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An Investigation of Scripts and Dysfunctional Expertise in Male Firesetters

By

Helen Louise Butler

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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

ERC: Expertise Related Competency (Bourke, Ward, & Rose, 2012)

FOI: Freedom of Information

FSP: Fire Service Professional

GAM: General Aggression Model (Anderson & Bushman, 2002)

GLM: Good Lives Model (Ward, 2002)

IM: Impression Management Scale (Paulhus, 1991)

LTM: Long Term Memory

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

Abstract

Firesetting theory and research is growing. Recent advances include: the development of a comprehensive multifactorial theory of adult firesetting and the development of specialist group therapy that appears successful at reducing firesetting risk (Gannon, Ó Ciardha, Doley, & Alleyne, 2012; Gannon et al., 2015). However, there remains a persistent over reliance on the concept of fire interest to explain acts of deliberate firesetting, despite such a phenomena not always being present.

The importance of cognition in the facilitation and reinforcement of criminal behaviour has been considered in numerous offender populations. Coupled with this is an emerging body of literature suggesting that experienced offenders display a certain level of expertise in their criminal behaviour. The purpose of this thesis was to apply, and investigate, the concepts of offending expertise along with cognition-specifically the concept of scripts-to firesetting behaviour for the first time.

Study 1 sought to gain initial exploratory qualitative information, through conducting semi-structured interviews with incarcerated firesetters, regarding whether firesetters hold scripts and expertise with regards to firesetting. Utilising the findings from Study 1, and existing research evidence, a preliminary conceptual framework of firesetting scripts and expertise was outlined. Study 2 sought to empirically investigate the hypothesised firesetting scripts and expertise, and their relationship to the established concept of fire interest. Results suggested that, relative to comparison groups, firesetters hold scripts about fire and demonstrate firesetting expertise. Furthermore, the extent to which one identifies with fire was shown to predict firesetting scripts and both identification with fire and serious interest in fire was shown to predict firesetting expertise. Studies 3a and 3b sought to investigate firesetting expertise further, through investigating two important facets of expertise, (1) availability of firesetting heuristics, and (2) a superior ability to automatically recognise offence-related cues. Results suggested

that firesetters did appear to both hold heuristics about their firesetting and demonstrate an awareness of offence-related cues, relative to offender controls. Finally, Study 4, sought to replicate the findings from Studies 1, 2, 3a, and 3b utilising a community based sample of un-apprehended firesetters. Results failed to confirm that un-apprehended firesetters demonstrate expertise. However, un-apprehended firesetters were found to be more likely, than community comparisons, to hold scripts revolving around the themes of fire being a powerful messenger and fire being a way of gaining attention. Furthermore, un-apprehended firesetters identified with fire more than community comparisons. Future research and practical implications of the proposed firesetting scripts and expertise are considered, along with limitations.

List of Tables

List of Figures

Table of Contents

Chapter One Why Is Firesetting a Problem and How Can We Explain It?

Introduction

Intentional firesetting is a persistent and pervasive problem, yet researchers and clinicians alike have given this type of offending little attention, compared to other offending domains (e.g., sexual and violent offending; Doley, Dickens, & Gannon, 2016). The term firesetting refers to any problematic fire and is not limited to fires set to property and land, but also refers to fires set to other people, as well as self-directed firesetting behaviour (Doley et al., 2016). Palermo (2015) states that those who fireset may do so without criminal intent. This may be most commonly seen in individuals who do not cause devastation to the wider community; however, they repeatedly set small, well-contained, fires (e.g., burning paper in a metal bin; Doley et al., 2016). The term firesetting allows for a broader consideration of different types of fires and motivations typically assessed and treated by consulting psychiatrists and clinicians.

Pyromania, however, is a psychiatric diagnosis, and refers to an impulse control disorder (American Psychiatric Association, 2013) and has a much narrower focus than firesetting. Included within the Diagnostic and Statistical Manual of Mental Disorders-5, for an individual to attract a diagnosis of pyromania they must repeatedly and intentionally set fires, experience tension or arousal preceding an act of firesetting, experience relief, pleasure or gratification from having set the fire, and hold a fascination or attraction to fire itself. Furthermore, fires motivated by: crime concealment, political ideology, profit or personal gain, revenge, or because of: substance abuse, delusions, hallucinations, neurobiological, or intellectual impairment preclude one from being given a diagnosis of pyromania. As such, pyromania is considered to be an outdated and limited definition failing to adequately account for firesetting behaviour (Ducat, McEwan, & Ogloff, 2013).

Arson is a criminal offence, charged under The Criminal Damage Act (1971), which is concerned exclusively with the wilful and malicious damage or destruction of

property. Arson is considered as a general-intent crime (Burton, McNeil, & Binder, 2012; Palermo, 2015), meaning that prosecutors only need to prove the individual intentionally set the fire, regardless of whether the consequences of the fire were intended. Furthermore, guilt can be ascertained through circumstantial, as opposed to direct evidence (Burton et al., 2012).

Burton et al. (2012) outline that "firesetting is a behaviour, arson is a crime, and pyromania is a psychiatric diagnosis" (p. 355). Therefore, as this thesis is concerned with behaviour, the term firesetting will be used throughout to describe all intentional acts of setting a fire. Furthermore, given that the empirical investigation conducted within this thesis involves males over 18 years old, unless explicitly stated otherwise, when using the term firesetter/s, within this thesis, it is in reference to males over 18 years old. The remainder of this chapter will outline the available evidence pertaining to the scale of the problem of deliberate firesetting and the theories that exist to explain firesetting.

The Scale of the Problem

One approach to estimating the scale of the problem of deliberate firesetting is to consider government statistics of recorded incidents of firesetting, and the associated economic and human costs. The latest available statistics from the Home Office report that between 2016 and 2017, of the 175,673 fires attended by Fire and Rescue Services, 84,992 fires were thought to have been set deliberately, accounting for almost half (48%; Home Office, 2017). This is an increase of 22% from the previous year. Of the 84,992 deliberately set fires, 46 resulted in death and 1,030 in non-fatal casualties (Home Office, 2017). Furthermore, estimates suggest that deliberate firesetting costs the UK economy £1.7 billion per year (Department for Local Communities and Government, 2011).

When considering in more detail the targets of these deliberate fires, although this does vary to some extent year on year, around 43% of targets are road vehicles, 22% are 'other' buildings (e.g., boarding school accommodation, hotel/motels, homeless hostels, sheltered housing, and residential care homes), 18% are dwellings, and 17% are classified

as other outdoors (e.g., outdoor equipment/machinery or furniture; Department for Local Communities and Government, 2011). Further analysis has also identified that the most common *other* building locations that are targeted are: private garages and sheds (48%), recreational and other cultural services premises (40%); and schools (32%; Department for Local Communities and Government, 2011).

Furthermore, recent numbers hint that firesetting within the prison estate itself is a rapidly growing concern. With 2,580 reported incidents of prison firesetting activity in England and Wales in 2016. This is an increase of 33% since 2015, and 109% since 2014 (BBC News, 2017).

In addition to using government statistics to demonstrate the scale of the problem of deliberate firesetting, academics have also attempted to empirically investigate the prevalence of deliberate firesetting amongst community samples through self-report measures. Blanco et al. (2010) and Vaughn et al. (2010) reported that when 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?",* between 1.0% and 1.13 % of US adults, who responded to the National Epidemiological Survey of Alcohol and Other Related Conditions (NESARC), reported setting a deliberate fire. Secondary analysis conducted by Hoertel, Le Strat, Schuster, and Limosin (2011) suggested a prevalence rate of 1.7% for adult men, and 0.4% for adult women. However, despite the large sample ($n = 41,552$), the item used to determine previous firesetting behaviour was both vague (i.e., it did not attempt to exclude childhood firesetting) and narrow (i.e., it only asked about property fires) in its scope. Furthermore, face-to-face data collection may have increased issues of social desirability, detrimentally effecting the number of truthful respondents (Barrowcliffe & Gannon, 2015; Dickens & Sugarman, 2012; Gannon & Barrowcliffe, 2012).

Studies in the UK sought to rectify some of these challenges. First, Gannon and Barrowcliffe (2012) asked participants ($n = 158$) in person to anonymously self-report incidents when they had engaged in deliberate firesetting. Results showed that less than 1%

(*n* = 2) had engaged in intentional firesetting as adults. Whilst improvements were made upon the NESARC study with regards to the use of a more well defined fire related question, and more anonymity for participants (Dickens & Sugarman, 2012), Gannon and Barrowcliffe's (2012) study was limited by its small, and disproportionately female (69%), sample size (Dickens & Sugarman, 2012; Gannon & Barrowcliffe, 2012).

In their second study Barrowcliffe and Gannon (2015) combated sampling problems by randomly inviting 10% of 5,568 households in Kent, UK to participate in the research. A total of 157 people elected to take part. Utilising a similar methodology to that of their first study, Barrowcliffe and Gannon (2015) found that 11.5% (*n* = 18) of their sample reported having engaged in deliberate firesetting. This prevalence rate is far greater than that reported by Blanco et al. (2012), Vaughn et al. (2010), and Hoertel et al., (2011). Barrowcliffe and Gannon (2015) hypothesise that this may be as a consequence of their guarantee of anonymity.

When considering both government statistics and studies of prevalence it is evident that the scope of the problem of deliberate firesetting is, and should be, a pressing concern for both policy makers concerned with crime prevention and clinicians involved in offender rehabilitation. However, limitations are inherent in all of the metrics used, which may in fact conceal the true scale of the problem. First, government statistics of deliberate fires fail to account for all types of deliberate fires set (e.g., fires set to self). Second, not all firesetting activity within the prison estate will be recorded. Finally, prevalence estimates within the general adult population rely on self-report data which will inevitably be subject to responding bias, even with the guarantee of anonymity.

Firesetting Theories

A sound understanding of offence related theory is not only key to understanding the scale of the problem, it is also an important element in allowing clinicians to explore potential treatment options (Gannon, Collie, Ward, & Thakker, 2008). Gannon and Pina (2010) conducted a review of existing firesetting theories which highlighted that there has

also been an overwhelming preoccupation with taxonomies as a way to subtype offenders, based upon shared motivational factors (Gannon & Pina, 2010). During this review Gannon and Pina (2010) also successfully applied Ward and Hudson's (1998) three level theory classification system, previously used to categorise theories of sexual offending, to distinguish between existing theories of deliberate firesetting. The following section will provide an overview of both noteworthy firesetting taxonomies and theories of firesetting reviewed by Gannon and Pina (2010), as well as recent theory developments in relation to micro-theories.

Taxonomies

In an attempt to aid clinicians and reduce the heterogeneity of firesetters, unilateral classificatory systems have been employed by professionals working with firesetters (Gannon & Pina, 2010). As outlined above, the firesetting literature is replete with attempts at subtyping firesetters based upon shared motivational factors. One of the first such typologies was proposed by Lewis and Yarnell (1951), utilising insurers' accounts of 2,000 incidents of firesetting, excluding fires set for profit, proposed four motivations for firesetting: confusion, delusions, for sexual gratification, and for revenge.

The second taxonomy of note, proposed by Inciardi (1970), utilised parole records of predominately male firesetters released from prisons in New York State across a 6 year period (1961-1966). Inciardi (1970) proposed six motives for firesetting: revenge, excitement, mental illness, insurance claim, vandalism, and crime concealment.

Dennett (1980, a fire investigator, also found firesetters were motivated by: crime concealment, financial gain, destructive/protest, factors associated with mental disorders, and boredom. One additional motive found by Dennett (1980), was heroism. These firesetters were said to set the fire to later extinguish it, and gain notoriety. Icove and Estepp (1987), who qualitatively analysed 1,016 fire-related arrest interviews, also found evidence for motivators that echo both Inciardi (1970) and Dennett (1980), reporting motives of: revenge, excitement, vandalism, and crime concealment. Prins (1994),

discovered motivations that share similarities with Inciardi (1970), Dennett (1980), and Icove and Estepp (1987). These included a need for attention, crime concealment, financial gain, mental disorder, mixed motives, political aims, revenge, self-destruction, and vandalism. Finally, Rix (1994), who classified 153 UK firesetters referred to psychiatric services over a 10 year period, also found evidence for: attention seeking, crime concealment, excitement, financial gain, hero firesetting, mental illness (including suicide attempts), political protest, revenge, and vandalism as motivators for firesetting. However, Rix (1994), also outlined novel motivations of: carelessness (accidental firesetting), manipulation (firesetting to promote relocation to prison/hospital or to reunite with a partner), proxy (firesetting on behalf of someone else), and re-housing (firesetting to promote a relocation from social housing).

It is attractive to reduce such a heterogeneous population down to more manageable descriptors, and some taxonomies have strengths (e.g., ample sample sizes; Dennett, 1980; Icove & Estepp, 1987; Inciardi; 1970; Rix, 1994) and some degree of clinical utility. However, many of the taxonomies outlined fall prey to key conceptual and methodological limitations. First, with the notable exception of Rix (1994), the taxonomies proposed have been borne out of the respective authors' own retrospective analysis of interviews or incident descriptions. As Gannon and Pina (2010) have outlined, there are inherent validity and reliability issues with such an analysis. The lack of inter-rater reliability or data validation practices limits the ability to compare for accuracy. Furthermore, given that minimal attempts have been made to separate males and females, adults and juveniles, and convicted and unconvicted firesetters, the ability to make meaningful comparisons between groups is difficult. Second, the taxonomies outlined classify firesetters into only one motivational factor. However, firesetters could be plausibly classified into more than one typology (e.g., vandalism and excitement). Furthermore, it is futile to explain firesetting through the use of a single factor; firesetting behaviour is often multifaceted and complex. Finally, there is a complete absence of detail regarding psychological traits, risk factors,

clinical features, or treatment suggestions. For example, in the context of this thesis, the taxonomies outlined fail to consider concepts such as scripts and expertise, which as will be outlined in more detail later, have been shown to be important explanatory factors when considering offending behaviour.

Multifactorial Theories

Gannon and Pina (2010) highlighted three Level I multifactorial theories of firesetting. These theories consider the existence and interaction of multiple factors relating to an offence.

Functional Analysis Theory (Jackson, Glass & Hope., 1987)

Functional Analysis Theory represents one of the earliest attempts at providing a complete explanation of firesetting behaviour. Central to the theory are factors that predispose individuals to fireset (i.e., antecedents) and how these interact with key facets of Social Learning Theory (i.e., positive and negative reinforcement). Jackson et al. (1987) suggest that psychosocial disadvantage (e.g., adverse developmental experiences and psychological vulnerabilities); life dissatisfaction and self-loathing (e.g., depression and self-esteem issues); ineffective social interactions (e.g., poor problem solving skills); previous experience with fire (e.g., both one's own or vicarious legitimate or illegitimate fire experiences); and emotionally significant events (e.g., internal affective states or external firesetting triggers) are all antecedents to an incident of firesetting.

Jackson et al. (1987) suggest that individuals who set fires are unsuccessful in using more adaptive ways of expressing or satisfying emotional and social needs. Jackson et al. (1987) pay deliberate attention to the reinforcement that maintains firesetting. Both positive (e.g., increased perception of effectiveness) and negative (e.g., prison) consequences are hypothesised to serve as key firesetting reinforcers. For example, punishment is hypothesised to exacerbate the firesetter's inadequacies (e.g., psychosocial disadvantage and ineffective social interactions) and thus maintains the firesetting behaviour.
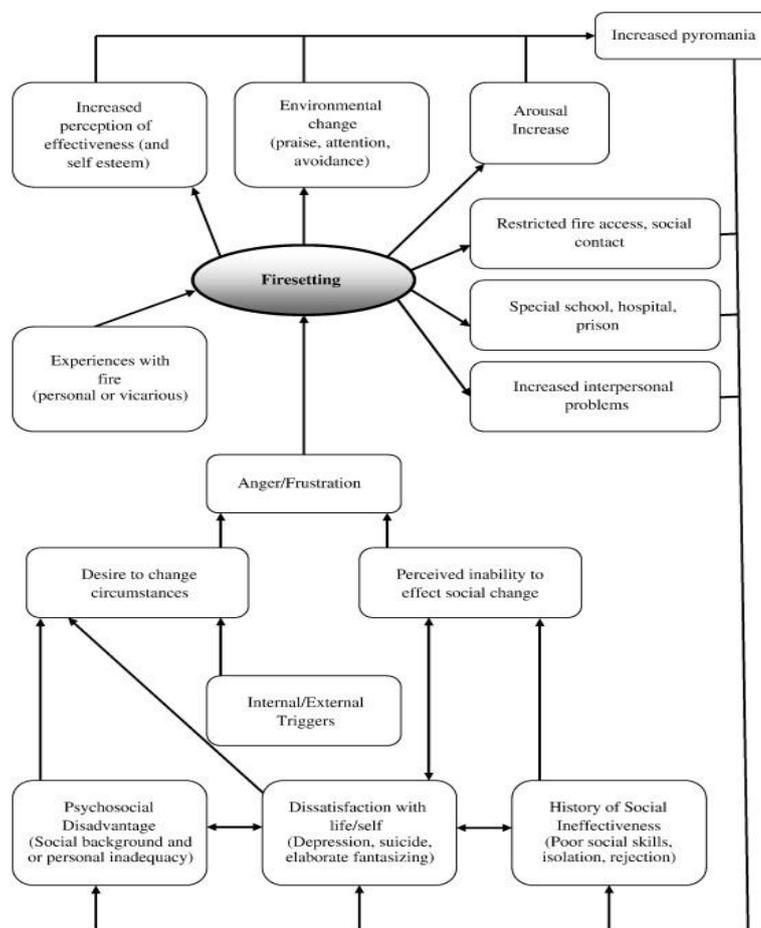
Figure 1.1. **Functional Analysis Theory (Jackson et al., 1987**)

There are a number of key strengths of the Functional Analysis Theory. First, there is clear empirical evidence that supports the core assumptions underlying the theory (e.g., experiences of isolation, poor social skills, depression, low self-esteem, negative affect preceding firesetting; Duggan & Shine, 2001; Gannon et al., 2012; Grant & Kim, 2007; Hurley & Monahan, 1969; Murphy & Clare, 1996; Tennent, McQuaid, Loughnane, Hands, 1971; Rice & Chaplin, 1979). Second, the theory is based upon well established, and rigorously researched, principles of Social Learning Theory (Bandura, 1976; Gannon & Pina, 2010). Third, as Gannon and Pina (2010) state, the theory holds promise in relation to clinical utility, due to its focus on developmental experiences and its multifactorial nature.

However, the theory also has clear limitations. First, Functional Analysis Theory presumes that pyromania/fire interest must be present in order for somebody to engage in firesetting behaviour. Therefore, this theory fails to account for acts of firesetting that occur in the absence of fire interest (e.g., crime concealment; Gannon & Pina, 2010). The

theory also does not directly refer to the concept of cognition. Therefore, the theory cannot account for why somebody may develop cognitions/scripts that result in a preference to use fire, irrespective of an interest in fire (Gannon & Pina, 2010). Second, the theory fails to consider whether those who engage in repeated acts of deliberate firesetting develop any skills which may lead them to become more proficient firesetters, or even expert. Furthermore, there is no consideration as to whether the development of such skills bares a relationship with why somebody may choose to engage in repetitive acts of deliberate firesetting. Third, the theory is almost solely based upon Jackson's own clinical experience with mentally disordered firesetters and, to date, remains largely untested (Gannon & Pina, 2010). This makes applying the theory to other groups of firesetters problematic.

