of firesetting into the theory and although they recognise the heterogeneity of firesetters as a whole, the theory attempts to homogenise firesetters as one group, failing to consider whether different types of firesetter may present different antecedents, behaviours, and reinforcement contingencies in their offending behaviour. Thus, Functional Analysis Theory (Jackson et al., 1987) does little to contribute to our understanding of imprisoned

firesetters or whether there may be different types of imprisoned firesetters, with differing treatment needs.

Dynamic Behaviour Theory (Fineman, 1980, 1995).

In his Dynamic Behaviour Theory, Fineman (1980, 1995) argues that firesetting is the result of historical psychosocial factors that influence an individual's propensity towards firesetting, through early social learning experiences (Gannon & Pina, 2010). By amalgamating existing conceptualisations of firesetting (i.e., Cook, Hersh, Gaynor, & Roehl, 1989), Fineman (1980, 1995) describes firesetting using the following formula:

$$(FS) \text{ Firesetting} = G1 + G2 + E$$

$$[E = C + CF + D1 + D2 + D3 + F1 + F2 + F3 + Rex + Rin] .$$

The formula hypothesises firesetting is the product of: (G1) historical factors predisposing individuals towards anti-social behaviour (i.e., adverse experiences with family, peers, personality, health etc.); (G2), historical environmental reinforcement contingencies facilitating firesetting (i.e., fire interest, fire-play, poor fire safety knowledge, poor parental responses to early firesetting etc.); and (E), immediate environmental contingencies that encourage firesetting behaviour. (E) consists of a number of variables which must be explored in order to assess the individual's risk of firesetting: (C), experience of a crisis or trauma prior to the firesetting incident (i.e., death of a loved one, loss of employment, abusive experiences), (CF), characteristics of the firesetting episode (i.e., crime scene characteristics), (D1), cognitive distortions present before the firesetting episode, (D2), cognitive distortions occurring during firesetting, (D3), cognitive distortions occurring immediately after firesetting, (F1), affect prior to firesetting, (F2), affect during firesetting, (F3), affect post firesetting, (Rex), external reinforcement contingencies (i.e.,

concrete goal of firesetting such as economic gain), and (*Rin*), internal reinforcement contingencies (i.e., appraisal of firesetting such as satisfaction, excitement etc.).

Within the theoretical framework, Fineman (1995) proposes a firesetting assessment checklist composed of the *Firesetting Sequence Analysis Form* (i.e., a checklist for the sequence of behaviours, thoughts, and feelings preceding and contributing to repeated firesetting), the *Firesetting Motive Analysis Form* (i.e., a checklist of eight firesetting subtypes to hypothesise the motive for the firesetting), and *The Psycholegal Analysis Form* (i.e., a checklist for the legal assessment of the individual and their risk of future fire-related dangerousness). Within the *Firesetting Motive Analysis Form*, Fineman (1995) proposed eight subtypes of firesetter, focusing on the firesetter's psychological state or diagnostic category, the target of firesetting, and the function of the fire:

- (i) the *Curiosity Type* (i.e., young children who set fires as part of early child-play, possibly as a result of hyperactivity and/or attention deficits),
- (ii) the *Accidental Type* (i.e., fires set by accident);
- (iii) the *Cry For Help Type* (i.e., those who seek to draw attention to either an intra- or inter-personal dysfunction);
- (iv) the *Anti-Social Type* (i.e., generally anti-social, showing little empathy for others and consideration for the consequences of their actions);
- (v) the *Severely Disturbed Type* (i.e., those suffering from poor mental health);
- (vi) the *Cognitively Impaired Type* (i.e., those suffering from neurological and/or medical problems which impair their judgement and ability to control impulses);
- (vii) the *Sociocultural Type* (i.e., those whose firesetting is an expression of social protest); and,

- (viii) the *Wildland Firesetter Type* (i.e., those who set fires to land with the intent of the fire spreading to inhabited areas as a result of an underlying grievance).

Overall Fineman's (1980, 1995) theory is consistent with other background theories of firesetting (Jackson et al., 1987) in terms of identifying the general domains related to the characteristics known to be associated with firesetting (i.e., personality and individual characteristics, family and social characteristics, and immediate environmental features). Dynamic-behaviour theory does not assume that one factor alone predicts firesetting; rather, it is the range of variables and the interaction between them that will explain firesetting behaviour, thus providing considerable explanatory depth to the theory (Doley, 2009). Further, the theory holds significant clinical utility, since it provides clinicians with a guiding framework with which to underpin their assessments of firesetting behaviour, in terms of the offence sequence (e.g., *Firesetting Sequence Analysis Form*), goals underlying firesetting (e.g., *Firesetting Motive Analysis Form*), and the level of risk presented by the individual (e.g., *The Psycholegal Analysis Form*).

However, whilst Dynamic Behaviour Theory offers a more detailed explanation of the factors involved in deliberate firesetting, it remains limited in several aspects. First, Dynamic Behaviour Theory was primarily developed for, and applied to juvenile firesetting. As a result the theory lacks empirical adequacy with adult firesetters and in particular there has been no known attempt to apply Fineman's (1980, 1995) model to imprisoned firesetters. Further, as the theory is mainly applied to juvenile firesetters, it does not adequately address how firesetting may persist from childhood through to adulthood or fire-related re-offending in adults (Doley, 2009). Second, the assessment framework provided relies heavily on the individual's ability to be aware of and to express the affective and cognitive factors involved in their firesetting behaviour (Doley, 2009).

Finally, the eight types of firesetter proposed by Fineman (1995) are based on the author's accumulated clinical experience with juvenile firesetters and are unlikely to extend to adult imprisoned firesetters. Further, the proposed typology does not incorporate the range of taxonomic knowledge regarding possible motives underlying firesetting (e.g., revenge, excitement, thrill-seeking) and there is no explanation as to how each type may present in the wider theoretical framework (e.g., within G1, G2, E). Finally, beyond providing a brief assessment of each category's *likely* suitability for treatment, Fineman (1995) does not provide any indication of the psychological or clinical features that may be associated with each type or how they might differ in terms of their treatment needs, thus limiting their clinical utility.

The Multi-Trajectory Theory of Adult Firesetting (Gannon et al., 2012).

The Multi-Trajectory Theory of Adult Firesetting (M-TTAF; Gannon et al., 2012), represents the most comprehensive attempt to explain firesetting to date. Gannon et al. (2012) developed the M-TTAF using a theory knitting approach (Kalmar & Sternberg, 1988), integrating the best aspects of existing theories with new ideas and existing research to create a comprehensive etiological theory of deliberate firesetting for all adult firesetters (i.e., imprisoned and mentally disordered firesetters). The uniqueness of the M-TTAF is its two tiered structure. Tier 1 presents the overall theoretical framework of the theory, integrating current firesetting theory and research knowledge into a broad etiological theory of firesetting regarding the factors and mechanisms that interact to facilitate and reinforce firesetting (see Figure 3.1; Gannon et al., 2012). Tier 2 summarises five prototypical trajectories firesetters may follow (i.e., patterns of characteristics leading to firesetting behaviour; see Table 3.2) that stem from the theoretical framework, each presenting unique risk factors, clinical features, and treatment needs.

In Tier 1, Gannon et al. (2012) propose that multiple factors interact and result in firesetting behaviour (see Figure 3.1). It is a combination of developmental factors (e.g., caregiver environment, attachments, abusive experiences, social deprivation), 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) which are hypothesised to contribute to the development of distinct psychological vulnerabilities (e.g., inappropriate fire interest, offence supportive attitudes, emotional regulation issues, communication problems) suggested to predispose individuals towards deliberate firesetting behaviour. Within this context, proximal factors and triggers (e.g., life events, internal affect/cognition, cultural and biological factors) and moderating factors (e.g., poor mental health and low self-esteem) are suggested to interact with, and exacerbate existing psychological vulnerabilities so that they become critical risk factors, placing individuals at increased risk of deliberate firesetting. Gannon et al. (2012) hypothesise maintenance of firesetting behaviour is explained in terms of reinforcement principles (e.g., cognition, affect). Gannon et al. (2012) posit desistance from firesetting occurs as a result of increased feelings of personal control, self-direction, and social support, achieved through engagement in therapeutic interventions and/or external influences (e.g., opportunities or peers which promote such skills).

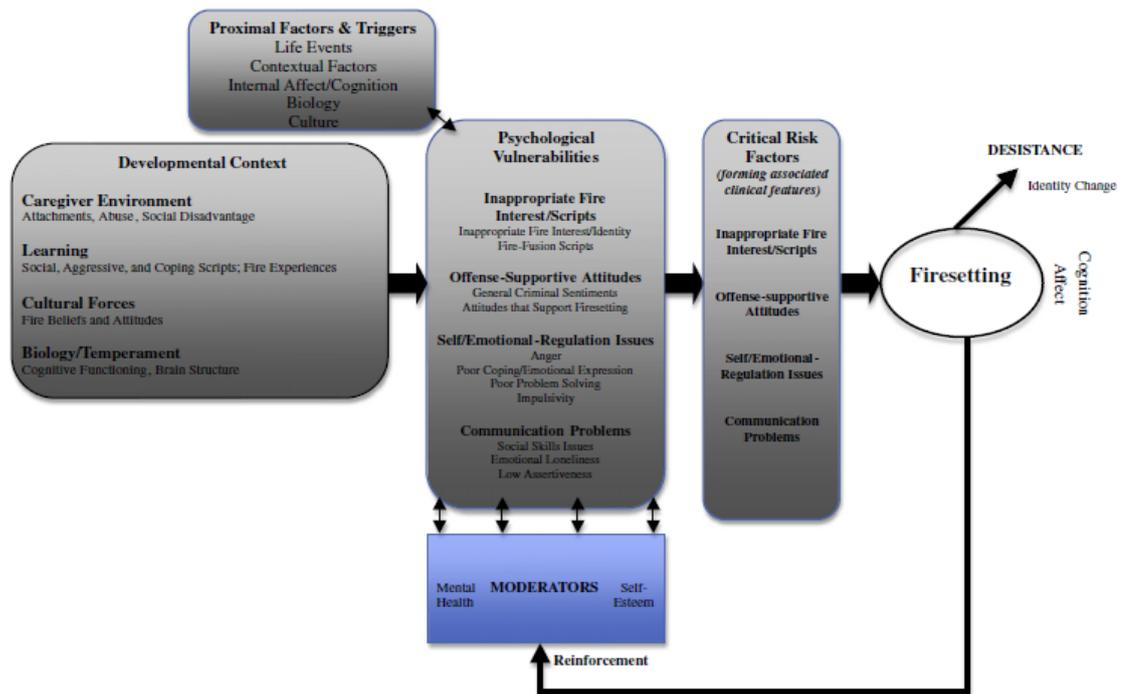


Figure 3.1. Tier 1 of the M-TTAF (Gannon et al., 2012)

In Tier 2 of the M-TTAF (see Table 3.2), Gannon et al. (2012) integrate current research literature, existing typological classifications of firesetters, and clinical experience into five prototypical trajectories associated with firesetting (Gannon et al., 2012). The trajectories are not intended to be exhaustive and firesetters may exhibit characteristics of multiple trajectories. Thus, the aim of the second tier is to ensure that clinicians may consult helpful prototypes of the differing ways in which firesetters may arrive at firesetting. Individuals are conceptualised as belonging to one of five trajectories leading to firesetting: *Anti-Social Cognition*, *Grievance*, *Fire-Interest*, *Emotionally Expressive/Need for Recognition*, and *Multi-Faceted* firesetters (See Table 3.2; Gannon et al., 2012).

Table 3.2***Tier 2 of the M-TTAF (Gannon et al., 2012)***

Trajectory	Prominent risk factor	Other Likely risk factors	Potential clinical features	Potential motivators
Antisocial	Offense-supportive attitudes/values (supporting general criminality)	Self-regulation issues (e.g., poor emotional modulation)	Antisocial values/attitudes Impulsivity Conduct disorder or antisocial personality disorder	Vandalism/boredom Crime concealment profit Revenge/retribution
Grievance	Self-regulation issues	Communication problems Inappropriate fire script	Low assertiveness Poor communication Fire-aggression fusion script Anger (rumination) Hostility	Revenge/retribution
Fire interest	Inappropriate fire interest/scripts	Offense-supportive attitudes (supporting firesetting)	Fire fascination/interest Impulsivity Attitudes supporting fire	Fire interest/thrill Stress/boredom
Emotionally expressive/need for recognition	Communication problems	Self-regulation issues* (e.g., poor emotional modulation)	Poor communication Impulsivity Depression Fire-coping fusion script Personality traits/disorder	Cry for help* Self-harm* Suicide* Need for recognition
Multi-faceted	Offense-supportive attitudes/values (supporting general criminality and firesetting) Inappropriate fire interest/scripts	Self-regulation Issues Communication problems	Pervasive firesetting/general criminal behavior Fire fascination/interest Antisocial values/attitudes Conduct disorder or antisocial personality disorder	Various

* = Emotionally expressive subtype only.

A key strength of the M-TTAF is it is the only multi-factor theory developed to explain adult firesetting in both imprisoned and mentally disordered offenders. Further, using a theory knitting approach (Kalmar & Sternberg, 1988), its incorporation of existing established theoretical and psychological principles, and existing firesetting research, serve to provide a comprehensive explanation of firesetting behaviour that is underpinned by the best available evidence (Gannon et al., 2012). Gannon et al. (2012) posit the hypothesised features outlined in Tier 1 are consistent with existing theories of deliberate firesetting (Fineman, 1980, 1995; Jackson et al., 1987), established principles of offending behaviour (Huesmann & Eron, 1984; Ward & Siegert, 2002), clinical psychology (i.e., social learning theory, principles of conditioning, attachment theory; Bandura, 1976; Bowlby, 2005), and social-cognitive psychology (i.e., cognitive schemas and scripts; Fiske & Taylor, 2008). Its central tenets are well supported by existing empirical findings relating to imprisoned firesetters' developmental experiences (Hurley & Monaghan, 1969), known psychological vulnerabilities (Gannon et al., 2013), and moderating factors (e.g., mental health, Duggan & Shine, 2001; Hurley & Monaghan, 1969; Gannon et al., 2013). Further, by comparison to its predecessors (Fineman, 1980, 1995; Jackson et al., 1987), Tier 1 of the M-TTAF provides a much more thorough account of the interactions between all the factors hypothesised to culminate in firesetting behaviour.

The inclusion of a second tier in the M-TTAF represents a novel and unique approach to etiological explanations of firesetting by broadening the function and utility of the theory for practicing professionals by offering descriptions and treatment recommendations for different types of firesetter. First, the description of multiple trajectories in the M-TTAF represents significant strengths in relation to its preceding theories and classification systems since they are intended to apply to all adult firesetters

(i.e., imprisoned and mentally disordered firesetters). Unlike Fineman's (1980, 1995) juvenile firesetting subtypes, the M-TTAF trajectories are also likely to be the most relevant to adult imprisoned firesetters compared to previous classification systems. Since mental health is conceptualised as a possible moderator, rather than a core defining feature of the trajectories, this allows for the inclusion of imprisoned firesetters who may not have pervasive mental health problems (e.g., Grievance Trajectory). The trajectories also allow for the inclusion of generalist firesetters by including those individuals with criminally versatile offence histories and whose firesetting is primarily instrumental in nature (e.g., Anti-Social Cognition Trajectory). Second, the trajectories successfully account for a number of motivational subtypes identified in existing typological classifications of firesetters: anti-social, profit, revenge, self-gratification, protest, attention seeking, suicide/self-harm, and thrill-seeking (see Table 3.1). Further, since Gannon et al. (2012) incorporate incidents of one-time or repeat firesetting, planned or impulsive firesetting, and allow for multiple motives, less prevalent typological subtypes are also accounted for (e.g., serial, organised/disorganised, and mixed motives firesetters). Finally, a notable strength of the five trajectories compared to preceding research efforts is the provision of potential psychological features and treatment recommendations for each trajectory, thus increasing the scope and utility for practicing professionals (Gannon et al., 2012).

However, whilst the M-TTAF is as empirically grounded as possible and provides a comprehensive framework to guide practicing professionals in the treatment of adult firesetters, there are limitations. Whilst the M-TTAF was developed to explain adult firesetting (i.e., excluding juvenile firesetting), Gannon et al. (2012) do not clearly explain how imprisoned and mentally disordered firesetters may differ for each of the hypothesised factors linked to deliberate firesetting. Further, not all the factors

hypothesised by Gannon et al. (2012) to facilitate deliberate firesetting are clearly explicated. Whilst mental health is recognised as a moderator, the process by which poor mental health may moderate pre-existing psychological vulnerabilities is unclear, and it is not clear whether poor mental health applies mainly to mentally disordered firesetters or is intended to include imprisoned firesetters. Further, Gannon et al. (2012) do not provide a detailed account of firesetters' offence characteristics (e.g., target of firesetting, extent of damage caused), offending styles (e.g., crime scene characteristics) or how the offence process might unfold for firesetters (i.e., micro-theory). Finally, whilst the M-TTAF provides a comprehensive framework likely to generate significant future research activity, as a whole, it is yet to be empirically evaluated. First, the psychological vulnerabilities and critical risk factors outlined in Tier 1 require substantial evaluation in order to ascertain if they are in fact the criminogenic needs associated with adult firesetters (Gannon et al., 2012). Second, evaluating the empirical adequacy and scope of the five trajectories is key for appraising the relative strengths and weaknesses of Tier 2 of the M-TTAF and for informing clinicians if they should be consulted in the treatment of imprisoned firesetters (i.e., by tailoring treatment to different types of firesetter).

Level II Single-Factor Theories in Deliberate Firesetting

Gannon and Pina (2010) identified three single-factor theories within the firesetting literature: Psycho-Analytical Theory (Freud, 1932), Biological Theory (Virkkunen, 1984; Virkkunen et al., 1995; Virkkunen et al., 1987), and Social Learning Theory (Bandura, 1976; Vreeland & Levin, 1980).

Psycho-Analytical Theory.

Psycho-Analytical Theory is one of the earliest explanations of firesetting associated with Freud (1932) and elaborated upon by others (Gold, 1962; Macht & Mack, 1968). The main proponent of this theory is that firesetting originates from either a urethral or oral fixated drive (Gannon & Pina, 2010). Firesetting is posited to occur as a result of repressed sexual urges and sexual interest in fire. However, research examining the link between sexual motivation and firesetting has failed to find any convincing evidence for its existence among imprisoned firesetters (Prins et al., 1985; Hurley & Monaghan, 1969). Some researchers suggest that the link between sexual arousal and firesetting simply reflects a general interest or fascination with fire (Hill et al., 1982). Further, as a Level II theory, it fails to unify other theoretical explanations of firesetting (e.g., developmental factors, personality traits), and there is no evidence to suggest psychoanalytical therapy leads to sustained reductions in firesetting behaviour thus limiting its clinical utility (Gannon & Pina, 2010).

Biological Theory.

Researchers have also paid attention to the role of biology and neurobiological impairment in order to understand and explain firesetting (Barnett & Spitzer, 1994; Virkkunen, 1984; Virkkunen et al., 1987; Virkkunen et al., 1995). These studies suggest that individuals who set fires, particularly those who engage in repeat firesetting, have decreased concentrations of cerebrospinal fluid monoamine metabolites in their neurotransmitters (i.e., 5-hydroxyindoleacetic acid; 5 HIAA, and 3-methoxy-4-hydroxyphenylglycol; MHPG; Roy, Virkkunen, Guthrie, & Linnoila, 1986; Virkkunen et al., 1987; Virkkunen, Dejong, Bartko, & Linnoila, 1989). Whilst Biological Theory is intended to be empirically grounded and could provide practicing professionals with a basis for

pharmaceutical treatment, there is no empirical evidence suggesting these neuro-biological deficits are prevalent in imprisoned firesetters. Further, the biological perspective fails to incorporate existing psycho-social explanations of deliberate firesetting (e.g., key psychological traits, risk factors, and clinical features of firesetters) or the wider characteristics associated with firesetting populations (e.g., offending styles, motives for firesetting). Thus, Biological Theory is limited in terms of its provisions towards understanding, assessing, and treating firesetting in imprisoned offenders.

Social Learning Theory.

Finally, social learning theorists posit firesetting as a manifestation of reinforcement contingencies and learning through imitations (Bandura, 1976; Gannon & Pina, 2010; Kolko & Kazdin, 1986; Macht & Mack, 1968; Singer & Hensley, 2004; Vreeland & Levin, 1980). Social Learning Theory predicts learning may occur via positive reinforcement and/or vicarious learning (e.g., observation), thus placing individuals at increased risk of firesetting behaviour themselves (Gannon & Pina, 2010). A whole range of developmental experiences, cognitions, triggers, and expectations contribute to an individual's propensity towards firesetting behaviour (Gannon & Pina, 2010). Social Learning Theory predicts that environmental reinforcement contingencies shape self-regulatory responses (Gannon & Pina, 2010). Poor childhood socialisation (e.g., negative developmental experiences, poor role models) may result in traits associated with firesetters (e.g., aggression, poor coping skills, lack of assertiveness; Gannon et al., 2013), and so are likely to increase an individual's propensity to light fires in an attempt to gain positive environmental control (Gannon et al., 2012; Gannon & Pina, 2010).

Social Learning Theory appears well supported by studies examining the developmental experiences of imprisoned firesetters (Hurley & Monaghan, 1969;

O'Sullivan & Kelleher, 1987) and widely accepted psychological principles (i.e., conditioning and modelling; Gannon & Pina, 2010). Existing empirical research suggests there is some evidence imprisoned firesetters originate from families who hold a history of firesetting (Frisell et al., 2011). Finally, a number of motives prevalent for intentional acts of firesetting in imprisoned offenders are well explained by Social Learning Theory (e.g., revenge, protest, recognition). Thus, Social Learning Theory may be helpful in understanding a certain proportion of imprisoned offenders who set fires (Gannon & Pina, 2010). However, its clinical utility is limited to these specific cases and does not adequately explain the combination of factors which may facilitate other types of firesetting in imprisoned offenders (e.g., profit motivated firesetting) nor does it account for the influence of more proximal factors linked to firesetting (e.g., triggering events).

Level III Micro-Theories of Deliberate Firesetting

To date, only one micro-theory exists within the firesetting literature: The Firesetting Offence Chain for Mentally Disordered Offenders (FOC-MD; Tyler et al., 2014). Tyler et al., (2014) interviewed twenty-three mentally disordered offenders (male and female), who had at least one recorded incident of firesetting in their offence history. Interviews were analysed using grounded theory (Strauss & Corbin, 1998) and an offence chain model was developed outlining the sequence of thoughts, feelings, and events that precede and surround a single incident of firesetting in mentally disordered offenders. The model was divided into four main sections: (i) *Background Factors*; which accounts for historical factors in the offender's childhood and adolescence; (ii) *Early adulthood*; factors that occur in offenders' early adulthood up until one year before the fire; (iii) *Pre-Offence Period*; factors that occur from one year before the fire up to immediately prior to the fire;

and (iv) *Offence and Post Offence Period*; factors that occur during and immediately after the fire.

Tyler et al. (2014) identified three potential pathways firesetters may follow through the model: First, the *Fire-Interest — Childhood Mental Health Approach*, describing individuals who developed at least two fire risk factors (e.g., early firesetting, strong affect towards fires, fire interest) and mental health problems (e.g., depression, paranoia) in childhood. These individuals were more likely to engage in detailed planning of the fire, experience positive fire-related affect, and watch the fire after it was set. Second, the *No Fire Interest — Adult Mental Health Approach*, described individuals who did not develop any fire-related risk factors in childhood but experienced a significant mental health deterioration close to the firesetting episode. Their fires were unplanned, they had no discernible affect about the fire (e.g., positive or negative) and they did not watch the fire once it had been set. Finally, the *Fire Interest — Adult Mental Health Approach*, described individuals who developed at least two fire risk factors in childhood but did not experience any mental health problems until adulthood. These individuals engaged in low level planning of their fires and watched the fire once it had been set.

As the first ever micro-theory developed in the area of deliberate firesetting, Tyler et al.'s (2014) model represents a significant milestone in current theoretical research developments for mentally disordered firesetters. Several important novel findings emerged from the offence chain: (i) offenders displayed a strong affective response to fire, either positive or negative, which was suggested to be a risk factor for firesetting behaviour; (ii) mental health was not identified to be a causal factor of firesetting as previously thought but an underlying dimension exacerbating pre-existing vulnerabilities/risk factors (e.g., fire interest, poor coping, poor problem solving); (iii) a

new motive for firesetting was identified, offenders set fire to protect themselves; and finally, (iv) mentally disordered firesetters appeared to follow one of three pathways within the model, based on differences in the presence/absence of fire interest and time of onset of mental health problems.

Whilst the development of Tyler et al.'s (2014) model for mentally disordered firesetters makes a new and significant contribution to theoretical explanations of firesetting, there are some limitations. Although not intended to be generalisable to all firesetters, the model is limited in terms of sample size (i.e., $n = 24$) and representation of different types of firesetting (e.g., filicide by fire; Tyler & Barnoux, 2015). Further, reliability checks were not employed to counteract potential researcher biases (e.g., subjective inferences) and the findings are limited by the biases associated with self-reported data (e.g., memory and recall biases, demand characteristics). Subsequent offense chains with further samples of mentally disordered firesetters and cross validation studies would certainly increase its reliability and validity. However, more importantly, the FOC-MD is limited to offenders who were formally diagnosed with a mental health disorder at the time of the fire. Participants' firesetting was directly linked to their mental health problems and were suggested to function as a firesetting trigger by exacerbating pre-existing vulnerabilities/risk factors. The model does not provide an adequate explanation for how other offenders, such as those found in the prison population, may come to set a fire, irrespective of the presence and/or time of onset of mental health problems.

Conclusions

Advances in psychological research rely entirely on the generation of new ideas and theories, without which the assessment and treatment of individuals who deliberately set fires would not progress. Despite the proliferation of existing typological classifications,

virtually none were developed using samples of imprisoned firesetters and the majority suffer from an array of conceptual and methodological problems, thus limiting their clinical utility and contribution to more complex etiological theories. Further, a review of existing multi-factor, single-factor, and micro theories of deliberate firesetting revealed two key deficits. First, with the exception of the M-TTAF (Gannon et al., 2012), the vast majority of existing theoretical efforts do not adequately explain firesetting perpetrated by imprisoned offenders. However, whilst the development of the M-TTAF (Gannon et al., 2012) represents the only comprehensive etiological explanation of deliberate firesetting in imprisoned offenders to date, the theory has yet to be empirically validated. Second, whilst the development of Tyler et al.'s (2014) FOC-MD represents a new and significant contribution to theoretical explanations of firesetting, the model is limited to mentally disordered firesetters and does not provide an adequate explanation for how imprisoned firesetters may come to set a fire.

The absence of an empirical evaluation of the M-TTAF and the development of a micro-theory for imprisoned firesetters is hampering the development of both higher level theory and classification, and thus impacting the generation of treatment programmes that capture the criminological needs that could be associated with deliberate firesetting. Competent clinical practice is governed by the scientist practitioner model, which asserts that clinical practice should be informed by empirical theory and research (Gannon, Rose, & Ward, 2008). This puts clinicians in a difficult position when there is a lack of systematic theoretical research in deliberate firesetting to inform developing treatment strategies (Gannon et al., 2008). Thus, evaluating the M-TTAF and developing a model of the offence process for imprisoned firesetters would serve to ground the development of treatment initiatives and higher order single-factor and multi-factor theories (Polaschek, Hudson,

Ward, & Siegert, 2001), and is presently vital to contribute towards advances in our understanding and treatment of this complex behaviour.

Chapter Four

Rationale and Research Agenda

Rationale for this Thesis

A review of the firesetting literature in Chapters One to Three has highlighted three areas of deficit. First, Chapter Two emphasised that very little research has been conducted with imprisoned firesetters; the majority of existing findings have been drawn from research based on arrest and/or conviction data from crime records, pre-trial psychiatric assessments, or from samples of mentally disordered offenders. Recent research conducted with imprisoned firesetters has provided some convincing evidence that they hold unique treatment needs which are not prevalent in other non-firesetting imprisoned offenders and thus require specialist assessment and treatment. Further, there is some preliminary evidence to suggest there may be differences between subtypes of imprisoned firesetters. However, no research has examined whether various types of imprisoned firesetter differ in their treatment needs. In particular, no research has considered whether specialist treatment is required for all imprisoned firesetters or whether more generic treatment approaches might be sufficient for some types of imprisoned firesetters.

Second, a review of existing theories in deliberate firesetting revealed the vast majority of existing theoretical efforts do not adequately explain firesetting perpetrated by imprisoned offenders, thus limiting their ability to inform evidence based practice. In fact, the development of the M-TTAF (Gannon et al., 2012) represents the only comprehensive etiological explanation of deliberate firesetting able to account for firesetting in imprisoned offenders to date and allows for different types of firesetter by incorporating a second Tier. However, the theory has yet to be empirically validated. Evaluating the empirical adequacy

and scope of the five prototypical trajectories is key for informing clinicians if they should be consulted in the treatment of imprisoned firesetters (e.g., by tailoring treatment to different types of imprisoned firesetter).

Third, it was highlighted there was a dearth of theoretical explanations of firesetting relating to how the offence process unfolds in a temporal dimension for imprisoned offenders. Whilst the development of Tyler et al.'s (2014) FOC-MD represents a new and significant contribution to theoretical explanations of firesetting, the model is limited to mentally disordered firesetters and does not provide an adequate explanation for how other offenders, such as those found in the prison population, may come to set a fire. The absence of a micro-theory for imprisoned firesetters is hampering the development of both higher level theory and classification, and is consequently impacting the generation of treatment programmes.

Research Agenda

Chapter Five: Study 1- an evaluation of the generalist/specialist debate with adult male imprisoned firesetters.

The aim of Study 1 is to conduct the first empirical evaluation regarding whether there may be generalist and specialist subtypes in imprisoned firesetters. In order to evaluate the existence of potential generalist and specialist subtypes, it is vital to understand the extent to which subtypes of imprisoned firesetters share key psychological characteristics with subtypes of non-firesetting imprisoned offenders by reducing both into smaller groups. From a sample of 250 imprisoned firesetters and non-firesetting imprisoned offenders, cluster analyses and multivariate significance tests will be conducted based on measures pertaining to the known treatment needs of imprisoned

firesetters derived from the literature. Follow up significance tests will be conducted to examine the extent of the difference between potential generalist and specialist subtypes. It is anticipated the findings from Study 1 will not only evaluate whether there are generalist and specialist imprisoned firesetters, but will also determine which factors differentiate them. Key aspects of the results will be discussed in terms of any potential novel findings and associated treatment implications.