Dynamic Behaviour Theory (Fineman, 1980, 1995)

With clear similarities to Functional Analysis Theory, Dynamic Behaviour Theory (Fineman, 1980; 1995) also emphasises the role of social learning in the development of firesetting behaviour. Combining both Fineman's own clinical experience of working with juvenile firesetters, and drawing from other works within the dynamic-behavioural framework (i.e., Cook, Hersch, Gaynor, & Roehl, 1989; Gaynor, 1991), Fineman quantified firesetting behaviour using the following formula:

(FS) Firesetting $= G1 + G2 + E$

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

The formula states that firesetting is due to: (G1) historical factors that predispose anti-social behaviour (i.e., poor parental supervision and poor interpersonal skills), (G2) historical environmental reinforcement contingencies supporting firesetting (i.e., poor parental supervision or excessive berating of childhood fire play, fire interest, poor fire safety knowledge) and (E) current environmental reinforcement contingencies supporting firesetting (i.e., external, internal, or sensory). Within (E), current environmental reinforcement contingencies, there are specific factors which are essential when clinicians are assessing the firesetter's risk: (C) a proximal traumatic life event (e.g., a death, eviction

from home, or abusive experience), (CF) characteristics of the crime scene, (D1, D2, and D3) cognitions that are present prior to, during, and post firesetting, and (F1, F2, and F3) affective states that are present prior to, during, and post firesetting. Finally, Fineman hypothesises that (R) relates to reinforcers of firesetting behaviour, these include (Rex) which are external reinforcers (e.g., gaining financial reward) and (Rin) which are internal reinforcers (e.g., sensory stimulation).

In essence, Fineman (1980/1995) proposes that firesetting occurs due to predisposing factors around antisocial behaviour, these are then compounded by a lack of appropriate role models for children to model prosocial skills and coping strategies necessary for dealing with stressful situations. Therefore, in the absence of knowing the appropriate ways to express feelings of anger or distress, individuals utilise fire as a form of expression. In turn, the firesetting behaviour is reinforced through both external and internal reinforcers.

In addition to providing a theory of firesetting, Fineman also provided three checklists: (1) the *Firesetting Sequence Analysis Form* (i.e., examining the thoughts, feelings and behaviours that occur before an act of firesetting and what may cause subsequent repeated firesetting), (2) the *Firesetting Motive Form* (i.e., eight motivation subtypes for firesetting which are based upon the firesetter's psychological state, the function the fire served, and the target of the firesetting), and (3) a *Psycholegal Analysis Form* (i.e., a legal assessment that is used to ascertain the firesetter's future level of firesetting dangerousness; see Fineman, 1980/1995 for more detail). The checklists are intended for use by consulting clinicians in order to help both themselves and the firesetting individual identify areas of risk, and subsequent treatment targets.

The Dynamic Behaviour Theory has clear strengths. First, within the theory, Fineman (1980/1995) has acknowledged the complex, multifactorial, and interactive nature of firesetting behaviour. The theory holds explanatory depth due to the way it can account for multiple motives and types of firesetting (Doley, 2009). Second, similar to the

Functional Analysis Theory, the theory is grounded in principles of conditioning and reinforcement which are known to be important within clinical psychology (Gannon & Pina, 2010). Third, the theory demonstrates a great deal of clinical utility, arguably more so than the Functional Analysis Theory, as Fineman (1980/1995) has provided clinicians with useable assessment tools, in the form of checklists. The three checklists, along with the theory itself, can be used to guide clinicians' formulations, assessments, and treatment targets for a given offender (see Fineman 1980, 1995 for a more detailed description of the checklists).

However, the theory is not without limitations. First, although cognitions are considered within the theory (D1, D2, and D3), Fineman (1980/1995) fails to specify what these cognitions may look like, how they have developed, and their specific role when considering firesetting behaviour. Furthermore, Fineman (1980/1995) does not explicitly state whether the cognitions that are present prior to, during, and post firesetting are in the form of scripts, or even if they are firesetting specific. Second, as Doley (2009) acknowledges, the theory fails to account for how and why juvenile firesetting may persist into adulthood. Again, similar to Functional Analysis Theory (Jackson et al., 1987) the theory fails to consider whether repeated acts of firesetting could lead to the development of firesetting expertise. Furthermore, no consideration is given to the fact that the development of such expertise could account for the persistence of firesetting into adulthood. Finally, akin to Functional Analysis Theory, this theory has been developed with, and for, a specific group of firesetters: in this case male juvenile firesetters. Therefore, this is problematic when trying to apply the theory's principles to male adult firesetting behaviour.

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

The most recent attempt to provide a multifactorial explanation of firesetting is the Multi-Trajectory Theory of Adult Firesetting (M-TTAF) proposed by Gannon et al. (2012). To date, this theory provides the most comprehensive attempt to explain firesetting. The

M-TTAF is structured into two tiers. Tier 1 presents the overall theoretical framework of the theory, including the psychological vulnerabilities and critical risk factors which interact to facilitate and reinforce firesetting (see Figure 1.2; Gannon et al., 2012). Tier 2 provides information on the five prototypical trajectories, based upon the critical risk factors presented in Tier 1, which account for the variation between firesetters (Gannon et al., 2012). These prototypical trajectories represent a pattern of characteristics which include: distinctive risk factors, clinical features, and treatment needs which can be utilised by clinicians to highlight clinical need (Gannon et al., 2012).
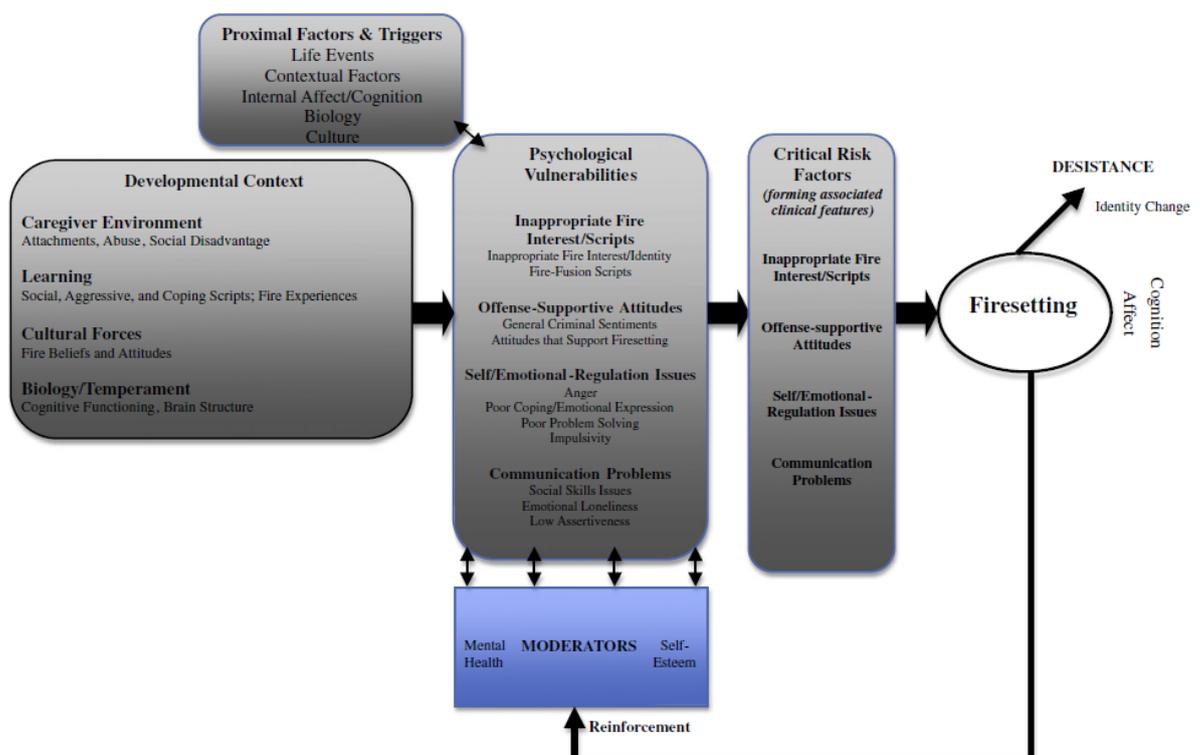
Figure 1.2 **Tier 1 of the M-TTAF (Gannon et al., 2012)**

Tier 1 of Gannon et al.'s (2012) theory presents multiple factors that are said to interact and result in an act of firesetting. First, the developmental context, consisting of: the caregiver environment (i.e., attachment style, abusive experiences, and social disadvantage), learning experiences (i.e., social, aggressive, fire and coping scripts), cultural factors (i.e., fire beliefs and attitudes), and biology and temperament (i.e., cognitive functioning and brain structure). It is from the developmental context that

psychological vulnerabilities form. These psychological vulnerabilities, derived from empirical evidence and the authors' clinical experience with firesetters, consist of: offence supportive attitudes (i.e., general criminal sentiments and attitudes that support firesetting), self/emotional regulation issues (i.e., anger, poor coping/intense emotional expression, poor problem solving, and impulsivity), communication problems (i.e., poor social skills, emotional loneliness, and low assertiveness), and, for the first time in any theory of firesetting, inappropriate fire interest/scripts (i.e., inappropriate interest with fire, identifying with fire, and fire scripts). Finally, proximal factors such as: life events, contextual factors, internal affect/cognition, biology and culture prime these psychological vulnerabilities which then cause them to become critical risk factors. It is as a result of this interaction, and the formation of critical risk factors, that an act of firesetting occurs.

Importantly, Gannon et al. (2012) state that the interaction between psychological vulnerabilities and proximal events can be moderated by mental health and self-esteem. Good mental health and high levels of self-esteem form protective factors and reduce how severely the proximal factors interact with the psychological vulnerabilities. However, poor mental health and low levels of self-esteem are hypothesised to exacerbate psychological vulnerabilities. In the theory, Gannon et al. (2012) hypothesise that desistance from firesetting occurs when the firesetter experiences an identity change. Achieved through either engaging in therapeutic interventions and/or external influences, desistance is most successful when feelings of personal control, self-direction, and social support increase.

As outlined above, within the M-TTAF, Gannon et al. (2012) acknowledge the importance of scripts within firesetting behaviour. Gannon et al. (2012) hypothesise two scripts: (1) an aggression fire fusion script and (2) a fire coping script. The aggression fire fusion script is hypothesised to develop as a result of a preference for indirect aggression when enacting revenge or wanting to warn others (Gannon et al., 2012). Fire allows one to send a powerful message, without having to interact directly with the victim.

Consequently, fire and indirect aggression become linked (Gannon et al., 2012). The fire coping script, unlike the aggression fire fusion script, does not contain information about the aggressive use of fire. Instead, fire is viewed as a way to cope with various problematic situations. Gannon et al. (2012) suggest this is because fire grabs attention, destroys property, and can promote environmental change. Gannon et al. (2012) propose that such scripts develop through social learning principles, and that the observation of others' uses of fire will guide the formation of fire scripts.

Tier 2 of the M-TTAF provides the five prototypical trajectories Gannon et al. (2012) propose firesetters may follow. These trajectories are formed from existing empirical evidence, typological classifications, and clinical experience. The trajectories are not mutually exclusive, and firesetters can exhibit characteristics from multiple trajectories. As stated earlier, the main function of the trajectories is to provide clinicians with a helpful way of understanding how a firesetter may come to set a fire, and thus how to tailor treatment for that individual. The five trajectories are: *Anti-Social Cognition, Grievance, Fire-Interest, Emotionally Expressive/Need for Recognition*, and *Multi-Faceted* firesetters (See Table 1.1; Gannon et al., 2012).

Table 1.1

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.

The M-TTAF has some clear strengths, especially when comparing this theory to previous theories of firesetting. A key strength of the M-TTAF is its explanatory depth. Through incorporating pre-existing firesetting theories, empirical research, and established psychological principles, this theory offers the most comprehensive explanation of firesetting to date (Gannon et al., 2012). Gannon et al. (2012) state that the M-TTAF incorporates, and extends, previous multifactorial theories (i.e., Functional Analysis Theory; Jackson et al., 1987 and Dynamic Behaviour Theory; Fineman, 1980, 1995) in two ways. First, the M-TTAF is the only theory of firesetting to acknowledge the importance of scripts in the explanation of firesetting behaviour. Within the M-TTAF, scripts are viewed as critical risk factors and, as such, play a crucial role in firesetting behaviour. The presence of scripts within the M-TTAF may provide an explanation as to why firesetting behaviour occurs in the absence of fire interest. Second, the M-TTAF provides an in depth explanation as to how the differing factors interact to result in an act of firesetting, which previous theories have failed to appropriately elucidate. Another key strength is that the M-TTAF's core principles are well supported by existing empirical findings relating to firesetters' psychological vulnerabilities (e.g., anger-related cognition, communication problems, low self-esteem, interest in serious fires, identification with fire, lower levels of perceived fire safety awareness; Gannon et al. 2013; Rice & Chaplin, 1979; Smith & Short, 1995) poor developmental experiences (Hurley & Monaghan, 1969), and mental health (Duggan & Shine, 2001; Gannon et al., 2013; Hurley & Monaghan, 1969). Furthermore, the M-TTAF is underpinned by key psychological principles of general criminal behaviour (e.g., Huesmann & Eron, 1984; Ward & Siegert, 2002), clinical psychology (i.e., social learning theory, classical conditioning, attachment theory; Bandura, 1977; Bowlby, 1969, 1973; Schachtman & Reilly, 2011), and social-cognitive psychology (i.e., schema theory; Fiske & Taylor, 2008).

The M-TTAF also has clinical utility. By providing prototypical trajectories in Tier 2, clinicians can use the M-TTAF to better understand an offender's offence history and subsequently tailor appropriate treatment. Furthermore, the scope of the proposed trajectories allows the theory to be applied to different types of firesetters (i.e., mentally disordered and imprisoned firesetters), with differing motivations, a limitation of previous theories. The trajectories can account for a wide variety of firesetting, as the M-TTAF can adequately distinguish between the differing prominent risk factors, clinical features, and potential motivations concerned with each trajectory. When looking more closely at the trajectories in Tier 2 it is evident that the trajectories can account for firesetters who utilise fire within a general criminal lifestyle, (e.g., those following the antisocial trajectory who are motivated to fireset to conceal a crime), as well as those who set a fire due to holding a serious interest in fire. The M-TTAF can account for the diversity seen in firesetting, and goes beyond previous multifactorial theories. Recent support for the M-TTAF trajectories has been shown through a Hierarchical Cluster Analysis. Barnoux (2015) found support for four of the five M-TTAF trajectories, those being: Anti-Social Cognition, Need for Recognition, Emotionally Expressive Trajectories, and some elements of the Grievance Trajectory (see also: Dalhuisen, Koenraadt, & Lem, 2017; Hagenauw, Karsten, Akkerman-Bouwsema, de Jager, & Lancel, 2014 for empirical support of the M-TTAF).

Whilst it is evident that the M-TTAF extends the theories of Jackson et al. (1987) and Fineman (1980, 1995), through considering the role of scripts within firesetting behaviour, the theory still holds some limitations. Gannon et al. (2012) provide only a very brief overview of scripts within the M-TTAF and minimal detail is provided about the content, structure, and etiological function of the proposed scripts. Furthermore, it is unclear why Gannon et al. (2012) only hypothesised two scripts. And, finally, to date, these two scripts proposed by Gannon et al. (2012) remain entirely untested. Therefore, whilst it is acknowledged that the scripts proposed within the M-TTAF represent a step forward in the consideration of cognition in firesetting theory there is still a way to go.

Furthermore, the M-TTAF, akin to both Jackson et al. (1987) and Fineman (1980, 1995), fails to articulate whether repeated use of fire leads to a greater level of firesetting proficiency, and the development of firesetting expertise, and whether such expertise is a risk factor for firesetting behaviour.

Single Factor Theories

Gannon and Pina (2010) also highlighted three Level II single-factor theories. Single-factor theories utilise one factor in detail to explain offending.

Psycho-Analytical Theory

Freud's (1932; and later Gold, 1962; Macht & Mack, 1968) Psycho-Analytical Theory posits that firesetting behaviour occurs as a result of either a urethral or oral fixated drive (Gannon & Pina, 2010). Repressed sexual urges and a sexual interest in fire are suggested to be key explanations for firesetting. However, whilst the Psycho-Analytical theory represents one of the earliest attempts to explain firesetting, there is no empirical evidence to support the theory's central claim regarding sexual desires motivating firesetting (Barnett & Spitzer, 1994; Hurley & Monaghan, 1969; Ó Ciardha, 2016; Prins, Tennent, & Trick, 1985). Furthermore, the Psycho-Analytical Theory demonstrates great failings in relation to its reductionist nature, inability to unify other explanations of firesetting, and poor clinical utility (Gannon & Pina, 2010). Furthermore, the theory fails to consider alterntiave cognitive (i.e., scripts) or behavioural (i.e., expertise) explanations of firesetting.

Social Learning Theory

Social Learning Theory views firesetting as being the product of learning through imitation and reinforcement (Bandura, 1976; Gannon & Pina, 2010; Kolko & Kazdin, 1986; Macht & Mack, 1968; Singer & Hensley, 2004; Vreeland & Levin, 1980). This learning occurs through both the positive reinforcement of fire (e.g., sensory excitement elicited by fire, the fanfare associated with a fire, or misplaced praise bestowed upon the firesetter for fighting the fire; Gannon & Pina, 2010; Vreeland & Levin, 1980) and

legitimate or illegitimate observation (e.g., a father's occupation as a firefighter or living in a family with a history of criminal firesetting; Gannon & Pina, 2010; Macht & Mack, 1968; Rice & Harris, 1991).

Social Learning Theory also proposes that an individual's regulatory responses are shaped thorough environmental reinforcement contingencies. However, as Gannon and Pina (2010) comment, firesetters are known to have poor self-regulation, often displaying aggression, inadequate interpersonal skills, and poor coping skills (borne out of poor developmental experiences). Thus, in the absence of more adaptive ways of regaining positive environmental control, firesetters turn to fire (Vreelan & Levin, 1980, Gannon et al., 2012; Gannon & Pina, 2010).

An advantage of Social Learning Theory is that there is clear empirical evidence to support the main proponents of the theory. Studies have found evidence supporting the poor developmental experiences of firesetters (including familial history of firesetting; Frisell et al., 2011; Hurley & Monaghan, 1969; O'Sullivan & Kelleher, 1987). Furthermore, similar to both Functional Analysis Theory and Dynamic Behaviour Theory, Social Learning Theory is grounded in established psychological principles (i.e., conditioning, reinforcement, and modelling; Gannon & Pina, 2010). Lastly, Social Learning Theory can account for certain firesetting motives, such as: revenge, recognition, fire interest, and protest (Gannon & Pina, 2010), providing clinicians with a basis for treatment options. However, Social Learning Theory cannot adequately account for all types of firesetting (e.g., fires set for profit) which is a clear limitation of the theory. Furthermore, whilst arguably the underlying mechanisms that lead to development of scripts and expertise, such as observational learning, imitation and reinforcement, the theory fails to explicitly refer to these concepts.

Biological Theory

Biological Theory proposes that neurobiological impairment can account for firesetting behaviour (Barnett & Spitzer, 1994; Virkkunen, 1984; Virkkunen, Goldman, Nielsen, & Linnoila, 1995; Virkkunen, Nuutila, Goodwin, & Linnoila, 1987).

The theory suggests that repeat or impulsive firesetters routinely set fires due to neurotransmitter deficits; namely the decreased concentration levels of cerebrospinal fluid monoamine metabolites (i.e., 5-hydroxyindoleacetic acid; 5 HIAA, and 3-methoxy-4-hydroxyphenylglycol; MHPG; Roy, Virkkunen, Guthrie, & Linnoila, 1986; Virkkunen et al., 1987; Virkunnen, Dejong, Bartko, & Linnoila, 1989). In addition to lower concentration levels of cerebrospinal fluid monoamine metabolites, abnormalities in glucose metabolism (Roy, et al., 1986; Virkkunen, 1984; Virkkunen et al., 1989), have also been suggested as an explanation for firesetting behaviour.

Similar to Social Learning Theory, it is evident that Biological Theory, unlike Psycho-Analytical Theory, has clear empirical evidence on which to base ascertains, thus offering clinical utility with regards to potential pharmaceutical treatments. Nevertheless, by virtue of such a preoccupation with a biological explanation, the consideration of other cognitive (i.e., scripts) or behavioural (i.e., expertise) explanations of firesetting, and key characteristics of deliberate firesetting (e.g., psychological traits, risk factors, offending styles, and motivations for firesetting) are missing, limiting broader aspects of clinical utility.

Micro-Theories

Finally, since Gannon and Pina's (2010) review, two Level III micro theories have been developed. Micro-theories examine the accounts given by offenders about their own offending behaviour, also known as offence chains.

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

Tyler et al., 2014)

Tyler at al. (2014) interviewed 23 male and female mentally discorded firesetters about the events, thoughts, and feelings leading up to and surrounding a recorded firesetting offence. All participants were diagnosed with a mental health disorder preceding an incident of firesetting, and had at least one recorded incident of firesetting. Using grounded theory (Strauss & Corbin, 1998), the interviews were analysed and an offence chain model was created. The model outlines the temporal sequence of the contextual, behavioural, affective, and cognitive events that occur around an incident of deliberate firesetting.

Tyler et al's. (2014) model has four phases: (1) background factors, (2) early adulthood, (3) the pre offence period, and (4) offence and post offence factors, each with specific sub-phases. Of most interest are the sub-phases within the pre offence period, approximately one year prior to the offence. This includes the planning of the offence, influenced by cognition, affect, and substance use, as well as the offence and post offence factors, whereby fire ignition (i.e., utilising fire knowledge), fire related affect, and cognition were deemed important (Tyler et al., 2014). Tyler et al. (2014) also propose three pathways through the model (*fire interest – childhood mental health approach, no fire interest – adult mental health approach,* and *fire interest – adult mental health*) determined by the journey through each of the phases and sub-phases of the model (for a more detailed description, see Tyler et al., 2014).

Tyler at al's. (2014) FOC-MD is the first micro theory of deliberate firesetting and, as such, represents an important development within the field of firesetting research. The FOC-MD offers a great deal of clinical utility, as the model can account for multiple motives of firesetting. Furthermore, key elements such as risk factors for mental health can be used to inform relapse prevention planning, and reduce the likelihood of future firesetting.

However, the FOC-MD is not without limitations. As noted by Tyler at al. (2014), the model falls prey to methodological failings which are inherent within grounded theory research, inaccuracies inherent with self-report data (i.e., memory loss and distortions over time), and the effects of social desirability. Another key limitation of the model is that it only applies to mentally disordered offenders. The model cannot be used to account for why other firesetters, namely imprisoned firesetters, may set a fire irrespective of the presence of a mental illness. Finally, and arguably most importantly, Tyler et al. (2014) fails to explicitly outline what is meant by cognition in phase four of the model. Specifically, Tyler et al. (2014) fails to articulate whether the cognitions referred to are fire specific or whether they refer to general offending cognition, and whether they are scripts or another form of cognition. Furthermore, Tyler et al. (2014) do not consider whether repeated acts of firesetting leads to the development of expertise in this area, and whether levels of firesetting expertise could account for, and discriminate, between different offenders' journeys through the model.

The Descriptive Model of Adult Male Firesetting (DMAF; Barnoux, Gannon, & Ó Ciardha, 2014)

Using a similar methodology to Tyler et al. (2014), Barnoux et al. (2014) interviewed 38 male imprisoned firesetters about the events, thoughts, and feelings leading up to, surrounding, and immediately following a deliberate incident of firesetting. Again, using grounded theory (Strauss & Corbin, 1998), the interviews were analysed and an offence chain model was created. Similar to Tyler at al. (2014), the model outlines the temporal sequence of the contextual, behavioural, affective, and cognitive events that occur around an incident of deliberate firesetting.

Barnoux et al. (2014) highlighted four phases within the chain. Within the background factors phase, childhood environment, abusive experiences, vulnerability factors (i.e., low assertiveness, aggression, impulsivity, poor communication, poor problem solving/coping strategies, learning disability, and schemas around offending), and fire

factors (i.e., serious fire interest, normalisation of fire, early childhood firesetting, and negative experiences with fire) were deemed important. In the second phase of adulthood experiences, Barnoux et al. (2014) emphasised the sub phases of: lifestyle outcomes (i.e., antisocial or prosocial lifestyle characterised by in/stability in areas of employment, housing, violent relationships, and drug and alcohol abuse); major life stressors (i.e., social exclusion, problems with interpersonal relationships, and experiencing a trauma); and proximal vulnerabilities (i.e., increased behavioural problems, absence of support, and mental health problems). Within the third phase, immediate pre-offence period, Barnoux et al. (2014) posit proximal triggers (i.e., moral transgression, conflict/provocation, and unmet needs) and affective response (i.e., anger, fear, and frustration) as being important. Finally, the fourth phase, the sub phases of: external influences (i.e., alcohol or drug abuse), offence related goal development (i.e., non-fire related or fire-related goals); materials used, and responses to the fire were deemed crucial. Barnoux et al. (2014), similar to Tyler et al. (2014), emphasises that the unique journey taken through the phases, and sub-phases, determines the pathway the offender follows of either *approach firesetters* and *avoidant firesetters* (for a more detailed description, see Barnoux et al., 2014).

Barnoux et al.'s. (2014) model has some clear strengths. First, it represents the first micro theory that applies specifically to imprisoned firesetters. Such a development is important when considering its clinical utility. The model can be used to help understand firesetting behaviour, and subsequently inform treatment for imprisoned firesetters. This model has also made important contributions to the wider literature of firesetting through emphasising the importance of the social context in childhood, the development of fire factors, and the importance of contextual triggers.

However, Barnoux et al.'s. (2014) model also has some clear limitations. In addition to the methodological and small sample size concerns that are inherent to grounded theory research, the model fails to consider the development of fire scripts and expertise. Whilst Barnoux et al. (2014) acknowledge the importance of general offence

schemas, there is a lack of clarity as to whether this specifically refers to scripts. Furthermore, Barnoux et al. (2014) do not consider whether repeated acts of firesetting might lead to the development of firesetting expertise.

Conclusions

Firesetting is a huge societal problem with severe financial and human consequences. However, the concept of firesetting is plagued with a distinct lack of research examining the prevalence of firesetting as well as frequent use of problematic terminology (i.e., Arson and Pyromania). Furthermore, whilst there have been advances in firesetting theory, allowing for increased proficiency when assessing and treating deliberate firesetting, there is still a way to go. From reviewing the typological classifications, micro, single, and multi-factor theories of firesetting it is evident that a major deficit of the theories is the prevailing assumption that fire interest must be present in order to explain firesetting behaviour. However, a preoccupation with the necessity of fire interest to explain firesetting behaviour maybe detrimentally affecting the exploration of other important explanatory concepts. Therefore, the aim of this thesis is to explore whether firesetting can occur in the absence of fire interest. Specifically, whether two key explanatory factors, scripts and expertise, absent from most theories of firesetting to date, could account for why firesetting occurs in the absence of fire interest.

First, with the exception of the M-TTAF (Gannon et al., 2012), there is a clear lack of consideration of the role of cognition, specifically scripts, within existing theories of firesetting. Whist some Level I and Level III theories may refer to proxies of scripts (e.g., motivations; Barnoux et al., 2014; Tyler et al., 2014) there is no direct consideration of this concept. Moreover, when scripts are directly referred to, in the case of the M-TTAF (Gannon et al., 2012), very little detail is given regarding the content and structure of potential firesetting scripts. However, this stands in stark construct to the fact that scripts have been shown to be an important concept within other offending domains, namely aggression and sexual behaviour, as will be outlined in Chapter Two (Gagon, 1990;

Huesmann, 1988; Huesmann & Eron, 1984; Ward & Hudson, 2000; Ward & Siegert, 2002) and may account for why individuals, without fire interest, engage in firesetting behaviour.

The second clear deficit is lack of attention paid to the development of firesetting proficiency. All of the theories of firesetting, to date, fail to consider whether repeated acts of firesetting lead to the development of expertise, and in turn further deliberate firesetting. Chapter Three will outline that continued, and repeated, behaviour in a given domain can lead to the development of expertise (Bennett & Wright, 1984; Bourke, Ward and Rose, 2012; Maguire & Bennett, 1982; Nee & Taylor, 2000; Nee et al., 2015; Taylor & Nee, 1988; Ó Ciardha, 2015; Ward, 1999). The absence of any substantive attention being paid to either of these two explanatory factors within the firesetting literature is concerning, given the clear evidence that supports the existence of these concepts in other offending domains. This lack of attention could be hindering the development of our understanding regarding firesetting behaviour that occurs in the absence of fire interest and the inclusion of these concepts when treating firesetters. Gannon, Rose and Ward (2008) emphasise that good clinical practice is achieved through adhering to the scientist practitioner model; whereby empirical research should inform clinical practice. Therefore, empirically investigating the existence of firesetting scripts and expertise may be crucial in advancing our understanding and treatment of firesetting behaviour. The following chapters will outline in more detail what is meant by the concepts of scripts and expertise.

Chapter Two Scripts

Introduction

Scripts were initially conceptualised in the field of cognitive science and artificial intelligence. However, since then, scripts have become well-established both within general psychology and, more specifically, within forensic psychology. Through both direct and vicarious experiences, an individual begins to encode several instances related to a specific situation or event in their memory. These memories allow one to develop mental representations of such events and they are organised and formulated in a group of inter-related schema (Fiske and Taylor 1991; Rummelhart and Norman 1988; Schank and Abelson 1977). These schematic knowledge structures then facilitate individuals' interpretation, evaluation, prediction, production, or control of circumstances that are goal-dependent and guide behaviour (Schank & Abelson, 1977; Tomkins 1991; Ward & Hudson, 2000; Ward & Siegert, 2002). Fiske and Taylor (1991) suggest scripts hold information relating to the roles, rules, and props of a series of events. Scripts also represent activities that are common, routine, or well-practiced (Abelson, 1981; Anderson, 1995). Importantly, scripts contain information about the sequencing of events (Baldwin 1992; Schank and Abelson 1977). A universal example of a script is that of the 'restaurant script'. This form of procedural knowledge allows us to all know that in a restaurant we: enter, wait to be seated, get the menu, order, eat, get the bill, pay, and exit (Cornish, 1994).

Scripts are mostly unconscious, socially learnt, extremely resistant to change, and influence how one attends to, organises, and recalls information (Baldwin, 1992; Demorest, 1995; Zadney & Gerard, 1974). Memory has been shown to be particularly susceptible to the influence of scripts (Bellezza & Bower, 1981; Bower, Black & Turner, 1979; Gibbs & Tenney, 1980; Graesser, Woll, Kowalski, & Smith, 1980). Furthermore, Tomkins (1991) suggests that whilst a script is informed by how an individual perceives a given situation, over time the script itself becomes self-confirming. Moreover, Tedeschi

and Felson (1994) comment that when the behaviour associated with a given script is repeatedly and successfully enacted, the given script will become activated more readily. Thus, the associated behaviour will also occur more readily.

Arguably, Wright and Decker (1994) were the first researchers to consider the concept of criminal behaviour and scripts. Through their work with burglars, Wright and Decker (1994) suggested that these offenders had developed cognitive scripts that guided their search through the house, suggesting a level of automaticity in their search strategy and goods selection. Wright and Decker (1994) suggested that although different for different offenders, these scripts developed through trial and error and allowed the offender to maximise their haul whilst minimising time spent inside and the chance of being detected.

Despite Wright and Decker's (1994) early work, the literature surrounding scripts related to different types of offending still remains predominately theoretical in nature, and empirical evidence of hypothesised scripts can, at times, be sparse. Through providing an overview of different scripts that have been applied to areas of offending behaviour with available empirical evidence, the aim of this chapter is to demonstrate that scripts could be a key explanatory factor of firesetting behaviour, and account for why acts of firesetting occur in the absence of fire interest, despite their absence from almost all theories of firesetting.

Aggression Scripts and Violent Offending

Huesmann (1988) and his colleague (Huesmann & Eron, 1984) are credited with proposing the concept of aggression scripts. They state that aggressive behaviour occurs due to the development of aggression scripts in early childhood. Huesmann (1988) suggests that scripts are stored in memory and act as behavioural guides; controlling how children behave in social contexts. Such guides provide information about what is likely to happen, how one should respond, and what the likely outcome would be.

Aggression, and aggression scripts, develop through a linear process of encoding,

retrieval, and rehearsal. In order to encode aggression the child must attend to the aggressive behaviour, without disregarding it as inappropriate (Huesmann, 1988). Encoding opportunities are increased, and are viewed as appropriate, by virtue of children observing and enacting aggressive behaviour. This aggressive behaviour is then elaborately rehearsed in the child's memory, through play acting, fantasying, and rumination (Huesmann, 1988). Importantly, Huesmann (1988) states that rumination is likely to make scripts more accessible in the child's memory. Finally, the child must be able to retrieve the behaviour from their memory. Whilst rehearsal does lead to retrieval being more likely, retrieval is said to be easier if, at the time of retrieval, there are cues which were also present at the time of encoding. This process is self-perpetuating as the encoding of aggressive situations provides both scripts for future aggressive behaviour, as well as triggering the retrieval of pre-existing aggressive scripts. Reinforcement is also said to play a vital role. Huesmann (1988) states that if an aggressive response is reinforced (e.g., by achieving one's goal) the script associated with that response is more likely to be retrieved and utilised again. Huesmann (1988) argues that once entrenched, a network of scripts develop which emphasise aggressive responses, are impervious to change, and are likely to continue into adulthood.

The concept of aggression scripts has been further developed and encapsulated in the General Aggression Model (GAM; Anderson & Bushman, 2002; Anderson & Carnagey, 2004; Anderson, Gentile, & Buckley, 2007; DeWall & Anderson, 2011). The GAM proposes that aggression occurs due to a combination of personality characteristics and aggression responses (e.g., provocation) which are mediated by one's cognition, affect, and arousal. Similar to Huesmann (1988), the role of learning is proposed to be extremely important. It is learning that is said to account for the development of normative beliefs, aggression related affective states (e.g., anger), and aggression scripts. In turn, these structures influence how one experiences, understands, and responds to the social world. Anderson and Bushman (2002) state that individuals who hold more entrenched

aggression-related cognition are more prone to engage in aggressive behaviour (for a wider overview of the model, see Anderson & Bushman, 2002).

Within the GAM, scripts are viewed, akin to Huesmann's (1988) conceptualisation, as knowledge structures which guide behaviour in a given situation. They help the individual to problem solve by allowing one to know what is likely to happen, how one should respond, and what will happen as a result of the actions taken (Anderson & Carnagey, 2004; Anderson et al., 2007). Whilst there has been considerable attention paid to the development of aggression theory, experimental evidence for the presence of aggression scripts is scarce (Collie, Vess, & Murdoch, 2007; Gilbert, Daffern, Talevski, & Ogloff, 2013). As Gilbert et al. (2013) contend, it is difficult to assess the concept of scripts, in part due to the lack of measures that exist to investigate scripts. As Gilbert and Daffern (2010) acknowledge, this has meant that, although considered to be fundamental in the explanation of aggressive behaviour, scripts have been under researched.

However, recently, researchers have begun to investigate the presence of aggression scripts using the Schedule of Imagined Violence (SIV; Gilbert et al., 2013; Grisso, Davis, Vesselinov, Applebaum, and Monahan, 2000; Hosie, Gilbert, Simpson, & Daffern, 2014; Kelty, Hall, & Watt, 2011; Nagtegaal, Rassin, and Muris, 2006). The SIV is a semi structured interview, focussed on eight criteria (presence, recency, frequency, chronicity, similarity or diversity in type of harm, target, change in seriousness of harm, and proximity to target), which screens for the presence or absence of participants' aggressive scripts. Grisso et al. (2000) first used the measure in their study examining aggressive scripts in psychiatric patients, diagnosed with psychosis, depression, substance-misuse, or personality disorders, and a non-psychiatric community sample. They found that a third of patients reported experiencing recent thoughts of violence towards others, this was twice as many as those reported by the non-psychiatric community sample. Furthermore, these violent thoughts, reported by the psychiatric sample, were found to be predictive of violent acts post discharge. Grisso et al. (2000) concluded that the findings

provided evidence that rehearsal of aggressive scripts increases the propensity for violence. However, it should be noted that given this study used a non-offending psychiatric sample it is difficult to apply these findings more widely.

A further study by Nagtegaal et al. (2006), utilising a community sample of females, investigated the relationship between aggressive fantasies and aggressive behaviour using the SIV. Results showed a correlation between aggressive fantasies and aggressive behaviour, in line with Huesmann's (1998) argument that script rehearsal increases the likelihood of later activation. Again, however, limitations regarding the sample are evident.

Only recently has the SIV been used to identify the presence of aggression scripts in offender populations (Gilbert et al., 2013; Hosie et al., 2014). Gilbert et al. (2013) recruited participants from a community forensic mental health service, who had received a conviction for a violent offence ($n = 47$), as well as a comparison group comprised of patients with a history of non-violent offences ($n = 40$). Using a suite of measures, including the SIV, Gilbert et al. (2013) found support for aggression-supportive scripts, and that aggressive individuals tend to hold more elaborate and readily accessible aggression-related scripts. Whilst the study provides evidence for the presence of aggression scripts, the findings are, again, limited to a psychiatric setting, and may not be applicable to non-psychiatric violent offenders.