Chapter Six: Study 2 - an empirical evaluation of Tier 2 of the Multi-Trajectory Theory of Adult Firesetting.

Whilst it is hoped Study 1 will provide a more fine-tuned approach to the generalist/specialist debate, caution should be exercised regarding the characteristics of the clusters derived. The findings from Study 1 are unlikely to be an accurate reflection of specific types of imprisoned firesetter since the clusters generated will be based on the shared similarities between non-firesetting imprisoned offenders and imprisoned firesetters. Consequently, using the prototypical trajectories of Tier 2 of the M-TTAF as a theoretical backdrop, follow up cluster analyses and multivariate significance tests with a sub-sample of 132 imprisoned firesetters will be conducted in Study 2. The findings from Study 2 will provide the first attempt to empirically evaluate the five prototypical trajectories of the M-TTAF with a sample of imprisoned firesetters. Key findings and associated treatment implications will be discussed.

Chapter Seven: Study 3 - the development of a descriptive model of the offence chain for adult male imprisoned firesetters.

Whilst it is hoped the findings from Study 2 will provide practicing professionals with valuable empirical evidence that the M-TTAF trajectories are a useful theoretical backdrop which may be consulted in the treatment of imprisoned firesetters, there is

currently no empirically grounded theoretical explanation detailing how imprisoned firesetters may come to set their fires. Thus, Study 3 will aim to develop an offence chain model using a sub sample of 38 imprisoned firesetters, documenting the cognitive, behavioural, affective, and contextual factors leading to a single incident of deliberate firesetting. It is anticipated the resulting model will provide a clear, yet detailed, account of firesetting and will be sufficiently developed to document the similarities between firesetters, whilst sensitive enough to account for offender heterogeneity. Key aspects of the resulting model will be discussed in terms of any potential novel findings and associated treatment implications.

Chapter Eight: Study 4 - pathways to deliberate firesetting in adult male imprisoned offenders: A preliminary investigation.

Whilst the development of a descriptive model of the offence chain for adult male imprisoned firesetters will provide a detailed account of the factors that precede and interact to culminate in a single incident of firesetting behaviour, potential taxonomic offence pathways taken by adult male imprisoned firesetters through the model will not have been examined. Thus, in Study 4 the prevalence of specific offence patterns or pathways characterising adult male imprisoned firesetters will be conducted. It is anticipated the findings from this last study will provide a useful classification of firesetters in a temporal dimension, thus serving to further inform the characteristics and treatment needs of imprisoned firesetters identified as part of Studies 1 and 2.

Chapter Nine: General discussion.

The aim of the final chapter will be to provide a general summary and combined discussion of the findings. Implications and future research directions are provided.

Chapter Five

Study 1: An Evaluation of the Generalist/Specialist Debate with Adult Male Imprisoned Firesetters³

Introduction

As seen in Chapter Two, a key issue in the firesetting literature is whether imprisoned firesetters should be considered as generalist or specialist offenders. Proponents of the generalist approach argue imprisoned firesetters are simply criminally versatile offenders in which firesetting is part of an array of offending behaviours (Doley et al., 2011; Ducat et al., 2013a; Gannon et al., 2013; Hill, et al., 1982; Ritchie & Huff, 1999; Sapsford, et al., 1978; Soothill & Pope, 1973; Soothill, et al., 2004). However, a handful of research studies have provided some convincing evidence that imprisoned firesetters hold unique psychological and clinical features, requiring specialist assessment and treatment, particularly in relation to fire interest and associations with fire (Duggan & Shine, 2001; Ducat et al., 2013a; Gannon et al., 2013; Hurley & Monaghan, 1969; Ó Ciardha et al., 2015b).

However, given there is some preliminary evidence to suggest there may be discreet, yet important differences between different types of firesetter (Barnett et al., 1997; Dickens et al., 2009; Ducat et al., 2013a; O'Sullivan & Kelleher, 1987), it is likely the generalist/specialist approach to firesetting is too broad. Rather, a more gradient approach is likely whereby imprisoned firesetters are considered a unique offender category in which some resemble generalists and others resemble specialists. Such an approach would conceptualise both generalists and specialists as presenting deficits in areas known to

³ The contents of this chapter have been submitted for publication in Barnoux, M., Gannon, T.A., & O Ciardha, C. (2015). An empirical evaluation of potential subtypes of adult male imprisoned firesetters. *Journal of Abnormal Psychology*

imprisoned firesetters (i.e., psychological treatment needs; see Chapter Two), however the key difference between them is likely to lie in their perception of, and relationship with fire (e.g., fire interest, fire-related identification). Surprisingly, no empirical research to date has considered whether there may be any discreet differences between different types of imprisoned firesetters in terms of their treatment needs and whether specialist treatment is required for all imprisoned firesetters or whether more generic treatment approaches might be sufficient for some imprisoned firesetters (i.e., generalists).

In order to evaluate whether the generalist/specialist debate holds true for different types of imprisoned firesetter it is vital to understand the extent to which subtypes of imprisoned firesetters share key psychological characteristics with non-firesetting imprisoned offenders by reducing both groups into more homogenous subtypes. Cluster analysis has proven useful in uncovering subtypes of offenders (Liem & Reichelmann, 2014; Poythress et al., 2010; Stefurak & Calhoun, 2007; Vandiver & Kercher, 2004; Walsh et al., 2010; Wieczorek & Miller, 1992) and evaluating theoretically driven offender typologies (Gannon, Terriere, & Leader, 2012; Holtzworth-Munroe, Meehan, Herron, Rehman, & Stuart, 2000; Waltz, Babcock, Jacobson, & Gottman, 2000). Cluster analyses have also been used in the subtyping of arson offenses, but these studies are limited to mentally disordered firesetters (Harris & Rice, 1996) and juvenile firesetters (Del Bove & Mackay, 2011). There has been no known attempt to use clustering methods with imprisoned firesetters by comparing their shared similarities with non-firesetting imprisoned offenders.

Using clustering methods based on measures examining the known treatment needs of firesetters derived from the literature (Duggan & Shine, 2001; Gannon et al., 2013; Hurley & Monaghan, 1969) two key hypotheses will be evaluated in line with a more

gradient approach to the generalist/specialist debate. First, generalist firesetter subtypes are hypothesised to be allocated into clusters where the proportion of imprisoned firesetters and non-firesetting imprisoned offenders are equivalent, or where non-firesetting imprisoned offenders are in a majority. They are likely to be characterised by a lower proportion of firesetting incidents and show fewer or no deficits in areas relating to self-concept, social competence, emotional regulation, impulsivity, and mental health. Generalist firesetters will be characterised by an absence of fire-related deficits in terms of identification with fire and fire interest. However, they may exhibit low levels of fire safety awareness and normalise the criminal uses of fire due to firesetting being part of a wide array of criminally versatile behaviour in which fire is one of many tools available to them.

Second, specialist firesetter subtypes are hypothesised to be allocated into groups where they are in a clear majority. They are likely to be characterised by a higher proportion of firesetting incidents and show significant problems in areas relating to self-concept, social competence, emotional regulation, impulsivity, and mental health. Specialist firesetters will be characterised by marked fire-related deficits, in particular in terms of identifying with fire and harbouring a deep seated interest in, or fascination with fire. They are also likely to exhibit poor levels of fire safety awareness and normalise the criminal uses of fire.

Method

Participants

The sample consisted of 250⁴ male prisoners recruited from ten prisons in England and Wales (132 firesetters, 118 non-firesetters). Imprisoned firesetters were selected from

⁴ From the original sample ($n = 250$), four firesetters declined to complete the cluster derivation measures.

institutional file records indicating either a conviction for arson, a history of unconvicted firesetting, or prison firesetting activity (e.g., prison documented cell fires). Non-firesetting imprisoned offenders were selected randomly from each prison establishment. Each non-firesetting participant's full offence history and prison records were checked to ensure they held no convictions or incidents associated with deliberate firesetting. Participants experiencing psychosis, suicidal ideation, or at risk of hostage taking were excluded. Although it was not possible to obtain formal refusal rates from participating prisons, using individual records it is estimated that the participation rate was over 80%.

Imprisoned firesetters ($n = 132$).

Mean age at time of interview ranged from 18 to 74 years ($M_{age} = 33.43$; $SD = 11.86$) and participants were on average 26.48 years old at the last incident of firesetting ($M_{age} = 26.48$; $SD = 11.69$). The majority were White British (88.10%); sentence length ranged from 1 to 336 months ($M_{sentence\ length} = 71.41$; $SD = 68.64$). Firesetters had on average 2.81 index offences ($M_{index} = 2.81$; $SD = 3.11$). Eighty-seven participants were one time firesetters (65.9%) and 36 participants had set multiple fires (27.3%); data were missing for nine participants for number of firesetting incidents. Sixty participants had an index offence for arson, 53 had a previous conviction for arson, 19 had set fires in prison and 5 had unconvicted incidents of firesetting. The majority of other index offences were for offences against the person ($n = 52$), theft and kindred offences ($n = 44$), and sexual offences ($n = 17$). Number of previous offences ranged from none to 230 ($M_{previous\ offences} = 32.33$; $SD = 37.06$) and of these, 4.60 were for violent offences ($M_{violent\ offences} = 4.60$; $SD = 5.04$).

Non-firesetting imprisoned offenders ($n = 118$).

Mean age at time of interview ranged from 18 to 68 years ($M_{age} = 35.67$; $SD = 12.52$) and the majority were White British (78.00 %). Sentence length ranged from 5 to 360 months ($M_{sentence\ length} = 79.59$; $SD = 61.39$). Non-firesetters had on average 3.32 index offences ($M_{index} = 3.29$; $SD = 3.89$) and the majority of these were for offences against the person ($n = 48$), sexual offences ($n = 24$), theft and kindred offences ($n = 39$), and drug related offences ($n = 20$). Number of previous offences ranged from none to 155 ($M_{previous\ offences} = 22.59$; $SD = 29.30$) and of these, 4.42 were for violent offences ($M_{violent\ offences} = 4.42$; $SD = 4.92$)⁵.

Measures

Cluster derivation measures.

A total of ten measures pertaining to the known treatment needs of imprisoned firesetters (Duggan & Shine, 2001; Gannon et al., 2013; Hurley & Monaghan, 1969; Ó Ciardha et al., 2015b) were presented in a randomised order to participants (see Appendix One). Internal reliability is reported according to the following criteria (George & Mallery, 2003): $\geq .90$ excellent, $.89$ to ≥ 0.80 good, $.79$ to $\geq .70$ acceptable, and $.69$ to $.60$ questionable.

Self-Concept Measures. The *Culture Free Self-Esteem Inventory – General* (CFSEI; Battle, 1992), is a 20 item self-report measure examining (a) general, (b) social, and (c) personal adult self-esteem rated using a yes/no response format. The psychometric properties of

⁵ Independent samples t-tests were conducted to verify imprisoned firesetters and non-firesetting imprisoned offenders were adequately matched. Imprisoned firesetters and non-firesetting imprisoned offenders did not differ on age at time of interview, sentence length, number of index offences, or number of violent offences. However, imprisoned firesetters had a significantly higher number of previous offences compared to non-firesetting imprisoned offenders; $t(232) = 2.22$, $p = 0.03$.

this measure are well established (Battle, 1997) and ranged from questionable to good in the current study ($\alpha = .62$ to $\alpha = .86$).

The Nowicki-Strickland Locus of Control (LoC; Nowicki, 1976) is a 40-item self-report measure of an individual's perception of their internal versus external control over events rated using a yes/ no response format. Acceptable psychometric properties of the scale have been established (Nowicki & Duke, 1974). Our study also showed acceptable measure reliability ($\alpha = .73$).

Social Competence Measures. The *Revised UCLA Loneliness Scale* (ELQ; Russell, Peplau, & Cutrona, 1980) is a 20 item self-report measure of emotional loneliness rated on a 4-point scale (1 = never, 4 = often). Good psychometric properties have been established (Horowitz, Rosenberg, Baer, Ureno, & Villasenor, 1988) and good measure reliability was evidenced in the current study ($\alpha = .86$).

The Simple Rathus Assertiveness Schedule – Short Form (SRAS; Jenerette & Dixon, 2010) is a simplified 19-item self-report measure of assertiveness across a variety of social situations rated on a 6-point scale (1 = very much unlike me, 6 = very much like me). The authors of the measure report good measure reliability which was also evidenced in the current study ($\alpha = .80$).

Emotional Regulation Measures. The *Novaco Anger Scale and Provocation Inventory* (NAS-PI; Novaco, 2003) are two related self-report measures. The NAS (60 items) examines anger experiences across the four domains of cognition (NAS-COG), arousal (NAS-ARO), behaviour (NAS BEH), and regulation (NAS-REG) rated using three response options (never, sometimes, always true). The PI (25 items) measures an individual's ability to tolerate general provocation on a 4-point scale (1= not angry at all, 4= very angry). The

NAS-PI has well established psychometric properties (Culhane & Morera, 2010; Novaco, 2003). Good to excellent measure reliabilities were evident in the current study ($\alpha = .86$ to $\alpha = .96$).

Impulsivity *The Boredom Proneness Scale-Short Form* (BPS; Vodanovich, Wallace, & Kass, 2005) is a 12-item self-report measure of perceptions of limited internal or external stimulation rated on a 7-point scale (1 = strongly disagree, 7 = strongly agree). Adequate to good psychometric properties have been established in the literature (Hopley & Nicki, 2010). However, the current study showed questionable measure reliability ($\alpha = .62$).

Mental Health *The Millon Clinical Multi-Axial Inventory III* (MCMI-III; Millon et al., 1994; Millon, Davis, & Grossman, 2006) is a 175-item measure of 24 personality disorders and clinical syndromes for adults undergoing psychological or psychiatric assessment or treatment rated using a true/false response format. The psychometric properties of the MCMI-III are well established and it is considered a reliable and valid psychological test (Millon et al., 1994; Millon et al., 2006). The MCMI-III has been extensively validated with offending populations and research shows it holds strong internal consistency ($\alpha > .80$), moderate test-retest reliability (median .91 over a 4 to 14 day interval) and good predictive power (Groth-Marnat, 2003).

Fire-Related Measures. The *Five Factor Fire Scale* (Ó Ciardha et al., 2015b) combines items from three fire related measures: the *Fire Interest Rating Scale* (Murphy & Claire, 1996), the *Fire Attitude Scale* (Muckley, 1997), and the *Identification with Fire Questionnaire* (Gannon, Ó Ciardha, & Barnoux, 2011). The resulting five subscales were empirically determined via factor analysis (Ó Ciardha et al., 2015b) and examine: (i) identification with fire; (ii) serious fire interest; (iii) perceived fire safety awareness; (iv)

everyday fire interest; and (v) firesetting as normal. The present study showed acceptable to good measure reliability for all the subscales ($\alpha = 0.73$ to $\alpha = 0.88$).

Offense-Supportive Attitude Measures. *The Measure of Criminal Attitudes and Associates-Part B* (MCAA-Part B; Mills & Kroner, 1999) is a 46 item self-report measure of antisocial attitudes examining (i) violence; (ii) entitlement; (iii) antisocial intent; and (iv) criminal associates rated using an agree/disagree response format. The psychometric properties of the MCAA-Part B are well established (see Mills, Kroner, & Forth, 2002; Mills, Kroner, & Hemmati, 2004). Measure reliability ranged from acceptable to good in the current study ($\alpha = 0.75$ to $\alpha = 0.88$).

Other measures.

Impression Management The *Impression Management Scale* (IM) of the Paulhus Deception Scales (Paulhus, 1998) is a 20-item self-report measure of intentional fake good responses rated on a 5-point scale (1 = not true, 5 = very true). The IM has well established psychometric properties with offending populations (Paulhus, 1998). In the current study measure reliability was good ($\alpha = .81$).

Procedure

The study was reviewed and approved ethically by the University Research Ethics Committee (REF 20101507) and the National Offender Management Service (REF 74-10, see Appendix Five). Prisoners were assessed in individual or group sessions (lasting approximately 90 minutes) to maximise validity of self-report responding. At each assessment, prisoners provided written informed consent (see Appendix Two), and completed the background questionnaire (i.e., key demographic data and offence related information) and psychometric measures (see Appendix One). In the background questionnaire, imprisoned firesetters were also asked to describe the details of their last

firesetting incident and any previous firesetting convictions (i.e., target of firesetting, relationship to victim, and any other details including motive⁶; see Appendix One). Each of the psychometric measures were hand scored by a qualified psychologist and one third were double checked by an independent scorer to maximise accuracy.

Data Analysis

Hierarchical Cluster Analysis (HCA) using Ward's method in IBM SPSS Statistics 20 software programme was used to derive subgroups based on participants' scores on the cluster derivation measures. A two-stage sequence of analysis was adopted: First, a Hierarchical Cluster Analysis using Ward's method applying Squared Euclidean Distance was carried out to determine the optimum number of clusters to work with. Second, the hierarchical cluster analysis was rerun with the selected number of optimum clusters, enabling allocation of every case to a particular cluster.

Interpretation of the cluster analyses proceeded in three stages. First, cluster membership characteristics (e.g., cluster means, frequencies, and distribution of scores) were interpreted using normative data (i.e., for the CFSEI, LoC, ELQ, SRAS, NAS-PI, BPS, MCMI-III, and MCAA-Part B) and clinical cut off scores calculated by Ó Ciardha, Tyler, & Gannon (2015c) for the Fire Factors (i.e., scores representing the boundary between the non-problematic and clinically problematic range for fire-related deficits)⁷. Scores were assessed against the hypotheses to enable classification of each cluster as either generalist or specialist. Second, multivariate and univariate significance tests on important demographic, offence related characteristics, and the cluster derivation variables were conducted to determine whether the generalist and specialist clusters derived significantly

⁶ Motive for firesetting was only recorded if participants clearly articulated the reason for their firesetting (e.g., explicitly stated 'revenge').

⁷ Ó Ciardha et al. (2015c) calculated the fire-factor cut off scores using Jacobson and Truax's (1991) formula.

differed on these factors. Third, independent sample t-tests were conducted on the sample of imprisoned firesetters alone to compare the differences between generalist firesetters and specialist firesetters overall on key demographic and offence characteristics, and treatment needs. Finally, a logistic regression was conducted to assess which variables best predicted whether imprisoned firesetters were classified as generalists or specialists.

Results

Identifying Generalist and Specialist Subtypes

A Hierarchical Cluster Analysis of a sample of 246 male imprisoned offenders (128 firesetters and 118 non-firesetters) was conducted on measures pertaining to offense-supportive attitudes, emotional regulation, self-concept, social competence, impulsivity, mental health, and fire factors. Five clusters were identified as the optimum number to work with from inspection of the agglomeration schedule and dendrogram, as succeeding clustering added little to distinguishing between cases.

Inspection of cluster membership characteristics (e.g., means, standard deviations and distribution characteristics) enabled classification of the cluster solution into two specialist clusters (Cluster 1 and Cluster 2) and three generalist clusters (Cluster 3, Cluster 4, and Cluster 5).

Specialist clusters (Cluster 1, Cluster 2).

A one-way between groups multivariate analysis of variance revealed a statistically significant difference between the specialist clusters on all the combined measures, $F(25, 14) = 6.78, p < .001$; Pillai's Trace = .92; $\eta_p^2 = .92$. However, subsequent Mann Whitney U Tests revealed non-significant differences between them on age, number of index offences, number of previous offences, number of violent offences, levels of entitlement, criminal associates, assertiveness, serious fire interest, fire safety awareness, everyday fire interest,

and fire normalisation ($p_s = ns$). Table 5.1 outlines the descriptive statistics and U values of the two specialist clusters.

Table 5.1
Characteristics of Specialist Clusters

	Cluster 1 (<i>n</i> = 22)	Cluster 2 (<i>n</i> = 18)		
<i>n</i>				
Firesetters	15	16		
Non-Firesetters	7	2		
	<i>M (SD)</i>	<i>M (SD)</i>	<i>U</i>	<i>Cut-Off Scores</i>
Age at last firesetting	21.62 (4.72)	32.00 (12.79)	147.00*	
Index offences	3.45 (5.39)	1.67 (.84)	155.00	-
Previous offences	21.14 (20.72)	45.63 (53.20)	231.00	-
Violent offences	4.81 (5.41)	5.47 (4.03)	190.50	-
PDS IM	49.82 (8.43)	46.16 (6.50)	146.50	>70.00
Offence Supportive Attitudes				
Violence	4.82 (3.62)	9.28 (2.89)	327.50*	>2.10
Anti-Social Behaviour	7.00 (2.99)	10.17 (1.82)	322.50*	>2.40
Entitlement	6.14 (3.06)	7.72 (2.22)	267.50	>4.30
Criminal Associates	7.5 (1.95)	8.17 (2.48)	253.00	>5.20
Self-Concept				
General Self-Esteem	9.75 (3.40)	11.20 (3.92)	62.00*	<11.78
Social Self-Esteem	5.92 (1.49)	3.52 (1.97)	72.50*	<6.62
Personal Self-Esteem	4.59 (2.70)	1.42 (1.54)	65.50*	<4.68
Locus of Control	25.43 (5.06)	18.92 (4.77)	66.50*	>10.96
Social Competence				
Emotional Loneliness	39.04 (6.66)	60.70 (9.11)	392.00*	>37.09
Assertiveness	69.16 (9.41)	66.28 (21.20)	208.50	<77.29
Emotional Regulation				
Anger (Cognition)	56.86 (10.76)	73.79 (6.93)	358.00*	>56.00
Anger (Arousal)	53.45 (13.79)	73.67 (8.83)	356.00*	>56.00
Anger (Behavioural)	59.86 (11.57)	70.22 (8.57)	297.50*	>56.00
Anger (Regulation)	50.64 (11.79)	35.83 (15.01)	85.50*	<56.00
Provocation	51.00 (11.94)	63.00 (8.87)	311.00*	>56.00
Impulsivity	44.53 (5.36)	56.94 (9.27)	344.50*	>39.89
Mental Health				
Personality Disorders	.64 (.90)	4.28 (2.19)	380.00*	-
Clinical Syndromes	1.27 (1.16)	3.94 (1.73)	352.00*	-
Fire Factors				
Identification with Fire	27.14 (6.93)	20.39 (8.20)	108.00*	>16.25
Serious Fire Interest	13.44 (5.13)	14.19 (6.07)	211.50	>10.88
Fire Safety Awareness	11.99 (4.29)	10.72 (2.59)	174.00	>10.13
Everyday Fire Interest	18.21 (2.19)	18.25 (1.81)	200.00	>17.21
Normalisation of Fire	23.68 (3.18)	22.72 (4.90)	165.50	>20.00

Note: cut off refers to the scores used to determine offenders scoring above or below the normative/clinically problematic threshold. **p* < .05.

Cluster 1 is composed of 22 offenders ($M_{age} = 32.48$; $SD = 9.35$), in which firesetters are in the clear majority (i.e., 15 firesetters and 7 non-firesetters). One time and repeat firesetters in this group are equally prevalent (i.e., 53.33% and 40.00% respectively) and are characterised by problems in areas relating to offence supportive attitudes, self-concept (e.g., poor self-esteem), social competence (e.g., poor assertiveness, associated loneliness), emotional regulation (e.g., cognition and behavioural anger), impulsive tendencies (e.g., boredom proneness), and mental health problems (i.e., predominantly Anxiety Disorder and Alcohol and Drug Dependency Disorders). Both imprisoned firesetters and non-firesetting imprisoned offenders in this cluster presented with problems in areas relating to identification with fire, fire interest, normalisation of the unconventional uses of fire, and poor fire safety awareness. However, closer examination of imprisoned firesetters' and non-firesetting imprisoned offenders' mean scores against the cut-off scores revealed the firesetters in this group showed poor levels of personal self-esteem ($M_{CFSEI\ Personal} = 4.20$; $SD = 2.78$) whereas their non-firesetting counterparts did not ($M_{CFSEI\ Personal} = 5.43$; $SD = 2.51$). Individuals in this cluster identified with fire significantly more than those in Cluster 2.

Cluster 2 is composed of 18 offenders ($M_{age} = 36.61$; $SD = 11.40$) and is almost exclusively composed of firesetters (i.e., 16 firesetters, 2 non-firesetters). One time and repeat firesetters in this group are prevalent (i.e., 56.25% and 37.50% respectively) and individuals in this group showed the most notable deficits in areas relating to offence supportive attitudes, self-concept, social competence, emotional regulation, and impulsive tendencies. Mental health problems were prevalent (i.e., predominantly Depressive and Borderline Personality Disorder, Anxiety and Thought Disorders). Individuals in this cluster also presented notable problems in relation to identification with fire and fire interest (e.g., serious and every day), normalisation of the unconventional uses of fire, and

poor fire safety awareness. However, the non-firesetters in this group showed no evidence of fire-related deficits. Compared with Cluster 1, individuals in this cluster showed significantly higher attitudes supportive of violence and anti-social behaviour, significantly lower social and personal self-esteem, significantly higher anger, trait aggression, provocation and lower anger regulation, were significantly less assertive and more emotionally isolated, significantly more prone to boredom, and significantly more likely to be mentally unwell.

Generalist clusters (Clusters 3, 4, 5).

A one-way between groups multivariate analysis of variance revealed a statistically significant difference between the three generalist clusters on all the combined measures, $F(50, 360) = 14.50, p < .001$; Pillai's Trace = 1.34; $\eta_p^2 = .69$. However subsequent univariate analyses revealed non-significant effects on the number of index offences, number of violent offences, identification with fire, serious fire interest, and fire safety awareness (all $ps = ns$). Table 5.2 presents descriptive statistics and F values of the three generalist clusters. Post Hoc comparisons were conducted using the Games-Howell test to control for Type I error.

Table 5.2
Characteristics of Generalist Clusters

		Cluster 3 (<i>n</i> = 91)	Cluster 4 (<i>n</i> = 35)	Cluster 5 (<i>n</i> = 80)		
<i>n</i>						
		<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>F</i>	<i>Cut-Off Scores</i>
	Firesetters	49	20	28		
	Non-Firesetters	42	15	52		
	Age at last firesetting	24.30 (9.59)	32.65 (14.65)	24.56 (12.58)	3.94	
	Index offences	2.90 (2.61)	3.76 (5.62)	3.08 (2.86)	.38	-
	Previous offences	35.70 (33.29)	18.91 _a (32.26)	19.41 _a (27.79)	6.70*	-
	Violent offences	4.24 (5.15)	5.31 (6.89)	4.10 (3.83)	.65	-
	PDS IM	46.77 (7.51)	58.03 _a (10.15)	57.33 _a (12.40)	32.29*	>70.00
	Offence Supportive Attitudes					
	Violence	8.59 (2.70)	2.29 _a (2.64)	1.98 _a (2.04)	176.06*	>2.10
	Anti-Social Behaviour	9.36 (2.39)	2.51 _a (2.05)	3.36 _a (2.54)	174.69*	>2.40
	Entitlement	8.11 (2.33)	5.49 (2.32)	4.18 (2.22)	64.88*	>4.30
	Criminal Associates	8.62 (1.44)	5.03 _a (3.01)	5.96 _a (2.66)	47.77*	>5.20
	Self-Concept					
	General Self-Esteem	11.95 (3.32)	8.28 (3.56)	13.46 (4.80)	33.10*	<11.78
	Social Self-Esteem	6.19 (1.67)	4.88 (1.99)	6.79 (1.22)	14.82*	<6.62
	Personal Self-Esteem	5.23 (2.38)	3.31 (2.60)	6.31 (1.77)	21.04*	<4.68
	Locus of Control	24.65 _a (4.31)	23.27 _a (4.39)	29.50 (3.57)	42.35*	>10.96
	Social Competence					
	Emotional Loneliness	38.47 (8.24)	49.62 (9.76)	33.35 (7.81)	46.15*	>37.09
	Assertiveness	81.70 _a (12.83)	61.01 (12.59)	79.78 _a (13.60)	33.64*	<77.29
	Emotional Regulation					
	Anger (Cognition)	63.64 (8.68)	52.66 (11.08)	44.36 (11.74)	74.97*	>56.00
	Anger (Arousal)	56.21 (11.87)	48.71 (12.79)	37.80 (10.51)	54.45*	>56.00
	Anger (Behavioural)	63.30 (8.49)	49.49 _a (10.74)	44.83 _a (9.46)	88.85*	>56.00
	Anger (Regulation)	43.35 (11.44)	54.29 (10.52)	59.79 (11.18)	47.16*	<56.00
	Provocation	58.29 (9.45)	49.23 (11.72)	39.74 (9.32)	76.04*	>56.00
	Impulsivity	44.86 _a (6.89)	44.59 _a (8.09)	37.85 (7.67)	21.43*	>39.89
	Mental Health					
	Personality Disorders	.97 _a (.89)	1.40 _a (1.59)	.20 (.40)	34.72*	-
	Clinical Syndromes	.96 _a (.99)	1.34 _a (1.64)	.24 (.46)	25.01*	-
	Fire Factors					
	Identification with Fire	14.43 (3.99)	14.11 (3.36)	14.18 (4.25)	.12	>16.25
	Serious Fire Interest	10.41 (4.59)	10.24 (4.32)	10.64 (4.86)	.10	>10.88
	Fire Safety Awareness	9.87 (3.49)	10.06 (2.27)	9.44 (2.69)	.90	>10.13
	Everyday Fire Interest	17.41 (1.73)	15.33 _a (4.91)	16.79 _a (2.02)	4.66*	>17.21
	Normalisation of Fire	21.87 (4.27)	19.83 (3.53)	15.71 (4.51)	41.93*	>20.00

Note. Groups with a common subscript (e.g., a) do not differ significantly from one another on post hoc comparisons using the Games-Howell test. Cut off refers to the scores used to determine offenders scoring above or below the normative/clinically problematic threshold. **p* < .05.