Sexual Scripts, Offence Scripts, and Sexual Offending

Sexual Scripts

Sexual scripts refer to the mental representations that allow one to interpret and guide sexual behaviour (Gagon, 1990). Gagon (1990) suggests that sexual scripts are comprised of three levels spanning the internal, interpersonal, and cultural contexts. The internal level refers to the internalising of a rehearsed script. The interpersonal refers to the interpretation of the cultural level, in line with one's own learning history. Finally, the cultural context of sexual scripts allows for the incorporation of norms, values, rules, and

beliefs gathered from sources such as educational intuitions and the media. Sexual scripts reflect both gender stereotypes and gender typical behavioural expectations. Such integration enables an individual to interpret sexually relevant behaviours, providing a guide in sexual encounters. Sexual scripts provide cues or signals associated with different phases in a sexual encounter. As Metts and Spitzberg (1996) state, sexual scripts represent what an individual knows about the typical elements of a sexual interaction. Specifically, what one should expect in regards to the behaviours of a partner, and what is appropriate.

Whilst sexual scripts are hypothesised to represent the typical elements of a sexual interaction, Krahe and colleagues (Krahe, Bieneck, Scheinberger-Olwig 2007a, 2007b; Krahe & Tomaszewska-Jedrysiak, 2011) suggest that differences between the acceptance of socially shared representations of prototypical sexual encounters (i.e., general sexual scripts) and the guidelines for one's own sexual behaviour (i.e., individual sexual scripts) may be linked to risk factors for sexually aggressive behaviour.

To investigate this, Krahe and colleagues (e.g., Krahe et al., 2007a, 2007b; Krahe & Tomaszewska-Jedrysiak, 2011), using a consistent script generation method, conducted a series of studies asking participants to describe how a consensual and non-consensual sexual encounter may take place. The descriptions were analysed to determine the extent to which the sexual scripts described by participants, contained *risk elements* associated with an increased risk of sexual aggression. Risk elements included: the consumption of alcohol, the ambiguous communication of sexual intentions, and a high level of sexual activity. Results consistently showed that risk elements were less pronounced in individual sexual scripts, compared to general sexual scripts. It was apparent that one's own cognitive representations of sexual behaviour were less likely to contain risk factors of sexual aggression than one's perception of peers' sexual scripts. However, the fact that the research is only investigating sexual scripts on an attitudinal level is a limitation. As Krahe et al. (2007a, 2007b) acknowledge, the use of a longitudinal methodology to consolidate their findings would be beneficial.

Offence Scripts

Different again from sexual scripts, Ward (1999) and colleagues (Gannon et al., 2008; Ward & Hudson, 2000) have proposed the concept of offence scripts. Ward and Hudson (2000) suggest that, similar to general scripts, offence scripts are cognitive frameworks that contain familiar and goal-orientated actions which are stored in long-term memory. However, unlike general scripts, offence scripts contain information that relates to, and guides, offending. Ward (1999) and Ward and Hudson (2000) state that offence scripts allow the offender to know under what circumstances they can offend, allowing the offender to commit the offence more systematically, and with less cognitive effort. Importantly, such offence scripts can be activated without conscious awareness, or intention (Ward & Hudson, 2000). Offence scripts are activated by relevant internal (mood) or external (previous acquaintances) cues (Ward & Hudson, 2000). Individuals with a long offending history will hold many, interconnected, scripts which are difficult to consciously inhibit (Ward, 1999).

One example of an offence script are distorted sexual scripts. Ward and Siegert (2002) hypothesise that early abuse may lead to the development of distorted sexual scripts. Exposure to sexual experiences before children are cognitively and emotionally ready to process these experiences is hypothesised to cause distortions, which manifest in the choice of inappropriate partners (e.g., age discrepancy), inappropriate behaviours (e.g., deviant or sadistic practices), or inappropriate contexts (e.g., impersonal sex). These distorted sexual scripts are vast and interconnected, and are likely to include information about suitable grooming and evasion strategies. The retrieval of such scripts is done with relative ease if the current situational cues match closely to the cues present at the time of encoding, leading an offender into high risk situations, whereby offending is more likely (Ward & Hudson, 2000; see also Gannon et al., 2008; Keeling & Rose, 2005).

Crime Scripts and General Offending

Crime scripts were first proposed by Cornish (1994). Cornish views scripts as procedural knowledge structures used to organise information relating to the form and content of specific crimes. Crime scripts were borne out of an attempt to better account for crime commission, and to improve crime prevention strategies (Cornish, 1994; Leclerc, Proulx, & Beauregard, 2009). Cornish (1994) defines crime scripts as a procedural step-by-step account of the criminal act, spanning the entire criminal event (i.e., before, during, and after). That being said, Cornish (1994) does not believe that crime scripts are merely a sequence of events, carried out in a fixed order. In fact, to the contrary, Cornish (1994) emphasises the flexibility inherent within crime scripts. Crime scripts are highly sophisticated and, if necessary, can cope with deviations from a given script. Cornish (1994) proposes that such sophistication develops overtime. Less experienced offenders hold scripts which are relatively crude in their sophistication, whereas more experienced offenders hold scripts containing multiple contingencies, thus allowing the offender to be more adaptable in a dynamic environment. Overcoming obstacles during the commission of a crime is an extremely important role of a script. Cornish (1994) argues that given scripts are cognitive resources, it is likely that scripts will adapt and modify over time or across situations to incorporate adaptions made. Crime scripts are highly susceptible to cues, and can be activated either through internal or situational factors.

Cornish (1994) provides the example of a crime script for the theft of a car. Car crime, and the associated criminal behaviour (e.g., reselling the vehicle), can be viewed as a composite of scripts which are linked, with each script representing a singular stage in the overall sequence (Cornish, 1994). There are five crime scripts involved in the theft of a car: (1) stealing the car, (2) car concealment, (3) car disguise, (4) marketing of the car, and (5) car disposal (Cornish, 1994; Tremblay, Talon, & Hurley, 2001). However, within each script, there are variations, or *tracks*. It is these tracks which allow the offender to respond to obstacles or problematic situational factors, demonstrating the flexibility of scripts.

As outlined above, Cornish (1994) has also emphasised the role of crime scripts in relation to situational crime prevention, also known as the rational choice perspective (Cornish & Clarke, 1987). The rational choice perspective proposes that criminal behaviour results from the choices an offender makes, and by understanding more about these choices this can contribute towards crime prevention strategies (Cornish & Clarke, 1987). As crime scripts contain procedural knowledge of how to commit a criminal offence, it seems reasonable that crime scripts could also be used to aid thinking about disrupting crime commission. Within the rational choice perspective, the offender is understood to have carefully reasoned the benefits of committing a given offence (Cornish & Clarke, 1987). However, as Johnson and Payne (1986) comment, offenders often make poor decisions, affected by variables such as: time, skill, intelligence or experience, which have not been carefully reasoned. Furthermore, rational choice decision making is crime-specific. Different crimes will provide the offender with different choices based upon the costs and benefits. Critics suggest that disrupting an offence, through employing crime prevention strategies, merely displaces an offender into committing another crime. However, Cornish and Clarke (1987) disagree, noting that the offender may simply *rationalise* the lost opportunity and desist. This form of crime prevention has been applied to areas as varied as clandestine drug manufacturing laboratories (Chiu, Leclerc & Townsley, 2011) and cybercrime (Willison, 2006).

Conclusions

Throughout this chapter it is clear that the literature is replete with definitions of the term 'script'. It appears that scripts can be separated into two distinct categories: (1) *behavioural guides*, which contain information that direct behaviour in a given situation (Huesmann, 1988; Huesmann & Eron, 1984; Ward & Hudson, 2002) and (2) *procedural scripts*, that are used to understand a procedural sequence associated with a particular behaviour (i.e., crime, Cornish, 1994). However, in viewing scripts as a way to guide or to understand sequences of behaviour, a key element is being overlooked and that is seeing

scripts as motivating behaviour. In this instance, scripts contain information about why to act in a given situation. Motivational scripts may work in similar way to behavioural guides as both lead to subsequent behaviour. However, the difference may well lie in that the motivational script provides information about why to act in a certain way in a given situation, whereas the behavioural guide script provides information that guides how to enact that behaviour. This concept will be explored in more detail later in this thesis.

It is also evident from reviewing the literature that scripts are yet to be applied to firesetting behaviour. As seen in Chapter One, although the M-TTAF considers the role of scripts, Gannon et al. (2012) only provide a very brief overview of two scripts. Minimal detail is provided about the content, structure, and etiological function of the proposed scripts and, to date, these scripts are untested. Therefore, it is imperative to build upon the scripts proposed by Gannon et al. (2012). Establishing whether firesetters hold scripts about their firesetting may allow for advancement in our understanding of why firesetting behaviour occurs in the absence of fire interest.

However, before an exploration of whether firesetters hold scripts about fire, it is vital to outline another potentially key explanatory factor which could account for why firesetting occurs in the absence of fire interest, and that is expertise. As outlined in Chapter One, expertise is yet to be considered in relation to firesetting behaviour. However, the concepts of scripts and expertise are inextricably linked, and as will be demonstrated in the forthcoming chapter, some authors argue that expertise is, in part, due to the development of offence related schema.

Chapter Three Expertise and Dysfunctional Expertise

Introduction

In addition to the concept of scripts being applied to offending behaviour, over the past four decades the application of expertise to offending behaviour has also begun to gain momentum. The idea of individuals possessing superior abilities can be traced back to the 16th Century, when distinguished individuals, such as artists and scientists, were thought to possess divine gifts (Ericsson, 2005; Ericsson & Charness, 1994). By the 1800's, the concept of innate abilities began to dissipate as developments in medicine, biology, and genetics grew, along with more scientifically rigorous testing of perceived experts (Ericsson, 2005; Ericsson 2006). Psychometric testing revealed that an expert's superiority was confined to their specific domain of expertise, and that the necessary mechanisms required to achieve expert status were gained through deliberate practice, not innate ability (Ericsson, 2006; Ericsson & Charness, 1994; Ericsson, Krampe, & Tesch-Römer, 1993). Both Chi (2006) and Ericsson (2006) provide valued definitions of expertise. Chi (2006) suggests expertise is "the manifestation of skills and understanding resulting from the accumulation of a large body of knowledge" (p. 167). Ericsson (2006) describes expertise as "the characteristics, skills and knowledge that distinguish experts from novices and less experienced people" (p. 3).

Although originally confined to more pro social domains (e.g., chess, medicine, and sport), over the past four decades there has been a small, but growing, body of literature that suggests the concept of expertise can be applied to offending behaviour. Principles found in the general expertise literature, such as: decision making, skill acquisition, and specific knowledge structures have been applied to some criminal domains (see Nee & Ward, 2015 for a review). However, the concept of expertise is yet to be applied to firesetting behaviour. This is despite its key explanatory promise, especially when considering firesetting behaviour committed in the absence of fire interest. Such a phenomenon is yet to be adequately explained by current theories of firesetting. Therefore,

this chapter aims to: (1) provide an overview of general expertise, and (2) examine the concept of dysfunctional expertise to demonstrate why the omission of expertise in theories of firesetting is such a concern given the potential explanatory power.

Domains of Expertise

Chess

Through the seminal work of de Groot (1946/1978) chess expertise was extensively researched for the first time. Utilising *think aloud* studies, de Groot (1946/1978) found that chess grandmasters, compared to less skilled players, chose a higher number of superior moves in a faster time. Furthermore, expert chess players made such decisions about moves more quickly, and their move searches were more relevant. de Groot (1946/1978) concluded that such superiority was a result of extended and intense practice from a young age rather than quantifiable differences in memory, or intelligence. The work of de Groot (1946/1978) formed the basis of the first ever theory of expertise proposed by Simon and Chase (1973).

Simon and Chase's (1973) theory suggested that through extended experience, expert chess players gain a vast amount of information about game positions and patterns of play which they 'chunk'. Expert chess players are said to store around 50,000 chunks or patterns in their Long Term Memory (LTM). Then, during game play, a chess master retrieves the previously utilised move/series of moves from series of chunked information in their LTM, allowing them to win matches and become chess masters (Simon & Chase, 1973). Simon and Chase (1973) propose that an individual must engage in full-time participation for at least ten years in order to achieve the status of a chess master.

Chase and Simon developed a successful paradigm to support their claim of chunking (Chase & Simon, 1973a, 1973b; Gobet & Simon, 1996). When briefly presented with chess positions, expert, compared to non-expert chess players were able to recall more positions as a result of their ability to hold more information in their LTM through chunking similar game positions together. Interestingly, this superiority in recall dissipated

when the chessboard randomly generated positions. Chase and Simon (1973a,b) contended this was as a result of expert chess players being unable to retrieve any associated chunks in their LTM. Recently, McGregor and Howes (2002) have contested the content of these chunks. They propose that instead of chunking chess piece locations, expert chess players chunk information relating to attack/defence strategies (McGregor & Howes, 2002). However, of note, is that McGregor & Howes (2002) do not disagree with the premise of chunking per se. They believe the attack/defence information is what is held in the form of chunked information, not simply game positions.

However, as Ericsson (2005) documents there have been more critical challenges made regarding the underlying theoretical assumptions of Simon and Chase's (1973) theory. First, and most notably, Gobet and Simon (1996) challenge the concept that expert ability in chess is solely due to the chess player being able to chunk information. They propose the concept of templates. These templates are said to be memory structures, held by expert chess players, which represent the positions of all the pieces on a given board. These templates develop as a result of adaptions made to advance expertise, and expert performance (Ericsson & Kintsch, 2000; Gobet, 2000a, 2000b). Second, is the hypothesis that expertise in chess is acquired simply through accruing chunks of information. Ericsson et al. (1993) state that in actual fact it is through engagement in deliberate practice that advances are made, and expertise is gained. Deliberate practice can be understood as the "engagement in special practice activities that allow performers to improve specific aspects of their performance with problem solving and through repetitions with feedback" (Ericsson, 2005, p. 237). Ericsson and his colleagues (Ericsson, 2004; Ericsson et al., 1993) state that less expert chess players spend hours each day playing games with chess masters, understanding the best move, and why the chess master would have selected that move. Charness, Tuffiash, Krampe, Reingold, and Vasyukova (2005) concur that deliberate practice is the most crucial factor in becoming an expert chess player. This deliberate practice is said to be responsible for expertise.

Medicine

Expertise in medicine is found in the medic's ability to diagnosis, through selecting appropriate information and formulating hypotheses (Custers, Boshuizen, & Schmidt, 1996). A common problem-solving model utilised by medics is the clinical reasoning approach, which emphasises the medic's ability to utilise cognitive processes to develop a working hypothesis regarding a diagnosis. However, Elstein (2000) proposes that as physicians become more experienced, clinical reasoning becomes less about developing working hypotheses and more about recognising or retrieving already known patterns for diagnoses. Elstein (2000) states that only in instances of difficult cases will the medic engage in a 'hypothetico-deductive' strategy.

Raufaste, Eyrolle, and Marine (1998) investigated the concept of medical expertise with radiologists. Participants, consisting of radiologists with 13 years of experience post residency (super experts), radiologists with at least 6 years after residency (basic experts), third and fourth year residents (intermediates), and first and second year residents (novices) were asked to produce a diagnosis from a chest X-ray. Results showed that participants were able to make more inferences relative to their experience. However, experience only had a minimal effect on overall accuracy. Novices and intermediate participants struggled to a greater degree than experts in differentiating between correct and incorrect diagnoses, and super experts were superior again, employing a specific form of deliberate reasoning. These results demonstrate a gradient of expertise, mediated by experience. Of particular note was the finding that super experts possessed a greater ability to generate diagnostic solutions for both typical and atypical cases, whereas the basic experts were limited to typical diagnoses. However, some elements of the study design, such as lack of manipulation amongst stimuli provided to participants and the absence of using a think aloud methodology to capture more automated decision making, means the authors' are unable to account for why experience had a minimal effect on overall accuracy.

Schmidt, Norman, and Boshhuizen (1990) have also investigated the concept of medical reasoning and expertise. They suggest that medical reasoning develops in four stages, with an importance placed upon the development of illness scripts. In the first stage, a medical student is able to recall all the information regarding a given topic; however, these are isolated pieces of information. Students also start to develop underlying networks detailing the cause or consequence of given diseases. The second stage is characterised by patient contact. Students apply the knowledge acquired, organising such knowledge into models relating to signs, symptoms, and diagnostic labels. It is in the third stage that illness scripts begin to form; these scripts contain categories of illness and are reinforced through patient contact. Finally, the illness scripts are further expanded through the creation of instance scripts of patient encounters. The illness script is extremely important in this instance as it allows for the diagnosis of a new patient based on the experience of previous patients. The illness script allows the medic to select, interpret, and memorise new information. This type of script is different to the scripts presented in Chapter Two (i.e. behavioural guides and procedural scripts). Instead, this script should be viewed as a cognitive shortcut, allowing for quicker decision-making based on existing knowledge. Rikers, Winkel, Loyens, and Schmidt (2003) empirically tested the presence of illness scripts. Participants, consisting of medical students, pulmonologists (both sub experts), and cardiologists (experts), were asked to evaluate two clinical case studies. Results showed that only the cardiologists possessed the expertise to understand and link the signs and symptoms pertinent to a diagnosis; confirming the presence of illness scripts (Rikers, Winkel, Loyens, & Schmidt, 2003). However, this study has been criticised with regards to how well the students understood the task, and consequently their relevance as a comparison group.

Patel and Groen (1991) have also offered an explanation as to how expertise develops within physicians. They propose a three-stage process, which emphasises the development of adequate knowledge representations (stage one), the ability to distinguish

between relevant and irrelevant information (stage two), and the ability to apply the information effectively (stage three).

The differing problem solving techniques, and associated empirical evidence, outlined above demonstrates a linear relationship between experience and expertise; more experience leads to greater levels of expertise. However, researchers have found that advanced medical students (i.e., medics with intermediate expertise) display a greater ability to recall medical information and diagnose patients than experts, this is known as the intermediate effect (Ericsson, 2005; Patel & Groen, 1991; Patel & Ramoni, 1997; Schmidt & Boschuizen, 1993a, b). Patel and Ramoni (1997) offer some explanations of this phenomenon. First, it is possible students outperform experts in tests because they have been exposed to routine testing more recently. Second, recently qualified students possess the most extensive body of formal knowledge that they will ever hold, given recent revision of such information. Third, that students are more motivated, relative to older experts, because they are at the beginning of their career (Patel & Ramoni, 1997).

Sport

Starkes (1993) argues that in the domain of sport, one can be considered an expert if they consistently perform at an athletically superior level, over an extended period of time. The study of expertise in sport has been applied to multiple and varied sports, including: volleyball (Allard & Starkes, 1980), soccer (Helsen, & Pauwels, 1993), figure skating (Starkes, Deakin, Allard, Hodges, & Hayes, 1996), and wrestling (Hodges & Starkes, 1996). The concept of deliberate practice has been readily applied to the sport expertise domain. Through deliberate practice one engages in structured practice to provide opportunities for monitoring and evaluation (both self and from an external body e.g., a coach; Ericsson & Charness, 1994). Such monitoring and evaluation means that deliberate practice, in the early stages, requires a great deal of effort from the individual and is relatively unrewarding (Ericsson et al., 1993). However, the concept of deliberate practice is not without controversy. Some researchers have disputed the argument that superior

ability in sport is due to deliberate practice, and have instead argued it is due to genetic

inheritance, which in turn effects the trainability of the athlete (Singer & Janelle, 1999).

Baker, Côté and Abernathy (2003) investigated this hypothesis, analysing the

differences between experts' and non-experts' training. Specifically, Baker et al. (2003)

were interested in how different forms of training may affect the development of expert

performance in team sports. Participants were made up of 15 experts who had competed at

national level from varying sports (netball, field hockey and basketball) and 13 non-expert

athletes who had represented their state. Participants were asked a variety of questions

regarding what activities they engaged in, how many hours per week, and at what times of

year. In addition, participants were asked to rate how effective they thought each of the

activities they self-reported were in the development of perception, decision-making,

movement execution, and physical fitness. Results showed that different forms of practice

were important for the development of different skills. For example, competition, video

training, organised training, and watching games on television were helpful for developing

perceptual skills whereas aerobic training, competition, organised training, and weight

training were helpful for developing physical fitness. The results from this study

demonstrated that time spent engaging in specific forms of training, accounts for their

expertise (see also Ericsson et al., 1993; Helson et al., 1998; Starkes et al., 1996).

However, the sample size was small, and relatively little was known about the comparison

group, thus making it difficult to confidently ascertain the distinct differences between the

expert and non-expert groups. Therefore, caution should be exercised when drawing

definitive conclusions.

Despite the fact that the domains of chess, medicine and sport are extremely varied,

three key themes have emerged: (1) those displaying expertise appear to organise

knowledge and retain it within their Long Term Memories (Simon & Chase, 1973); (2)

deliberate practice is important (Ericsson, 2006; Ericsson & Charness, 1994; Ericsson et

al., 1993) and it takes around 10 years of full-time practice to become 'expert' in a given

domain (Simon & Chase, 1973), and (3) scripts relating to a given area of expertise develop which help one to perform in a given domain (Rikers et al., 2003; Schmidt et al.,1990). Nee and Ward (2015) refer to the expertise outlined above as *functional expertise* as one holds the knowledge and skills needed to be able to function well in their given domain. However, what happens when the given domain that one functions well in is criminal?

Dysfunctional Expertise

Nee and Ward (2015) argue that experienced offenders possess similar abilities to those listed above, and are able to function well in a given domain. However, as the given domain is criminal, and the outcomes are invariably negative, Nee and Ward (2015) argue it would be more appropriate to consider this expertise as *dysfunctional expertise*. Key to Nee and Ward's (2015) theory of dysfunctional expertise is that of a continuum of expertise, ranging from novice to expert. Although, as Nee and Ward (2015) acknowledge, individuals would rarely reach the extreme end of expertise, as individuals naturally plateau once they reach a given level.

Nee and Ward's (2015) Dysfunctional Expertise Model (DEM) outlines four key steps:

1. Automatic, unintentional, pre-conscious appraisal of the environment that cannot be turned off.

2. Superior, automatic recognition of the environmental, offence-related cues meaningfully related to the domain of expertise.

3. The activation of complex cognitive schemas, built up through practice, allowing instantaneous, compensatory access to a rich number of exemplars and heuristics which will in turn guide:

4. Speedy responses to environmental cues that have worked in the past in the form of the playing out of behavioural scripts, allowing a relatively automatic commission of the act (Nee & Ward, 2015, p.5).

As outlined above, the concept of dysfunctional expertise has been gaining moderate attention over the past four decades. Although burglary and sexual offending are arguably the most well-established domains of dysfunctional expertise, research has also been conducted into the areas of: carjacking, drug offences, identity theft, and violent offending (see Nee & Ward, 2015 for a full review). An overview of the research conducted into all of these areas will be examined in order to better understand how these principles of dysfunctional expertise can be applied to firesetting behaviour.

Burglary

The expertise research within burglary has focussed on the decision making process of burglars (e.g., Bennett & Wright, 1984; Decker, Wright & Logie, 1993; Maguire & Bennett, 1982; Nee et al., 2015; Nee & Meenghan, 2006; Nee & Taylor 1988; Nee & Taylor, 2000; Taylor & Nee, 1988; Wright & Decker, 1994; Wright & Logie, 1988; Wright, Logie & Decker; 1995). Research into burglary expertise began with the work of Bennett and Wright (1984) and Maguire and Bennett (1982). Bennett and Wright (1984) found that around 50% of their sample of 316 convicted burglars, when interviewed and presented with photos and video, utilised previously learnt environmental cues (such as affluence and accessibility) when determining the vulnerability of a property. Bennett and Wright (1984) labelled these burglars as 'searchers'. However, the study has been criticised for its failure to include a comparison group and the use of an incarcerated sample (Nee, 2015; Nee & Taylor, 1988; Wright & Decker, 1994). Using incarcerated samples in expertise research has been criticised as the information gleaned from such participants is compromised due to the fact that they do not represent those most expert offenders as they have been apprehended (Cromwell, Olson, & Avery, 1991; Wright and Decker, 1994). Furthermore, the accounts of offending they provide may well be unreliable due to the effects of biases in memory (Wright and Decker, 1994, Cromwell, Olson, & Avery, 1991). However, it is important to note that although arguably superior, the use of active burglars (and active offenders more generally) is still problematic and this will be

outlined in more detail later in this chapter.

The work of Bennett and Wright (1984) was later replicated by Nee and Taylor in a series of studies (Nee & Taylor, 1988; Nee & Taylor, 2000; Taylor & Nee, 1988). These studies utilised a comparison group of non-burglars, and also found that experienced burglars exploited environmental cues in order to determine a suitable target. Participants were shown slides of five houses; four of the houses naturally occurred in the row, with the fifth house manipulated to make it appear as though it naturally occurred in the row. Results showed that two thirds of the burglars chose the fifth house as "highly likely" or "definite burglary". The decision to burgle was based upon exploiting environmental cues, such as: accessibility and decreased opportunities of surveillance from neighbours. Furthermore, the control group in the study were less economical in their decision making process as they utilised more slides in order to make their decision, compared to burglars. Nee and Taylor's (Nee & Taylor, 1988; Nee & Taylor, 2000; Taylor & Nee, 1988) research improved upon the work of Bennett and Wright (1984) as they successfully included a comparison group. However, the burglars used in the study were also incarcerated, and the comparability of the control group is questionable given they were recruited from a University sample of postgraduate students or academic staff.

Wright and Logie (1988) also conducted a similar study to that of Nee and Taylor (Nee & Taylor, 1988; Nee & Taylor, 2000; Taylor & Nee, 1988). They utilised manipulated photographs (e.g., the presence or absence of a dead bolt on the front door) and recorded which of the houses, and why, convicted juvenile burglars chose to burgle, compared to adult non-offender homeowners. Wright and Logie (1988) found that relative to the non-offending controls, burglars utilised perceptual skills in selecting a suitable target and generally agreed on the factors that influenced their target. Again, however, the use of both convicted burglars and a relatively non-comparable control group (i.e., non-offending adults) can be criticised. However, in a subsequent study, Wright, Logie and Decker (1995) built upon their previous findings through utilising active residential

burglars and the addition of a surprise recognition test. The test required participants to ascertain which physical features in the pictures had been altered. Results showed that, relative to the non-offending comparison group, active residential burglars were superior at distinguishing changes in certain "burglary relevant" environmental features.

A second key facet of burglary expertise is the strategies utilised by burglars once inside the property. Wright and Decker (1994) where the first to investigate this, with over 80 active burglars at the scene of recent burglaries in the USA. Wright and Decker (1994) found that 93% of the burglars reported the same search strategy; heading straight to the master bedroom. In the bedroom they searched for items such as cash, jewellery, and guns. Burglars reported searching dressers, bedside tables, under the bed, and wardrobes. Burglars then moved downstairs, only engaging in a short, crude search. It is evident from Wright and Decker's (1994) research that, similar to the economical use of environmental cues, burglars also possess abilities to be able to efficiently utilise search strategies once inside a property.

Wright and Decker's (1994) study was, in part, replicated by Nee and Meenaghan (2006) with a UK incarcerated sample of 50 experienced burglars. Burglars were interviewed about a recent burglary they had engaged in. The burglars interviewed were extremely experienced, with over 50% of participants having committed over 100 burglaries. Similar to the findings of Wright and Decker (1994) the vast majority of participants (90%) described searching the property in an automatic and predictable manner. However, previous criticisms levelled at Wright and Decker's study regarding the use of an incarcerated sample and the absence of a control group also apply here.

Utilising a novel methodology Nee et al. (2015) sought to further investigate the search strategies employed by burglars. Twelve participants (six ex- burglars and six non-burglar comparisons) were asked to undertake a mock burglary in a real house, and in a computer simulation of the same house. Participants were instructed to enter and *burgle* the house, touching items that they would steal. Participants were told to explore the property

in their own time, signifying they had finished by returning to the researcher. Participants wore head mounted cameras to record the route taken. Upon completion participants were audio-recorded talking through the footage captured. Participants engaged in a filler task and were then asked to *burgle* the same house this time on a computer. Again, participants were told to enter the house and were instructed to indicate items they would steal, this time by clicking on the item with the mouse. The same method of utilising a head mounted video recorder to capture the route taken round the simulated house and subsequent talk through of the footage was employed.

Results showed that ex-burglars and non-burglars differed significantly on how they navigated the house, and what they stole. First, all ex-burglars entered the house via the most discrete entrance (the rear) and all non-burglars entered the house via the most exposed entrance (the front door). Second, ex-burglars took one of two routes, whereas non-burglars varied greatly on the routes they took. Finally, ex-burglars, comparative to non-burglars, spent most of their time in the most profitable areas of the house, allowing them to steal the higher value items. These results were consistent across both the real and simulated houses. Overall the results highlighted that ex-burglars were more systematic in their wayfinding, better able to discriminate what items to take, and had developed well practiced, *script like,* knowledge. Although the sample size was small and the *real* house is still a staged environment, which the authors readily accept, this study represents a ground-breaking approach to the investigation of offending expertise. The findings from the study replicate previous interview data, and the absence of significant differences between the real and simulated environments means that the latter paradigm may prove a fruitful methodology for future studies. Later replication of the use of virtual reality by van Gelder et al. (2017) has again shown promise for its utilisation in burglary research.

From the vast amount of research conducted within the burglary expertise domain three salient findings have emerged. First, burglars are not opportunists; rather they explicitly discriminate between targets using environmental cues (e.g., occupancy,

accessibility, and security; Bennett & Wright, 1984; Maguire & Bennett, 1982). When considering this in relation to the key principles of the DEM (Nee & Ward, 2015), it is apparent that the principles of automatic appraisal of the environment and recognition of burglary related cues are key to the commission of a successful burglary. Second, in natural and simulated environments, burglars—relative to non-offenders—use distinctive and systematic search routes (Nee et al, 2015; Taylor & Nee, 1988). Third, burglars rely on previous learning (or behavioural scripts) when making decisions regarding target selection and responses to environmental cues (Nee & Meenaghan, 2006; Nee & Taylor, 2000). Again, when considering this key finding in relation to principles of the DEM (Nee & Ward, 2015) it is apparent that the behavioural scripts referred to in the literature are akin to the cognitive schemas outlined in the DEM by Nee and Ward (2015). Nee and Ward (2015) hypothesise that essential to expertise is the development of cognitive schemas which allow the offender to commit the offence almost automatically.

Before moving on to other areas of offending expertise it would be prudent to explore in more detail the use of incarcerated and active offenders. As outlined above, the use of incarcerated offenders has been criticised as some authors argue they represent *failed* criminals (Cromwell, Olson, & Avery, 1991; Nee, 2010; Wright and Decker, 1994), who provide compromised accounts of offending that could be years old in a sterile environment (Nee, 2010). However, as Nee (2010) outlines, the use of active offenders also comes with challenges. Nee (2010) suggests that incarcerated offenders may form a more representative pool of potential participants than active offenders. Nee (2010) acknowledges that participants gained from prison establishments may be still not be entirely representative, given the inherent structural problems within the criminal justice system, and the sentencing bias that exists (e.g., people from Black and Minority Ethnic communities are more likely to receive a custodial sentence). However, Nee (2010) suggests that incarcerated populations still provide a more generalisable sample than what can be obtained using snowball sampling techniques typically used to recruit active

offenders, as such samples are often representative of a specific geographical error (Nee, 2010).

Nee (2010) also challenges the assumption that the payment for participation given to active offenders ensures the collection of higher quality data. Nee (2010) suggests that incarcerated offenders may actually provide superior data given that they have much more time available to participate in the research, unlike active offenders. Furthermore, incarcerated offenders may be less likely to be under the influence of drugs, and so may provide better quality data. Finally, as Nee (2010) outlines, regardless of the fact that interviewing an active offender at a recent crime scene is arguably superior than in a prison due to the availability of real world cues, the active offenders are still providing compromised accounts of their offending as they are obtained through interview. Therefore, throughout this thesis it is important to consider both the merits and limitations of using both active and incarcerated offenders when investigating dysfunctional expertise.

Carjacking

Topalli and colleagues (Jacobs, 2012, 2013; Jacobs, Topalli, & Wright, 2003; Topalli & Wright, 2003; Topalli, Jaques & Wright, 2015) have conducted a vast amount of research into carjacking over the past decade or so. Their research is quasi-ethnographic in design, utilising semi-structured interviews with active carjackers. The focus of the interviews are the offenders' experiences of carjacking and the offence process, focusing on their decision-making at the time of the offence (Topalli et al., 2015). Topalli and colleagues define carjacking as the unlawful commandeering of a vehicle. It involves two distinct stages: targeting and enactment, in which perceptual and procedural skills (i.e., expertise) are deemed extremely important (Topalli et al., 2015).

Topalli et al. (2015) state targeting the right vehicle, employing perceptual skills developed through experience and utilising knowledge gained from previous carjacking attempts, is the first step in the process. Perceptual skills thought to be critical are: (1) knowing which vehicles to target, (2) which drivers are less likely to resist/retaliate, and

(3) the current environment/logistics. Decisions regarding what is the *right* vehicle are based on whether the vehicle can be easily sold, or will fetch them the right price (Topalli et al., 2015). This decision is often made without their conscious awareness, carjackers say they *just know*. Factors such as: age, gender, and race were deemed important when deciding the right target. For example, older females or young white males were seen as preferable, and less likely to resist. Finally, a quiet location, which could be exited easily, is deemed most preferable. When considering the perceptual skills outlined by Topalli et al. (2015) in relation to the DEM principles outlined by Nee & Ward (2115), it is apparent that carjackers are continuously appraising the environment and automatically recognising offence-related cues (e.g., gender and race of the victim) two key principles of the DEM. Ultimately, leading the decision to carjack to be made without conscious awareness.

Enactment is the second step in the carjacking process, with procedural skills being seen as most necessary. Topalli et al. (2015) refer to two styles of commandeering the car: normalcy portrayals and blitzes (Copes, Hochstetler & Cherbonneau, 2012; Jacobs, 2012). Common to both techniques is the need to gain access to the victim as quickly as possible, limiting the potential for a victim to resist (Topalli et al., 2015). Normalcy portrayals, the carjacker's preferred method, involve carjackers pretending to be performing a non-threatening task in order to get close enough to the victim to steal the car (Jacobs, 2012). Jacobs (2012) states that the main benefit of this style is that it does not draw unwanted attention. The second approach, blitz, relies on speed, as opposed to deception. Carjackers threaten, or actually use, physical violence in order to take control of the car (Copes et al., 2012). Escalation of threats, or actual violence, may occur if the victim does not comply. Topalli et al. (2015) state that commandeering the vehicle using this method is evidence of both the perceptual (threats) and procedural (evaluation of whether such threats are being taken seriously) skills held by carjackers. Again, the skills outlined by Topalli et al. (2015) in the enactment phase show distinct parallels with the DEM principles outlined by Nee &

Ward (2115), in relation to the carjacker automatically appraising the offence-related cues, in this case whether their threats are being headed by the victim.

Topalli et al. (2015) state that more expert carjackers will develop their skills over time, as they repeatedly commit carjackings, resulting in sophisticated scripts. Such scripts will allow the carjacker to make immediate decisions, as well as refine and alter their decision making. Once again, when considering carjacking in relation to the DEM (Nee & Ward, 2015), it appears that Topalli et al.'s (2015) suggestion of the development of scripts relating to carjacking is akin to the principles outlined in the DEM (Nee & Ward, 2015) in relation to development and activation of cognitive schemas which enable the offender to respond promptly to environmental cues.

The research conducted by Topalli and his colleagues (Jacobs, 2012, 2013; Jacobs et al., 2003; Topalli & Wright, 2003; Topalli et al., 2015) demonstrates the clear role of dysfunctional expertise. However, the carjacking techniques, and the perceptual and procedural skills observed by Topalli and colleagues (Jacobs, 2012, 2013; Jacobs et al., 2003; Topalli & Wright, 2003; Topalli et al., 2015) have not been empirically tested using an expertise paradigm, and thus it is difficult to make any clear assertions as to how expert carjackers are relative to non-carjackers.

Drug Dealing

Casey (2015) proposes that expertise related to drug dealing can be seen in (1) the methods used by drug dealers to sell drugs, and (2) how addiction can affect an offenders' expert decision making. For the purposes of this chapter, the focus will be on the former as specific elements involved in drug dealing expertise (e.g., avoiding apprehension) may prove to be especially relevant for firesetting expertise.

The research conducted by Jacobs (1996a, 1996b; Jacobs & Miller, 1998) with male and female African American crack cocaine dealers is particularly pertinent when considering drug related expertise. As Casey (2015) acknowledges, Jacobs' (1996a, 1996b; Jacobs & Miller, 1998) focus on offender decision making, is by extension a consideration

of expertise. This research has focused on the varying elements integral to drug dealing, including: handling drugs, where to sell drugs, and how to avoid apprehension. Jacobs' (1996a) proposed a three-part typology for male crack dealer's avoidance techniques. In part one, environmental positioning, drug dealers scan the environment and establish if it is safe to sell drugs in a given location (demonstrating perceptual skills). This is akin to a key DEM (Nee & Ward, 2015) principle in relation to the automatic appraisal of the environment and the automatic recognition offence-related cues. The second part, stashing, refers to the decision to keep a small quantity of drugs on one's person which can be easily secreted if caught, and *stashing* the remainder at a different location. Casey (2015) states that this type of well-rehearsed behaviour constitutes a crime script (Cornish, 1994; see Chapter Two). Again, in relation to the DEM (Nee & Ward, 2015) it appears that Casey's (2015) suggestion of the development of scripts relating to drug dealing, is akin to the principles outlined in the DEM (Nee & Ward, 2015) in relation to development and activation of cognitive schemas. Finally, transactional mediation, means that drug dealers employ different tactics to conceal that they are dealing drugs (e.g., transactions carried out in the street vs. in a more closed environment; Jacobs 1993; 1996b). Casey (2015) concludes that low prosecution rates for drug dealing, compared to high numbers of drug dealers, demonstrates that drug dealers do possess a level of expertise in this domain.