Cluster 3 is composed of 91 offenders ($M_{age} = 29.62$; $SD = 9.21$), in which imprisoned firesetters and non-firesetting imprisoned offenders are almost equally prevalent (i.e., 49 firesetters, 42 non-firesetters). The majority of imprisoned firesetters are predominantly one-time firesetters (i.e., 67.35%) despite significantly higher numbers of previous offences compared to the other two clusters. Individuals in this group are characterised by good levels of self-concept, assertive traits, and did not present any problems in areas relating to identification with, and interest in fire. They did, however, show an everyday interest in fire and normalise the unconventional uses of fire significantly more than the other two clusters. These offenders appear quite anti-social, appear socially incompetent, poorly regulate their anger, display impulsive tendencies, and mental health problems (e.g., predominantly Anti-Social Personality Disorder, Anxiety, Alcohol and Drug Dependency Disorders). Closer examination of imprisoned firesetters' and non-firesetting imprisoned offenders' mean scores against the cut-off scores revealed neither showed any evidence of fire interest or identification with fire. However, both the imprisoned firesetters and non-firesetting imprisoned offenders showed slightly elevated levels of fire normalisation ($M_{fire\ normalisation} = 22.14$; $SD = 4.42$; $M_{fire\ normalisation} = 21.55$; $SD = 4.12$). Imprisoned firesetters in this cluster also exhibited poor levels of social self-esteem ($M_{CFSEI\ Social} = 5.97$; $SD = 1.87$) and fire safety awareness ($M_{fire\ safety} = 10.44$; $SD = 3.83$) whereas their non-firesetting counterparts did not ($M_{CFSEI\ Social} = 6.45$; $SD = 1.37$; $M_{fire\ safety} = 9.19$; $SD = 2.96$). Compared to the other two clusters, individuals in Cluster 3 showed significantly higher offence supportive attitudes, and significantly higher anger, trait aggression, and poorer anger regulation.

Cluster 4 is composed of 35 offenders ($M_{age} = 38.71$; $SD = 13.95$), in which imprisoned firesetters and non-firesetting imprisoned offenders are almost equally prevalent (i.e., 20 firesetters and 15 non-firesetters). The majority are predominantly one

time firesetters (70%) and are characterised by a marked absence of problems relating to emotional regulation and fire related pathology. However, they exhibit offence supportive attitudes (e.g., violence, anti-social intent, entitlement), poor levels of self-concept and social competence, impulsive tendencies, and mental health problems (i.e., predominantly Depressive and Anxiety Disorders). None of the non-firesetting imprisoned offenders in this cluster showed any evidence of fire-related deficits. However, the firesetters in this group revealed poor levels of fire safety awareness ($M_{Fire\ Safety} = 10.70$; $SD = 2.00$).

Individuals in Cluster 4 showed significantly higher levels of self-concept and social competency compared to the other two clusters.

Cluster 5 is composed of 80 offenders ($M_{age} = 37.91$; $SD = 13.26$), in which non-firesetters are in a clear majority (i.e., 28 firesetters and 52 non-firesetters). The majority are predominantly one-time firesetters (i.e., 75%) and are characterised by a discernible lack of problems in areas relating to self-concept and social competence, emotional regulation, impulsive tendencies, and mental health problems (i.e., predominantly ASPD, Anxiety Disorders and Drug Dependency Disorder). They did however show offence supportive attitudes in terms of anti-social intent and attitudes supportive of criminal associates. Individuals in this cluster did not present any evidence of fire-related deficits. However, closer examination of imprisoned firesetters' and non-firesetting imprisoned offenders' mean scores against the cut-off scores within this cluster revealed imprisoned firesetters showed poor levels of assertiveness ($M_{SRAS} = 77.29$; $SD = 14.92$) and serious fire interest ($M_{Serious\ Fire\ Interest} = 11.91$; $SD = 5.20$), whereas their non-firesetting counterparts did not ($M_{SRAS} = 81.13$; $SD = 12.78$; $M_{Serious\ Fire\ Interest} = 9.96$; $SD = 4.57$). None of the non-firesetters in this cluster showed evidence of any fire-related deficits. Individuals in Cluster 5 showed significantly higher self-esteem and lower associated loneliness, significantly lower anger, trait aggression and provocation, higher anger regulation, significantly fewer

impulsive tendencies, and significantly fewer mental health problems compared to the other two clusters.

Differences between generalist and specialist firesetters.

To examine the differences between generalist and specialist firesetters, specialist firesetters were collapsed together from clusters 1 and 2, generalist firesetters were collapsed together from clusters 3, 4, and 5, and the non-firesetters were excluded from the analyses. Independent samples t-tests and chi square tests for independence were conducted on the firesetting sub-sample to compare the differences between the specialist firesetters ($n = 31$) and the generalist firesetters ($n = 97$) on the cluster derivation variables⁸. As outlined in Table 5.3, generalist firesetters were characterised by offence supportive attitudes, poor self-concept (i.e., general and social self-esteem), impoverished social skills (i.e., low assertiveness and associated loneliness), poor anger regulation and ruminative tendencies, and boredom proneness. They were also found to have poor fire safety knowledge and normalised the criminal uses of fire. Specialist firesetters were characterised by notable problems in terms of offence supportive attitudes, poor self-esteem and associated loneliness, poor assertiveness, high levels of anger and trait aggression, low tolerance towards frustration and provocation, impulsive tendencies, and notable mental health problems. Specialist firesetters were characterised by marked fire-related deficits in terms of fire interest and identification, knowledge of fire safety, and normalisation of the criminal uses of fire.

Compared to the generalist firesetters, specialist firesetters showed significantly higher levels of offence supportive attitudes (e.g., violence and anti-social behaviour),

⁸ Due to unequal group sizes, non-parametric tests were conducted to verify the findings. Mann Whitney U analyses yielded the same results.

associated loneliness, impulsive tendencies, identification with fire, serious fire interest, every day fire interest, fire normalisation, and increased prevalence of mental health problems. Specialist firesetters also showed significantly lower self-esteem, less perceived control over external events, and lower tolerance towards frustration and provocation. However, generalist and specialist firesetters did not differ on age, age at last firesetting, number of index offences, number of previous offences, number of violent offences, attitudes supportive of entitlement and associations with criminal peers, or their knowledge of fire safety. Finally, a chi square test for independence revealed generalist and specialist firesetters were no more likely to be one-time or multiple firesetters ($\chi^2 (1, n = 128) = 2.76, p = 0.10$).

Table 5.3
Characteristics of Generalist and Specialist Firesetters

	Generalists (<i>n</i> = 97)	Specialists (<i>n</i> = 31)		95% CI		Cut off Scores
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>t</i>	Lower	Upper	
Age	33.04 (12.00)	33.60 (10.83)	-.23	-5.41	4.29	-
Age at last firesetting	26.15 (12.05)	27.18 (11.07)	-.40	-6.07	4.02	-
Index offences	2.82 (4.49)	2.77 (4.60)	.07	-1.26	1.35	-
Previous offences	31.53 (34.16)	33.61 (43.00)	-.26	-17.65	13.50	-
Violent offences	4.18 (4.92)	5.56 (5.29)	-1.23	-3.58	.83	-
PDS IM	51.54 (9.80)	47.55 (7.33)	2.08*	.20	7.78	>70.00
Offence Supportive Attitudes						
Violence	5.42 (4.08)	7.29 (3.83)	-2.25*	-3.51	-.22	>2.10
Anti-Social Behaviour	6.22 (3.90)	8.39 (3.09)	-3.18***	-3.53	-.81	>2.40
Entitlement	6.57 (2.83)	6.81 (2.79)	-.41	-1.39	.91	>4.30
Criminal Associates	7.14 (2.70)	7.97 (2.26)	-1.53	-1.89	.24	>5.20
Self-Concept						
General Self-Esteem	11.40 (3.54)	6.77 (4.16)	6.08***	3.12	6.14	<11.78
Social Self-Esteem	6.01 (1.65)	4.51 (2.07)	4.13***	.78	2.22	<6.62
Personal Self-Esteem	4.98 (2.57)	2.63 (2.62)	4.41***	1.29	3.40	<4.68
Locus of Control	25.25 (4.67)	21.26 (5.34)	4.00***	2.02	5.97	>10.96
Social Competence						
Emotional Loneliness	39.56 (9.29)	50.29 (13.79)	-4.05***	-16.09	-5.37	>37.09
Assertiveness	76.65 (15.01)	66.84 (17.05)	3.07*	3.48	16.15	<77.29
Emotional Regulation						
Anger (Cognition)	57.02 (12.26)	67.58 (10.89)	-4.28***	-15.44	-5.68	>56.00
Anger (Arousal)	50.40 (12.55)	66.03 (12.14)	-6.09***	-20.71	-10.55	>56.00
Anger (Behavioural)	55.68 (11.69)	66.87 (10.24)	-4.78***	-15.83	-6.55	>56.00
Anger (Regulation)	49.84 (13.62)	43.10 (15.40)	2.32*	1.00	12.48	<56.00
Provocation	51.23 (12.77)	58.71 (11.63)	-2.90*	-12.59	-2.38	>56.00
Impulsivity	43.10 (8.18)	51.61 (9.40)	-4.86***	-11.97	-5.04	>39.89
Mental Health						
Personality Disorders	.84 (1.09)	2.39 (2.25)	-3.71***	-2.40	-.70	-
Clinical Syndromes	.88 (1.14)	2.77 (1.96)	-5.12***	-2.65	-1.15	-
Fire Factors						
Identification with Fire	14.38 (4.00)	24.06 (8.47)	-6.15***	-12.88	-6.49	>16.25
Serious Fire Interest	10.73 (4.67)	14.00 (5.34)	-3.27***	-5.25	-1.29	>10.88
Fire Safety Awareness	10.37 (3.23)	11.32 (3.23)	-1.42	-2.26	.37	>10.13
Everyday Fire Interest	16.96 (3.14)	18.27 (1.96)	-2.19*	-2.50	-.13	>17.21
Normalisation of Fire	20.34 (4.83)	23.45 (4.17)	-3.22*	-5.02	-1.20	>20.00

Note: cut off refers to the scores used to determine offenders scoring above or below the normative/clinically problematic threshold. **p* < .05. ***Bonferroni Correction controlling for Type I error: *p* < .002

A logistic regression was performed to assess which variables best predicted the classification of firesetters as generalists or specialists (see Table 5.4). In order to control for Type I error, only the variables reaching statistical significance after applying a Bonferroni correction from the independent samples t-tests were entered into the model (i.e., $p < .002$; see Table 5.3). Further, to reduce the number of predictor variables, only the overall scores from the Culture-Free Self-Esteem Inventory (i.e., general self-esteem) and Novaco Anger Scale (i.e., total anger) were entered into the model. Similarly, mental health problems were dichotomised as present or absent.

The full model containing all predictors was statistically significant, $\chi^2 (9, N = 128) = 94.46, p < 0.001$, indicating that the model was able to distinguish between generalist firesetters and specialist firesetters. The model as a whole explained between 52.2% (Cox and Snell R square) and 78% (Nagelkerke R squared) of the variance and correctly classified 92.2% of cases. Two of the independent variables made a unique statistically significant contribution to the model. Compared to the generalist firesetters, specialist firesetters were 1.50 times more likely to identify with fire and 1.20 times more likely to show an interest in serious fires (see Table 5.4).

Table 5.4

Logistic Regression Predicting Likelihood of Being a Generalist or Specialist Firesetter

	<i>B</i>	S.E.	Wald	<i>df</i>	<i>p</i>	Odds Ratio	95% C.I.	
							Lower	Upper
Offence Supportive Attitudes								
Anti-Social Behaviour	.13	.15	.76	1	.384	1.14	.85	1.53
Self-Concept								
General Self-Esteem	-.16	.13	1.55	1	.213	0.85	.66	1.10
Locus of Control	-.09	.11	.58	1	.445	0.92	.74	1.15
Social Competence								
Emotional Loneliness	.06	.05	1.68	1	.195	1.06	.97	1.17
Emotional Regulation								
Total Anger	.72	.05	2.46	1	.117	1.08	.98	1.18
Impulsivity (Boredom Proneness)								
Mental Health Present/Absent	1.35	1.14	1.40	1	.237	3.85	.41	36.02
Fire Factors								
Identification with Fire	.40	.11	13.22	1	.000*	1.50	1.20	1.86
Serious Fire Interest	.18	.09	4.05	1	.044*	1.20	1.01	1.43

**p* < .05.

Discussion

Study 1 represents an empirical evaluation of whether the generalist/specialist debate holds true for different types of imprisoned firesetters. Hierarchical Cluster Analyses on a sample of 246 imprisoned firesetters and non-firesetting imprisoned offenders yielded five distinct clusters, each depicting a unique combination of characteristics and treatment needs with three generalist subtypes and two specialist subtypes emerging. Generalist firesetters were found to differ significantly from specialist firesetters in areas pertaining to offence supportive attitudes, self-concept, social competence, emotional regulation, impulsivity, mental health problems, and fire-related deficits. Identification with fire and serious fire interest significantly predicted whether imprisoned firesetters were classified as generalists or specialists.

Support for the specialist hypothesis was evidenced by the existence of two distinct clusters whose membership and psychological characteristics were specific to firesetters. In both specialist clusters, non-firesetting imprisoned offenders were either in a minority (Cluster 1) or virtually absent (Cluster 2) suggesting the combination of characteristics and treatment needs were unique to imprisoned firesetters. Furthermore, the higher proportions of repeat firesetters and prevalence of notable fire-related deficits suggest that these particular offenders hold a unique perception of, and relationship with fire requiring specialist assessment and treatment in order to target what is likely to be a lifelong fascination and relationship with fire in the context of their offending (Gannon et al., 2013, 2015). Whilst neither of the non-firesetting imprisoned offenders in Cluster 2 showed any discernible fire-related deficits, the non-firesetting imprisoned offenders in Cluster 1 exhibited levels of identification with fire, fire interest, fire normalisation, and poor fire safety awareness. Despite a lack of recorded firesetting convictions, it may be these

individuals have used fire in the context of their general offending but their firesetting may have been subsumed under a conviction for criminal damage (Criminal Damage Act, 1971), a more serious primary offence (e.g., manslaughter), or their fires may simply have gone undetected. Alternatively, as impression management scores were not problematic for any of the individuals in Cluster 1, it may be these non-firesetting imprisoned offenders do hold fire-related deficits despite never having set a fire. For these individuals, fire-related deficits may have stemmed from their background experiences (e.g., engaging in fire-play as a child, family history of firesetting, socialisation in an environment where criminal firesetting was pervasive; Frisell et al., 2011; Hurley & Monaghan, 1969; Ritchie & Huff, 1999) but fire was never used in the context of their offending. These non-firesetting imprisoned offenders may well be considered potential specialists at risk of future firesetting, and like their firesetting counterparts, may benefit from specialist treatment targeting their perception of, and relationship with fire. These findings suggest practicing professionals may wish to consider exploring fire-related deficits in the assessment of offenders more generally in order to detect and treat individuals at potential risk of future firesetting.

Support for the generalist hypothesis was evidenced by the existence of three distinct subtypes of imprisoned firesetters where the firesetters were either in equal proportion to non-firesetting imprisoned offenders (Clusters 3 and 4) or were in a minority (Cluster 5) suggesting the unique combination of characteristics and treatment needs presented in each subtype were just as prevalent in imprisoned firesetters and non-firesetting imprisoned offenders. Furthermore, the imprisoned firesetters in the generalist clusters were predominantly one-time firesetters and showed no discernible identification with or interest in fire, nor did they differ from each other on levels of identification with

fire, serious fire interest, and fire safety awareness. In line with the literature, these particular offenders may regard criminal activity as a 'lifestyle', whereby firesetting is part of a wide array of offending behaviours (Hill et al., 1982; Sapsford, et al., 1978; Soothill, et al., 2004). However, both imprisoned firesetters and non-firesetting imprisoned offenders in Cluster 3 showed greater levels of fire normalisation, perhaps indicating fire normalisation is not necessarily specific to firesetters. In fact, the use of fire, like other tools (e.g., knives, guns etc.), may simply have been normalised as a result of socialisation in a pro-criminal, anti-social environment whereby the inappropriate use of fire is pervasive (Harris & Rice, 1996; Ritchie & Huff, 1999). Further, the imprisoned firesetters in Cluster 3 and Cluster 4 exhibited poor levels of fire safety awareness, and imprisoned firesetters in Cluster 5 showed a serious interest in fire (i.e., where their non-firesetting counter parts did not) suggesting that whilst the characteristics of each group are equally prevalent in imprisoned firesetters and non-firesetting imprisoned offenders, fire-related deficits are likely to be specific to imprisoned firesetters only. Consequently, whilst the shared prevalence of psychological characteristics between imprisoned firesetters and non-firesetting imprisoned offenders would suggest more general treatment programmes are likely to diminish firesetting by association, individual case formulation is likely to be needed in terms of improving fire knowledge and education for subtypes resembling Cluster 3 and Cluster 4 and exploring imprisoned firesetters' perceptions of, and relationship with fire in the context of their offending for subtypes resembling Cluster 5.

Overall, comparison of the generalist and specialist firesetters showed specialist firesetters to hold significantly greater deficits compared to the generalist firesetters in all areas associated with imprisoned firesetters from the literature (Duggan & Shine, 2001; Gannon et al., 2013; Hurley & Monahan, 1969; Ó Ciardha et al., 2015a). However, the

generalist firesetters did nevertheless present psychological deficits known to be associated with imprisoned firesetters from the literature (e.g., poor social skills and associated loneliness, poor anger regulation, inward directed hostility, impulsivity, poor fire safety knowledge, and normalisation of fire; Duggan & Shine, 2001; Gannon et al., 2013), but to a lesser extent than the specialist firesetters, confirming the need for a more gradient approach towards the generalist/specialist debate. Further, in line with the hypothesised approach to the generalist/specialist debate, identification with fire and serious fire interest were the two strongest predictors of whether imprisoned firesetters were classified as generalists or specialists, suggesting that it is in fact imprisoned firesetters' perception of and relationship with fire which differentiates the two. Thus, imprisoned firesetters should be considered a unique offender category due to the presence of fire-related deficits, with some offenders requiring highly specialised assessment and treatment (i.e., specialists) and more generic treatment approaches likely to suffice for others (i.e., generalists). However, it may be worth noting generalist firesetters were in a significant majority in the current sample (i.e., 75%, $n = 97$) and consequently it may be most imprisoned firesetters are in fact generalist offenders. Thus, for the vast majority of imprisoned firesetters, firesetting is likely to be diminished by targeting their wider criminogenic needs (e.g., offence supportive attitudes, cognitive and social skills) via generic treatment approaches, although some level of individualised fire-related work is likely to be required (i.e., fire safety awareness, fire normalisation, fire interest).

Finally, a number of limitations merit consideration. First, despite a large overall sample size ($n = 246$), firesetters were slightly over-represented (i.e., 128 firesetters, 118 non-firesetters) and may have marginally biased the findings. However, the difference was

relatively small and groups did not differ significantly on core demographic variables indicating they were adequately matched. Multivariate and univariate analyses may have also been impacted by the unequal cluster sizes and number of tests conducted, however the MANOVAs were highly significant with large effect sizes and more conservative post-hoc comparisons were conducted to control for Type 1 errors (i.e., Games-Howell test). Additionally, non-parametric analyses (i.e., Kruskal-Wallis, Mann Whitney U) were conducted separately where possible and confirmed the findings. Caution should also be taken in drawing definitive clinical conclusions since the measures used were all self-report and transparent in nature. In particular, the Boredom Proneness Scale had questionable reliability and may not be the most appropriate measure of impulsivity. However, the link between boredom proneness and impulsivity is well established in the literature (Watt & Vodanovich, 1992); nevertheless it may be judicious to use more established measures in future research (e.g., Barratt Impulsiveness Scale; Barratt, Patton, & Stanford, 1975). Further, the finding that some non-firesetting imprisoned offenders showed notable fire-related pathologies may indicate the constructs measured are not specific to firesetters (e.g., fire normalisation) and there could be other undetected fire-related deficits (e.g., implicit theories; Ó Ciardha & Gannon, 2012). Finally, whilst the findings from Study 1 make a novel and significant contribution to the firesetting literature by providing a more fine-tuned approach to the generalist/specialist debate, caution should be exercised regarding the characteristics of the clusters derived. Indeed, as cluster analysis maximises the similarity of cases within each cluster and maximizes the dissimilarity between groups, the clusters generated were yielded based on the shared variance between non-firesetting imprisoned offenders and imprisoned firesetters. Consequently, the clusters generated are unlikely to be an accurate reflection of different types of imprisoned firesetter.

In order to evaluate the existence of different types of imprisoned firesetter, follow up cluster analyses on the sample of imprisoned firesetters from this study are required. As outlined in Chapter Three, the development of the M-TTAF (Gannon et al., 2012) represents the only comprehensive etiological explanation of deliberate firesetting to date able to account for firesetting in imprisoned offenders and allowing for different types of firesetter by incorporating a second Tier. Evaluating the empirical adequacy and scope of the five prototypical trajectories is key for appraising the relative strengths and weaknesses of Tier 2 of the M-TTAF in relation to previous classifications and for informing clinicians if they should be consulted in the treatment of imprisoned firesetters (e.g., by tailoring treatment to different types of firesetter). Thus, using Tier 2 of the M-TTAF as a theoretical framework, the following chapter will focus on empirically deriving subtypes of imprisoned firesetter from the sample of imprisoned firesetters used in Study 1.

Chapter Six

Study 2: An Empirical Evaluation of Tier 2 of the Multi-Trajectory Theory of Adult Firesetting⁹

Introduction

As discussed in Chapter Three, existing multi-factor theories of deliberate firesetting remain limited in their empirical adequacy with imprisoned firesetters thus limiting their ability to inform evidence based practice. The development of the M-TTAF (Gannon et al., 2012) represents the only comprehensive etiological explanation of deliberate firesetting to date able to account for firesetting in imprisoned offenders and allowing for different types of firesetter by incorporating a second Tier. In the M-TTAF, individuals are conceptualised as belonging to one of five trajectories leading to firesetting: *Anti-Social Cognition, Grievance, Fire-Interest, Emotionally Expressive/Need for Recognition, and Multi-Faceted* (Gannon et al., 2012). Table 6.1 outlines the primary potential characteristics and psychological features associated with each trajectory.

⁹ The contents of this chapter have been submitted for publication in Barnoux, M., Gannon, T.A., & O Ciardha, C. (2015). An empirical evaluation of potential subtypes of adult male imprisoned firesetters. *Journal of Abnormal Psychology*

Table 6.1***Characteristics and Psychological Features of the M-TTAF Trajectories (adapted from Gannon et al., 2012)***

	Anti-Social Cognition	Grievance	Fire Interest	Emotionally Expressive*/ Need for Recognition	Multi-Faceted
Developmental Experiences	Criminal activities; anti-social socialisation.	Witness or victim of aggression; passive aggressive tendencies.	Lack of offending history; intense fascination with fire.	Lack of offending history; poor coping and communication.	Pervasive criminal lifestyle; adverse developmental context; natural curiosity in fire.
Motives	Instrumental in nature.	Revenge, anger, rumination.	Fire interest, thrill, excitement.	Cry for help/attention, self-harm/suicide.	Various.
Offence Supportive Attitudes	Anti-social cognition, scripts, values; criminal peers.	Anti-social attitudes.	Low prevalence.	Low prevalence.	Anti-social cognition, scripts, and values; criminal peers.
Emotional Regulation/ Impulsivity	Poor self-regulation, aggression, impulsivity, thrill seeking.	Poor self-regulation, hostility, rumination, displaced aggression.	Poor self-regulation, boredom prone	Poor self-regulation*, boredom prone*.	Poor self-regulation, anger and aggression, rumination; boredom prone; thrill seeking.
Social Competence	Assertive.	Communication problems, poor problem solving, poor assertiveness.	None specified.	Communication problems, low assertiveness, emotionally isolated.	Poor communication and emotional control, assertive.
Self-Concept Mental Health	None specified. Anti-social personality disorder.	Increased self-esteem. None specified	None specified. Pyromania.	Low self-esteem*. Depression, Personality disorder.	External Locus of control. Anti-social personality disorder.
Fire Interest	Absent.	Fire aggressive scripts, poor fire safety awareness	Fire interest, fire coping scripts.	Fire-coping scripts.	Fire fascination/interest.
Treatment Focus	Anti-social attitudes and criminal behaviour	Anger, rumination, communication problems.	Relationship and identity with fire; triggers to firesetting	Emotional expression; relationship with fire, personality issues.	General criminality and fire interest.

*Emotionally Expressive only

Whilst the M-TTAF provides a comprehensive framework likely to generate significant future research activity, as a whole, it is yet to be empirically evaluated. As outlined in Chapter Three, evaluating the empirical adequacy and scope of the five prototypical trajectories is key for appraising the relative strengths and weaknesses of Tier 2 of the M-TTAF in relation to previous classifications and for informing clinicians if they should be consulted in the treatment of imprisoned firesetters (e.g., by tailoring treatment to different types of firesetter). Thus, in this study, using follow up cluster analyses with the sample of imprisoned firesetters from Study 1 ($n = 128$) I attempted to evaluate: (i) whether there is empirical evidence for all five trajectories of the M-TTAF; (ii) whether the potential characteristics and treatments needs outlined for each trajectory can be supported; and (iii) how treatment may be approached for the subtypes generated based on the findings from Study 1.

Method

Participants

The same sample of firesetters from Study 1 ($n = 128$) was used. Thus, imprisoned firesetters' demographic and offence characteristics are outlined in Chapter Five. Participants were on average 26.48 years old at the last incident of firesetting ($M_{age} = 26.48$; $SD = 11.69$). Eighty-seven participants were one time firesetters (65.9%) and thirty six participants had set multiple fires (27.3%); data were missing for nine participants for number of firesetting incidents. Details of the last firesetting incident and motive were not available for all participants. However of those reported ($n = 125$), participants set fires to occupied properties ($n = 46$), unoccupied properties ($n = 48$), prison cells ($n = 22$), and themselves or another person ($n = 9$). Reported motives ($n = 94$) for setting the fire included:

revenge/anger ($n = 28$), protest ($n = 7$), power ($n = 6$), escape ($n = 10$), thrill/boredom ($n = 12$), crime concealment ($n = 11$), communication/problem solving ($n = 7$), suicide/self-harm ($n = 3$), protection ($n = 3$), economic gain ($n = 2$), drug induced ($n = 3$), and murder ($n = 2$).

Measures and Procedure

The measures and procedures employed were identical to those described in Study 1 (see Chapter Five). The measures selected were intended to map onto the characteristics of each of the five M-TTAF trajectories outlined in Table 6.1.

Data Analysis

As in Study 1, Hierarchical Cluster Analysis using Ward's method was used. Interpretation proceeded in three stages. First, cluster membership characteristics (e.g., cluster means, frequencies, and distribution of scores) were interpreted using normative data (i.e., for the CFSEI, LoC, ELQ, SRAS, NAS-PI, BPS, MCMI-III, and MCAA-Part B) and clinical cut off scores calculated by Ó Ciardha, et al. (2015c) for the Fire Factors. Scores were assessed against the hypothesised characteristics of each M-TTAF Trajectory outlined in Table 6.1. Second, multivariate and univariate significance tests on important demographic, offence related characteristics, and the cluster derivation variables were conducted to determine whether clusters derived significantly differed on these factors. Finally, a Chi Square test for independence was conducted to ascertain whether the imprisoned firesetters in each cluster generated were significantly more likely to be generalists or specialists based on the analyses from Study 1 in order to evaluate the recommended treatment approaches for each validated M-TTAF trajectory (i.e., generalist or specialist treatment).

Results

A Hierarchical Cluster Analysis of a sample of 128 male imprisoned firesetters was conducted on measures pertaining to offense-supportive attitudes, emotional regulation, social competence, self-concept, impulsivity, mental health, and fire factors. The optimum number of clusters to work with was derived from inspection of the agglomeration schedule and dendrogram. The agglomeration schedule provided a solution for every possible number of clusters from 1 to 128 (e.g., number of cases). The number of clusters was determined by inspecting the change in agglomeration coefficients as the number of clusters increased. Four clusters were identified as the optimum solution, as succeeding clustering added little to distinguishing between cases. Inspection of the dendrogram gave support to the agglomeration schedule, showing four clear clusters. Thus, the results did not lend support to the existence of five prototypical trajectories as hypothesised by the M-TAFF (Gannon et al., 2012).

Interpretation of the Cluster Solution

A one-way between groups multivariate analysis of variance revealed there was a statistically significant difference between the clusters on all the combined measures, $F(72, 309) = 6.65, p < .001$; Pillai's Trace = 1.82; $\eta_p^2 = .61$. However, subsequent univariate analyses revealed a non-significant effect for two of the measures pertaining to assertiveness and every day fire interest ($p > .05$). Table 6.2 presents descriptive statistics and F /Welch's values of the four-cluster solution. Post-hoc comparisons using the Games-Howell Test were conducted to control for Type I error.