This research does provide clear typologies for the drug dealing process, and as Casey (2015) suggests such typologies are consistent with the current definition of dysfunctional expertise (Nee & Ward, 2015). Furthermore, the typologies were drawn from semi-structured interviews conducted with active crack dealers, similar to the research conducted into carjacking. As Wright, Logie and Decker (1995) note, conducting research with individuals who are currently active provides a rich source of data (and arguably these offenders are most expert as they have successfully avoided apprehension). However, it appears that the work of Jacobs is yet to go beyond semi-structured interviews. Therefore, it is difficult to make any clear comparisons as to how expert drug dealers are comparative

to non-drug dealers.

Identity Theft

Identity theft involves the stealing of personal information and the use of that information in order to commit an unlawful act (Vieraitis et al., 2015). Unlike other street crimes, such as burglary, carjacking, and drug dealing, Vieraitis et al. (2015) suggests that identity theft is distinct as the crime is perpetrated over a much longer time period and the skills one learns to commit the theft may involve experience with legitimate and illegitimate work. Further layers of complexity are added when considering the fact that this activity can be committed alone or in a group, and that different elements of the crime may be committed by different individuals (Vieraitis et al., 2015). Vieraitis et al. (2015) outlines that the fraudulent use of the stolen identity may not always occur in a linear fashion, and two different offenders (or groups of offenders) may commit different parts of the theft and subsequent fraud. Vieraitis et al. (2015) outline that the theft, or obtaining, of personal information can happen both offline or online, and can range from the basic theft of information from somebody's car or wallet to the distribution of *phishing* emails, or even planting a fake employee in a company which handles personal information (e.g., a human resources department; Copes & Vieraitis, 2012). Once the information is stolen it can then be *converted* in order to obtain cash or goods, including: withdrawing money, opening new bank accounts, and acquiring healthcare benefits (Copes & Vieraitis, 2012; Vieraitis et al., 2015).

Vieraitis et al. (2015) propose that, gained through legitimate and illegitimate experiences, identity fraudsters require three types of skills in order to commit their offences: practical, social, and cognitive. Vieraitis et al. (2015) suggests that these skills are built up over time, and the knowledge amassed varies dependent upon the type of fraud committed. Practical skills refer to both knowledge (e.g., knowing about how different payment system operate) and ability (e.g., being skilled in producing counterfeit money; Vieraitis et al., 2015). Applying the DEM (Nee & Ward, 2015), outlined earlier in this

chapter, Vieraitis et al. (2015) suggests that the identity fraudster would be engaging in aspects of both chunking and automaticity when using these skills. Social skills refer to the ability of the offender to be adept in social situations; whether this be in order to convince victims of their trustworthiness or to use both verbal and non-verbal communication to control a situation (Vieraitis et al., 2015). Finally, cognitive skills, refer to the ability of the offender to recognise opportunities to offend as well as foreseeing potential problems before they arise (Vieraitis et al., 2015). Vieraitis et al. (2015) suggests that in order to utilise both their social and cognitive skills, the identity fraudster would be employing multiple features of expertise: automaticity, situational awareness, selective preconscious attention, and multi-tasking which are all key principles of the DEM (Nee & Ward, 2015).

Whilst Vieraitis et al's. (2015) review provides a very useful summary of identity fraud and begins to suggest how dysfunctional expertise may play a role in this type of offending, the authors acknowledge that the review is based upon a small pool of previous research, none of which is specifically designed to investigate the concept of expertise. Therefore, further research is required to empirically investigate how dysfunctional expertise may play a role in both the acquisition and subsequent use of stolen identities, as well as how this may differ when performed by a lone fraudster or by a group of offenders.

Violent Offending

The work of Topalli (2005) is most pertinent when considering violence expertise, with an emphasis, again, placed on both perceptual (assessing the crime scene) and procedural (committing the crime) skills. Topalli (2005) emphasises the need to consider an offender's social perceptual skills as unlike burglary, when an offender engages in interpersonal crime (e.g., assault, murder, and rape) an offender will rely upon social interaction cues (related to perception) when deciding whether to commit an offence.

Topalli (2005) investigated the expertise of violent offenders using three Point Light Display (PLD) segments. PLDs are videotaped recordings that show the movements of individuals who have point-light sources attached to them, with the surroundings in

darkness. When the individual moves, only the lights are seen. It is hypothesised that by eliminating the human form, the perceiver of these PLDs is left to make inferences about what is being portrayed. Within Topalli's (2005) study he used active violent offenders along with demographic controls (i.e. non-violent offenders from the same or similar neighbourhoods), and first year undergraduate students. Topalli (2005) aimed to investigate if offenders differed to non-offenders in their social and perceptual judgments.

The PLDs used portrayed varying interactions between two men of similar height, weight, and age. In each segment one of the men walked up to other and tapped him on the shoulder. However, the speed was manipulated across the three segments (slow, medium, or fast). All participants were then asked questions designed to gauge their perception of what was happening in each of the three segments, and the nature of the social interaction. Results indicated a clear distinction between the three groups. Generally active violent offenders' described both the slow and medium paced segments as an aggressive, threatening, and unfriendly interaction. Whereas they generally saw the fast paced interaction as non-threatening or affectionate. This was in complete opposition to college students, who perceived the segments depicting slow or medium paced walking as non-threatening, and considered the fast pace as hostile. Interestingly the demographic control participants partially agreed with both offenders and students. Demographic controls and students agreed that the slow paced interaction was non- threatening and the fast paced interaction was hostile. However, demographic controls also agreed with the active offenders that the medium paced segment could be hostile. This latter finding is explained by Topalli (2005) as a result of demographic controls sharing a similar sociocultural environmental to the violent offenders.

Topalli (2005) concluded that offenders hold specialised offending knowledge, related to crime, hostility, and physical confrontation, as there was a clear difference between the interpretation of ambiguous PLD scenarios between offenders and non-offenders. It is these quantifiable differences that can be considered as differences in

expertise. However, it could be argued, as does Topalli (2005) to an extent, that variations in perceptions across groups do not necessarily constitute expertise. Therefore, whilst Topalli's (2005) results are interesting, in and of itself these results do not represent expertise entirely. Having said that, the results do highlight the importance of perceptual skill, which, as Topalli (2005) argues, is important when exploring dysfunctional expertise. According to the DEM (Nee & Ward, 2015) this may also represent a key element of dysfunctional expertise, in relation to the automatic scanning of one's environment.

Sexual Offending

Ward (1999) first proposed the concept of expertise in sexual offending. Whilst acknowledging the deficits sex offenders are considered to have (e.g., intimacy and empathy deficits and low self-esteem; Ward, Polaschek, & Beech, 2006), Ward (1999) suggested that sexual offenders might also display various competencies. Expertise is thought to be especially relevant to preferential child sexual offenders, as they have offended against many victims, developing knowledge structures that may be distinct from offenders with fewer victims. Furthermore, Ward (1999), for the first time, suggested the importance of offence scripts in the development of expertise. During the commission of an offence, the offender may gain new information which is processed and incorporated into already existing implicit schemas, altering the knowledge structures and thus also their offence-related strategies (Ward, 1999).

Ward (1999) argued experienced sexual offenders have developed many skills which include: identifying and responding to emotional vulnerability in potential victims; avoiding detection through appropriately appraising risk; easily befriending, grooming, or disarming victims; deceiving authorities, friends, and family whilst leading a normal life; regulating negative affect before, throughout, and after the offence; and enhanced problem solving and planning skills.

Bourke et al. (2012) build upon Ward's (1999) proposed idea of expertise, and tested

the existence of sexual offending expertise empirically. Bourke et al. (2012) conducted semi-structured interviews with 47 male child sexual offenders. Through these interviews Bourke et al. (2012) devised a descriptive model of child sexual offenders' expertise related competency (ERC). Within the model the variability and skills acquired by offenders is emphasised. Bourke et al. (2012) proposed six phases within the model: Primary Skill Acquisition (expertise during this stage refers to the development at a young age of deviant behaviour scripts, which are then relied upon during adult offending); Lifestyle (Offence Non Supportive or Offence Supportive); Offence Related Competency (key is the use of cognitive resources, such as scripts and goals, and strategic planning); Offence Related Behaviours (the successful application of these behaviours directly relates to the committing of an offence); Masking (inappropriate behaviour and to remain undetected) and Offence Reflection (High or Low appraisal of the offence). Bourke et al. (2012) also proposed Internal Moderators (Affect Regulation, Cognitive Mechanisms, and Arousal) and Contextual Features (Triggers and Victim Opportunity/Availability) within the model (see Bourke et al., 2012 for a detailed description). The skills expert sexual offenders have developed become automatic. Importantly within the model, Bourke et al. (2012) emphasise variability, suggesting that expertise can be seen as a continuum. When considering the ERC (Bourke et al., 2012) in relation to the DEM (Nee & Ward, 2015) it is clear many of it's key principles are inherent within the phases of the ERC (Bourke et al., 2012). For example, during Phase 3, *Offence Related Competencies,* where most of the planning of which victim to offend against and the environment in which to do so take place, the offender demonstrates an automatic recognition of cues related to this. Then in Phase 4, *Offence Related Behaviours,* the offender is able to offend almost automatically due to their ability to rely on cognitive schemas, developed through continued and prolonged practice (Fortune, Bourke, & Ward, 2015; Nee & Ward, 2015).

This model represents a comprehensive attempt at explaining the offence process of child sexual offenders based upon their level of expertise. Arguably, this is the most

comprehensive model of expertise of any area of offending expertise presented within this chapter. However, as Bourke et al. (2012) acknowledge there are limitations inherent within this model, by virtue of utilising offender's own retrospective accounts. Such accounts may be open to bias since offenders are only able to report knowledge that they are consciously aware of, and given what has been outlined above regarding the automaticity of expertise this is a concern. Furthermore, as outlined earlier, in the context of expertise, the use of an incarcerated sample is fraught with limitations.

With regards to expertise and adult sexual offending, namely rape, as Ó Ciardha (2015) has acknowledged, research evidence is sparse. Ó Ciardha (2015) provided a useful review of studies that he believed could contain proxies for expertise (e.g., comparing the offending behaviour of one time vs serial rapists). Serial rapists, compared to one time rapists, may be considered more expert due to them demonstrating more forensic awareness (e.g., use of a condom; Davies, Wittebrood, & Jackson, 1997; Park, Schlesinger, Pinizzotto, & Davis 2008; Slater, Woodhams, & Hamilton-Giachritsis, 2014). However, as Ó Ciardha (2015) states, there is a need for further empirical investigation in order to be able to draw conclusions, beyond Ward's (1999) conceptualisations, regarding whether adult sexual offenders demonstrate expertise in their offending behaviour.

Conclusions

Throughout this chapter it is evident that functional expertise has been applied to a wide variety of domains. However, despite this variety, there are enduring principles of expertise than can applied to all domains. Namely, the superior ability of experts to organise and retain knowledge within their Long Term Memories, the concept of deliberate practice, and the development of domain specific scripts. More recently, expertise has been applied to the domain of offending behaviour. Dysfunctional expertise is a small, but growing area of research. From the research reviewed above it is evident that, relative to non-offenders, expert offenders have developed specific skills that allow them to successfully engage in their given criminal domain, which include: an ability to

automatically recognise of offence-related cues, possession of cognitive schemas with exemplars and heuristics of well-practiced behaviour, and behavioural scripts which allow for automatic commission of an offence (Nee & Ward, 2015).

However, what is also evident from the research reviewed above is that the concept of dysfunctional expertise is yet to be applied to firesetting behaviour. Given that dysfunctional expertise has been successfully investigated in other criminal domains, it would seem imperative that the concept of dysfunctional expertise be investigated in the area of firesetting.

Chapter Four Rationale and Research Agenda

Rationale for this Thesis

A review of the literature in Chapters One to Three has highlighted two clear areas of deficit. First, the concept of scripts, to date, was yet to be meaningful applied to firesetting. The concept of firesetting scripts was clearly absent from all theories that exist to explain firesetting behaviour, with the exception of the M-TTAF (Gannon et al., 2012) which only provided a cursory consideration. The second clear area of deficit is the complete lack of consideration for the concept of expertise in firesetting behaviour, despite the key explanatory power demonstrated in other offending domains (see Chapter Three). Taken together, there was a clear need to empirically investigate the existence of firesetting scripts and expertise as they may provide a key explanation as to why firesetting behaviour occurs in the absence of fire interest, and in turn contribute to advances in our understanding and treatment of firesetting behaviour.

Chapter Five: Study 1 - A qualitative exploration of the scripts and expertise held by firesetters.

The aim of Study 1 was to gain exploratory information regarding whether apprehended firesetters hold scripts about firesetting, and demonstrated expertise in their offending. This study provided vital insights enabling the formulation of hypotheses regarding the content, structure, and etiological functions of firesetting scripts and expertise, allowing for subsequent empirical investigation. A sample of 25 imprisoned firesetters were interviewed about their previous firesetting, using a semi-structured interview schedule. The interviews, after being transcribed verbatim, were thematically analysed, in order to establish if there were any emerging themes surrounding firesetting scripts and expertise. The findings from Study 1 provided evidence that firesetters do hold scripts about fire, as well as demonstrating expertise in their offending.

Chapter Six: Conceptualisations of Firesetting Scripts and Expertise

It would be premature to empirically investigate these concepts any further without first attempting to better articulate the content, structure, and etiological functions of firesetting scripts and expertise. Therefore, this chapter outlines a preliminary conceptual framework of the potential scripts and types of expertise that are likely to characterise firesetters. The scripts and expertise outlined in this chapter are derived from existing empirical evidence and theory, clinical experience, and the preliminary data gained from the thematic analysis conducted in Study 1.

Chapter Seven: Study 2 - An Empirical Investigation of the Scripts and Expertise Held by Firesetters and Their Relationship to the Four Fire Factor Scales

Whilst Study 1 provided initial evidence that firesetters possess scripts and expertise, the evidence gained from Study 1 was qualitative. Therefore, Study 2 aimed to quantitatively investigate the presence of firesetting scripts and expertise. Study 2 also sought to investigate the relationship between firesetting scripts, expertise, and the Four Fire Factor Scales (Ó Ciardha et al's., 2014) to understand if scripts and expertise can help to account for firesetting behaviour in the absence of fire interest. Of further interest, is that Study 2 utilised fire service professionals (FSP) as a comparison group. Given FSPs' vast experience with fire, as it was deemed important to investigate if FSP hold similar cognition and expertise to firesetters.

Chapter Eight: Study 3a and 3b- An Empirical Investigation of the Expertise Held by Firesetters

Whilst Study 2 provided initial experimental evidence for the existence of firesetting expertise, the replication of those findings was crucial. Therefore, Studies 3a and 3b, utilised 88 participants across two participant groups (firesetters and offender comparisons) sought to investigate two key facets of expertise: availability of firesetting heuristics and automatic recognition of offence-related cues. Study 3a tested the concept proposed by Nee and Ward (2015) that expert offenders, in this case firesetters, hold

heuristics relating to examples of when the offence has been successfully carried out. Holding such heuristics is suggested to lead to superior performance. Study 3b investigated the concept that expert firesetters are superior in their ability to automatically recognise offence-related cues in their environment, which allows them to perform at an expert level. The findings from Studies 3a and 3b provided further evidence for the existence of firesetting expertise.

Chapter Nine: Study 4 - An Empirical Investigation of the Scripts and Expertise Held by Un-apprehended Firesetters and Their Relationship to the Four Fire Factor Scales

Whilst Studies, 1, 2, 3a, and 3b provided evidence that firesetters possess scripts and associated expertise, the studies conducted utilised apprehended samples, including firesetters with limited instances of repeat firesetting. However, given that the concepts of firesetting scripts and expertise are associated with a well-practiced behaviour that would lead to superiority, dexterity, and evasion of apprehension it was imperative that these concepts be investigated with an un-apprehended sample. Therefore, Study 4 aimed to empirically investigate these concepts with men who have engaged in deliberate firesetting activity in the community and remain unapprehend. It was hoped that the findings from Study 4 would provide further evidence for the existence of firesetting scripts and expertise within an un-apprehended sample.

Chapter Ten: 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 will also be provided.

Chapter Five Study 1: A Qualitative Exploration of the Scripts and Expertise Held by Firesetters

Introduction

As outlined in Chapter One, current theories of firesetting struggle to adequately explain why deliberate firesetting occurs in the absence of fire interest. This thesis proposes that this, in part, may be due to the lack of attention paid by current theories of firesetting to the role of cognition (i.e., scripts) and expertise. As outlined in Chapter Two, the importance of cognition has been emphasised in various offending, and non-offending domains. The presence of scripts has been shown to be in important in the development of aggression (Anderson & Bushman, 2002; Anderson & Carnagey, 2004; Anderson et al., 2007; DeWall & Anderson, 2011; Huesmann, 1988; Huesmann & Eron, 1984) and sexual offending (Gannon, et al., 2008; Ward, 1999; Ward & Hudson, 2000). However, only recently, and albeit briefly, has cognition been considered within firesetting. Within the M-TTAF, Gannon et al. (2012) hypothesise two scripts: (1) an aggression fire fusion script; hypothesised to develop as a result of a preference for indirect aggression and viewing fire as a powerful messenger (Gannon et al., 2012) and (2) the fire fusion coping script; where fire is viewed as a way to cope with various problematic situations. However, these scripts are ill-defined and entirely untested.

Furthermore, the concept of expertise has also been considered in both non-offending and offending domains (see Chapter Three). Expertise has been shown to be important in various offence types, namely: burglary, carjacking, drug offences, identity theft, sexual offending, and violent offending (Bennett & Wright, 1984; Bourke et al., 2012; Casey, 2015; Jacobs, 2012, 2013; Jacobs et al., 2003; Maguire & Bennett, 1982; Nee et al., 2015; Nee & Meenaghan, 2006; Nee & Taylor, 2000; Taylor & Nee, 1988; Topalli, 2005; Topalli & Wright, 2003; Topalli et al., 2015; Vieraitis et al., 2015; Ward, 1999; Wright & Decker, 1994; Wright et al, 1995). From this varied research, Nee and Ward (2015) have synthesised several components that are key to dysfunctional expertise (i.e.,

when expertise is applied to criminal behaviour). These concepts include: automatic, unintentional, pre-conscious appraisal of offence-related cues in the environment; the activation of complex cognitive schemas, built up through practice; and the development of exemplars, heuristics, and behavioural scripts. From these key components, it is evident that expertise and scripts are not mutually exclusive concepts, and are inextricably linked.

Given the existence of scripts and expertise in other offending domains it is hypothesised that these concepts may also be evident within the domain of firesetting. Therefore, the aim of this study is to gain preliminary information in order to be (1) understand if firesetters hold scripts about fire and demonstrate expertise in their firesetting and (2) adequately formulate hypotheses regarding the content, structure, and etiological functions of firesetting scripts and expertise. Establishing whether firesetters hold scripts and possess expertise in relation to their firesetting may provide an explanation as to why firesetting occurs in the absence of fire interest, allowing for advancement in our understanding and treatment of firesetting behaviour.

Method

Participants

Twenty-five male participants were recruited from one prison establishment in the South East of England, and selected from institutional file records indicating either a current or previous conviction for a firesetting offence (i.e., Arson; $n = 17$), fire used in the commission of a wider offence (e.g., murder; $n = 4$), or prison firesetting activity (e.g., prison documented cell fires; $n = 4$). Participants firesetting status was also confirmed when participants were asked to complete a short self-report measure prior to the interview taking place. Eight participants were repeat firesetters and had received a previous conviction for a firesetting offence, ranging from 1 ($n = 4$) to 9 ($n = 1$) previous offences. Their security information was reviewed and any participant who had a security alert relating to risk of hostage taking or risk to female staff were excluded. The majority of participants classified themselves as White British/Irish (88%; $n = 22$). The mean age of

participants were 36.40 years, and ages ranged from 21-65 years old. Twelve participants had at least one diagnosed mental disorder. Psychiatric diagnoses included depression ($n = 8$), schizophrenia ($n = 3$), personality disorders (including Dissocial Personality Disorder, Antisocial Personality Disorder, and Emotionally Unstable Personality Disorder; $n = 4$), bipolar affective disorder ($n = 1$), and mood disorder ($n = 1$). Three participants had more than one diagnosis.

Procedure

General offence-related information and demographic details were obtained using a self-report measure. A semi-structured interview schedule was constructed and used to gather preliminary evidence about possible firesetting scripts and expertise. The interview was conducted one-to-one and aimed to encourage participants to discuss their previous use of fire. The interview covered aspects of the offender's firesetting incident/s (be it their index offence, or another incident of firesetting), the thoughts that they had at the time of the incident, and the different uses of fire. The interview questions were used only to guide the interview process (see Appendix One). Therefore, the semi-structured nature allowed for follow up questions as the interview unfolded. All but one of the interviews were recorded on a digital audio recorder with the participant's knowledge and informed consent. One participant declined to be recorded, so his account was recorded in note form. All interviews were transcribed verbatim. The length of each interview varied, ranging from 7.05 minutes to 34.08 minutes (M interview time $= 17.88$; $SD = 6.19$).

Given the potentially sensitive nature of the topics discussed in the interview the participants' identities were protected by using a number in place of their name, and any potential identifying information was not included in the transcription.

Ethics

The study was reviewed and approved ethically by the University Research Ethics Committee (REF 20143556).

Data Analysis

Braun and Clarke's (2006) *thematic analysis* methodology was used to analyse each participant's interview. Thematic analysis allows for the analysis of qualitative data through the identification and reporting of reoccurring themes within a dataset. A theme is something important about the data in relation to the research question, and represents some meaning within the data set (Braun & Clarke, 2006).

The data from this study was analysed using the six phase approach proposed by Braun and Clarke (2006). First, *familiarising* with the data occurred through the author conducting and transcribing all interviews, as well as reading and rereading the interview transcripts. The data was then *coded* through a process of selecting quotes taken from the interview transcripts. A code could be a standalone statement, or multiple statements. The questions asked in the interview were transcribed and formed part of each participant's dataset, however, this was purely to provide context and did not feature in the coding of each participants dataset. Furthermore, any statement that was coded was explicitly stated by the participant, and not an example of the participant merely agreeing with a statement made by the interviewer. All in-text quotes were taken directly from transcripts; however, where necessary, extracts were edited to increase readability, and grammatical errors were corrected. S*earching for themes* took place by reviewing all the codes generated and grouping codes that were similar in content together. Sub-themes were also created under the broad themes when it was evident that a cluster of codes represented something unique within the overall theme. The themes were then *reviewed* to ensure that they accurately represented the codes within them. Sub-themes that were similar and did not provide additional information about the data were collapsed together into the boarder theme. Finally, the themes were *defined and named*.

A sub-sample of four (16%) transcribed interviews were independently rated. The rater was experienced in working with firesetters, however, they were blind to the study aims. The rater was provided with Figures 5.1 and 5.2 and asked to consider if the themes

and subthemes generated were present in the four interviews. The independent rater

confirmed that all themes and subthemes listed were present across the four interviews.

The independent rater also suggested the inclusion of a subtheme of *fire will get me what I*

want, under the main theme of *fire is a cry for help*. The author agreed with this inclusion,

and as such it was incorporated into the results. Through the use of an independent rater

the author can be confident that any bias in the interpretation of the results is limited as far

as possible.

Results

Based on the thematic analysis, six broad themes regarding why fire had been used

(i.e., scripts) were identified across the data set. These were: fire is a powerful tool, fire

destroys evidence, fire is a cry for help, fire will get me attention, fire makes me feel better,

and fire will end my life. Figure 5.1. provides a diagrammatic representation of these themes

and subthemes.

Figure 5.1. **Thematic network of themes and sub-themes identified from a thematic**

analysis of why firesetters engage in firesetting

1. Fire is a powerful tool

Participants described the use of fire as a tool or weapon to achieve a specific aim: "It's (fire) a powerful thing; it's a powerful tool…I have always known it's a good weapon to get my point across" (P01). As the aims and reasons for utilising fire were so diverse, they are represented in the following sub-themes: *fire sends a message, fire enacts revenge, fire destroys, and I can't tell them.*

In relation to the overall theme, *fire is a powerful tool,* most participants described the use of fire as a tool to achieve a specific goal. P02 stated: "It's (fire) an instrument; it's a tool". This was echoed by P01 who stated: "It's (fire) a powerful thing; it's a powerful tool". He followed this up by saying "I have always known it's a good weapon to get my point across". P22 also agreed that fire could be used as weapon, he simply stated: "It can be used as a weapon". Support for the overall theme, including all sub-themes, came from 92% (*n* = 23) of the interviews across the dataset.

1.1. Fire sends a message

Within this sub-theme the key messages appeared to take the form of communicating one's power, a symbol of your intentions/ a warning, or a message of dissatisfaction. In relation to wanting to be perceived as somebody powerful, participants stated: "(Fire) Sends the message you're powerful" (P06); "You're not somebody to be messed with" (P05), and "Don't mess with me" (P23). With regards to firesetting being a symbol of your intentions / sending a warning, participants felt fire helped them achieve that message, for example: "Sending a message that you are prepared to do anything to get back at them" (P26), "Just put a little bit of petrol through their letterbox, as a warning" (P19), and "It's a warning, it's not a verbal thing. It is showing action" (P20). Finally, in relation to sending a message of dissatisfaction: "I set alight the jumper as a way of saying fuck you" (P25). Although the messages varied in their exact content, overall, they can be viewed as intimidatory. From the dataset it was evident that fire was chosen to send a message

because it is frightening: "I knew fire would scare them" (P01)" and "By throwing the petrol on her, it was enough to scare her" (P22).

1.2. Fire enacts revenge

The use of fire to enact revenge was extracted from multiple participants in the dataset: "It was a form of me enacting revenge for what happened to her" (P04) and "It was just blatant revenge" (P18). The frightening and harmful nature of fire were suggested as reasons why it can be used to satisfy one's aim of enacting revenge. Interestingly, this harm related to both physical harm: "I was in pain and I wanted to hurt her" (P22) and "It can be used as a direct way to harm somebody" (P25) and emotional harm: "If someone punches you you're gonna heal in a week or two. But if you burn something precious to someone it's irreplaceable, so it hurts the person more" (P05) "It gives them emotional hurtness as well as like their house has been destroyed" (P02).

This differs from using fire to send a message as, in that instance, the individual's focus is on how the fire will allow him to be perceived. However, this sub-theme does share similarities with using fire to send a message, as it was evident in the dataset that fire is used to enact revenge due to it being frightening, which is also present in why somebody uses fire to send a message. For example: "He'd been frightening me so I thought I would frighten him" (P09).

1.3. Fire destroys

This sub-theme pertains to the idea that fire can be used to send a message or enact revenge, because fire is very destructive: "It's destructive, it's a destructive power" (P18). Furthermore, the inevitability of fire as a destructive force was outlined: "That's guaranteed damage…"I knew it would damage everything" (P20).

1.4. I can't tell them

This final sub-theme refers to feelings of inadequacy and deficits in communication skills as reasons why some participants chose fire, arguably a more indirect way, to send a message or enact revenge. P09 stated: "I haven't got the confidence to approach

somebody...you can get your message across to somebody without actually having contact with that person" and P01 stated: "I felt trapped…I felt scared and worried".

2. Fire destroys evidence

This theme describes the use of fire as a means of destroying evidence that has been generated as a result of engaging in criminal activity. This theme consisted of three subthemes: *fire is destructive, fire is quick and easy, and fire is more effective.* Support for the overall theme, including the subthemes, came from 92% (*n* = 23) of the interviews across the dataset.

In relation to the overall theme, *fire destroys evidence,* most participants described the different types of evidence that could be destroyed using fire. Commonly participants outlined the use of fire to destroy cars that had been stolen, or evidence generated from the commission of another crime (e.g., a murder or robbery). For example, P07 said: "Obviously, we didn't want to get caught, so we burnt the person and then burnt the car". P22 also echoed this: "If you steal a car...you burn it out and you haven't got any evidence". Participants also spoke specifically about the use of fire to destroy DNA and fingerprint evidence. For example, P14 said: "If you set a fire the police won't be able to trace fingerprints, or nothing else".

2.1. Fire is destructive

This sub-theme pertains to the idea that the reason fire is used to destroy evidence is due to fire's destructive nature: "It's (fire) just destructive 'ern it. It (fire) burns everything" (P09) and "Fires destructive quality will ensure that all the stuff is gone" (P25). This is similar to the fire destroys sub-theme listed above, however, it is included as a sub-theme within this theme as fire's destructive nature was specifically cited as a reason to use it to destroy evidence.

2.2. Fire is quick and easy

This sub-theme explains the suggestion made by participants that the reason fire is used to destroy evidence is because setting a fire is quick and easy: "Since growing up all I knew about fire was that it is the quickest and easiest way (to destroy evidence)" (P01) and "It's just quicker and easier to torch things" (P13).

2.3. Fire is more effective

This final sub-theme refers to the idea that fire is utilised to destroy evidence because it is more effective, when compared to other methods of destroying evidence: "You strip it (car) down for parts there could be fingerprint on it somewhere. But when it's (car) burnt, it's burnt; it's gone" (P20) and "If you used a gun in a murder and dumped it in the river it could be found years later and used against you. But, if you melt it down, it's gone; disappeared forever" (P17).

3. Fire is a cry for help

In this theme, participants described using fire to communicate the need for or attempt to illicit help. Fire is seen as a viable way to enact a chain of events that will result in help being offered. Generally, fire was seen as an indiscriminate way of trying to gain help, and those that described this theme were not specific about who the fire would illicit help from. Some participants had the knowledge that a consequence of setting the fire could be prison, however, this was seen as a preferable solution: "I thought if I do this I'll probably come to prison, but I'll get the help and support I need" (P11). This theme consisted of three sub-themes *I'll be taken seriously, I cannot get help* and *Fire will get me what I want.* Support for the overall theme, including the sub-themes, came from 68% (*n* = 17) of the interviews across dataset.

3.1. I'll be taken seriously

This sub-theme provides an explanation as to why fire would be seen as a viable way to illicit help, as it is perceived to be a way to be taken seriously. For example, P09 stated: "Now they take me seriously". This was echoed by P26 who stated: "With it being

a serious thing…people are now concerned about your problem". This sub-theme could suggest that setting a fire is a means for the individual to demonstrate the severity of the situation they feel that they were in.

3.2. I cannot get help

This sub-theme pertains to the idea that fire may also be used as a cry for help due to feeling unable to ask for help or a perception of not being listened to. For example, in relation to not feeling able to ask for help, P25 stated: "I don't feel I can ask for help". This was echoed by P04 who stated "I find it hard to ask for help". With regards to feelings of not being listened to P11 stated: "I was feeling frustrated" and P24 stated: "I have been trying to tell you'se the problem, you'se weren't listening that's why I have done it".

3.3. Fire will get me what I want

This sub-theme, as highlighted by the independent rater, refers to participants who used fire in order to change their circumstances for, what they saw, as the better: "I set the cell on fire because I knew they would have to come and open the door" (P03), "Well as soon as you set fire to the cell they have to move you…I used it to get what I wanted" (P21), and "I used fire to get what I wanted"(P06).

4. Fire will get me attention

This theme refers to the idea that fire can be used in order to gain attention. This theme consisted of two sub-themes *fire creates a scene* and *I am lonely.* Support for the overall theme, including the sub-themes, came from 64% ($n = 16$) of interviews across the dataset. In relation to the overall theme, *fire will get me attention,* participants that described this theme described the idea that fire can be used in order to gain attention: "The last time I set a fire people paid me attention" (P25) and "Setting a fire will attract a lot of attention" (P17). Of interest was the idea that fire gets attention may, for some, have started in childhood: "I never used to get the attention I wanted at home. So, I think I thought if I set a fire to something I would get it". He followed this up with "getting bad attention was better than getting no attention at all" (P09).

This theme is, and should be viewed as, different from the theme of *fire is a cry for help,* as participants that reported this theme were not trying to invoke a chain of events that would result in help being provided, they were merely setting a fire in order to gain some attention or recognition.

4.1. Fire creates a scene

Fire was reportedly used to get attention because it creates a *scene.* Through setting a fire, in a public place, participants stated this would create a lot of interest, due to fire's dramatic nature, and inevitably the need for emergency services to attend: "You've got the fire brigade come out, and you've got other people coming there…they (the firesetter) are there because they feel good about it…they have caused all of the trouble" (P19) and "Some people like seeing the suits, the services, they like hearing the sirens going off, seeing the crowds" (P10).

5. Fire makes me feel better

This theme pertains to the idea that fire can be used in order to make the firesetter feel better if they were experiencing negative affect. For example, P10 gave a comprehensive explanation as to how his firesetting makes him feel better. He stated: "I saw it (fire) as a way of releasing my anger". He went on to say; "It takes my pain away". This was reiterated by other participants who also spoke to the healing nature of fire. P23 stated: "It does calm me down, fire" and P09 stated: "When I feel depressed, and probably think everybody's after me I do (set a fire)". This theme consisted of two sub-themes *I like watching fire* and *fire is exciting*. Support for the overall theme, including the sub-themes, came from 52% ($n = 13$) of interviews across the dataset.

5.1. I like watching fire

Gaining enjoyment from watching fire was provided as an explanation as to why some may use fire as a means to make them feel better, due to fire's relaxing and hypnotic qualities: "It's just nice to watch it; the warmth from it is nice…the relaxing flicker" (P23) and "I like to watch the flames" (P20).

5.2. Fire is exciting

This sub-theme also explains why some may choose fire as way to make themselves feel better, due to the fact that fire is exciting. Extracts pertaining to this sub-theme detailed the thrilling or exciting nature of fire, and it is these properties of fire that can contribute to someone using fire to make themselves feel better. For example, P23 stated: "It's (fire) exciting" and P25 stated "You get a buzz from it".

6. I want to end my life

This theme pertains to extracts from the dataset where participants shared their experiences of using fire to end their life. This theme applied to only a few participants (12% n =3). Extracts pertaining to this theme referred to the use of setting a fire was an act of suicide. P03 stated: "I used it (fire) to harm myself". This was similar to that of P16 who stated: "It was a suicide attempt". And, finally, P18 who stated: "I thought it would be an effective way to kill myself, a dead cert, no mistakes". He went on to say: "If the flames don't kill me the smoke would".

In addition to the scripts identified and outlined above, five broad themes were identified across the dataset that, in light of the literature reviewed in Chapter Three, pertain to key facets of expertise. Figure 5.2. provides a diagrammatic representation of these themes and sub-themes. The following themes, and sub-themes, pertaining to expertise are slightly less well developed than the themes relating to scripts presented above. Nevertheless, the five themes are: fire knowledge, avoiding detection, automaticity, familarity, and childhood fire play/deliberte practice.
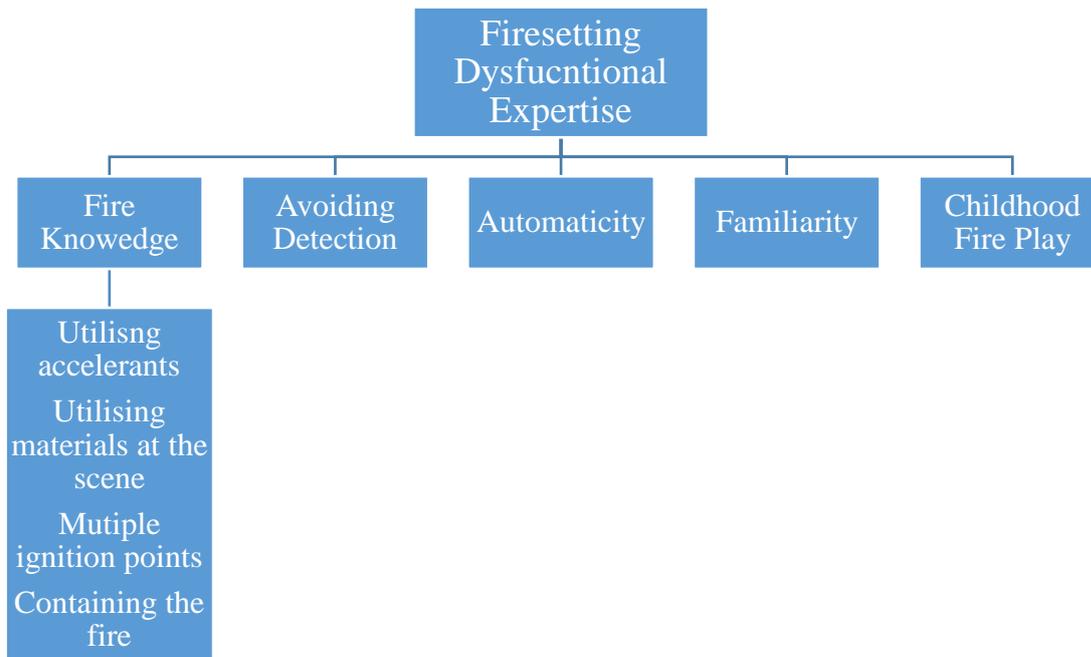
Figure 5.2 **Thematic network of themes and sub-themes identified from a thematic analysis of firesetting expertise**

1. Fire Knowledge

This theme refers to the specific knowledge participants held about how to set a fire. This theme consisted of four subthemes. These subthemes were: *utilisng accelrants, utilsing materials at the scene, mutiple igntion points,* and *containing the fire.* These sub-themes refer to the different elements used when setting a fire and also how the fire is set. Support for the overall theme, inluding all subthemes, came from 60% ($n = 15$) of the intervews across the dataset.