Table 6.2
Hierarchical Cluster Solution – Imprisoned Firesetters

		Cluster 1 (<i>n</i> = 55)	Cluster 2 (<i>n</i> = 35)	Cluster 3 (<i>n</i> = 24)	Cluster 4 (<i>n</i> = 14)		
		<i>M</i> (<i>SD</i>)	<i>F</i>	<i>Cut off Scores</i>			
Demographic	Age at last Firesetting	24.40 (9.38)	27.48 (13.99)	27.65 (13.42)	29.46 (11.62)	.98	-
	Number previous offences	35.70 (30.79)	26.74 (36.89)	23.41 (29.42)	46.23 (57.47)	1.51	-
	Number violent offences	4.29 (4.31)	4.89 (7.39)	3.76 (2.76)	6.09 (4.09)	.60	
PDS IM		48.33 _{a,b} (8.27)	52.15 _{b,c} (8.47)	56.75 _c (10.88)	44.92 _a (6.66)	7.54*	>70.00
Offence Supportive Attitudes	Violence	8.32 _a (3.18)	3.17 _b (2.76)	2.33 _b (2.66)	9.07 _a (3.08)	39.04*	>2.10
	Anti-Social Behaviour	9.04 _a (2.59)	4.17 _b (3.03)	3.25 _b (2.61)	10.14 _a (2.03)	45.55*	>2.40
	Entitlement	7.95 _a (2.47)	5.43 _{b,c} (2.85)	4.96 _b (2.22)	7.29 _{a,c} (2.23)	11.55*	>4.30
	Criminal Associates	8.18 _a (1.87)	6.34 _b (3.30)	6.17 _b (2.32)	8.57 _a (2.14)	7.24*	>5.20
Self-Concept	General Self-Esteem	11.44 _{a,b} (3.44)	9.54 _b (3.94)	12.67 _a (2.51)	3.53 (1.90)	64.74*	<11.78
	Social Self-Esteem	6.11 _{a,b} (1.71)	5.26 _b (1.54)	6.67 _a (1.20)	3.03 (1.62)	18.69*	<6.62
	Personal Self-Esteem	4.65 _a (2.44)	4.14 _a (2.58)	6.29 (2.46)	.90 (1.12)	39.28*	<4.68
Social Competence	Locus of Control	23.86 _a (4.40)	24.28 _a (4.35)	28.75 (3.80)	18.32 (4.91)	17.46*	>10.96
	Emotional Loneliness	40.40 _a (8.46)	44.26 _a (8.33)	31.98 (7.41)	61.25 (9.98)	37.26*	>37.09
	Assertiveness	77.85 (13.37)	69.81 (14.79)	79.71 (15.22)	62.07 (21.72)	4.54	<77.29
Emotional Regulation	Anger (Cognition)	64.82 (8.42)	53.83 _a (10.12)	47.08 _a (11.91)	74.79 (5.51)	36.38*	>56.00
	Anger (Arousal)	57.60 (11.01)	50.54 (10.26)	39.75 (10.85)	74.64 (6.01)	37.18*	>56.00
	Anger (Behavioural)	63.71 _a (9.28)	53.94 (10.22)	45.75 (9.11)	70.29 _a (8.84)	29.94*	>56.00
	Anger (Regulation)	44.16 (12.60)	51.57 (11.40)	61.42 (10.75)	33.00 (11.16)	20.88*	<56.00
	Provocation	59.95 _a (9.17)	45.14 _b (11.77)	42.92 _b (10.31)	63.00 _a (7.24)	28.90*	>56.00
Impulsivity	Boredom Proneness	45.78 (7.58)	45.25 (7.86)	37.11 (7.16)	56.36 (9.04)	18.50*	>39.89
Mental Health	Personality Disorders	1.09 _a (1.06)	.97 _a (1.25)	.13 (.45)	4.14 (1.99)	27.60*	-
	Clinical Syndromes	1.58 (1.40)	.66 _a (.80)	.25 _a (.53)	3.93 (1.94)	25.22*	-
Fire Factors	Identification with Fire	16.60 _{a,b} (6.05)	16.94 _{a,b} (7.21)	13.42 _a (4.86)	22.36 _b (8.27)	5.66*	>16.25
	Serious Fire Interest	10.79 _{a,b} (4.49)	9.57 _a (3.70)	13.78 _b (5.34)	15.38 _b (6.19)	6.09*	>10.88
	Fire Safety Awareness	10.03 _a (2.66)	12.22 _b (4.01)	9.17 _a (2.60)	11.21 _{a,b} (2.58)	5.81*	>10.13
	Normalisation of Fire	22.78 _a (4.25)	20.26 (3.80)	16.71 (4.85)	24.07 _a (4.08)	14.25*	>20.00

Note. Groups with a common subscript (e.g., a, b, c) do not differ significantly from one another on post hoc comparisons using the Games-Howell test. Cut off refers to the scores used to determine offenders scoring above or below the normative/clinically problematic threshold. **p* < .05.

Cluster 1: Anti-Social Cognition Firesetters.

The demographic and psychological characteristics of individuals belonging to Cluster 1 appeared to show similarities to the hypothesised characteristics of firesetters following the Anti-Social Cognition Trajectory of the M-TTAF (see Table 6.1 and 6.2).

Cluster 1 is composed of 55 imprisoned firesetters ($M_{age} = 30.53$; $SD = 10.19$) and they were the youngest of all four groups at age of last firesetting ($M_{age} = 22.40$; $SD = 9.38$); most were one time firesetters (72.7%). Common motives for firesetting included revenge/anger, crime concealment, escape, and thrill/boredom. Fires were set to occupied premises ($n = 16$), unoccupied premises ($n = 23$), prison cells ($n = 10$) and another person/themselves ($n = 2$). Individuals in this group have the second highest number of previous offences of all four clusters ($M_{previous\ offences} = 35.70$; $SD = 0.79$) and of these, 4.29 were for violent offences ($M_{violent\ offences} = 4.29$; $SD = 4.31$). Impression management was not problematic ($M_{PDS\ IM} = 48.33$; $SD = 8.27$).

The results indicate Cluster 1 are the most anti-social of the four groups, highly endorsing anti-social behaviour and showing a higher prevalence of Anti-Social Personality Disorder (ASPD) compared to the other four clusters. Individuals in this group hold offence supportive attitudes and despite appearing socially quite competent, showed problems relating to self-concept and self-worth (e.g., poor personal self-esteem and associated emotional loneliness). These imprisoned firesetters exhibit an array of problems relating to anger, aggression, and impulsive tendencies. Overall, mental health problems are prevalent in this group, with 48 offenders exhibiting one or more possible disorders. Negativistic/Passive Aggressive Personality Disorder, Paranoid Personality Disorder, Anxiety, and Alcohol and Drug

Dependency Disorders were common. Although lacking an interest in, or fascination with fire, individuals in this cluster identify with fire and normalise the unconventional uses of fire.

Cluster 2: Need for Recognition Firesetters.

Interpretation of the demographic and psychological characteristics of individuals belonging to Cluster 2 appeared to show similarities to the hypothesised characteristics of firesetters following the Need for Recognition Trajectory of the M-TTAF (see Table 6.1 and 6.2).

Cluster 2 is formed of 35 firesetters ($M_{age} = 34.38$; $SD = 13.08$). The majority are white British (65.7%). This group were on average 27.48 years old at the last incident of firesetting ($M_{age} = 27.48$; $SD = 13.99$) and were largely one time firesetters (65.7%). Common motives for firesetting included revenge/anger, escape, power, and thrill/boredom. Fires were set to occupied properties ($n = 15$), unoccupied premises ($n = 10$), prison cells ($n = 6$), and another person/themselves ($n = 2$). This group had a relatively lower number of previous offences ($M_{previous\ offences} = 26.74$; $SD = 26.89$), and of these 4.89 were for violent offences ($M_{violent\ offences} = 4.89$; $SD = 7.39$). Impression management was not problematic ($M_{PDS\ IM} = 52.15$, $SD = 56.75$).

The results indicate individuals in Cluster 2 hold offense supportive attitudes, although to a significantly lesser extent compared to Clusters 1 and 4 on attitudes towards violence, anti-social behaviour, and criminal associates. Despite displaying intact self-regulation, individuals in this cluster appear to show problems in areas relating to self-concept (e.g., poor self-esteem), social competence (e.g., poor assertiveness and associated loneliness), and impulsive tendencies (e.g., boredom

proneness). Mental health problems are prevalent in this group, with 25 imprisoned firesetters exhibiting one or more possible disorders; Anti-Social, Narcissistic, Depressive Personality Disorder, and Anxiety Disorder were common. However, they exhibited significantly less personality disorders compared to Cluster 4 and fewer clinical syndromes compared to Clusters 1 and 4. Individuals in this group displayed a tendency to identify with fire, normalise the unconventional uses of fire, and exhibit poor fire safety awareness (i.e., significantly poorer levels of fire safety awareness compared to Clusters 1 and 3, significantly lower levels of fire normalisation compared to Clusters 1 and 4, but more compared to Cluster 3). Individuals in this group showed the lowest levels of serious fire interest, significantly less so compared to Clusters 3 and 4, with a discernible lack of problems in this area.

Cluster 3: Grievance Firesetters.

Interpretation of the demographic and psychological characteristics of individuals belonging to Cluster 3 appeared to show some similarities to the hypothesised characteristics of firesetters following the Grievance Trajectory of the M-TTAF (see Table 6.1 and 6.2).

Cluster 3 is formed of 24 imprisoned firesetters ($M_{age} = 36.83$; $SD = 12.78$). The majority are white British (83.3%). This group were on average 27.65 years old at the last incident of firesetting ($M_{age} = 27.65$; $SD = 13.42$) and were largely one time firesetters (62.5%). Common motives for firesetting included revenge/anger and crime concealment. Fires were set to occupied premises ($n = 9$), unoccupied premises ($n = 9$), prison cells ($n = 3$), and another person/themselves ($n = 2$). This group had the lowest number of previous offences ($M_{previous\ offences} = 23.41$; $SD = 29.42$) and the lowest number of violent offences ($M_{violent\ offences} = 3.76$; $SD = 2.76$). Impression

management was not problematic overall ($M_{PDSIM} = 56.75, SD = 10.88$), however five individuals appeared to show high levels of social desirability and individuals in this group were more likely to respond in a socially desirable way compared to Clusters 1 and 4.

The results indicate individuals in Cluster 3 displayed good levels of self-concept, social competence, intact self-regulation, and low impulsivity. However, imprisoned firesetters in this cluster endorsed offence supportive attitudes towards violence, anti-social behaviour, entitlement and criminal associates, although significantly less compared to Clusters 1 and 4. Individuals in this cluster were also characterised by increased perceived control over external events. Mental health problems were significantly less prevalent in this group compared to the other clusters, with only 6 firesetters exhibiting one or more possible disorders; Anxiety, and Alcohol and Drug Dependency Disorders were common. Individuals in this group displayed high levels of serious fire interest; however, there was a discernible lack of problems in relation to identification with fire, fire normalisation, and fire safety awareness.

Cluster 4: Emotionally Expressive Firesetters.

Interpretation of the demographic and psychological characteristics of individuals belonging to Cluster 4 appeared to show similarities to the hypothesised characteristics of firesetters following the Emotionally Expressive Trajectory of the M-TTAF (see Table 6.1 and 6.2).

Cluster 4 is composed of 14 imprisoned firesetters ($M_{age} = 34.36; SD = 10.55$); all White British. They were relatively older at age of last firesetting ($M_{age} = 29.46; SD$

= 11.62) and were composed of one time ($n = 7$) and repeat ($n = 6$) firesetters. Common motives for firesetting included revenge/anger, self-harm/suicide, communication, murder, power, protection, and thrill/boredom. Fires were set to occupied premises ($n = 5$), unoccupied premises ($n = 5$), prison cells ($n = 2$), and another person/themselves ($n = 2$). Individuals in this group had the highest number of previous offences ($M_{previous\ offences} = 46.23$; $SD = 57.47$) and of these, the highest number of violent offences ($M_{violent\ offences} = 6.09$; $SD = 4.09$). Impression management was not problematic ($M_{PDS\ IM} = 44.92$; $SD = 6.66$).

The results indicate Cluster 4 hold offence supportive attitudes and show significantly more problems in areas relating to social competence (e.g., poor assertiveness and associated loneliness), self-concept (e.g., low self-esteem and perceived control over external events), self-regulation (e.g., anger related), and impulsivity (e.g., boredom proneness) compared to the other clusters. This group are significantly more mentally unwell compared to the other three clusters, with all 27 individuals presenting two or more possible disorders; Depressive and Borderline Personality Disorders, and Anxiety Disorders were common. Finally, Cluster 4 show problems around identification with fire, inappropriate fire interest (serious and every day), normalisation of the unconventional uses of fire, and poor fire safety awareness.

Confirming treatment recommendations for the M-TTAF firesetting clusters.

A Chi-Square test for independence indicated there was a significant association between the imprisoned firesetters in the validated M-TTAF trajectories and being classified as either a generalist or specialist in Study 1, $\chi^2(3, n = 128) =$

54.61, $p < .001$, $\varphi_c = .65$. The results indicate the majority of Anti-Social Cognition, Need for Recognition, and Grievance firesetters are likely to benefit from more general treatment options as they were classified as generalist firesetters in Study 1 (see Table 6.3). However, almost a quarter of the Anti-Social Cognition Firesetters (23.63%, $n = 13$) and a small proportion of Need for Recognition Firesetters (11.43%, $n = 4$) were also classified as specialists in Study 1, suggesting a sub-section of these groups may require more specialist assessment and treatment. Emotionally Expressive Firesetters were all classified as specialist firesetters in Study 1, thus requiring targeted firesetting assessment and treatment (see Table 6.3).

Table 6.3

Generalist/Specialist Classification of M-TTAF Firesetter Clusters

	Anti-Social Cognition <i>N</i>	Need for Recognition <i>N</i>	Grievance <i>N</i>	Emotionally Expressive <i>N</i>	Total <i>N</i>
Specialist Firesetters	13	4	0	14*	31
Generalist Firesetters	42*	31*	24*	0	97
Total <i>N</i>	55	35	24	14	128

* $p < .001$.

Discussion

Study 2 represents the first known empirical evaluation of the five prototypical trajectories outlined in Tier 2 of the M-TTAF (Gannon et al., 2012). From a sample of 128 adult male imprisoned firesetters, Hierarchical Cluster Analyses revealed four distinct subgroups of imprisoned firesetter. Whilst evidence was not found for all five M-TTAF trajectories, there was compelling evidence to support the Anti-Social Cognition, Need for Recognition, Emotionally Expressive Trajectories as

well as elements of the Grievance Trajectory. Individuals in each of the validated trajectories were significantly associated with being classified as generalists or specialists in Study 1, allowing for generalist or specialist treatment recommendations for each trajectory.

The demographic and psychological characteristics of Cluster 1 suggest there is evidence for the Anti-Social Cognition Trajectory. In particular, evidence was found for a pervasive and longstanding pattern of criminality (e.g., high number of previous offences; offence supportive attitudes), poor emotional regulation and impulsivity, a high prevalence of ASPD, and a lack of interest in fire. These firesetters are likely to have been socialised within an antisocial pro-criminal environment, whereby firesetting is one of many tools used in the context of their offending (e.g., majority one time firesetters, wide array of offending behaviour, instrumental motives; Ritchie & Huff, 1999). Although Gannon et al. (2012) hypothesised these individuals are unlikely to hold any interest or fascination in fire, it is not surprising fire-related deficits are present as the criminal uses of fire may have been learnt and subsequently normalised (e.g., social learning theory, Bandura, 1976; Rice & Harris, 1991), thus forming a fundamental part of their criminal lifestyle (i.e., fire identification). Individuals in this cluster were, in the vast majority, classified as generalists in Study 1 (see Table 6.3), suggesting specialist treatment is unlikely to be necessary as their needs are likely to be addressed by more general offender behaviour programmes (e.g., social and cognitive skills). However, 13 firesetters from this cluster were classified as specialists in Study 1 (see Table 6.3) suggesting that for a small proportion of these firesetters, specialist individual case formulation may be required.

The demographic and psychological characteristics of Cluster 2 suggest there is evidence for the Need for Recognition Trajectory (Gannon et al., 2012). In particular, evidence was found for a lower number of previous offences, lower offence supportive attitudes, poor communication skills, intact self-regulation, personality disorder, and identification with fire. Although Gannon et al. (2012) hypothesise only narcissism may be evident in the Need for Recognition Firesetter, narcissistic and anti-social personality traits overlap (Gunderson & Ronningstam, 2001) and the presence of depression and anxiety is unsurprising given their low levels of self-esteem. Consequently, prevalence of Depressive, ASPD, and Anxiety Disorders may need to be incorporated in this trajectory. The most common motives for individuals falling in this category suggest the primary use of fire is to gain recognition from others (e.g., revenge/anger, power, communication, protest; Barnoux & Gannon, 2014; Gannon et al., 2012) and the resulting positive reinforcement experienced may also explain why these individuals normalise its criminal uses. The majority of individuals in this cluster were classified as generalists in Study 1 (see Table 6.3), suggesting specific firesetting treatment is unlikely to be required. Treatment should focus on their communication issues, problem solving deficits, self-image, and pertinent personality issues facilitating the individual's need to gain recognition in unacceptable ways (e.g., Anti-Social Personality Disorder, Narcissistic Personality Disorder). However, a small minority ($n = 4$) were classified as specialists in Study 1 and consequently some level of specialist treatment may be required for some of these individuals. For example, due to poor levels of fire safety awareness, it may be useful to consider a fire safety awareness course for imprisoned firesetters following the Need for Recognition trajectory.

Interpretation of the demographic and psychological characteristics of individuals belonging to Cluster 3 does not provide clear evidence for a particular trajectory of the M-TTAF (Gannon et al., 2012). However, individuals in this group appear to show some similarities to those hypothesised for the Grievance Trajectory of the M-TTAF. In particular, evidence was found for firesetting as a one off event or repeated use, revenge as the primary motive, increased self-esteem, a low prevalence of mental health problems, and a lack of identification with, and normalisation of the criminal uses of fire. Further, the combination of potentially dangerous fires set (i.e., occupied premises, other people) and the prevalence of Alcohol and Substance Dependency Disorders may suggest these individuals are prone to displaced aggression, whereby alcohol/substance misuse inhibits rational thinking and promotes aggressive responding in the context of external provocation. Interestingly, individuals in this group showed the second highest level of serious fire interest of all four clusters which was not hypothesised by Gannon et al. (2012). However, without some hypothesised fire-related deficit, the Grievance Trajectory could be followed by a range of offenders. Revenge is a common motive among offenders more generally (Gudjonsson & Sigurdsson, 2004), many of whom resort to methods other than firesetting (e.g., offensive weapons). The specificity of the Grievance Trajectory to firesetters relies on the choice of fire (i.e., rather than another tool) which is likely to stem from an interest in or fascination with fire. Thus, it seems important to develop and refine this trajectory to incorporate the current findings. All of the firesetters from this cluster were classified as generalists in Study 1 (see Table 6.3) suggesting these individuals may not require specialist firesetting treatment, as general offending behaviour programmes are likely to be able to address their deficits (e.g., poor problem solving, displaced aggression, alcohol/substance misuse). However,

given these firesetters displayed high levels of fire interest, it may be important to tailor individual case work to explore their perception of fire to avoid future and repetitive firesetting in the context of external provocation.

The demographic and psychological characteristics of Cluster 4 suggested there is evidence for the Emotionally Expressive Trajectory. In particular, individuals in this cluster showed problems in areas relating to offence supportive attitudes, emotional regulation, social competence, self-concept, and impulsive tendencies. They were also the most mentally unwell, with a high prevalence of personality disorder traits (e.g., Borderline, Depressive) and clinical syndromes (e.g., Anxiety). Firesetting may be a means of emotional coping, to draw attention to themselves and their needs (e.g., motives of protection, self-harm/suicide, thrill seeking). These imprisoned firesetters identified with fire (e.g., evidence of fire-coping scripts) and showed problems around inappropriate fire interest and fire normalisation. All the imprisoned firesetters in this group were classified as specialists in Study 1 (see Table 6.3), suggesting specialist treatment would be highly recommended as firesetting is likely to be long standing, repetitive, and violent. Treatment of these individuals should focus on developing skills sufficient to express emotional needs more immediately via more appropriate outlets (i.e., other than firesetting). Therapy might focus on improving emotional and cognitive regulation (i.e., social skills, communication strategies, assertiveness; dialectical behavioural therapy), interventions addressing any mental health problems where relevant to their offending behaviour (e.g., Depressive and Borderline Personality Disorder), and targeted fire related to work to address their perception of, and relationship with fire.

Despite convincing evidence to support the existence of four of the M-TTAF trajectories, the present study was unable to account for the Fire Interest or Multi-Faceted trajectories of the M-TTAF (Gannon et al., 2012). However, research indicates firesetters resembling the Fire Interest Trajectory may be more prevalent among mentally disordered firesetters (Tyler & Gannon, 2012; Tyler et al., 2014). Although the current sample indicated the presence of mental health problems, it was limited to a predominantly non-psychiatric sample. Thus, future cross validation studies should seek to include mentally disordered firesetting populations to see if this trajectory, and the others, can be empirically supported.

Furthermore, individuals conceptualised as following the Multi-Faceted Trajectory are likely to present very similar traits to those following the Anti-Social Cognition trajectory, though are likely to show longstanding fire-related deficits (Gannon et al., 2012). Individuals conceptualised as following the Multi-Faceted Trajectory may in fact form a specialist subgroup of the Anti-Social Cognition Trajectory (i.e., the subsection of Anti-Social Cognition Firesetters who were classified as specialists in Study 1). The Anti-Social Cognition Trajectory may be better re-conceptualised to include two subtypes, Anti-Social Generalists (e.g., absence of an interest of fascination with fire) and Anti-Social Specialists (e.g., enduring fire-related problems).

Finally, evidence for the Need for Recognition and Emotionally Expressive Trajectories showed two clearly distinct subtypes for these trajectories, presenting very different characteristics, clinical features, and treatment approaches. Consequently, it is unlikely that these two subtypes should be subsumed under one trajectory in the M-TTAF. Rather, the Emotionally Expressive trajectory would be

better conceptualised as individuals seeking to express their emotions via the use of fire and the Need for Recognition trajectory should conceptualise individuals seeking to gain attention from others via the use of fire.

Some final limitations of this study should also be considered. First, despite an overall commendable sample size, group sizes were unequal and some relatively small, limiting the variety and representation of different types of firesetting offences (e.g., filicide by fire). However hierarchical cluster analysis is well suited to smaller sample sizes and capable of generating reliable results, which can be applied to, and replicated with, subsequent samples. Further, the current sample represents approximately 10% ($n = 60$) of all adult males currently in custody in England and Wales for an index offence of arson ($n = 617$; Ministry of Justice, 2014b) and also captures individuals with a previous conviction for arson ($n = 53$), those who have set a prison fire ($n = 19$), and those who have unconvicted incidents of firesetting ($n = 5$); thus providing substantial generalisability to the findings. As in Chapter 5, multivariate and univariate analyses may have also been impacted by the unequal cluster sizes and number of tests conducted; however the MANOVAs were highly significant with large effect sizes and more conservative post-hoc comparisons were conducted to control for Type 1 errors (e.g., Games-Howell test). Additionally, non-parametric analyses (e.g., Kruskal-Wallis) were conducted separately where possible and confirmed the findings. Finally, whilst the findings provide valuable empirical evidence that the M-TTAF trajectories are a useful theoretical backdrop which may be consulted in the treatment of imprisoned firesetters, the present study did not seek to evaluate the background characteristics of these groups (e.g., childhood and developmental experiences), their offending styles (e.g., offending histories, motives

etc.), or how they came to set their fires in any detail. Qualitatively grounded offence chain models have proven particularly useful for other offence types (e.g., sexual offending; Gannon, et al., 2008) and future research in this area would allow analysis of imprisoned firesetters' progression through the offence chain, thus further informing the M-TTAF's empirical adequacy and clinical scope. Consequently, using a sub sample of the current sample of imprisoned firesetters, the following chapter will seek to develop a descriptive model of the offence chain for adult male imprisoned firesetters.

Chapter Seven

Study 3: The Development of a Descriptive Model of the Offence Chain for Adult Male Imprisoned Firesetters¹⁰

Introduction

As discussed in Chapter Three, there is an almost complete absence of micro-theories within the firesetting literature. Only one known micro theory of firesetting behaviour exists. Tyler et al., (2014) developed an offence chain model for a sample of 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 (2014) FOC-MD represents a new and significant contribution to theoretical explanations of firesetting, the model is limited to mentally disordered firesetters and does not provide an adequate explanation for how imprisoned firesetters may come to set a fire. The absence of a micro-theory for imprisoned firesetters is hampering the development of both higher level theory and classification, and is consequently impacting the generation of treatment programmes.

Thus, the aim of this study is to develop a descriptive model of the offence chain for imprisoned adult male firesetters. By using a sub-section of the sample of firesetters from Study 2, this will also allow for the generation of information

¹⁰ The contents of this chapter are published in Barnoux, Gannon, & Ó Ciardha (2014). A Descriptive Model of the Offence Chain for Imprisoned Adult Male Firesetters, *Legal and Criminological Psychology*. doi:10.1111/lcrp.12071

regarding their developmental and background experiences, offending styles, and how they came to set their fires to help further inform the findings from Study 2.

Method

Participants

A random sub sample of firesetters from Study 2 was used for the current study. Thirty-eight male offenders with at least one recorded firesetting incident volunteered to participate¹¹; the majority were White British ($n = 28$). Ages ranged from 18 to 63 years ($M_{age} = 34.24$; $SD = 12.57$). Sentence length ranged from 1 month to indeterminate¹² ($M_{sentence\ length} = 90.51$; $SD = 72.95$) and number of previous offences ranged from 0 to 129 ($M_{previous\ offences} = 24.92$; $SD = 29.53$). Forty-two per cent ($n = 16$) of participants had engaged with mental health services and 31.6% ($n = 12$) reported a mental health diagnosis¹³ before ($n = 4$), at the time ($n = 1$), or after ($n = 7$) the fire. Diagnoses for these twelve participants were: Depression ($n = 5$ ¹⁴), 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

The study was reviewed and approved ethically by the University Research Ethics Committee (REF 20101507) and the National Offender Management Service (REF 74-10, see Appendix Five). Informed consent was obtained for each participant

¹¹ No incentives were offered.

¹² Indeterminate sentences were not included in the mean.

¹³ Mental health diagnoses as defined in the DSM-V.

¹⁴ Two participants had a dual diagnosis: depression and schizophrenia; depression and ADHD.

and demographic and background information was collected via questionnaire (see Appendices One and Four). A semi-structured interview schedule was adapted from schedules used in previous offence process research (e.g., Gannon et al., 2008; see Appendix Three). Participants were first asked to describe their childhood 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 ($M_{length} = 47.29$ 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 the 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 to all imprisoned firesetters, but rather reflect a descriptive account of the individuals sampled within one particular study

(i.e., in this case how imprisoned 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 myself 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 through comparing my interview transcript codings and those of IR1 (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 my PhD supervisors. The analytic process was reviewed for each step until agreement was reached between all three of us 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

A qualitatively grounded model was developed, outlining 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 7.1, 7.2, 7.3, and 7.4 respectively. Participants flow through the model in unique and dynamic ways. This is reflected by individuals experiencing various sub stages within one overarching stage of the model.

Phase 1: Background Factors (Figure 7.1)

Data relevant to background factors formed three main categories, further divided into subcategories reflecting the childhood experiences of participants up to the age of eighteen.

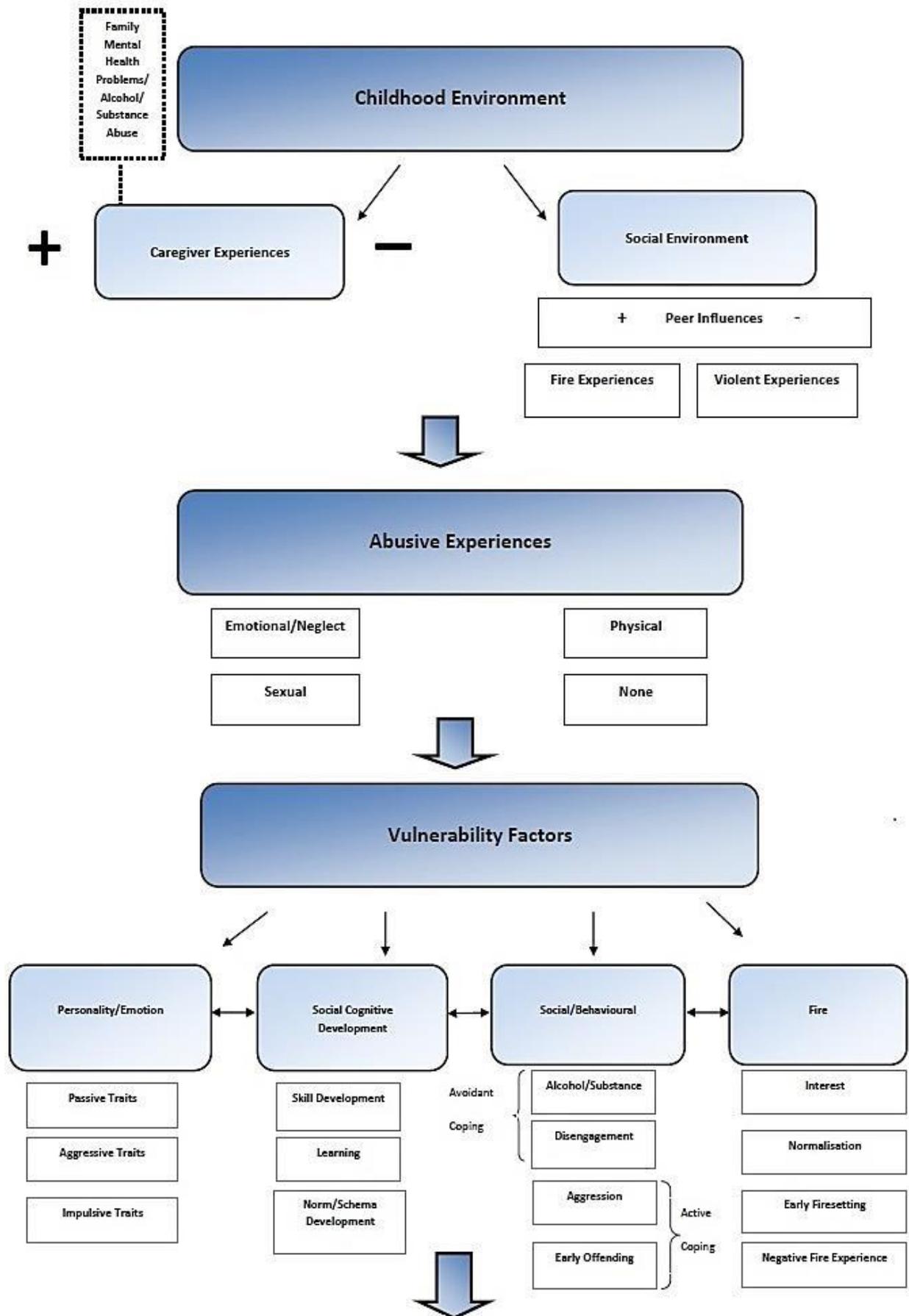


Figure 7.1. Phase 1 - Background Factors

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 interpersonal 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 friendship formation 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 to them, arising from caregiver experiences, social environments, or both. These experiences were categorised as (i) emotional abuse/neglect ($n = 26$) in the form of verbal or psychological abuse, bullying by peers, witnessing domestic violence, or neglect; (ii) physical abuse ($n = 26$) in the form of excessive physical punishment or physical conflict with adults; or (iii) sexual abuse ($n = 4$). The majority of participants experienced multiple forms of abuse ($n = 21$); six reported no abuse. No participants 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 ($n = 28$) such as anger or hostility, and impulsive traits ($n = 12$) such as boredom proneness and thrill-seeking tendencies. Impulsiveness seemed to co-occur with aggressive tendencies. For example, one participant displaying early aggressive traits commented "I lose my temper, things happen don't they, can't control myself".

Social cognitive development.

Participants identified or demonstrated potentially problematic areas of social cognitive development including skill development (i.e., poor communication skills and problem-solving abilities; $n=8$), learning difficulties (i.e., self-reported special needs; $n = 15$), and the development of certain norms and schemas, possibly predisposing participants to engage in offending behaviour (i.e., 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 ($n = 24$). For example, one participant explained being so affected by the abuse he was suffering at home that “as [he] got older, [he] thought [he] was one above the rest and started going shop-lifting”.

Fire.

A range of fire related vulnerability factors were found to develop among offenders during their childhood: an excessive interest in fire¹⁵ typically associated

¹⁵ Fire interest was defined as an elevated and/or deep seated fascination with fire, fire paraphernalia and/or the consequences of fire.

with strong positive affect ($n = 11$), the normalisation of unconventional uses of fire¹⁶ ($n = 10$), 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. Fire-related deficits, beyond simple childhood curiosity, was inferred from comments such as “I like seeing things burn...I’ve got like a buzz out of it”, “[I] just used to like it, like the colours and all, blue and yellow and that” or “you can set a fire with one match and take down the whole world – you have the power. If I can cause that ... I can hurt anyone. I can be the most powerful person in the world”. 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 7.2)

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.

¹⁶ Such as setting fire to cars or small animals etc.

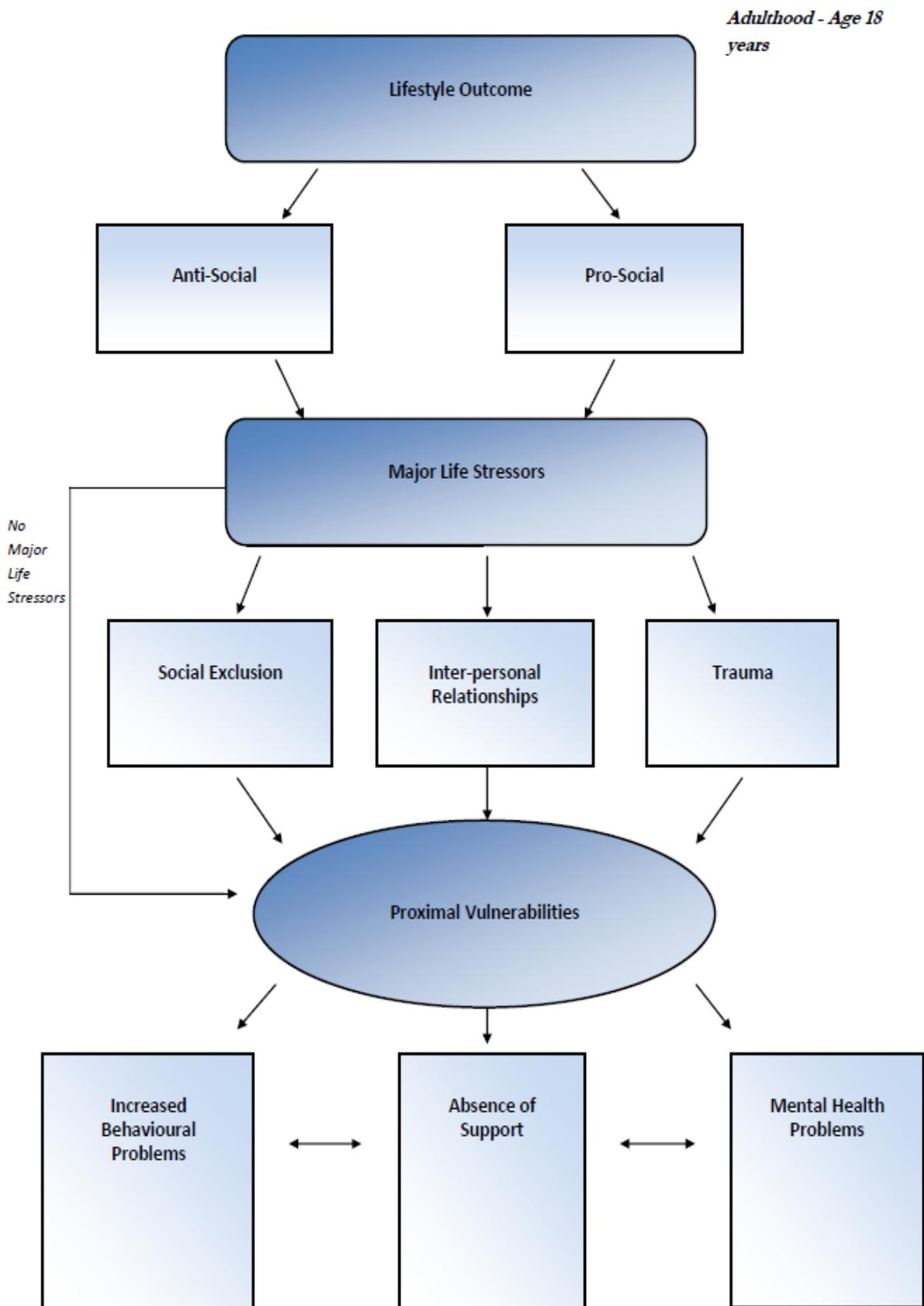


Figure 7.2. Phase 2 - Adulthood Experiences

Lifestyle outcome.

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, and/or 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: (i) social exclusion, characterised by isolation and/or rejection from significant others and/or custodial experiences ($n = 19$); (ii) inter-personal relationships, characterised by significant on-going problems in individuals' relationships (e.g., personal or professional; $n = 9$); and (iii) trauma (e.g., loss of loved one, a major illness and/or being the victim of a crime; $n = 14$). For example, one participant's cousin was shot and subsequently set on fire, commenting this event affected his later firesetting - "it's where the idea came from. It was something I [was] thinking about a lot". 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 ($n = 17$). For example, one participant explained how he felt completely isolated and had no support to deal with being previously kidnapped and tortured (i.e., identified as a trauma in major life stressors). Third, mental health problems (i.e., self-reported symptoms and/or diagnosed) were largely described as symptomatic of mood disorders, particularly depressive episodes ($n = 16$). For example, one participant was diagnosed with Bipolar Disorder a few weeks before the offence, triggered by the loss of three family members over a short period of time.

Phase 3: Immediate pre-offence period (Figure 7.3)

The immediate pre-offence period describes the sequence of events occurring from a few days before the fire up to just before the fire itself.

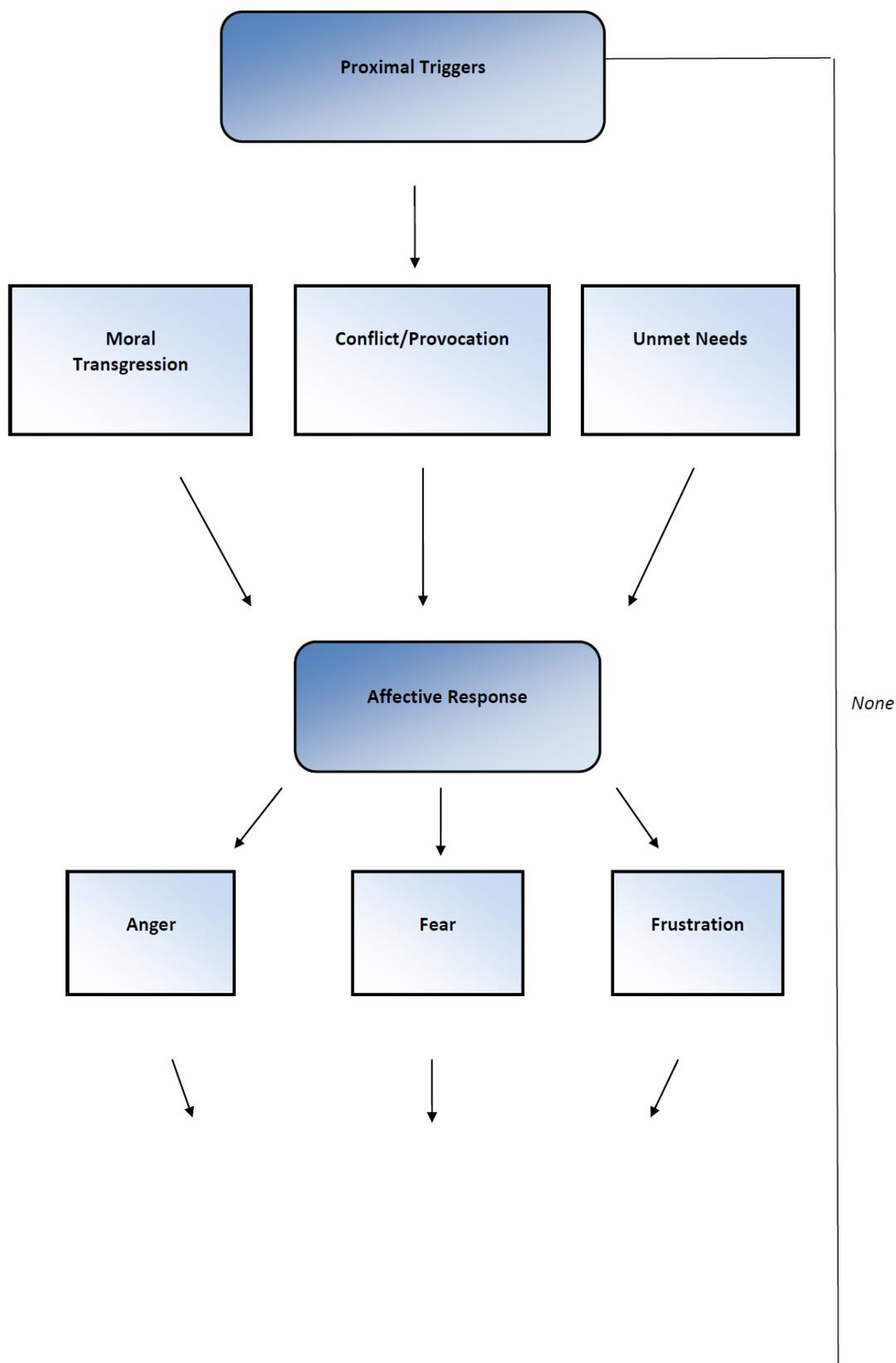


Figure 7.3. Phase 3 - Immediate Pre-Offence Period

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 was broken 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 ($n = 9$). For example, one man felt neglected, explaining, "I'm getting hurt over this, yeah and you're not listening to me. And you're not taking me seriously. And that's what it was, I wanted to be taken seriously." 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: (i) anger at the situation, others, and/or themselves ($n = 27$); (ii) fear associated from being in an unwanted/life-threatening position ($n = 6$); and (iii) 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 7.4)

There are six main categories in the final phase of the model, detailing how participants' came to set their fire and the events that occurred during and immediately after.

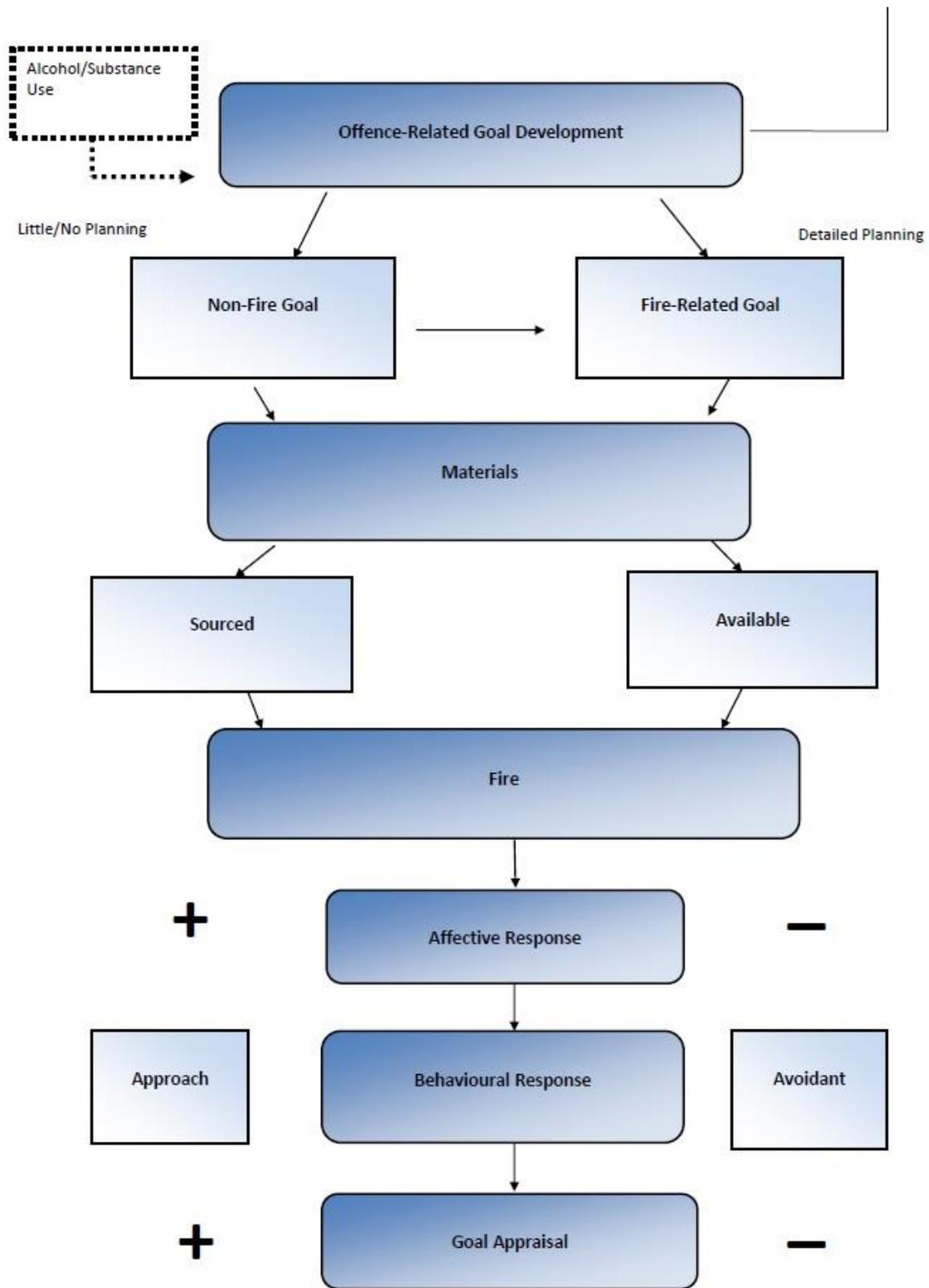


Figure 7.4. Phase 4 - Offence and Post-Offence Period

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 ($n = 2$)¹⁷. These individuals went on to develop fire-related goals during the execution of their offence-related goals. These fire-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.

¹⁷ Two participants reported two motives for their non-fire related goals.

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 ($n = 18$)¹⁸. 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 ($n = 7$).

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

¹⁸ Details of the fire were unavailable for one participant.

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.

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 imprisoned 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 imprisoned 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 (Frisell et al., 2011). 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 (i.e., 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. The recent empirical research by Gannon et al. (2013) found that imprisoned firesetters displayed higher levels of interest in serious fires, identification with fire, and lower levels of perceived fire safety awareness compared to non-firesetting imprisoned offenders (Gannon 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, Pettit (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).

Fourth, 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 Chapter Three). Within the DMAF, nine offence goals were reported in line with existing findings: revenge (Lewis & Yarnell, 1951), economic gain (Barker, 1994), thrill seeking (Icove & Estep, 1987), communication (Canter & Fritzon, 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., 2014), murder (Ritchie & Huff, 1999), 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, 2014 for a review). However, the DMAF identified two new fire-related offence goals which require incorporation into existing theoretical developments: *escape*, where firesetting serves to free the offender from their current situation, and *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, which 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-TTAF 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 (Dickens et al.,

2009 Ducat et al., 2015; Grace & Edwards, 2014; Hurley & Monahan, 1969) 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.

Lastly, the development of the DMAF highlights the offence process unfolds differently for imprisoned firesetters compared to that of mentally disordered firesetters described in Tyler et al.'s (2014) FOC-MD. In line with Tyler et al.'s (2014) model, the findings highlight the importance of the sequence of thoughts, feelings and events that precede and surround an incident of firesetting. Similarly to the FOC-MD (Tyler et al., 2014), the DMAF highlights similar background factors in offenders' offence chain narratives (e.g., family history of mental health/substance abuse, caregiver relationships, abusive experiences, emerging risk factors), offence characteristics (e.g., motives), post offence behaviour (e.g., affect and behaviour following firesetting), and the contributory role of mental health in deliberate firesetting. However, the DMAF differs remarkably from the FOC-MD in relation to the pre-offence and offence period. Whilst the FOC-MD focuses on offenders' intimacy problems, mental health deterioration, and offence planning, the DMAF pays particular attention to the contributory role of proximal triggers and offence goal formation. This is not surprising given Tyler et al. (2014) developed their model for mentally disordered firesetters, whereas the DMAF is intended for imprisoned firesetters for whom mental health is unlikely to play a pivotal role. Thus the two models combined are likely to present a more complete picture of the offence chains

for different firesetting target populations (e.g., mentally disordered firesetters and imprisoned firesetters).

As seen in Chapter Two, there is currently no accredited offender behaviour programme specifically designed for imprisoned 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)¹⁹. 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, the importance of fire factors emerging from the DMAF support Gannon et al.'s (2015) findings from their evaluation of the Firesetting Intervention Programme for Prisoners recently piloted in a UK based prison (FIPP, Gannon, 2012; see Chapter Two). Reported treatment outcomes suggested specialised treatment targeting offenders' perception of and relationship with fire is required for individuals who deliberately set fires and these would not be adequately targeted in more generic treatment programmes provided by the prison service in the UK (Gannon et al., 2015). The findings from the DMAF may serve to provide further details on how imprisoned firesetters' relationship with and perception of fire develop in the lead up

¹⁹ Examples of NOMs accredited offender behaviour programmes from Ministry of Justice, 2014d.

to their offence, thus making a useful contribution for practicing professionals wishing to implement the FIPP in their services.

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 (i.e., 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. Finally, whilst the DMAF documents the contributory roles of the cognitive, behavioural, affective, and contextual factors associated with a single incident of firesetting, it does not describe in detail the potential taxonomic offence pathways taken by adult male imprisoned firesetters through the model. In particular, identifying potential pathways followed by imprisoned firesetters' through the DMAF will provide a useful classification of imprisoned firesetters in a temporal dimension to further elucidate any discreet, yet

important differences between different types of imprisoned firesetter, and thus may help to build on the findings from the previous chapter.

Chapter Eight

Study 4: Pathways to Deliberate Firesetting in Adult Male

Imprisoned Offenders: A Preliminary Investigation²⁰

Introduction

In Study 3, the Descriptive Model of the Offence Chain for Adult Male Imprisoned Firesetters (DMAF) was developed, documenting the contributory roles of cognitive, behavioural, affective, and contextual factors associated with a single incident of firesetting. However, the DMAF does not describe in detail the potential different taxonomic offence pathways taken by adult male imprisoned firesetters through the model. Yet, the identification of discreet pathways followed by offenders within descriptive offence chain models has proved particularly useful within the literature pertaining to sexual and violent offending (Chamber, Ward, Eccleston, & Brown, 2009; Hudson, Ward, & McCormack, 1999; Gannon, Rose, & Ward, 2010; Gilligan & Lennings, 2013; Polaschek & Hudson, 2004). In particular, these have provided a useful temporal classification of offenders by reducing the heterogeneity of their offence processes into more manageable common pathways, thus allowing for treatment recommendations addressing problematic areas in the temporal sequence of cognitive, affective, behavioural, and contextual factors contributing to their offending (Gannon et al., 2010).

²⁰ Sections of this chapter are published in Barnoux, Gannon, & Ó Ciardha (2014). A Descriptive Model of the Offence Chain for Imprisoned Adult Male Firesetters, *Legal and Criminological Psychology*. doi:10.1111/lcrp.12071

However, there is a paucity of such research within the firesetting literature. As seen in Chapter Three, within Tyler et al's (2014) Firesetting Offence Chain for Mentally Disordered Offenders, three preliminary pathways to firesetting were identified: (i) *Fire-Interest — Childhood Mental Health*; (ii) *No Fire Interest — Adult Mental Health Approach*; and (iii) *Fire Interest — Adult Mental Health Approach*. However, whilst, the development of Tyler et al.'s (2014) model represents a significant milestone in the current theoretical research developments in deliberate firesetting, the pathway descriptions are preliminary and future validation is required. Further, the model is limited to mentally disordered firesetters and does not provide an adequate explanation for the different pathways to firesetting that imprisoned offenders may follow.

Thus, the main aim of this study was to examine the prevalence of specific offence patterns or pathways characterising adult male imprisoned firesetters (i.e., discreet differences in their progression through the sub category variables of the DMAF) and explore how they differ on key demographic variables. The identification of potential discreet pathways within the DMAF would allow for a classification of how imprisoned firesetters approach their offending in a temporal dimension, thus furthering theoretical developments in the firesetting literature for imprisoned offenders, and thus contributing towards evidence based practice in the treatment of prisoners who intentionally set fires.

Method

Participants

The analysis is based upon the data provided from the same sample reported in Study 3 (see Chapter Seven).

Analyses and Results

The analyses proceeded in two stages. First, the DMAF was subjected to qualitative and quantitative analyses in order to identify the potential pathways imprisoned firesetters followed through the model. Second, the pathways were examined in order to ascertain the key differences between them on important demographic features.

Pathway Identification

Each individual's progression through the DMAF was examined by the researcher to identify any common patterns or pathways taken by participants, indicative of a discrete potential temporal classification of imprisoned firesetters. This process revealed two distinct pathways characterising offenders' progression through the model: Twenty-two imprisoned firesetters appeared to follow one distinct pathway, labelled as Aggressive; sixteen imprisoned firesetters appeared to follow a different pathway labelled as Passive. The key identifying patterns of each pathway identified by the researcher are outlined in Table 8.1. A number of core defining categories which characterised all or the vast majority of imprisoned firesetters allocated to that particular pathway were identified (see Table 8.1). Other features listed were common to that pathway but not necessarily followed by every firesetter.

Table 8.1

Description of pathways to firesetting in adult male imprisoned firesetters

Phase of Model	Aggressive (N = 22)	Passive (N = 16)
1. Background	Negative caregiver experiences Negative peer influences* Aggressive personality traits* Anti-social norms* Alcohol/substance misuse Aggressive behavior* Early offending* Fire interest, fire normalisation, vicarious fire experiences* Early firesetting*	Negative OR positive caregiver experiences Negative OR positive peer influences Passive personality traits* Avoidant coping strategies (disengagement) No fire factors* Negative fire experiences*
2. Adulthood Experiences	Anti-social lifestyles* Major life stressor – social exclusion Increased behavioral problems*	Pro-Social lifestyles* Major-life stressors* Mental health problems Absence of support
3. Immediate Pre-Offence Period	Trigger present OR no identifiable triggers Conflict provocation Affective response – Anger	Trigger present OR no identifiable triggers Unmet need Affective response – fear and/or frustration
4. Offence and Post Offence Period	Low level OR detailed planning Non-fire goals/fire-related goals Materials sourced Affective response: positive* Behavioural response: approach* Goal appraisal: positive* OR negative	Low level planning Non-fire goals/fire-related goals Materials sourced OR available Affective response: negative* Behavioural response: avoidant* Goal appraisal: positive OR negative*

*core defining categories

Reliability and validity.

Inter-rater reliability.

Reliability checks were employed in order to ensure good levels of accuracy. An independent rater, IR3, was enlisted towards this aim and had little knowledge of the existing firesetting literature. First, IR3 was asked to independently plot each of the 38 participants' offence narratives through each stage of the DMAF, allocating each offence account to a subcategory for each of the stages of the model. Subsequently, IR3 was asked to categorise each participant as belonging to either the Aggressive or Passive pathways identified using the description of the pathways presented in Table 8.1. If IR3 felt that a participant did not fit one of the predefined pathways then this was noted so that any other emerging pathways could be accounted for.

Inter-rater reliability was calculated using the Kappa statistic for overall pathway allocation. Level of agreement for overall pathway allocation was Kappa = 0.68, $p < .001$, 95% CI (0.445, 0.915); indicating a substantial level of agreement according to Landis and Koch (1977) and Fleiss (1981). Inter-rater reliabilities for each of the core defining categories of the pathways (see Table 8.1) were also examined and showed substantial to excellent inter-rater for all the distinguishing pathway categories. The reliabilities were as follows: *negative peer influences*, Kappa = 0.65, $p < .001$, 95% CI (0.412, 0.887); *aggressive/passive personality traits*, Kappa = 0.74, $p < .001$, 95% CI (0.467, 1.012); *anti-social norms*, Kappa = 0.63, $p < .001$, 95% CI (0.336, 0.924); *aggressive behaviour*, Kappa = 0.87, $p < .001$, 95% CI (0.689, 1.050); *early offending*, Kappa = 0.79, $p < 0.001$, 95% CI (0.595, 0.984); *vicarious fire experiences*, Kappa = 0.61, $p < .001$, 95% CI (0.370, 0.849); *no fire factors*, Kappa =

0.68, $p < .001$, 95% CI (0.344, 1.015); *negative fire experiences*, Kappa = 1.00, $p < .001$, 95% CI (-1.00, 1.00); *early firesetting*, Kappa = 0.72, $p < .001$, 95% CI (0.492, 0.947); *lifestyle outcome*, Kappa = 0.81, $p < .001$, 95% CI (0.608, 1.011); *major life stressors*, Kappa = 0.71, $p < .001$, 95% CI (0.447, 0.972); *affective response*, Kappa = 0.72, $p < .001$, 95% CI (0.492, 0.947); *behavioural response*, Kappa = 0.62, $p < .001$, 95% CI (0.367, 0.872); and *goal appraisal*, Kappa = 0.70, $p < .001$, 95% CI (0.433, 0.966). Key disagreements between the researcher and IR3 related to the identification of vulnerability factors in terms of offenders' personality, social, and cognitive factors (e.g., development of norms and values), and also interpretation of vicarious fire experiences. However these were easily resolved upon discussion between the researcher and IR3.

Quantitative validation.

Chi square tests for independence were also undertaken to validate and assess the significance of the differences between the sub-category variables of the Aggressive and Passive pathways identified in the DMAF. The sub-category variables from the DMAF were cross-tabulated with reference to pathway membership and occurrence of the dichotomous variables. For those variables that produced a low cell count (i.e., < 5), Fisher's Exact test was performed. Where the two pathways significantly differed on sub-category variables, values, significance levels, and effect sizes are reported in Table 8.2.

Table 8.2
Significant Differences on the Sub-Category Variables of the DMAF between Aggressive and Passive Firesetters

Phase of Model		Aggressive	Passive	Total <i>n</i>	χ^2	ϕ_c
		<i>n</i>	<i>n</i>			
Background Factors						
Childhood Environment	Caregiver Experiences +	3	8	11	5.96*	.40
	Caregiver Experiences -	19	8	27		
Vulnerability Factors	Positive Peer Influences	3	8	11	5.96*	.40
	Negative Peer Influences	19	8	27		
	Vicarious Fire Influences	9	1	10	5.74*	.38
	Passive Traits	0	10	10	18.66**	.70
	Aggressive Traits	22	6	28		
	Offence Supportive Norms/Schemas	16	5	21	6.45*	.41
	Aggressive norms	15	2	17	11.62**	.55
	Normalisation of violence	16	2	18	13.48**	.60
	Alcohol/substance use	15	3	18	9.08*	.49
	Aggression	21	8	29	10.59*	.53
Offending	19	5	24	12.09**	.56	
Early firesetting	18	6	24	7.82*	.45	
No fire factors	0	5	5	7.92*	.46	
Adulthood Experiences						
Lifestyle Outcome	Anti-Social lifestyle	22	5	27	21.29**	.75
	Pro-Social Lifestyle	0	11	11		
Proximal Vulnerabilities	Increased Behavioural Problems	18	8	26	4.34*	.34
Offence and Post Offence Period						
Affective Response	Positive	17	1	18	17.80**	.70
	Negative	5	14	19		
Behavioural Response	Approach	16	1	17	15.67*	.65
	Avoidant	6	14	20		
Goal Appraisal	Positive	17	1	18	10.18*	.62
	Negative	3	5	8		

* $p < .05$, ** $p < .001$.

Key demographic and offence related characteristics of the pathways.

Mann Whitney U tests and chi square tests for independence were performed on important demographic and offence related information to explore the differences between Aggressive and Passive firesetters on these variables. Table 8.3 outlines the key differences between the pathways on demographic and offence related information. Aggressive firesetters were found to be significantly younger at the time of last firesetting ($M_{age} = 22.60$; $SD = 7.12$) and held significantly more previous offences ($M_{previous\ offences} = 31.19$; $SD = 25.24$) compared to Passive firesetters ($M_{age} = 33.44$; $SD = 14.31$; $M_{previous\ offences} = 16.75$; $SD = 33.44$). A Chi-Square test for independence revealed Aggressive firesetters were more likely to be multiple firesetters compared to Passive firesetters who were more likely to be one-time firesetters, $\chi^2(1) = 7.70$, $p < 0.01$, $\phi_c = .47$.

Table 8.3
Demographic and Offence Related Characteristics of Aggressive and Passive Firesetters

	Aggressive Firesetters ($n = 22$)		Passive Firesetters ($n = 16$)				
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>U</i>	<i>p</i>	<i>r</i>
Age	30.38	7.67	39.31	15.89	213.00	.175	
Age at last firesetting	22.60	7.12	33.44	14.31	243.5	.007*	.45
Index offences (n)	2.40	1.19	2.00	.89	136.00	.459	
Firesetting offences (n)	1.25	0.79	1.37	1.15	158.50	.962	
Previous offences (n)	31.19	25.24	16.75	33.44	79.5	.006*	-.45
Violent offences (n)	4.52	4.00	3.37	3.24	144.5	.476	

* $p < .01$

Final Pathway Descriptions and Case Studies

Aggressive pathway.

The Aggressive pathway comprised twenty-two offenders ($M_{age} = 30.38$; $SD = 7.67$) who directly approached their offence behaviour to achieve their goals, comprising 59.7% of the sample ($n = 22$). The vast majority were White British (86.4%) and individuals in this group had a significantly higher number of previous offences ($M_{previous\ offences} = 31.19$; $SD = 25.24$) compared to the Passive Firesetter group. They were significantly younger at the time of last firesetting compared to the Passive Firesetters ($M_{age} = 22.60$; $SD = 7.12$) and the majority had either an index and/or previous conviction for a firesetting offence ($n = 14$), or they had set a fire in prison ($n = 5$). Individuals in this group were significantly more likely to have set multiple fires compared to the Passive Firesetters ($\chi^2(1) = 7.70$, $p < 0.01$, $\phi_c = .47$). Table 8.4 provides a case study example of one man who followed the Aggressive pathway to firesetting.

Individuals on this pathway appeared to show a pattern of outwardly expressing their opinions or feelings, identifying and often meeting their needs by resorting to aggression and/or violence. These offenders were characterised by troubled childhood experiences (i.e., *negative caregiver experiences, negative peer influences*) and high levels of aggression/violence and anti-social behaviour were evident (i.e., *aggressive personality traits and behaviour, offence supportive norms, alcohol/substance misuse, early offending*). The majority of men following this pathway displayed multiple fire factors emerging in childhood (i.e. two or more) and nearly all experienced *vicarious fire experiences* ($n = 9$) and/or engaged in *early*

firesetting ($n = 18$). The majority of firesetters reporting fire interest ($n = 9$)²¹ and fire normalisation ($n = 8$)²² were also found to follow the Aggressive pathway.

Their adulthood experiences were all characterised by *anti-social lifestyles* ($n = 22$), and most men following this pathway identified some form of *major life stressor* (i.e., largely social exclusion; $n = 13$) and reported *increased behavioural problems* (e.g., alcohol/substance misuse, aggression, increased offending; $n = 18$) as a result of lifestyle outcome and major stressors. The majority of individuals following this pathway identified a trigger to their offence, largely around a *conflict or provocation* ($n = 13$). *Anger* was the most commonly reported response to the triggering event ($n = 17$).

The majority of Aggressive firesetters formed fire-related goals ($n = 14$) and either premeditated their fire or engaged in some form of low level planning ($n = 18$). However, this pathway also included the majority of firesetters who formed non-fire goals, planning to commit an offence other than firesetting in order to fulfil their aims ($n = 8$). The most common motives for setting the fire were to exact revenge for a real or perceived injustice ($n = 7$), to escape the situation they were in ($n = 4$), or to protest against a situation they could not resolve through other means ($n = 3$). Materials were mainly *sourced* by these individuals ($n = 14$) and their fires were largely set to occupied premises (e.g., domestic dwellings, businesses, or prison cells; $n = 17$). Aggressive firesetters were likely to report *positive affect* (e.g., excitement,

²¹ The imprisoned firesetters showing fire interest on this pathway also scored in the clinically problematic range for serious fire interest in Studies 1 and 2 on the Five-Factor Fire Scale (Ó Ciardha et al., 2015b).

²² Six out of the eight imprisoned firesetters on this pathway scored in the clinically problematic range for fire normalisation on the Five-Factor Fire Scale (Ó Ciardha et al., 2015b) in Studies 1 and 2.

happiness, satisfaction; $n = 17$) and an *approach behavioural response* (e.g., watching the fire, wanting to watch the fire but being unable to, being confined in proximity to the fire but feeling in control; $n = 16$) immediately after they had set the fire. The majority reported *positive goal appraisal* following the fire ($n = 17$).

Table 8.4

Case Study - Mr X**Aggressive Firesetter**

Mr X set fire to an occupied dwelling with his co-defendant killing all three occupants when he was a young adult. He has three previous offences: arson, a theft and kindred offence, and a miscellaneous offence.

1. Background Factors

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 (*abusive experiences*) and believed everyone got bullied when they were younger (*normalised violence*). He often lost his temper and reacted violently (*impulsive traits*). 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 normalisation*). He did not have any real fascination with fire but was arrested for setting fire to a stolen motorcycle (*early firesetting*).

2. Adulthood Experiences

Mr X's early adulthood was characterised by a largely anti-social lifestyle. He engaged in frequent criminal activities, mainly theft, kindred and drug offences and experienced short periods of incarceration in prison (*anti-social lifestyle/social exclusion/increased behavioural problems*).

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 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. 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 was satisfied by the damage the fire had done and wasn't upset the victims had died (*positive goal appraisal*), but would have preferred they had stayed alive to face the consequences of their actions.

Passive pathway.

The Passive firesetter pathway is composed of 16 offenders ($M_{age} = 39.31$; $SD = 15.89$) who indirectly approached their offence behaviour to achieve their goals, comprising 42% of the sample. Individuals following this pathway were more ethnically diverse compared to the Aggressive Firesetters with the majority identified as White British (56.3%), and the remaining as Black Caribbean (18.8%), Pakistani (12.5%), and Indian (12.5%). Individuals in this group had a significantly lower number of previous offences ($M_{previous\ offences} = 16.75$; $SD = 33.44$) and were significantly older at the time of their last firesetting incident ($M_{age} = 33.44$; $SD = 14.31$) compared to the Aggressive Firesetters. The majority had either an index offence or previous conviction for arson ($n = 14$); only one offender had set a fire in prison. Individuals in this group were 4.26 times more likely to have set only one fire compared to the Aggressive Firesetters ($\chi^2(1) = 7.70$, $p < 0.01$, $\phi_c = .47$). Table 8.5 provides a case study example of one man who followed the Passive pathway to firesetting.

Individuals following 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. Individuals following this pathway reported fewer adverse experiences in their childhood environment compared to the Aggressive pathway. Half of these firesetters described positive caregiver experiences ($n = 8$), positive peer influences ($n = 8$) and only small numbers reported vicarious fire or violent influences ($n = 1$; $n = 3$). However, the majority reported abusive experiences ($n = 14$). These offenders

typically displayed fewer vulnerability factors emerging during childhood. However, *passive personality traits* characterised by a lack of assertiveness were common and the majority reported avoidant coping strategies (e.g., disengagement; $n = 12$). They showed lower numbers of fire-factors compared to the Aggressive Firesetter pathway (e.g., one or less). Those offenders with *no fire factors* ($n = 5$) and those who reported *negative fire experiences* ($n = 4$) were found to follow this pathway. Other fire-related deficits were rare: only a handful of Passive firesetters reported vicarious fire experiences ($n = 1$), fire interest ($n = 2$)²³, fire normalisation ($n = 2$)²⁴, or childhood firesetting activities ($n = 6$).

Firesetters following this pathway typically developed *pro-social lifestyles* progressing through adulthood ($n = 11$). The majority experienced significant life stressors ($n = 14$); half of the men experienced some form of trauma (e.g., loss of loved one, major illness, victim of a crime; $n = 8$). As a result of stressors experienced, the majority experienced increased behavioural problems ($n = 8$), absence of support ($n = 9$), and the onset of mental health problems ($n = 7$). Whilst the majority identified a trigger to their offending ($n = 15$), anger ($n = 10$), and frustration ($n = 7$) as a response were more common in this group.

The majority of Passive Firesetters formed fire-related goals ($n = 12$) and either premeditated their fire or engaged in some form of low level planning ($n = 12$). The most common motives for setting the fire were to exact revenge for a real or perceived injustice ($n = 4$), to exert their own power over a situation or another

²³ Confirmation of fire interest for one participant was unavailable as he declined to complete the cluster derivation measures in Studies 1 and 2. The other participant did not score in the clinically problematic range for fire interest in Studies 1 and 2.

²⁴ Confirmation of fire normalisation for one participant was unavailable as he declined to complete the cluster derivation measures in Studies 1 and 2. The other participant did not score in the clinically problematic range for fire normalisation in Studies 1 and 2.

individual ($n = 4$), or to protest against a situation they could not resolve through other means ($n = 3$). Materials were mainly sourced by these individuals ($n = 10$) and their fires were largely set to occupied properties ($n = 8$) or other individuals ($n = 4$). Passive firesetters were more likely to report *negative affect* (e.g., fear, panic, anger, frustration, disappointment; $n = 14$) and an associated *avoidant behavioural response* (e.g., fleeing the fire or wanting to flee the fire but being trapped; $n = 14$), immediately after they set the fire. The majority reported *negative goal appraisal* following the fire ($n = 5$).

Table 8.5**Case Study - Mr Y****Passive 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 55 years old at the time of the fire and had 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 (*abusive experiences*). He felt conflicted about his father: he was often physically disciplined and bullied (*abusive experiences*) 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 did not 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, describing this as a negative experience (*early firesetting, negative fire experiences*). 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 an affective 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. 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

Study 4 represents the second part of a major investigation of imprisoned firesetters' offence characteristics. Building on the DMAF developed in the previous chapter, this study sought to investigate whether imprisoned firesetters followed potential taxonomic pathways through the model. The findings from the current study suggest there are two possible unique offence pathways, Aggressive and Passive, which differ on important key demographic, offence-related characteristics, and how firesetters progress through the sub-category variables of the DMAF. The identification of two distinct pathways provides a useful classification of how these individuals approach their offending in a temporal dimension, thereby reducing their heterogeneity into more manageable groups. Further, the key differences found between the pathways provide evidence for differing risk factors and clinical features which practicing professionals may find useful to consult during treatment formulation. Individual case formulation may be used to work through the offender's progression through their own offence chain. This would enable clinicians to break down each phase of the individual's offence pattern and target problem areas specific to them (e.g., how their own experiences may have led to their firesetting).

Individuals following the Aggressive pathway were characterised by a pattern of persistent anti-sociality and criminality likely to stem from troubled childhood and adulthood experiences (e.g., higher number of previous offences, anti-social norms, anti-social lifestyles). In line with existing literature, the criminal uses of fire are likely to have been learnt in part from socialisation in an anti-social, pro-criminal environment (e.g., vicarious fire influences; Wolford, 1972; Rice & Harris, 1991). Fire is likely to be perceived as a choice tool in the context of their offending (e.g., early

onset of deliberate firesetting, fire normalisation, fire interest). These individuals appear to show a consistent pattern of outwardly expressing their opinions or feelings, identifying and meeting their needs by resorting to aggression and/or violence (e.g., poor anger regulation in response to triggering events). Their fires were often intentionally life threatening (e.g., planned, targeting occupied premises) and the positive affect experienced after their firesetting is likely to reinforce the repetitive use of fire in the context of their offending (e.g., multiple firesetting incidents), which appears in line with the hypothesised maintenance of firesetting outlined in Functional Analysis Theory (Fineman, 1980, 1995) and the M-TTAF (Gannon et al., 2012). Consequently, Aggressive Firesetters may be likely to benefit from treatment focusing on: (i) attitudes and sentiments supportive of offending behaviour, aggression and violence, and anti-social lifestyles; (ii) poor emotional regulation and problematic coping styles in terms of anger, aggression, and provocation; (iii) alcohol/substance abuse and mental health treatment where relevant; and (iv) fire-specific work exploring their relationship with, and perception of fire stemming from their wider social environment, addressing the factors contributing to the onset and repetitive use of fire in the context of their offending.

However, individuals following the Passive pathway appear to present a very different picture. These imprisoned firesetters are likely to have experienced a more pro-social lifestyle compared to Aggressive Firesetters (e.g., positive caregiver experiences, positive peer influences, fewer vulnerabilities). However, Passive firesetters appear to show problems in terms of poor self-concept, impoverished social competence, and poor coping skills which may underlie their indirect approach to their firesetting offences (e.g., passive personality traits, disengagement). Early

fire related deficits are unlikely to be as pervasive as individuals following the Aggressive pathway. However, in line with social learning theorists (Bandura, 1976; Vreeland & Levin, 1980) their perception of, and relationship with fire may stem from their own personal experiences (e.g., negative fire experiences) rather than their wider social environment (i.e., which may be more characteristic of the Aggressive pathway). Criminal behaviour and firesetting in particular may occur later in life compared to the Aggressive Firesetters (e.g., older at age of last firesetting, lower number of previous offences, likely to have only one firesetting incident) and is likely to stem from the combination of adverse adulthood experiences (e.g., major stressors), poor coping skills, and resulting vulnerabilities (e.g., behavioural problems, absence of support, mental health problems). These individuals appear to allow grievances and annoyances to mount (e.g., frustration) and are possibly prone to explosive outbursts (e.g., setting a fire), usually out of proportion to the triggering incident. Whilst their fires may be life threatening (e.g., planning their fires, targeting occupied properties or other individuals), the negative affect and consequences experienced as a result may prohibit future firesetting (e.g., one time firesetters), which may serve to contribute towards Gannon et al.'s (2012) explanation of desistance from firesetting in the M-TTAF. Clinically, Passive firesetters are likely to benefit from work focusing on: (i) poor emotional regulation in terms of ruminative thinking; (ii) inappropriate coping styles relating to poor self-concept and social competence, in particular around low assertiveness; (iii) treatment of any identified mental health problems where relevant; and (iii) fire specific work to address their attitudes towards and perception of fire as a result of their fire-related experiences, with particular focus on the role played by any negative fire experiences.

The temporal classification of imprisoned firesetters as either Aggressive or Passive may provide useful information to help further inform the four M-TTAF trajectories validated in Study 2 (i.e., Anti-Social Cognition Firesetters, Need for Recognition Firesetters, Grievance Firesetters, and Emotionally Expressive Firesetters). First, the key characteristics of the Aggressive pathway appear consistent with the majority of characteristics and treatment needs outlined in Study 2 for the Anti-Social Cognition Firesetters (i.e., younger at age of last firesetting, high number of previous offences, offence supportive attitudes, high levels of anti-sociality, poor anger emotional regulation, identification with fire, and normalisation of the unconventional uses of fire) and Emotionally Expressive Firesetters (i.e., repeat firesetting, high number of previous offences, offence supportive attitudes, poor emotional regulation, fire interest, identification with fire, and normalisation of fire). However, in Study 2, mental health problems were a key characteristic for the *Emotionally Expressive Firesetters* (e.g., Depressive and Borderline personality disorder, Anxiety disorders; see Chapter Six), whereas mental health problems appear to be more characteristic of the Passive pathway in the current study.

Second, the key characteristics of the Passive pathway appear in line with the characteristics and treatment needs of the Need for Recognition and Grievance Firesetters identified in Study 2. In line with the Passive pathway, individuals associated with both these validated M-TTAF trajectories were older at the time of last firesetting, more likely to be one time firesetters, had fewer previous offences, and fewer offence supportive attitudes. In Study 2, Need for Recognition Firesetters also displayed poor self-concept and social competence, mental health problems, and despite showing some fire-related problems, a long standing inappropriate interest in

fire was not evident. Further, Grievance Firesetters were found to present fewer fire-related deficits and psychological vulnerabilities compared to the other trajectories, in line with the Passive pathway. However, Grievance Firesetters did also show a greater interest in fire in Study 2, which is more consistent with elements of the Aggressive pathway. Thus, it seems each of the validated M-TTAF trajectories from Study 2 follow specific pathways through the DMAF. However, caution should be exercised in drawing definitive conclusions as further validation would be required to confirm any direct association. Future research would benefit from analysing the offence chains of imprisoned firesetters classified into each of the updated M-TTAF trajectories to ascertain if the trajectories can indeed be empirically linked to the Aggressive or Passive pathways of the DMAF. Clinically, practicing professionals may find it useful to consult both the validated M-TTAF trajectories and DMAF pathways when tailoring treatment to the needs of individual imprisoned firesetters. First, mapping firesetters onto the updated M-TTAF trajectories will help reduce the heterogeneity of imprisoned firesetters into smaller manageable groups for treatment purposes, by prioritising different criminogenic needs for different types of imprisoned firesetter. Second, identifying which pathway may be followed by imprisoned firesetters through the DMAF may prove useful for individual case formulation.

Finally, the Aggressive and Passive pathways identified in the DMAF differ substantially from those identified by Tyler et al., (2014) within the FOC-MD. Tyler et al.'s (2014) pathways are distinguished by the presence and/or time of onset of mental health problems and offenders' level of fire interest. However, the Aggressive and Passive pathways of the DMAF focus on the manner firesetters' approach their

offence based on underlying cognitive, affective, personality, and behavioural characteristics. The two models combined are likely to present a more complete picture of the offence chains for different firesetting target populations (e.g., mentally disordered firesetters and imprisoned firesetters). Future research would certainly benefit from cross-validation studies with further samples of male and female firesetters; ultimately an over-arching descriptive model of the offence chain for deliberate firesetting could be developed, with the FOC-MD and DMAF acting as potential sub-offence chains, each with discreet pathways offenders may follow.

Despite the convincing evidence for two distinct taxonomic offence pathways leading to firesetting in imprisoned offenders, both requiring different treatment formulations, some limitations should be considered. The current study suffers from the limitations identified in Chapter Seven as part of the development of the overall DMAF, thus limiting the generalisability of the findings. However, samples in offence chain models tend to be small and do not need to be representative to generate common pathways to offending. A core strength of using grounded theory methodology to generate offence patterns is its ability for future modification in response to additional data. Future research should seek to further validate the offence pathways identified in the DMAF with additional samples of imprisoned men and women, using a combination of offence narratives and psychometric data in order to contribute to the limited amount of research conducted with imprisoned firesetters, and thus serve to further inform evidence based practice.

Chapter Nine

General Discussion and Concluding Comments

Overview of the Research

This thesis began by examining the literature pertaining to the characteristics and treatment needs of adult male imprisoned firesetters, followed by a review of existing theoretical developments in the area. Three key areas of deficit were highlighted. First, very little research has been conducted with imprisoned firesetters; the majority of existing findings have been drawn from research based on arrest and/or conviction data drawn from crime records, pre-trial psychiatric assessments, or from samples of mentally disordered offenders. Research from a handful of studies conducted with imprisoned firesetters has provided some convincing evidence they share unique treatment needs compared to other non-firesetting imprisoned offenders and thus require specialist assessment and treatment. Further, there is some preliminary evidence to suggest there may be discreet differences between subtypes of imprisoned firesetters. However, no research has examined in any detail whether subtypes of imprisoned firesetter might present different treatment needs. In particular, no research has considered if specialist treatment is required for all imprisoned firesetters or whether more generic treatment approaches might be sufficient for some types of imprisoned firesetters (i.e., generalists or specialists).

Second, with the exception of the M-TTAF (Gannon et al., 2012), the vast majority of existing theoretical efforts do not adequately explain firesetting perpetrated by imprisoned offenders, thus limiting their ability to inform evidence

based practice in prison settings. However, whilst the development of the M-TTAF (Gannon et al., 2012) represents the only comprehensive etiological explanation of deliberate firesetting able to account for firesetting in imprisoned offenders to date and allowing for different types of firesetter by incorporating a second Tier, the theory has yet to be empirically validated. Evaluating the empirical adequacy and scope of the five prototypical trajectories is key for appraising the relative strengths and weaknesses of Tier 2 of the M-TTAF in relation to previous classifications and for informing clinicians if they should be consulted in the treatment of imprisoned firesetters (e.g., by tailoring treatment to different types of imprisoned firesetter).

Third, it was highlighted there was a dearth of theoretical explanations of firesetting relating to how the offence process unfolds in a temporal dimension for imprisoned offenders. Whilst the development of Tyler et al.'s (2014) FOC-MD represents a new and significant contribution to theoretical explanations of firesetting, the model is limited to mentally disordered firesetters and does not provide an adequate explanation for how other offenders, such as those found in the prison population, may come to set a fire. The absence of a micro-theory for imprisoned firesetters is hampering the development of both higher level theory and classification, and is consequently impacting the generation of treatment programmes.

Overview of the Main Findings

Study 1: An evaluation of the generalist/specialist debate with adult male imprisoned firesetters.

Study 1 represented an empirical evaluation of whether some imprisoned firesetters resemble generalists and other imprisoned firesetters resemble specialists to further inform the generalist/specialist debate within the firesetting literature. Hierarchical Cluster Analyses on a sample of 246 imprisoned firesetters and non-firesetting imprisoned offenders yielded five distinct clusters, each depicting a unique combination of psychological characteristics and treatment needs. Three generalist subtypes and two specialist subtypes emerged from the analyses. Comparison of generalist and specialist imprisoned firesetters showed they did not differ on core demographic or offence related information. However, specialist firesetters were found to hold significantly greater deficits compared to generalist firesetters in all treatment need areas known to be associated with imprisoned firesetters from the literature. Specialist firesetters were characterised by notable problems in terms of offence supportive attitudes, poor self-esteem and associated loneliness, poor assertiveness, high levels of anger and trait aggression, low tolerance towards frustration and provocation, impulsive tendencies, and notable mental health problems. Specialist firesetters were characterised by marked fire-related deficits in terms of fire interest and identification, knowledge of fire safety, and normalisation of the criminal uses of fire. Overall, generalist firesetters were characterised by offence supportive attitudes, impoverished social skills (i.e., low assertiveness and associated loneliness), poor anger regulation, ruminative tendencies, and boredom proneness. They were also found to have poor fire safety knowledge and normalised the criminal

uses of fire. Since generalist firesetters appeared to present psychological deficits known to be associated with firesetters from the literature, but to a lesser extent than the specialist firesetters, the need for a more gradient approach towards the generalist/specialist debate was thus confirmed. Further, identification with fire and serious fire interest were the two strongest predictors of whether imprisoned firesetters were classified as generalists or specialists, confirming that it is in fact imprisoned firesetters' perception of and relationship with fire which differentiates the two.

Study 2: An empirical evaluation of tier 2 of the Multi-Trajectory Theory of Adult Firesetting.

Study 2 represented the first known empirical evaluation of the five prototypical trajectories outlined in Tier 2 of the M-TTAF (Gannon et al., 2012). Whilst Study 1 provided a more fine-tuned approach to the generalist/specialist debate, the findings were unlikely to be an accurate reflection of specific types of imprisoned firesetter since the clusters generated were based on the shared similarities between non-firesetting imprisoned offenders and imprisoned firesetters. Consequently, using the prototypical trajectories of Tier 2 of the M-TTAF as a theoretical backdrop, follow up cluster analyses with the 128 adult male imprisoned firesetters from Study 1 were conducted in Study 2. Hierarchical Cluster Analyses using the same measures employed in Study 1 revealed four distinct groups of imprisoned firesetter. Whilst the cluster solution did not provide support for all five trajectories of the M-TTAF, evidence emerged for the Anti-Social Cognition, Need for Recognition, Grievance, and Emotionally Expressive trajectories. The findings also provided evidence for necessary refinements and developments to each of the

validated trajectories, particularly in relation to the prevalence of specific mental health problems (e.g., Need for Recognition, Grievance) and fire-related deficits (e.g., Anti-Social Cognition, Need for Recognition, Grievance). Finally, firesetters in each of the validated trajectories were found to be significantly associated with being classified as either generalists or specialists in Study 1. The findings suggested that the majority of Anti-Social Cognition, Need for Recognition, and Grievance firesetters were likely to benefit from more general treatment options as they were classified as generalist firesetters in Study 1. However, almost a quarter of the Anti-Social Cognition Firesetters and a small proportion of Need for Recognition Firesetters were also classified as specialists in Study 1, suggesting a sub-section of these groups may require more specialist assessment and treatment. Emotionally Expressive Firesetters were all classified as specialist firesetters in Study 1, suggesting targeted firesetting assessment and treatment is likely to be required for individuals resembling this trajectory.

Study 3: The development of the Descriptive Model of the Offence Chain for Adult Male Imprisoned Firesetters (DMAF).

Whilst the findings from Study 2 provided empirical support for four of the M-TTAF trajectories in terms of imprisoned firesetters' psychological deficits and clinical features, information regarding their background characteristics or how they came to set their fires was not specifically evaluated. Thus, Study 3 sought to develop an offence chain model using a sub sample of 38 adult male imprisoned firesetters from Study 2. Using Grounded Theory analysis, the Descriptive Model of the Offence Chain for Adult Male Imprisoned Firesetters (DMAF) was developed documenting the cognitive, behavioural, affective, and contextual factors leading to a single incident of

deliberate firesetting. Important new findings were gleaned from the development of the DMAF. First, the model highlighted the importance of the offender's wider social environment during childhood, in particular in relation to vicarious fire experiences. Second, the emergence of fire factors as vulnerabilities arising in childhood emphasised the pivotal role that childhood experiences of fire may play in terms of future firesetting. Third, the DMAF highlighted the importance of contextual triggers and their associated emotional responses in terms of how the offender interacts with his environment and copes with adverse events. Fourth, the DMAF described a dual level process in imprisoned firesetters' offence goal formation: offenders either formed a non-fire related goal first and then a fire related goal; or they purely formed a fire related goal. Within these, two new previously unidentified fire related offence goals emerged (i.e., escape, power). The DMAF indicated imprisoned firesetters were likely to appraise the relative success of their fire in achieving their original offence goal (i.e., positive or negative). Finally, a number of important treatment needs arose from the DMAF, particularly in terms of aggression and anger, alcohol and substance misuse, poor coping strategies, poor communication skills, anti-social belief systems, contextual factors contributing to firesetting, and the presence of fire-related deficits.

Study 4: Pathways to firesetting in adult male imprisoned offenders: A preliminary investigation.

Whilst the DMAF provided a clear, yet detailed, account of firesetting it did not describe in detail potential different taxonomic offence pathways taken by adult male imprisoned firesetters. Thus, in Study 4 the prevalence of specific offence patterns or pathways characterising adult male imprisoned firesetters was examined. Two distinct taxonomic offence pathways followed by imprisoned firesetters emerged

from the model, the Aggressive and Passive pathways. These were found to differ on important key demographic features, offence-related characteristics, and their progression through the sub-category variables of the DMAF. Imprisoned firesetters found to follow the Aggressive pathway experienced troubled childhood backgrounds and adulthood experiences, characterised by a consistent pattern of criminality, anti-social behaviour, and poor coping strategies. These individuals appeared to directly approach their offence behaviour to achieve their goals, showing a pattern of outwardly expressing their opinions or feelings, identifying and meeting their needs by resorting to aggression and/or violence. Conversely, individuals following the Passive pathway appeared to experience relatively stable childhood experiences, with a marked deterioration during adulthood, characterised by adverse life events, poor coping, and problem solving skills. These individuals 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, usually out of proportion to the triggering incident. The key differences found between the pathways provided evidence for differing risk factors and clinical features which practicing professionals may find useful to consult during treatment formulation. Individual case formulation may be used to work through the offender's progression through their own offence chain to address how their own personal experiences may have led to their firesetting.

The Characteristics and Treatment Needs of Adult Male Imprisoned Firesetters

The research undertaken in this thesis sought to contribute to the dearth of existing research in deliberate firesetting in imprisoned offenders by examining one sample of imprisoned firesetters in three different ways: (i) by treatment outcome

(i.e., generalist or specialist treatment); (ii) by treatment need (i.e., by evaluating the M-TTAF trajectories); and (iii) how the offence process unfolds (i.e., DMAF and associated pathways to firesetting). The findings from each study have been discussed in detail in Chapters Five to Eight. However, taken together, three key conclusions can be drawn from the combined findings: (i) different types of imprisoned firesetter have different fire-related deficits; (ii) different types of imprisoned firesetter have different treatment needs; and (iii) the findings highlight the importance of considering different target populations and different types of firesetter in theory development and evaluation. Limitations and future research directions are subsequently discussed.

Different types of imprisoned firesetter have different fire-related deficits.

As outlined in Chapter Two, the perception that firesetters are a unique group with specific needs historically originated in the relationship between firesetting and specific diagnostic categories (i.e., Pyromania, Fineman, 1995; Vreeland & Levin, 1980), in which firesetting was linked to an intense interest in, and fascination with fire (Lewis & Yarnell, 1951). The recent findings from Gannon et al. (2013) were the first to empirically measure fire-related deficits in imprisoned firesetters and confirmed that the specificity of imprisoned firesetters compared to other imprisoned offenders lies primarily in their interest in, and relationship with fire. However, in this thesis the use of Ó Ciardha et al.'s (2015b) five-factor scale in Studies 1 and 2, as well as the use of exploratory qualitative methods in Studies 3 and 4, represent the first known attempt to explore discreet differences between different types of imprisoned firesetter using different types of fire-related deficits.

The findings throughout the empirical studies in this thesis are the first to evidence that different types of imprisoned firesetter hold different fire-related deficits. First, in Study 1, fire interest and identification were specifically associated with specialist firesetters, whereas fire normalisation and poor fire-safety awareness were associated with generalist firesetters. Second, in Study 2, identification with fire and normalisation of its criminal uses were characteristic of imprisoned firesetters associated with the Anti-Social Cognition and Need for Recognition Trajectories of the M-TTAF. Conversely, fire interest was only noted in imprisoned firesetters resembling the Grievance and Emotionally Expressive trajectories of the M-TTAF. Finally, fire interest and fire normalisation were found to be vulnerabilities associated with Aggressive firesetters in Study 4, likely to result from early vicarious fire experiences and childhood firesetting activities. Conversely, Passive firesetters were found to hold relatively few fire-related deficits; rather their firesetting appeared to stem from negative fire experiences.

Taken together, two key implications arise from these findings. First, in contrast to previous literature (e.g., Gannon et al., 2013), an interest in, and fascination with fire does not appear to be characteristic of all imprisoned firesetters. In fact, only a sub-section of imprisoned firesetters in Studies 1 (i.e., specialists), 2 (i.e., Grievance and Emotionally Expressive Firesetters), and 4 (i.e., Aggressive firesetters²⁵) were found to hold an interest in fire. Rather, the findings suggest identification with fire and fire normalisation may be the key identifying fire-related deficits associated with imprisoned firesetters. Indeed, the majority of imprisoned

²⁵ The imprisoned firesetters showing fire interest on the Aggressive pathway in Study 4 were a sub-section of the imprisoned firesetters showing fire interest in studies 1 and 2 (see Chapter Eight).

firesetters in the current sample were found to identify with fire and/or normalise its criminal uses in Studies 1 (i.e., fire identification and normalisation for specialists; fire normalisation for generalists), 2 (i.e., Anti-Social Cognition, Need for Recognition, Emotionally Expressive), and 4 (i.e., fire normalisation; Aggressive firesetters²⁶). Further, based on the different treatment needs found to be associated with distinct types of imprisoned firesetter throughout the studies in this thesis, it may be subtypes of imprisoned firesetter identify with, and normalise the unconventional uses of fire in different ways. For generalist firesetters and those resembling Anti-Social Cognition Firesetters (i.e., generalist sub-section; see Chapter Six), fire is likely to be part of their criminal identity as one of many useful tools available to them in the context of their offending. In line with proponents of the generalist approach to firesetting, generalist firesetters are likely to regard criminal activity as a 'lifestyle', whereby firesetting is part of a wide array of offending behaviours (Hill et al., 1982; Sapsford, et al., 1978; Soothill, et al., 2004) and the criminal use of fire is likely to have been learnt from socialisation in a pro-criminal anti-social environment (i.e., social learning theory, Frisell et al., 2011; Hurley & Monaghan, 1969; O'Sullivan & Kelleher, 1987). Firesetting is likely to be facilitated by either poor fire-safety awareness or a lack of concern for the consequences of fire as a result of highly anti-social attitudes. However, for specialist firesetters and those resembling the Need for Recognition (i.e., specialist sub-section; see Chapter Six) and Emotionally Expressive trajectories of the M-TTAF, fire is likely to be part of their personal identity as a useful, and subsequently normal, means of communication and/or coping. For

²⁶ The imprisoned firesetters showing fire normalisation on the Aggressive pathway in Study 4 were a sub-section of the imprisoned firesetters showing fire normalisation in studies 1 and 2 (see Chapter Eight).

example, fire may become normalised as a means of emotional expression as a result of adverse childhood experiences where fire was used in the context of negative emotional events (e.g., fire used as punishment; Haines, Lambie, & Seymour, 2006; Ritvo, Shanok, & Lewis, 1983). This was also highlighted in Study 4, where negative experiences around fire were found to be pivotal in how individuals following the Passive pathway of the DMAF came to set their fires.

Second, these findings suggest fire-specific treatment for imprisoned firesetters needs to target different fire-related deficits. Treatment should seek to explore potentially different underlying cognitive processes in terms of individuals' fire-related deficits (e.g., implicit theories, Ó Ciardha & Gannon, 2012). In particular, practising professionals should explore the factors related to the onset, development, and maintenance of individuals' fire interest and identification (e.g., adverse life experiences, fire-related experiences etc.), and how and why firesetting is perceived as normal for different types of imprisoned firesetter.

The need for different types of treatment tailored to different types of firesetter.

Taken together, the overall findings from this thesis provide evidence for the need for different types of treatment tailored to different types of imprisoned firesetter. By reducing this group of offenders into smaller homogenous groups, treatment options can be made more manageable for practicing professionals and consulting clinicians whilst remaining in line with the leading theories of offender rehabilitation (Andrews & Bonta, 2003; Ward, Mann, & Gannon, 2006). In particular, each of the different classifications of imprisoned firesetter derived from the empirical studies in this thesis may be useful to further inform the underlying *risk*

and *need* principles of the Risk Need Responsivity Model of offender rehabilitation (RNR; Andrews & Bonta, 2003).

The *risk* principle of the RNR model is concerned with the offender's levels of risk for reoffending and the amount of treatment they should receive (Ward, Polaschek, & Beech, 2006). The underlying assumption is that risk is indicative of clinical need and consequently high risk offenders should receive the most amount of treatment (Ward et al., 2006). The findings from Study 1 should help guide clinicians in assessing firesetters' levels of risk by determining whether they resemble generalists or specialists, and thus whether they require highly specialised assessment and treatment, or whether more generic treatment approaches are likely to suffice. The findings from Study 1 suggest specialist firesetters are likely to present the most elevated levels of future firesetting risk. Specialist firesetters were found to hold significantly greater deficits compared to generalist firesetters in all areas known to be associated with firesetters from the literature. In particular, they were found to present a number of the known risk factors from the literature found to positively predict firesetting recidivism: an extensive and violent offending history, notable mental health problems, and pervasive fire-related deficits, in particular around fire interest and fire identification (Dickens et al., 2009; Ducat et al., 2015; Edwards & Grace, 2014). Although generalist firesetters were found to present deficits in areas known to be associated with firesetters from the literature, they appear to present lower levels of firesetting risk in terms of a lack of notable mental health problems, serious fire interest, or identification with fire. For generalists, firesetting is likely to be diminished by targeting their wider criminogenic needs through more general approaches to treatment (e.g., offence supportive attitudes,

cognitive and social skills) although some level of fire safety awareness training is likely to be required. Consequently, in line with the *risk* principle of the RNR model, it is likely treatment should be prioritised for the higher risk specialist firesetters.

The *need* principle of the RNR model advocates treatment programmes should focus on the criminogenic needs of the individual offender (i.e., dynamic risk factors) in order to reduce future reoffending (Ward et al., 2006). The findings from Study 2 provide evidence that different types of imprisoned firesetter present different psychological characteristics and clinical features, and thus have different treatment needs (i.e., Anti-Social Cognition Firesetters, Emotionally Expressive Firesetters, Need for Recognition Firesetters, and Grievance Firesetters; see Chapter Six). Further, the findings from Study 4 indicate imprisoned firesetters may also present two distinct ways of approaching their offence as outlined by the identification of the Aggressive and Passive pathways in the DMAF model. Thus, practicing professionals may find it useful to consult the validated M-TTAF trajectories and DMAF pathways when tailoring treatment to the needs of individual imprisoned firesetters. First, mapping firesetters onto the updated M-TTAF trajectories will help reduce the heterogeneity of imprisoned firesetters into smaller manageable groups for treatment purposes, by prioritising different criminogenic needs for different types of imprisoned firesetter. Second, identifying which pathway may be followed by firesetters through the DMAF may prove useful for individual case formulation. The pathway conceptualisations are intended to help clinicians work with offenders through their own offence chain, breaking down each phase of the individual's offence pattern and target problem areas specific to them (e.g., how their own experiences may have led to their firesetting).

However, overall, the need for different types of treatment for different types of imprisoned firesetter highlights the importance of a combination of group offending behaviour programmes and individual therapeutic work with imprisoned firesetters. General offender behaviour programmes (e.g., NOMS Accredited Offender Behaviour Programmes) are likely to be able to target deficits common to imprisoned firesetters and other offending populations (i.e., for those resembling Anti-Social Generalists, Need for Recognition, and Grievance subtypes). Specialist firesetting group programmes (e.g., FIPP; Gannon, 2012) may be suitable for those presenting deficits unique to specialist firesetters (i.e., for those resembling Anti-Social Specialists and Emotionally Expressive firesetters). However, in all cases, individual case formulation and individual therapeutic work to support group treatment are recommended, as the current findings suggest all imprisoned firesetters require some level of fire-specific work (i.e., fire safety awareness and fire supportive attitudes for generalists, all fire-related deficits for specialists). The implication of being able to subtype treatment options for different groups of imprisoned firesetters is likely to impact how they are assessed, managed, and disposed of within the criminal justice system, enabling professionals to focus on the appropriate combination of rehabilitation strategies (e.g., education, employment, psychological treatment).

The importance of considering different target populations and different types of firesetter in theory development and evaluation.

The combined findings in this thesis highlight the importance of considering different target populations and different types of firesetter in theory development and evaluation. First, by examining one sample of imprisoned firesetters in three

different ways, the findings from this thesis highlight that different types of imprisoned firesetter emerge depending on the purpose sought for the classification (i.e., treatment outcome, treatment needs, offence process), indicating there is unlikely to be one definitive, all-encompassing typological classification of imprisoned firesetters. Whilst this further highlights the inadequacy of existing attempts to subtype firesetters using a typological approach, understanding the taxonomic structure of firesetting populations should nevertheless remain a key part of theory building and evidence based practice (Knight & Prentky, 1990). Different classifications are likely to be able to further inform theoretical efforts by distinguishing different types of imprisoned firesetter based on the central attributes of a particular theory (e.g., Dynamic Behaviour Theory, Fineman, 1980, 1995; M-TTAF, Gannon et al., 2012). Further, classification may prove useful for evidence based practice by distinguishing different types of imprisoned firesetter based on offence and crime scene characteristics (i.e., for law enforcement agencies), risk factors, and/or treatment need (i.e., for practicing professionals, consulting clinicians; Dickens & Sugarman, 2012b). Future attempts to classify imprisoned firesetters should not only seek to address the methodological limitations of existing typological classifications (see Chapter Three), but should also be clear on the intended purpose of classification and thus the applicability of the findings.

Second, the findings from Studies 2 and 3 highlight the empirical adequacy of the M-TTAF to explain firesetting in imprisoned offenders and its ability to account for different types of imprisoned firesetters, thus indicating it should be considered a useful theoretical framework for practising professionals to consult during treatment planning and formulation. First, the evaluation of Tier 2 of the M-TTAF in Study 2

indicated the majority of the M-TTAF trajectories are well supported in imprisoned firesetters, but some refinements and developments are likely to be required, particularly in relation to the prevalence of specific mental health problems and fire-related deficits. Further, it was highlighted that future cross validation studies were required, in particular to ascertain whether the trajectories apply to other firesetting populations (e.g., females, mentally disordered firesetters) and whether there was evidence for the Fire Interest trajectory which remains unsupported based on the findings from Study 2. Second, the majority of the key findings emerging from the development of the DMAF in Chapter Seven are accounted for by Gannon et al. (2012) in the M-TTAF (i.e., fire-related deficits and experiences, the role of proximal life events and contextual factors, and the potential factors related to firesetting maintenance and desistance). However, the DMAF also highlighted the M-TTAF may require further refinements in order to account for the dual level process in which imprisoned firesetters form their offence related goals (i.e., non fire goals, fire-related goals).

Third, the combined findings throughout this thesis suggest certain elements of Social Learning Theory (Bandura, 1976; Kolko & Kazdin, 1986; Macht & Mack, 1968; Singer & Hensley, 2004; Vreeland & Levin, 1980) appear to be able to explain some of the factors linked to deliberate firesetting in imprisoned offenders. Indeed, the emergence of important environmental factors in the context of developing fire-related deficits (e.g., vicarious fire influences, negative peer influences, negative fire experiences; see Study 3) would suggest firesetting is in part learnt from exposure to poor role models (Bandura, 1976; Kolko & Kazdin, 1986; Macht & Macht, 1968; Singer & Hensley, 2004; Vreeland & Levin, 1980). Further, the findings from Study 4

suggest Social Learning Theory may play a different role for both the Aggressive and Passive pathways in the DMAF. Aggressive firesetters were more likely to experience vicarious fire influences, whereas Passive firesetters were more likely to experience negative fire experiences, suggesting environmental factors linked to imprisoned firesetters' propensity to light fires may differ between different types of firesetter.

Finally, the development of the DMAF and associated pathways in Studies 3 and 4 highlight the offence process unfolds differently for imprisoned firesetters compared to that of mentally disordered firesetters described in Tyler et al.'s (2014) FOC-MD. In line with Tyler et al.'s (2014) model, the findings from Studies 3 and 4 highlighted the importance of the sequence of thoughts, feelings and events that preceded and surround an incident of firesetting. Similarly to the FOC-MD (Tyler et al., 2014), the DMAF highlighted similar background factors in offenders' offence chain narratives (e.g., family history of mental health/substance abuse, caregiver relationships, abusive experiences, emerging risk factor), offence characteristics (e.g., motives), post offence behaviour (e.g., affect and behaviour following firesetting), and the contributory role of mental health in deliberate firesetting. However, the DMAF differs remarkably from the FOC-MD in relation to the pre-offence and offence period. Whilst the FOC-MD focuses on offenders' intimacy problems, mental health deterioration, and offence planning, the DMAF pays particular attention to the contributory role of proximal triggers and offence goal formation. This is not surprising given Tyler et al. (2014) developed their model for mentally disordered firesetters, whereas the DMAF is intended for imprisoned firesetters for whom mental health is unlikely to play a pivotal role. This is further reflected in the potential pathways identified by Tyler et al. (2014), all distinguished by the presence

and/or time of onset of mental health problems and offenders' level of fire interest. The two models combined together are likely to present a more complete picture of the offence chains for different firesetting target populations (e.g., mentally disordered firesetters and imprisoned firesetters) in which the DMAF and FOC-MD (Tyler et al., 2014) act as potential sub-offence chains.

Limitations

Limitations associated with each specific study are discussed in detail in each chapter, however there are some limitations arising from the combined findings of this thesis which require attention. First, conceptually, the findings from this thesis rely entirely on the measurement of the specific characteristics and treatment needs chosen by the researcher. Although every effort was made to target the range of known characteristics of firesetters from the literature, it was invariably impossible to address every single aspect (e.g., additional demographic characteristics, victim characteristics, and crime scene features etc.). However, the firesetting literature is still very much in its infancy and the full range of possible characteristics and psychological features have yet to be explored. The data collected for this thesis has nonetheless produced a number of novel findings; any unaccounted characteristics could be easily addressed in future research. Further, the use of empirically grounded techniques in Chapters 7 and 8 allowed for the emergence of new data and avenues of research. Thus, the use of a combination of transparent, replicable statistical techniques and adaptable qualitative methods do mean that any future research attempts to further confirm and/or develop the present findings can be conducted with ease.

Second, there are some methodological limitations which warrant consideration. Despite a relatively large sample size, the findings from this thesis are based on data from 132 imprisoned firesetters limited to England and Wales. Whilst the sample size was sufficiently large to detect statistically significant effects throughout, caution should always be given to the generalisability of the findings to all firesetters. For example, as the sample was limited to adult male prisoners from the UK, the findings are unlikely to be applicable to other populations (e.g., juveniles, women, psychiatric samples etc.) or across cultures. Further, not all potential types of firesetter may have been included (e.g., those who commit filicide using fire; Tyler & Barnoux, 2015). Whilst every effort was made to find all potential recorded incidents of firesetting in offenders' backgrounds, there is always the possibility that individuals whose firesetting was subsumed under another conviction (e.g., murder, fraud) may have been missed. Although formal refusal rates for participating in the research were not collected, it was estimated around 20% of imprisoned firesetters approached declined to take part. Although researchers must rely on voluntary participation, it is possible those imprisoned firesetters who declined may present different characteristics and treatment needs which were not captured. Nonetheless, the current sample represents approximately 10% of all adult males currently in custody in England and Wales for an index offence of arson ($n = 617$; Ministry of Justice, 2014b) and also captures individuals with a previous conviction for arson, those who have set a prison fire, and those who have unconvicted incidents of firesetting. Thus the sample may well be considered sufficiently representative of imprisoned adult male firesetters in England and Wales.

A further methodological limitation in terms of the sample used for this thesis relates to the reliability of the treatment recommendations. First, as participants' treatment histories were not recorded during data collection it is possible some participants may have already received some form of psychological treatment prior to, or at the time of interview (e.g., cognitive skills training, anger management). As a result, the findings may not reflect the full range of participants' unmet treatment needs and it is possible imprisoned firesetters may have other psychological deficits which were not reflected in the present findings. However, none of the participants had received any treatment directly related to their firesetting due to the absence of a firesetting treatment programme in the UK Prison Service. Consequently, whilst some may have already undertaken some psychological work, individuals' treatment needs in terms of their firesetting and associated fire-related deficits were unaddressed at the time of data collection, thus giving sufficient reliability to the findings. Second, caution should be exercised in drawing definitive clinical conclusions regarding the specific treatment recommendations provided until further research and treatment evaluations have been undertaken. For example, there may be both advantages and disadvantages for imprisoned firesetters to attend a fire-safety awareness course. For individuals whose firesetting may have resulted in greater damage and threat to life than was intended due to a lack of knowledge and understanding of the consequences of fire, a fire safety awareness programme is likely to be appropriate. However, for other individuals such a programme may equip them with greater skills and expertise in setting dangerous fires and thus may increase their risk of future firesetting. It is thus vital that future research seeks to evaluate the effectiveness of the full range of recommended treatment initiatives for imprisoned firesetters arising from the findings in this thesis.

Another methodological limitation relates to the measures used throughout the research. All the findings emerging in this thesis are based on self-reported data and are thus likely to suffer from common problems associated with participant and researcher bias. In terms of the questionnaire data, offenders may be susceptible to social desirability and as such, use methods to minimise responsibility for offending. However, throughout data collection, measures were put in place to counter-act these potential biases, such as the use of impression management scales, maximising confidentiality and anonymity, and verifying collateral information against files and records. The interview data used for Chapters Seven and Eight rely on offenders' retrospective self-reports, which may have suffered distortions, self-deception, and recall inferences as time has passed as well as demand characteristics (Gannon et al., 2008; Polaschek et al., 2001; Cassar et al., 2003). The use of grounded theory analysis can also be subject to researcher bias as it is an inherently subjective process, which inevitably questions generalisability, reliability, and validity. However, inter-rater and cross validation techniques were employed to counter act potential biases as much as possible. Such measures do not necessarily provide the control over validity threats that would be desirable, but the data produced are as much a product of what offenders want researchers and clinicians to think they think, feel, and do as it is a representation of genuine affective, cognitive, and behavioural processes (Polaschek et al., 2001). It is also worth considering offenders do not necessarily have the intellectual capacity or expert knowledge to fully understand the underpinnings of the research being conducted and as such may not be able to manipulate their responses in light of this as much as they might like.

Finally, whilst every effort was made to use robust scales to measure the characteristics and treatment needs associated with imprisoned firesetters, the validity of certain measures may be questioned. First, boredom proneness was used as a measure of impulsivity, and although boredom proneness is characteristic of firesetters and linked to impulsivity (Watt & Vodanovich, 1992), the lower reliability statistics produced for this scale suggest more robust measures might have been more appropriate (e.g., Barrat Impulsiveness Scale; Barratt et al., 1975). Second, although the MCAA represents one of the few available measures of offence supportive attitudes and cognitions, its natural transparency may be limited in the extent to which underlying cognitive processes can be measured accurately. Third, the use of the MCMI-III to measure the presence of mental health problems was insufficient to provide diagnostic evidence. Consequently, the findings regarding mental health prevalence should be treated with caution as definitive conclusions would require data pertaining to full psychiatric histories and assessments for participants. Nonetheless the reliability and validity of the MCMI-III is well established (Groth-Marnat, 2003; Millon et al., 2006) and the scale is regularly used within mental health settings to provide an indication for the need of a more thorough mental health assessment. It is therefore likely the findings in this thesis provide a good indication of the potential types of mental health problems prevalent in imprisoned firesetters. Finally, whilst the use of direct fire-related measures represents an important strength of this research and the scales themselves have been subject to reliability and validity analyses (Ó Ciardha et al., 2015b), it is possible they may not necessarily be unique to imprisoned firesetters as some non-firesetting imprisoned offenders in Study 1 were found to present fire-related deficits (see Chapter Five). It may be other underlying fire-related deficits are prevalent in

imprisoned firesetters which have not been addressed by this research (e.g., implicit theories; Ó Ciardha & Gannon, 2012). Nonetheless, the development and use of these fire-related scales represent an important step forward in sound empirical research in firesetting behaviour and it is important these measures continue to be utilised, validated, refined, and developed in future research.

Future Research Directions

A number of important future research directions have emerged from the combined findings of this thesis. Future cross-validation studies are required in order to increase the reliability and validity of the findings. First, future research efforts would benefit from replicating the studies conducted in this thesis (e.g., with additional samples of adult male imprisoned firesetters) in order to confirm the findings, and offer further refinements or developments where appropriate. Second, evaluating the applicability of the findings to other firesetting populations, such as imprisoned women, children, and psychiatric populations would also be beneficial. This would not only serve to increase the generalisability of the findings, but would also allow for the emergence of other potential types of firesetter (i.e., potential types specific to women, children and/or mentally disordered offenders). Third, evaluating the findings in a wider international context may serve to elucidate the role played by cultural norms and values surrounding the uses of fire. There is some research to suggest the meaning and uses of fire differ between cultures (e.g., self-incineration for religious reasons; Adinkrah, 2001) and future research efforts may consider replicating the studies in this thesis with samples of non-UK prisoners to explore the prevalence of culture specific fire-scripts. Finally, future research may consider examining in detail the key correlates and predictors linked to different fire-related

deficits in imprisoned firesetters and thus further inform the potentially different treatment responses to different fire-related deficits.

Whilst the research in this thesis sought to be as comprehensive as possible by including a range of factors associated with firesetting behaviour, future research efforts may benefit from further developments by incorporating additional factors. Some research does suggest that firesetting may be common among offenders with low IQ and/or intellectual difficulties (Murphy & Clare, 1996) and this was also found to be the case for a percentage of the sample used in the DMAF (e.g., self-reported learning difficulties; see Study 3). However, research targeting firesetters with intellectual difficulties is currently sparse and future research would certainly benefit from investigating this avenue in further detail. Similarly, an important part of existing firesetting research focuses on associated crime scene characteristics and thus the inclusion of detailed police recorded data regarding individuals' firesetting offences may elucidate other differences between subtypes of firesetter to further inform evidence based practice for law enforcement agencies (e.g., police, fire and rescue services).

The findings from this thesis have also opened up a number of potential theoretical developments in deliberate firesetting. First, as outlined in Chapter Eight, future research seeking to integrate the FOC-MD (Tyler et al., 2014) and the DMAF may serve to provide a more complete picture of the offence chains for different firesetting target populations (e.g., mentally disordered firesetters and imprisoned firesetters) by developing an over-arching descriptive model of the offence chain for deliberate firesetting, with the FOC-MD and DMAF acting as potential sub-offence chains. Second, researchers may examine whether there are different types of

imprisoned firesetter based on the central attributes of other firesetting theories (e.g., Functional Analysis Theory, Jackson et al., 1987; Social Learning Theory, Bandura, 1976). For example, investigating whether there are in fact different types of imprisoned firesetters presenting different antecedents, behaviours, and reinforcement contingencies as the current findings may suggest would further inform elements of Functional Analysis Theory (Jackson et al., 1987). Further, future research may focus on the importance of the offender's wider social environment, particularly in terms of the precise role that social learning plays in the etiology of deliberate firesetting and whether it differs between different types of imprisoned firesetter. Finally, future cross validation research would also serve to evaluate the eight subtypes proposed in Dynamic Behaviour Theory (Fineman, 1995) and, as previously mentioned, further the evaluation of the M-TTAF trajectories (e.g., Fire-Interest Trajectory; Gannon et al., 2012).

Finally, future research in terms of treatment options would benefit from focusing on risk and recidivism in different types of firesetter. Existing research focusing on recidivism in imprisoned firesetters is sparse (Gannon & Pina, 2010) and there is no research to date which has robustly examined whether risk of re-offending may differ between different types of imprisoned firesetter. Using the current findings to evaluate the factors associated with re-offending rates for different types of imprisoned firesetter would serve to further inform how practicing professionals should manage these individuals in the criminal justice system. The findings from this thesis may also be useful in the development and validation of a checklist for different types of imprisoned firesetter for clinicians to refer to during individual case formulation. Such a checklist may also be useful to compliment a

specialised risk assessment tool for imprisoned firesetters more generally (Gannon & Pina, 2010).

Conclusions

To date, despite the devastating financial and human consequences associated with acts of intentional firesetting in the UK, research and theory in deliberate firesetting behaviour in imprisoned offenders has been scarce. In light of the paucity of existing research, the research undertaken in this thesis represents a comprehensive attempt to examine the characteristics, treatment needs, and offence processes of different types of adult male imprisoned firesetters. A number of novel findings have emerged from the four studies conducted in this thesis indicating there are important differences between different types of imprisoned firesetter; in particular in relation to their psychological and clinical features, treatment recommendations, and how the offence process unfolds. However, much more work is still needed and it is hoped the present findings will serve as an important foundation upon which clinicians and researchers can build on to improve evidence based practice with imprisoned firesetters.

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Appendix One

Background Questionnaire and Non-Copyrighted Psychometric

Measures: Studies 1 and 2

Background Information Questionnaire

Ok, I'm just going to start off the session by asking you a few questions about yourself. Some of the questions will ask you very general information about yourself (for example, your age and ethnicity), others will ask you about your current offence, and any previous offences that you may have. Please remember that the information that you give us will be looked after with great care. It will be kept in a secure place at the University, and a research number will replace your name so that no one can identify you (point out to participant their research identification number at the top of the page).

Please try and be as accurate as possible and ask me if you are unsure about how to answer any of the questions that I ask you.

Age _____

Remand Y/N

Which of the following best describes your ethnicity?

Indian _____

Pakistani _____

Bangladeshi _____

Chinese _____

Asian – Other	—
Black – Caribbean	—
Black – African	—
Black – Other	—
Mixed Race	—
White - UK/Irish	—
White European	—
White – Other	—

Formal Education

Which of the following best describes the type of qualification that you have?

No qualification	—
Fifth form qualification	—
Sixth form qualification	—
Higher school qualification	—
Bachelor Degree	—
Higher Degree	—

Occupation

At the time of your ²⁷index offence were you:

Unemployed	___
In part-time work	___
In full-time work	___
A student	___
Retired	___

If you *were* employed at the time of your index offence, what job did you have?

Marital Status

At the time of your index offence were you:

Single	___
Married	___
Living with partner	___
Divorced or separated	___

²⁷ Note, for any persons who have a firesetting offence/incident in their history, but their index is a NON-FIRESETTING offence this should be reworded to “at the time of your arson or firesetting”.

Offence Information: Current Convictions

Ok, I know a little bit about you, and why you are here. I'm just wondering whether you would be happy to fill me in on a few details. If you don't want to that's fine, I can just look up some of the information on file. We find that it is usually just easier to ask people face-to-face.

What year were you convicted of your index offence? _____

What sentence did you receive? _____

Please specify what the index offence(s) was _____

GO STRAIGHT TO "PREVIOUS CONVICTIONS NON-FIRESETTING" IF COMPARISON OFFENDER

Did your index offence/alleged index offence involve you setting a fire? Y/N

If yes, which of the following best describes what you set fire to?

- A house or other residence that was unoccupied ___
- A house or other residence that was occupied ___
- A business or workplace that was occupied ___
- A business or workplace that was unoccupied ___
- A car that was unoccupied ___
- A car that was occupied ___
- Countryside (e.g., trees, woodland) ___
- A person (including yourself) ___
- Other (please specify) _____

Interviewer please note down any specific details below (i.e., relationship to any victims, type of building, motive):

Ok, now I'd just like to ask you some information about any previous convictions that you may have.

Previous Convictions - Firesetting

Do you have any past convictions for offences that involved you setting a fire (e.g., arson, criminal damage)? Y/N

If "yes", how many previous convictions for offences that involved you setting a fire do you have? ____

Provide detail here:

(i.e., write down number and type of offences as well as conviction dates if participant can recall them)

For each offence, which of the following best describes what you set fire to?

Interviewer note down which offence is being referred to.

A house or other residence that was unoccupied ____

A house or other residence that was occupied	___
A business or workplace that was occupied	___
A business or workplace that was unoccupied	___
A car that was unoccupied	___
A car that was occupied	___
Countryside (e.g., trees, woodland)	___
A person (including yourself)	___
Other (please specify)	_____

Interviewer please note down any specific details below (i.e., relationship to any victims, type of building, motive):

Previous Convictions – Non-Firesetting

Do you have any past convictions for offences that do not involve firesetting? Y/N

If “yes”, how many past convictions for offences that do not involve firesetting do you have? ___

Provide detail here:

(i.e., write down number and type of offences as well as conviction dates if participant can recall them)

Have you ever set a fire in prison or whilst in detention that you were caught for but have not been convicted of? Y/N

If “yes”, how many fires like this have you set? ____

Provide detail here (i.e., relationship to any victims, target of the firesetting, motive):

Overall, how many deliberate fires do you think you have set since the age of 18 years?

We are only interested in deliberate fires. We are not interested in fires that you have set as part of organized events (e.g., bonfire night or barbeques)

Have you ever taken part in any type of treatment programme for your offending?
Y/N

If yes please specify below:

THANK PARTICIPANT

Fire Factor Scales: Identification With Fire, Everyday Fire Interest, Serious Fire Interest, Normalisation Of Fire

(Gannon, Ó Ciardha, & Barnoux, 2011; Muckley, 1997; Murphy & Clare, 1996; Ó Ciardha et al., 2013)

Please read each statement and decide to what extent **you agree or disagree with it**. There are no trick questions, and no right or wrong answers – we are interested in your personal thoughts about each statement. If you are not sure what a statement means please ask and we will try to make it clearer for you.

	Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5
1. Fire is an important part of my identity.					
2. I don't need fire.					
3. Fire is almost part of my personality.					
4. If I never saw another fire again it wouldn't bother me.					
5. Fire is an important part of my life.					

6. I don't know who I am without fire.					
7. I need fire in my life.					
8. Without fire, I am nobody.					
9. Fire is a part of me.					
10. I have to have fire in my life.					
11. Most people carry a box of matches or a lighter around					
12. People often set fires when they are angry.					
13. I would like to work as a fireman.					
14. The best thing about fire is watching it spread.					
15. I have never put a fire out.					
16. I know a lot about how to prevent fires.					
17. Setting just a small fire can make you feel a lot better.					

18. Fires can easily get out of control.					
19. I get bored very easily in my spare time.					
20. People who set fires should be locked up.					
21. When you're with your mates, you act now and think later.					
22. If you've got problems, a small fire can help you sort them out.					
23. Most families have had a fire accident at home.					
24. Parents should spend money on buying a fire extinguisher.					
25. Most people have set a few small fires just for fun.					
26. I usually go along with what my mates decide.					
27. Playing with matches can be very dangerous.					
28. Most people have been questioned about fires by the police.					

29. They should teach you about fire prevention at school.					
30. Most people's friends have lit a fire or two.					

Rate how interested you would be in the following things.

Circling a 1 indicates that you would find the description **extremely upsetting or frightening**, a 4 would suggest that you are okay and **it doesn't bother you**, and a 7 suggests that you would find the example given **exciting, fun, or lovely**.

Having a box of matches in your pocket

	1	2	3	4	5	6	7
Upsetting/frightening lovely				OK			Exciting, fun, or lovely

Watching an ordinary coal fire burn in a grate

	1	2	3	4	5	6	7
Upsetting/frightening lovely				OK			Exciting, fun, or lovely

Watching a bonfire outdoors, like on bonfire night

	1	2	3	4	5	6	7
Upsetting/frightening lovely				OK			Exciting, fun, or lovely

Seeing firemen get their equipment ready

	1	2	3	4	5	6	7
Upsetting/frightening lovely				OK			Exciting, fun, or

Watching a fire engine come down the road

	1	2	3	4	5	6	7
Upsetting/frightening lovely				OK			Exciting, fun, or

Striking a match to light a cigarette

	1	2	3	4	5	6	7
Upsetting/frightening lovely				OK			Exciting, fun, or

Watching a house burn down

	1	2	3	4	5	6	7
Upsetting/frightening lovely				OK			Exciting, fun, or

Going to a police station to be questioned about a fire

	1	2	3	4	5	6	7
Upsetting/frightening lovely				OK			Exciting, fun, or

Watching people run from a fire

	1	2	3	4	5	6	7
Upsetting/frightening lovely				OK			Exciting, fun, or

Watching a person with his clothes on fire

	1	2	3	4	5	6	7
Upsetting/frightening lovely				OK			Exciting, fun, or

Striking a match to set fire to a building

	1	2	3	4	5	6	7
Upsetting/frightening lovely				OK			Exciting, fun, or

Seeing a hotel on fire in the TV news

	1	2	3	4	5	6	7
Upsetting/frightening lovely				OK			Exciting, fun, or

Seeing firemen hosing a fire

	1	2	3	4	5	6	7
Upsetting/frightening lovely				OK			Exciting, fun, or

Giving matches back to someone

	1	2	3	4	5	6	7
Upsetting/frightening lovely				OK			Exciting, fun, or

The Boredom Proneness Scale – Short Form

(Vodanovich, Wallace, & Kass, 2005)

Indicate **how often you feel** the way described in each of the following statements. Tick the relevant box for each question.

	Strongly Disagree 1	Disagree 2	Somewhat disagree 3	Neither Agree or Disagree 4	Somewhat Agree 5	Agree 6	Strongly Agree 7
1. It is easy for me to concentrate on my activities.							
2. Frequently when I am working I find myself worrying about other things.							
3. Time always seems to be passing slowly.							
4. I often find myself at "loose ends", not knowing what to do.							
5. I am often trapped in situations where I have to							

do meaningless things.							
6. Having to look at someone's home movies or travel slides bores me tremendously.							
7. I have projects in mind all the time, things to do.							
8. I find it easy to entertain myself.							
9. Many things I have to do are repetitive and monotonous.							
10. It takes more stimulation to get me going than most people.							
11. I get a kick out of most things I do.							
12. I am seldom excited about my work.							
13. In any situation I can usually find something to do or see to keep me interested.							
14. Much of the time I just sit around doing nothing.							

15. I am good at waiting patiently.							
16. I often find myself with nothing to do, time on my hands.							
17. In situations where I have to wait, such as in a line I get very restless.							
18. I often wake up with a new idea.							
19. It would be very hard for me to find a job that is exciting enough.							
20. I would like more challenging things to do in life.							
21. I feel that I am working below my abilities most of the time.							
22. Many people would say that I am a creative or imaginative person.							
23. I have so many interests, I don't have time to do everything.							

24. Among my friends, I am the one who keeps doing something the longest.							
25. Unless I am doing something exciting, even dangerous, I feel half-dead and dull.							
26. It takes a lot of change and variety to keep me really happy.							
27. It seems that the same things are on television or the movies all the time; it's getting old.							
28. When I was young, I was often in monotonous and tiresome situations.							

The Simple Rathus Assertiveness Schedule – Short Form

(Jenerette & Dixon, 2010)

Indicate how well each item **describes you** by ticking the appropriate box next to each statement.

	Very much unlike me	Rather unlike me	Slightly unlike me	Slightly like me	Rather like me	Very much like me
1. Most people stand up for themselves more than I do.						
2. At times I have not made or gone on dates because of my shyness.						
3. When I am eating out and the food I am served is not cooked the way I like it, I complain to the person serving it.						
4. I am careful not to hurt other people's feelings, even when I feel hurt.						
5. If a person serving in a store has gone to a lot of trouble to show me something which I do not really like, I have a hard						

time saying "No"						
6. When I am asked to do something, I always want to know why.						
7. There are times when I look for a good strong argument.						
8. I try as hard in life to get ahead as most people like me do.						
9. To be honest, people often get the better of me.						
10. I enjoy meeting and talking to people for the first time.						
11. I often don't know what to say to good looking people of the opposite sex.						
12. I do not like making phone calls to businesses or companies.						
13. I would rather apply for jobs by writing letters than by going to talk to the people.						
14. I feel silly if I return things I don't like to the						

store that I bought them from.						
15. If a close relative that I like was upsetting me, I would hide my feelings rather than say that I was upset.						
16. I have sometimes not asked questions for the fear of sounding stupid.						
17. During an argument, I am sometimes afraid that I will get so upset that I will shake all over.						
18. If a famous person were talking in a crowd and I thought he/she was wrong, I would get up and say what I thought.						
19. I don't argue over prices with people selling things.						
20. When I do something important or good, I try to let others know about it.						

21. I am open and honest about my feelings						
22. If someone has been telling false and bad stories about me, I see him or her as soon as possible to "have a talk" about it.						
23. I often have a hard time saying "No."						
24. I tend not to show my feelings rather than upsetting others.						
25. I complain about poor service when I am eating out or in other places.						
26. When someone says I have done very well, I sometimes just don't know what to say.						
27. If a couple near me in the theatre were talking rather loudly, I would ask them to be quiet or to go somewhere else and talk.						
28. Anyone trying to push ahead of me in a line						

is in for a good battle.						
29. I am quick to say what I think.						
30. There are times when I just can't say anything.						

The Revised UCLA Loneliness Scale

(Russell, Peplau, & Cutrona, 1980)

Indicate **how often you feel** the way described in each of the following statements by ticking the appropriate box.

	Never	Rarely	Sometimes	Often
1. I feel in tune with people around me				
2. I lack companionship				
3. There is no one I can turn to				
4. I do not feel alone				
5. I feel part of a group of friends				
6. I have a lot in common with people around me				
7. I am no longer close to anyone				
8. My interests and ideas are not shared by those around me				
9. I am an outgoing person				
10. There are people I feel close to				
11. I feel left out				
12. My social relationships are superficial				
13. No one really knows me well				
14. I feel isolated from others				
15. I can find companionship when I want it				
16. There are people who really understand me				
17. I am unhappy being so withdrawn				
18. People are around me but not with me				
19. There are people I can talk to				
20. There are people I can turn to				

The Measure of Criminal Attitudes and Associates – Part B

(Mills & Kroner, 1999)

Please consider each statement and say whether you **agree or disagree** with it. There are no right or wrong answers.

	Agree	Disagree
1. It's understandable to hit someone who insults you.		
2. Stealing to survive is understandable.		
3. I am not likely to commit a crime in the future.		
4. I have a lot in common with people who break the law.		
5. There is nothing wrong with beating up a child molester.		
6. A person is right to take what is owed them, even if they have to steal it.		
7. I would keep any amount of money I found.		
8. None of my friends have committed crimes.		
9. Sometimes you have to fight to keep your self-respect.		
10. I should be allowed to decide what is right and wrong.		
11. I could see myself lying to the police.		
12. I know several people who have committed crimes.		
13. Someone who makes you very angry deserves to be hit.		
14. Only I should decide what I deserve.		
15. In certain situations I would try to outrun the police.		
16. I would not steal, and I would hold it against anyone who does.		
17. People who get beat up usually had it coming.		
18. I should be treated like anyone else no matter what I've done.		

19. I would be open to cheating certain people.		
20. I always feel welcomed around criminal friends.		
21. It's all right to fight someone if they stole from you.		
22. It's wrong for a lack of money to stop you from getting things.		
23. I could easily tell a convincing lie.		
24. Most of my friends don't have criminal records.		
25. It's not wrong to hit someone who puts you down.		
26. A hungry man has the right to steal.		
27. Rules will not stop me from doing what I want.		
28. I have friends who have been to jail.		
29. Child molesters get what they have coming.		
30. Taking what is owed you is not really stealing.		
31. I would not enjoy getting away with something wrong.		
32. None of my friends has ever wanted to commit a crime.		
33. It's not wrong to fight to save face.		
34. Only I can decide what is right and wrong.		
35. I would run a scam if I could get away with it.		
36. I have committed a crime with friends.		
37. Someone who makes you really angry shouldn't complain if they get hit.		
38. A person should decide what they deserve out of life.		
39. For a good reason, I would commit a crime.		
40. I have friends who are well known to the police.		
41. There is nothing wrong with beating up someone who asks for it.		

42. No matter what I've done, its only right to treat me like everyone else.		
43. I will not break the law again.		
44. It is reasonable to fight someone who cheated you.		
45. A lack of money should not stop you from getting what you want.		
46. I would be happy to fool the police.		

The Nowicki-Strickland Locus of Control

(Nowicki, 1976)

We are trying to find out what men your age think about certain things. We want you to answer the following questions the way *you* feel. There are no right or wrong answers. Don't take too much time answering any one question, and do try to answer them all. Try to pick one response for all the questions and not leave any blanks. Tick 'yes' or 'no' next to each item.

	Yes	No
1. Do you believe that most problems will solve themselves if you just don't fool with them?		
2. Do you believe that you can stop yourself from catching a cold?		
3. Are some people just born lucky?		
4. Most of the time, do you feel that getting good marks at school meant a great deal to you?		
5. Are you often blamed for things that just aren't your fault?		
6. Do you believe that if somebody studies hard enough he or she can pass any subject?		
7. Do you feel that most of the time it doesn't pay to try hard because things never turn out right anyway?		
8. Do you feel that if things		

start out well in the morning that it's going to be a good day no matter what you do?		
9. Do you feel that most of the time parents listen to what their children have to say?		
10. Do you believe that wishing can make good things happen?		
11. When you get punished does it usually seem it's for no good reason at all?		
12. Most of the time, do you find it hard to change a friend's (mind) opinion?		
13. Do you think that cheering, more than luck, helps a team to win?		
14. Did you feel that it was nearly impossible to change your parent's mind about anything?		
15. Do you believe that parents should allow children to make most of their own decisions?		
16. Do you feel that when you do something wrong there's very little you can do to make it right?		
17. Do you believe that most people are just born good at sports?		

18. Are most of the other people your age stronger than you are?		
19. Do you feel that one of the best ways to handle most problems is just not to think about them?		
20. Do you feel that you have a lot of choice in deciding whom your friends are?		
21. If you find a four leaf clover, do you believe that it might bring you good luck?		
22. Did you often feel that whether or not you did your homework had much to do with what kind of marks you got?		
23. Do you feel that when a person your age is angry at you, there's little you can do to stop him or her?		
24. Have you ever had a good luck charm?		
25. Do you believe that whether or not people like you depends on how you act?		
26. Did your parents usually help you if you asked them to?		

27. Have you felt that when people were angry with you it was usually for no reason at all?		
28. Most of the time, do you feel that you can change what might happen tomorrow by what you do today?		
29. Do you believe that when bad things are going to happen they just are going to happen no matter what you try to do to stop them?		
30. Do you think that people can get their own way if they just keep trying?		
31. Most of the time, do you find it useless to try to get your own way at home?		
32. Do you feel that when good things happen they happen because of hard work?		
33. Do you feel that when somebody your age wants to be your enemy there's little you can do to change matters?		
34. Do you feel that it's easy to get friends to do what you want them to do?		
35. Do you usually feel that you have little to say about what you get to eat at home?		

36. Do you feel that when someone doesn't like you there's little you can do about it?		
37. Did you usually feel that it was almost useless to try in school because most other children were just cleverer than you were?		
38. Are you the kind of person who believes that planning ahead makes things turn out better?		
39. Most of the time do you feel that you have little to say about what your family decides to do?		
40. Do you think it's better to be clever than to be lucky?		

Appendix Two

Examples of Information, Consent, and Debrief Forms: Studies 1 and 2



School of Psychology

Information Sheet

Examining Offender Characteristics Study

You are being invited to take part in a research study. Before you decide whether or not to take part, it is important for you to understand why the research is being done and what it will involve. Please take the time to read the following information carefully and discuss it with others if you wish. Please feel free to ask me if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

Who is doing this research?

This research is being carried out by Dr. Theresa Gannon, Dr Caoilte Ó Ciardha, Ms Magali Barnoux, and Ms Nichola Tyler from the University of Kent. Dr. Gannon is a Lecturer and Researcher in Forensic Psychology. Dr Ó Ciardha is a researcher, and Ms Barnoux and Ms Tyler are research assistants. This research is being funded by the Economic and Social Research Council who have reviewed the study to ensure that the research generated from this study is likely to be both beneficial and useful.

Why are we doing this research?

We are doing this research to learn more about the attitudes, thoughts, feelings, and behaviours of people who have carried out different types of crimes (e.g., arson, theft, burglary etc.). In particular, we are interested in exploring any differences or similarities that exist between people who have carried out different types of crimes. Examining these differences or similarities is an important part of deciding whether or not we should devise separate rehabilitation programmes for different types of

crimes. We hope that the results of this research will help to establish whether certain crimes—such as arson—require separate types of rehabilitation programme.

Why have you been chosen to take part?

We are asking everyone on your Wing/in your Establishment if they would like to take part in this study. By sharing your attitudes, thoughts and feelings with us, we hope that we will get a better idea of the differences or similarities that exist between people who have carried out different types of crimes.

Do you have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are free to withdraw at any time and without giving a reason. A decision to withdraw at any time or a decision not to take part, will not affect your parole, the standard of care you receive or your privileges.

What will happen if you do decide to take part?

If you do decide to take part, then there are two things that I will ask you to do today. First of all, I will ask you a couple of questions about you, such as your age, ethnicity, and how old you were when you left school, and your offence history. Second, I will ask you to answer some simple questionnaires. The whole session should take no longer than about an hour, but if you would like more time, or if you would like to take a break, then this will not be a problem either. If you find any of the questions disagreeable, in any way, then please do not feel that you have to answer them. You are also free to stop the interview at any point or take a break, during the session, should you wish to do so. Taking part in this study does not mean that you have to take part in any others; however, I may invite you to consider taking part in a further study if you are interested. Full information about that study will be given to you on a separate occasion, and you will be asked to sign another form saying that you agree to take part.

Will your taking part in this study be kept confidential?

Information which is collected about you during the course of the research will be kept strictly confidential. The information that you give to us will be looked after with great care and will be kept in a secure place at the Researcher's University. Any information about you which leaves the prison, will have your name removed so that

you cannot be recognised from it. In addition, the consent form that you sign will be kept in a locked cabinet, separate from any other information that you provide us with.

However, should you disclose either the intention to harm yourself, harm another individual, attempt to escape, or act in any way that may result in a breach of security, it would be the duty of the researcher to inform relevant staff of such information. Other than in these areas however, none of the information, resulting from this study, will be shared in a way that can identify you with anyone outside of the study.

What will happen to the results of the research study?

If the research goes well we will write up the results for publication in a scientific journal and will talk about it at professional conferences. It will not be possible for anyone to tell that you took part in this study. However, we will keep your answers, without identifying information for up to 5 years after publication.

Who has reviewed the study?

This study has been reviewed and approved by the University of Kent Ethics Committee, and the National Research Committee for NOMS.

Thank-you for taking the time to read this Participant Information Form and hear about this research. It has some important implications and we hope you will seriously consider partaking in it. This Participant Information Form is for you to keep. If you do wish to take part in the study, please sign the consent form. You will be given a copy of the signed consent form to keep.

Thank you for your time.

Theresa Gannon, Caoilte Ó Ciardha, Magali Barnoux, & Nichola Tyler

Further Information and Ethics

If you would like to ask any more questions about our research, please do not hesitate to ask. We will do our very best to answer any questions that you have about the research.

Alternatively, if you have any serious concerns about the ethical conduct of this study then please notify the chair of ethics at the School of Psychology, University of Kent, Canterbury, CT2 7NP.

Participant Information Number for Study: _____



Consent Form

Title of Project: Examining Offender Characteristics

Name of Researchers: Dr. Theresa Gannon, Dr Caoilte Ó Ciardha, Magali Barnoux, & Nichola Tyler

Please initial box

1. I confirm that I have read and understand the information sheet, for the above study, and have had an opportunity to ask questions.

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my parole, standard of care, rights or privileges being affected.

3. I understand that my prison records may be looked at by appropriate members of the University of Kent research team, where it is relevant to my taking part in research. I give permission for these individuals to have access to my records.

4. I agree to take part in the above study.

Name of Participant Date Signature

Researcher Date Signature

One for prisoner, one for researcher; one to be kept with prison files



School of Psychology

Debrief Form

Information for you about the study examining why people set fires

Dear Participant,

First of all, we would like to say a big **THANK YOU** for taking part in our research on *Understanding Why People Set Fires*. It would be impossible to make any progress in our research without your help.

A Brief Summary

We asked you to talk to us in detail about a time in your life when you had set a fire. We also asked you to talk to us about other things that had happened in your life. The reason we interviewed you was because we wanted to get an idea of what types of issues and thinking might make people more likely to set fires. If we know this, then it can help us to build models of why people feel like setting fires so that we can see where things start to go wrong. Learning about where things go wrong can be crucial for working out how to develop treatment for people who set fires. At the moment, although there are lots of treatment programmes available for treating all different types of offence behaviours in prisons, there are very few programmes that look at helping people to stop setting fires. We hope that this research will help to develop future treatment for people in prison who have set fires.

Thanks for Volunteering

We would like to take this opportunity to thank you for taking the time to volunteer in this research. It has important implications for future treatment and you have played a vital part in this research.

Magali Barnoux, PhD Student & Research Assistant

Nichola Tyler, Research Assistant

Dr Theresa Gannon, Research Supervisor

Dr Caoilte Ó Ciardha, Research Associate

Further Information and Ethics

If you would like to ask any more questions about our research, please do not hesitate to ask. We will do our very best to answer any questions that you have about the research.

Alternatively, if you have any serious concerns about the ethical conduct of this study then please notify the chair of ethics at the School of Psychology, University of Kent, Canterbury, CT2 7NP.

Appendix Three

Semi Structured Interview Schedule: Studies 3 and 4

I would like to ask you about the thoughts, feelings, and experiences that you have about firesetting. By “firesetting” I mean instances where you have started a fire, intentionally, as an adult. It doesn’t matter if you were formally convicted of this offence or not. There are no right answers; I am just interested in your view of things.

When I ask you about your thoughts, feelings, and experiences, I would like you to try and think of a recent situation that involved you setting a fire or maybe one that you can remember in enough detail to talk about.

Please do stop me if there is something that you feel uncomfortable talking about, or if you are feeling uncomfortable in any way. We can then stop the interview to give you a break or talk about something that you feel more comfortable talking about.

- I would like to start by asking a bit about your background.
 - Where did you grow up.....who with? (home life, family, parents jobs etc)
 - Can you describe to me your first memory of fire? Was it positive/negative? What other memories of fire do you have from your child hood?
 - Family relationships with parents, siblings?
 - How would you describe your childhood, was it happy? – what about school? - School friends, bullying.
 - Can you tell me about your first intimate relationship, how old were you, how would you describe that relationship?
 - Did you start/have any interest in fire in your childhood?

- I would like you to think back to about 6 months before the offence.
 - How were things going in your life at this time?
 - Were you happy/unhappy? What types of things were going on – any difficulties? If so how did you cope with them? (coping mechanisms)
 - Did you have a job?
 - What relationships did you have at that time....what about family? (social support systems?)
 - What about leisure or other interests?

- I would like you to think about the days leading up to the time when you set the fire.
 - How were you feeling at this time? Had anything changed in your life that made you feel differently to how you felt 6 months before?
 - Did you think about lighting the fire? If you did, how did you feel about this? Did it excite you or make you feel anxious? Were you happy/unhappy?
 - Did you ever have thoughts about fire setting before this time? What about plans (were there any or was it spontaneous/specific individual aimed at)? If so, how what were your thoughts and feelings about these ideas you had?

- Now I would like you to think about the day you set the fire.
 - What were you doing that day? How did you feel? Were you happy/unhappy? Was anything bothering you?
 - Do you remember how you spent the day? What did you do?
 - How did you feel immediately before you set the fire? What was going through your head? Do you remember saying anything to yourself?
 - How did these thoughts make you feel?

- Now I would like you to think about the actual fire as it was happening.
 - How did you come to set the fire? Where, when, how, why?
 - How did you feel about the fire once you had started it? Did you think it should be happening?
 - How did you feel as the offence was taking place? What types of things were running through your head? What kind of things did you say to yourself that made it easier to go ahead and do the offence(s)?
 - Did you stay to watch the fire? How did it make you feel seeing it?
 - Did you call the fire brigade? Did you stay to watch the fire brigade? How did it make you feel watching the fire brigade?
 - If not mentioned already – was there anyone else there at the time of the offence? What was their role, if any?

- Now I would like to ask you about after you set the fire and your thoughts on it now looking back.
 - How did the situation end?
 - How did you feel afterwards?
 - In your opinion, what affect did your actions have? How harmful do you feel the fire was?
 - If there was a victim what did you say to them and what did you do?

- Did you talk to someone about the fire? What did they say to you and how did you feel about their comments?
 - How serious do you think setting the fire was?
- Now I would like you to tell me a little bit about your knowledge of fire and fire safety.
 - Describe to me how you start a fire
 - Do you know what causes a fire? How? What things do you need to make a successful fire?
 - Do you know how to prevent fires? How would you do this?
 - Do you know how to put out a fire? How would you do this?

Thank Participant

Appendix Four

Example of Information, Consent, and Debrief Forms: Studies 3 and

4



School of Psychology

Information Sheet

Understanding Why People Set Fires

You are being invited to take part in a research study. It is important for you to understand why the research is being done and what it will involve. Please take time to read and listen to the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. You can take time to decide whether or not you wish to take part.

Why is this research being done?

We are doing this research to learn more about the attitudes, thoughts, and feelings of male prisoners who have set fires. Looking at these attitudes, thoughts, and feelings is an important part of rehabilitation programmes. We hope that the results of this research will help to further improve rehabilitation for prisoners who have set fires.

Who is organising the research?

The research is being organised by researchers at the University of Kent and will form part of a PhD thesis for Ms Magali Barnoux who is a postgraduate student at Kent.

Why have I been asked to take part?

We are asking all prisoners on your wing/in your establishment who have ever set a fire to help with this research.

Do I have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part you will get this information sheet to keep and you will be asked to sign a consent form. If you decide to take part you can still withdraw at any time without giving a reason. If you decide to not take part or to withdraw at any stage it will not affect your leave, or your rights and privileges. You should also know that taking part in this research will not increase your rights or privileges in any way.

What will happen to me if I take part?

If you decide to take part, you will be asked to book an appointment to be interviewed by a member of the research team. The interview should take roughly 45 minutes and will involve questions about your childhood and any incidents of fire setting you have been involved in. If at any point you change your mind and wish to stop participating you are welcome to. All information given will be audio-recorded but kept confidential. If you wish not to be audio-recorded inform a member of the research team, who will take notes instead. Also, your prison records will be examined for demographic details, and information on any previous offences. This information will be used purely for the purpose of the study and will not be conducted by anyone outside of the research team. Any information used in relation to your prison records will be made anonymous before it leaves the prison. This means that no one apart from the research team will know that this information is about you.

Will my participation in this study be confidential?

- We will make a record in your notes that we have seen you for the purpose of this research. However, the information that you tell us in your interview will not be communicated to staff in the prison or anyone else outside of the research team. There are some exceptions to this:

Should you disclose either **a previously unknown offence in detail the intention to harm yourself, harm another individual, attempt to escape, or act in any way that may result in a breach of security**, it would be the duty of the researcher to inform appropriate staff of such information so that they may take appropriate

action. Other than in these areas however, none of the information resulting from the interview will be shared in a way that can identify you with anyone outside of the study.

- The information that you tell us in your interview will be kept secure and will only be accessible by the research team. Once we have written down everything that you said, we will erase your recorded interview.
- Any information (including your voice recording) removed from the prison will have your name removed and will be stored in a secure location at the University.
- Your consent form (which you signed) will be kept in a locked cabinet separate to any other information you have provided.

We will not tell other prisoners that you are taking part in the research. It is up to you whether or not you want to tell others. You don't have to tell others what you are being interviewed about. Sometimes people find it helpful to tell others that they are taking part in research about their life when they were in the community.

What will happen to the results of the research study?

If the research goes well we will write up the results for publication in a scientific journal and will talk about it at professional conferences. It will not be possible for anyone to tell that you took part in this study. However, we will keep your answers, without identifying information for up to 5 years after publication.

Who has reviewed the study?

This study has been reviewed and approved by the University of Kent Ethics Committee, and the National Research Committee for NOMS.

Thank you for taking the time to hear about our research. It has important implications and so we hope that you will consider taking part in it.

Magali Barnoux, PhD Student & Research Assistant

Nichola Tyler, Research Assistant

Dr Theresa Gannon, Research Supervisor

Dr Caoilte Ó Ciardha, Research Associate

Further Information and Ethics

If you would like to ask any more questions about our research, please do not hesitate to ask. We will do our very best to answer any questions that you have about the research.

Alternatively, if you have any serious concerns about the ethical conduct of this study then please notify the chair of ethics at the School of Psychology, University of Kent, Canterbury, CT2 7NP.

Participant Code Number:

Consent Form

Title of Project: Understanding Why People Set Fires

Please initial box

- 1) I confirm that I have read/had read to me and understood the information sheet for the above study. I have also been given the opportunity to ask questions.

- 2) *I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason, without my leave status, parole or legal rights being affected.*

- 3) *I understand that sections of my prison files may be looked at by the research team where it is relevant to my taking part in research. I give permission for these individuals to have access to my records.*

- 4) *I understand that any information collected about me will not have my name on it when it leaves the prison.*

- 5) I understand that if I disclose information that suggests that I am a risk to myself or others the research team will have to inform appropriate professionals.

I agree to take part in the above study:

Name of Participant Date Signature

Researcher Date Signature

One for prisoner, one for researcher; one to be kept with prison files



School of Psychology

Debrief Form

Information for you about the study examining why people set fires

Dear Participant,

First of all, we would like to say a big **THANK YOU** for taking part in our research on *Understanding Why People Set Fires*. It would be impossible to make any progress in our research without your help.

A Brief Summary

We asked you to talk to us in detail about a time in your life when you had set a fire. We also asked you to talk to us about other things that had happened in your life. The reason we interviewed you was because we wanted to get an idea of what types of issues and thinking might make people more likely to set fires. If we know this, then it can help us to build models of why people feel like setting fires so that we can see where things start to go wrong. Learning about where things go wrong can be crucial for working out how to develop treatment for people who set fires. At the moment, although there are lots of treatment programmes available for treating all different types of offence behaviours in prisons, there are very few programmes that look at helping people to stop setting fires. We hope that this research will help to develop future treatment for people in prison who have set fires.

Thanks for Volunteering

We would like to take this opportunity to thank you for taking the time to volunteer in this research. It has important implications for future treatment and you have played a vital part in this research.

Magali Barnoux, PhD Student & Research Assistant

Nichola Tyler, Research Assistant

Dr Theresa Gannon, Research Supervisor

Dr Caoilte Ó Ciardha, Research Associate

Further Information and Ethics

If you would like to ask any more questions about our research, please do not hesitate to ask. We will do our very best to answer any questions that you have about the research.

Alternatively, if you have any serious concerns about the ethical conduct of this study then please notify the chair of ethics at the School of Psychology, University of Kent, Canterbury, CT2 7NP.

Appendix Five

Ethical Approval

University of Kent Ethics Approval

APPROVAL BY PSYCHOLOGY RESEARCH ETHICS COMMITTEE

The following research project has been approved by
The Psychology Research Ethics Committee

Date: 14:07 28-10-2010

Code: 20101507

Applicant details:

Name: Miss Magali Barnoux

Status: PhD Student

Email address: mlb25@kent.ac.uk

Title of the research:

The Firesetting Treatment Project

When carrying out this research you are reminded to

- * follow the Departmental Guidelines for Conducting Research with Human Participants
- * comply with the Data Protection Act 1998
- * refer any amendments to the protocol to the Panel

Please keep this form in a safe place. You may be asked to present it at a later stage of your study for monitoring purposes. Final year project students and MSc students will need to submit a copy of this form with their project.

You can log in at <http://www.kent.ac.uk/psychology/technical/ethics/index.php> to copy or print pregenerated handouts for this study.

National Offender Management Service Approval



Ministry of JUSTICE

National Offender
Management Service

Dr Theresa A. Gannon
University of Kent
School of Psychology
Keynes College,
University of Kent
Canterbury, Kent
Post Code CT2 7NP
T.A.Gannon@Kent.ac.uk
Theresa.Gannon@vuw.ac.nz

National Offender Management Service

National Research Committee
Business Change Group
BCG Building
HMP Full Sutton
York, YO41 1PS

Telephone: 01759 475078

Fax: 01759 475 073

Email: National.Research@noms.gsi.gov.uk

Title: The Firesetting Treatment Project: An Investigation of Firesetters' Treatment Needs and the Effectiveness of Specialist Treatment for Firesetters

Reference: 74-10

Establishments: London, South East, Yorkshire & Humberside

Dear Dr Gannon

Further to your application to undertake research in HM Prison Service and our letter dated 7 December 2010.

The NRC is pleased to grant approval in principle for your research, subject to compliance with the conditions outlined below:

- To include women in the research study, as arson is prevalent especially in female IPPs.
- Prisons - Approval from the Governor of each Establishment you wish to research in. (Please note that NRC approval does not guarantee access to Establishments,

access is at the discretion of the Governor and subject to local operational factors and pressures)

- Probation Trusts - Researchers are under a duty to disclose to Probation Trusts if an individual discloses information that either indicates a risk of harm to themselves or others or refers to a new crime that they have committed or plan to commit. Researchers should make research participants aware of this requirement
- Compliance with all security requirements.
- Compliance with the requirements of the Data Protection Act 1998.
- Informing and updating the NRC promptly of any changes made to the planned methodology.
- It being made clear to participants verbally and in writing that they may withdraw from the research at any point and that this will not have adverse impact on them.
- The NRC receiving an electronic copy of any research report submitted as a result of the research with an attached executive summary of the product of the research.
- The NRC receiving an electronic copy of any papers submitted for publication based on this research at the time of submission and at least one month in advance of the publication.
- Researchers are under a duty to disclose certain information to the Prison Service. This includes behaviour that is against prison rules and can be adjudicated against (see Section 51 of the Prison Rules 1999), illegal acts, and behaviour that is harmful to the research participant (e.g. intention to self-harm or complete suicide). Researchers should make research participants aware of this requirement.
- HMP staff - Official permission is required from HR Policy and Reward Group in Headquarters before any member of staff, serving or retired, may publish any material relating to the work of the Prison Service, the NOMS Agency, the Ministry of Justice or other Government departments. Permission should be sought from Colin Harnett, Deputy Director, HR Policy. Colin can be contacted at colin.harnett@noms.gsi.gov.uk or on 020 7217 6453. The rules are set out in Chapter 19 (Conduct) of the HMPS Staff Handbook.

When approaching establishments/probation trusts, a copy of this letter must be attached to the request to prove that the NRC has approved this piece of research.

Once the research is completed, and received by the NRC Co-ordinator, it will be lodged at the Prison Service College Library.

Yours sincerely

Dr Susan Wishart
 Chair of the NRC
 Business Change Group