In relation to the overall theme, *fire knowledge,* most participants appeared to hold knolwedge around how to set a successful fire, including the different elements they would need and a sitational awareness of where, if needed, they could source materials from. For example, P20 discussed how, when setting a local shop's storage facility alight, he utilised the stock held in the storage facility to set the fire: "I literally got everything for it in there, because there was all of his stock in there. So, I've got the whole lot of lighter fluid,

sprayed it around everything, threw everything back in, lit a cardboard box, threw the cardboard box in, pulled the screen down and just let the garage do its thing".

1.1. Utilising accelerants

This first sub-theme refers to the fact that many participants discussed their use of accelerants, normally petrol, when setting their fires. Three main reasons for the use of accelerants were reported. First, participants discussed how utilising an accelerant is easy. For example, when P20 discussed setting fire to a car he stated: "It's just easy ern it. You just take off the petrol cap, pour it all on the inside and just light the fire". Second, participants outlined how the use of accelerants, again namely petrol, allows the fire to develop more quickly. Given that speed is often preferable, if not essential, when committing a crime this finding is not surprising. For example, when discussing why he used petrol to set fire to an occupied house P4 stated: "I wanted something to make it happen quicker". This was echoed by P7, who used petrol to set fire to a car, when he stated: "(using petrol) makes it burn quicker. Its sets fire quicker". Finally, participants referred to the inevitably of fire when one utilises accelerant. For example, P22 stated: "I put some petrol on him, and light him, and in a couple of minutes he'd be dead". This inevitably was also reiterated by P14 when he stated: "When you use petrol it starts the fire… it is ensuring it starts the fire".

1.2. Utilising materials at the scene

This sub-theme pertains to how participants described utilising materials present at the scene when setting their fires. Extracts pertaining to this theme were centred on how participants appeared to describe having a situational awareness of items that were readily available at the scene, which they could use in order to start their fire. This was true of both the use of flammable materials and the use of accelerant. For example, in relation to participants being aware of flammable material at the scene, P20 stated: "You don't have to bring any extra, it's all there". This was echoed by P8, when describing how he was involved in setting fire to a man, when he stated: "The stuff was already there". With

regard to the use of accelerant, when discussing how he used petrol to set fire to his flat in order cover up a murder P19 stated: "I used the petrol from one of the cans that was in there. We did always have some petrol in the van". This was echoed by P22 who stated: "And I went out to the bike shed and got the petrol".

1.3.Multiple ignition points

This sub-theme refers to how some participants described setting multiple points of ignition when setting their fires. P13 stated how, when setting fire to a house, he set multiple ignition points, he stated: "I sprayed it (petrol) all round the house, all round the rooms". This was echoed by P07 who, when describing how to set fire to a car, stated that: "You pour petrol on the inside and outside of the car and set fire". Again, similar to the use of accelerant to ensure speed, it would appear speed was also pertinent here too. Setting multiple ignition points would inevitably encourage the fire to spread more rapidly.

1.4.Containing the fire

This final sub-theme refers to how some participants discussed that they would make attempts to contain the fire. For example, P23 stated: "I would always make sure that they (fires) were contained within an area". P10 stated: "I'd do it on the path, so I know no way it can spread". Interestingly, one participant spoke of how he had planned to contain the fire, but failed to do so as he was not using familiar materials. P20 stated "It was gonna be a little fire but I didn't think because it was plastic, and I am used to metal bins. This sub-theme demonstrates the dexterity some participants feel they have when using fire.

2. Avoiding Detection

Some participants discussed attempts they had made to avoid detection; before, during, or after the fire, by asking others to either acquire specific items needed to set the fire (e.g., petrol) or actually set the fire: "Get a couple of youngsters, who could do it for a small fee, and you wouldn't even have to get your hands dirty" (P19). Support for this theme came from 8% ($n = 2$) of the interviews across the dataset.

3. Automaticity

This theme pertains to the idea that some participants considered their firesetting to be automatic and, at times, without conscious awareness. From the dataset it was apparent that some firesetters stated that their firesetting was often not consciously premeditated, but rather a spur of the moment decision. For example, P01 stated: "It just come into my head in a split second". He later echoed this by saying: "I don't know how it even got into my head. But it did, it just come up". Another participant also spoke of the automatic, unconscious decision to set a fire. When describing how he set fire to a pair of curtains in his flat P15 stated: "It was like I acted on instinct".

The idea of certain environmental cues triggering firesetting was also apparent. For example, P6 stated that, when setting fire to a pub in an act of revenge, it was only the fact that he passed the pub that triggered the thought of setting a fire. He stated: "I came up to the pub, it twigged in my head that this was the pub that she had said. And it was instantaneous, it weren't no forward planning". Support for this theme came from 16% ($n = 4$) of the interviews across the dataset.

4. Familiarity

This theme relates to participants' in the study familiarity when using fire. For example, P2 stated: "I am familiar using fire…I know what I am doing". This familiarity meant that when participants spoke about their firesetting, they noted how easy they found firesetting. For example, P9 stated: "It was easy for me to use (fire)". This was also echoed by P11 who stated: "It's (fire) an easy thing to do". Furthermore, such familiarity was also seen when participants discussed what would happen once they set the fire. It appeared that participants spoke with a level of assurance about what the outcome of their firesetting would be. For example, when discussing burning down an occupied house, P04 stated: "It (fire) was something that I knew how it would end up really. This was reinforced by P06 who, when explaining how he set fire to the rubbish bins outside a pub, stated: "I knew because it was winter, January, and it was windy and wet I knew that the smoke would go

straight through that door". He went on to say: "I knew the pub wouldn't burn down because I didn't set it up to burn the pub down. If I wanted to burn the pub down I would have gone and got petrol and burnt it down". Support for this theme came from 24% (*n* = 6) of the interviews across the dataset.

5. Childhood Fire Play/Deliberate Practice

This theme relates to the fact that many participants spoke about how they would often engage in childhood firesetting. For example, P4 stated: "I was growing up and I was setting fires, that was a sense of learning about fires". He went on to say: "It (fire) was just something that has always been there. It's just something I have always known". When participants discussed their childhood fire play, it was often in relation to experimenting with fire. There was evidence of both childhood fire play in groups, and by oneself. For example, P23 stated: "I just used to set fires with my mates. Just sit around, put things on it see how things burnt". Whereas, P10 referred to fire play which was solitary. He stated: "I used fire before as a kid". He went on to say: "I would burn some rubbish bags, a bit of paper, some dry grass leaves, sticks". Support for this theme came from 16% (*n* = 4) of the interviews across the dataset.

Discussion

Study 1 represented the first attempt to empirically investigate the concepts of firesetting scripts and expertise. This study sought to gain preliminary evidence about why firesetters may utilise fire, in order to establish whether firesetters hold scripts about fire. Thematic analysis of 25 semi-structured interviews with firesetters yielded six clear themes about fire: *fire is a powerful tool, fire destroys evidence, fire is a cry for help, fire will get me attention, fire makes me feel better, and fire will end my life*. The themes derived appear to represent a set of beliefs about fire that motivate firesetters to use fire in a given situation. However, it would appear that the motivational beliefs, or scripts, observed in this study do not neatly fall into either of the two existing classifications of scripts, that being procedural or behavioural, reviewed in Chapter Two. Therefore, the themes derived

in this study warrant their own conceptualisation. This new conceptualisation will be explored in the subsequent chapter, when a detailed framework of firesetting scripts and expertise will be hypothesised.

In addition to the preliminary evidence outlined regarding firesetters' uses of fire, this study also uncovered knowledge around *how* firesetters use fire. Thematic analysis of the 25 semi-structured interviews also yielded five clear themes relating to expertise: *fire knowledge, avoiding detection, automaticity, familiarity,* and *childhood fire play.* As outlined in Chapter Three in addition to domain specific knowledge, the concepts of automaticity and deliberate practice are considered integral to dysfunctional expertise, a concept which is yet to be applied to firesetting. However, the emerging findings from this literature suggest that dysfunctional expertise may also be present within firesetters and worthy of further investigation. Key themes found in this study replicate much of the wider literature regarding dysfunctional expertise outlined above, such as: automaticity, domain specific knowledge, and deliberate practice. The findings from this study provide promising initial evidence for the existence of firesetting expertise.

Whilst the findings from this study, to the author's knowledge, represents the first attempt at investigating the scripts and expertise that may be held by firesetters, some limitations should be explored. Firstly, the researcher has had previous experience of working within the firesetting field in a clinical role, and as such is extremely familiar with the area. Such clinical experiences may have contributed to some bias when engaging with the data collected. However, as it is widely acknowledged, qualitative data can be inherently subjective with different researchers reaching different conclusions about the same data (Olds & Hawkins, 2014; Sandelowski, 1995). However, to limit this as much as possible, the researcher followed the theoretically driven thematic analysis approach as described by Braun and Clarke (2006). Furthermore, a subsample (16%, $n = 4$) of the transcribed interviews were independently rated and the inter-rater confirmed that all themes and subthemes listed were present across the four interviews. Therefore, limiting,

as far as possible, subjectivity.

Another limitation is the use of exclusively male imprisoned firesetters. The scripts and expertise that are evident within this sample may not be applicable to other types of firesetters, for example female firesetters or mentally disordered firesetters. Furthermore, because this study only included male imprisoned firesetters, the researcher cannot be sure that these scripts and expertise outlined are only held by firesetters. With the absence of any inclusion of a comparison group the researcher cannot claim that the scripts and expertise evident within this population are not also evident within other populations, and thus cannot be sure that these scripts are specific to firesetters. Furthermore, to the use of an incarcerated sample to investigate firesetting expertise may have been problematic. Firesetters who remain undetected may possess knowledge and skills which reflect more well defined, or superior, expertise that was not captured in this research.

A final limitation of this research refers to the use of interviews to gain information about offending history, as well as preliminary script and expertise data. Despite a substantial discussion guide, interviews were relatively short (*M* interview time = 17.88 minutes), with the shortest interview lasting 7.05 minutes. This was in part due to the fact that some offenders appeared reluctant to share their offending experiences. Future research should seek to utilise alternative experimental paradigms to explore ways to overcome such reluctance. One such paradigm is that of the Virtual Enactment Method (Meenaghan, Nee, van Gelder, Otte, & Vernham, 2018), which requires participants to commit a crime in a virtual reality setting and information elicited from participates during this virtual crime commission is later expanded upon in an interview. Researchers have noted this helps to encourage even the most unwilling to share key offence related information.

The findings from this study provide promise; it is clear that future empirical investigation of firesetting scripts and expertise is warranted. The initial evidence pertaining to the existence of firesetting scripts and expertise garnered in this study will

provide a useful grounding for such future research. However, it is also evident that, as research investigating firesetting scripts and expertise is in its complete infancy, the content, structure, and etiological functions of these scripts and expertise need to be clearly articulated before such empirical investigation can take. To ground these preliminary findings in a wider set of hypotheses that are informed by the, albeit limited, firesetting research landscape would be fortuitous. Therefore, the following chapter will seek to provide clear hypotheses regarding the content, structure, and etiological functions of firesetting scripts and dysfunctional firesetting expertise.

Chapter Six: Conceptualisations of Firesetting Scripts and Expertise

Introduction

As it has been highlighted in previous chapters, with the exception of the M-TTAF (Gannon et al., 2012), there is a clear lack of consideration of the concept of scripts within existing theories of firesetting. Whist some theories may consider proxies of scripts (e.g., motivations; Barnoux et al., 2014; Tyler et al., 2014) there is no direct consideration of this concept. Moreover, when scripts are directly considered, in the case of the M-TTAF (Gannon et al., 2012), very little detail is given regarding the content and structure of potential firesetting scripts. However, this stands in stark construct to the fact that scripts have been shown to be an important concept within other offending domains, namely aggression and sexual behaviour (Gagon, 1990; Huesmann, 1988; Huesmann & Eron, 1984; Ward & Hudson, 2000; Ward & Siegert, 2002). Second, the concept of expertise, whilst again shown in other offending domains, namely burglary and sexual offending (Bennett & Wright, 1984; Bourke, Ward and Rose, 2012; Maguire & Bennett, 1982; Nee & Taylor, 2000; Nee et al., 2014; Taylor & Nee, 1988; Ó Ciardha, 2015; Ward, 1999), as an important explanatory factor there is a complete omission of expertise form all theories of firesetting. The absence of any substantive attention being paid to either of these two explanatory factors within the firesetting literature is concerning, given the clear evidence that supports the existence of these concepts in other offending domains.

The preliminary findings seen in Study 1 suggest that firesetters do hold beliefs about fire, and also appear to hold knowledge around how to utilise fire (i.e., dysfunctional expertise). However, given the current lack of application of these concepts to firesetting behaviour, it would be premature to empirically investigate these concepts any further without first attempting to better articulate the content, structure, and etiological functions of firesetting scripts and expertise. Thus, this chapter outlines a preliminary conceptual framework of the potential scripts and types of expertise that are likely to characterise firesetters. The scripts and expertise outlined in this chapter have been derived from

existing empirical evidence and theory, clinical experience, and the preliminary data gained from the thematic analysis conducted in Study 1 (Chapter Six).

Scripts and Expertise Applied to Firesetting

First, it is important to make clear how the concepts of scripts and expertise will be viewed going forward. The contemporary conceptualisations of scripts, as outlined in Chapter Two, suggests that scripts can take the form of: (1) behavioural guides, which are cognitive frameworks that contain information that direct behaviour in a given situation (Huesmann, 1988; Huesmann & Eron, 1984; Ward & Hudson, 2002), and (2) procedural scripts, that pertain to knowledge structures that are used to understand criminal behaviour (Cornish, 1994). However, it would appear that the preliminary findings regarding scripts from Study 1, do not necessarily fit with either of those classifications. The themes appear to relate to a set of motivational beliefs about firesetting, as opposed to cognitive frameworks which outline how to set a fire or knowledge structures which help understand criminal behaviour. These motivational beliefs appear to provide the firesetter with information about why to set the fire, as opposed to how to do it. Therefore, as neither previous conceptualisations of scripts can be readily applied, the motivational beliefs observed in Study 1 will be conceptualised into a framework of motivational firesetting scripts in order to distinguish them from other more behavioural or procedural definitions of scripts. The motivational scripts are a key concept relating to *why* firesetters set a fire, and can be understood as guiding an individual to know when it is appropriate to use fire. For example, an individual experiencing negative affect may have used fire previously to restore positive feelings. Therefore, they may know that fire can help alleviate their negative mood, and so set a fire. It is the knowledge that fire will make them feel better that explains *why* they utilise it.

The contemporary conceptualisation of expertise, as has been outlined in Chapter Three, refers to an expert being an individual who has a large body of knowledge and skill (Nee and Ward, 2015). In this thesis, firesetters will be viewed in the same vein. They have

amassed a great deal of knowledge and skill in setting fires. Therefore, expertise will be conceptualised as the *how* firesetters set a fire. In other words, they know *how* to set a fire to successfully achieve their goal. Importantly, scripts and expertise will be viewed as complimentary concepts. That is to say those firesetters who hold multiple firesetting scripts are likely to be classified as more expert.

Motivational Firesetting Scripts

Firesetters are extremely heterogeneous, with differing motives and offending styles. Therefore, it would be unrealistic to suggest that all those who have set a fire hold motivational fire scripts. However, it is plausible to consider that those individuals who have set multiple fires, in similar ways, and in a similar environmental context would hold motivational fire related scripts. These individuals are likely to have had the opportunity to develop specific knowledge structures relating to their firesetting. It is also possible that some firesetters may hold multiple motivational fire scripts dependent upon the motivation of the given fire.

The following section will present four possible motivational scripts that may be held by firesetters, derived from the themes outlined in Study 1, existing empirical evidence, and the author's clinical experience to allow for further empirical investigation and revision. These motivational scripts should be viewed as subsuming the basic firesetting scripts developed by Gannon and colleagues (2012), referred to in Chapter One. The current motivational scripts develop and refine those scripts further, as well as presenting a novel script, *fire is the best way to destroy evidence*, never before alluded to in this area.

For each hypothesised motivational fire script, a description of the script will be provided, both in relation to theory and the function it serves, supplemented with available empirical evidence. As these hypothesised motivational scripts represent the first attempt to, in detail, suggest what motivational scripts firesetters hold they should be viewed as preliminary conceptualisations for which to provide a basis for empirical investigation and possible revision.

Fire is a powerful messenger

Firesetters who hold this motivational script may have developed schematic knowledge around the use of fire to send a message of some kind. This message usually takes two general forms, (1) fire is used to send a message of revenge or a warning (most similar to Gannon et al's., 2012 aggression-fire fusion script) and (2) fire is used to send a message of distress or as a 'cry for help'.

First, the motivational script of *fire as messenger of revenge/warning*. Gannon et al. (2012) suggest that poor problem-solving skills are a key psychological weakness of firesetters' as well as improvised communication skills. Such communication deficits are characterised by impoverished social skills, a lack of assertiveness, and passivity (Noblett & Nelson, 2001; Rice & Chaplin, 1979; Rice & Harris, 2008; Stewart, 1993). Difficulties with problem solving and communication deficits usually arise from poor relationships with earlier caregivers. Deficits in communication skills were evident in Study 1; participants' often spoke of their inability to communicate their problems. This was encapsulated in sub-theme of *I can't tell them*. Children engaging in typical childhood fire play (Fessler, 2006; Fineman, 1980) that spans into adolescence may develop knowledge schemas around the use of fire as a problem solving and communicative tool. Furthermore, multiple instances of fire play may also result in the destruction of property etc., and so knowledge around the destructiveness of fire may also develop.

Evidence for the script was seen in Study 1, and the theme *fire is a powerful tool.* Participants often referred to the use of fire to send a message. This was further evidenced through the sub-themes of *fire sends a message* and *fire enacts revenge.* Gannon et al. (2012) suggests that when an individual utilises fire in this way it may be as a result of poor problem-solving skills, poor communication skills, feelings of entitlement, and learnt behaviour around the destructive and intimidating power of fire. Viewing fire as destructive and an intimidating power closely echoes the sub-theme of *fire destroys* outlined in Study 1. Firesetters holding this motivational script may hold beliefs around

utilising fire as a tool for enacting revenge. As when individuals encounter a situation in which they believe they have been wronged, and feel the need to rectify this, they believe feel fire is a powerful way to do so. Barnoux and Gannon (2013) have recently reconceptualised revenge in firesetting. Within this model they highlight the presence of fire scripts. Importantly, Barnoux and Gannon (2013) hypothesise that when fire is utilised as a tool for enacting revenge it is often used to both inflict suffering and to assert a sense of power.

Second, the motivational script of *fire is a powerful messenger of distress or a 'cry for help'*. This was also a prominent theme present in Study 1, as many participants cited *fire is a cry for help* as a common use of fire. As Gannon et al. (2012) argue firesetters are generally lonely with a limited social support network (Barracato, 1979; Bennett & Hess, 1984; Inciardi, 1970; Leong, 1992; Rice & Harris, 1991; Ritchie & Huff, 1999). This lack of social support along with firesetters' aforementioned problems in the areas of problem solving and communication mean that often those who set fires find it difficult to meet their needs in pro-social ways. Again, similar to the powerful messenger motivational script, childhood fire play may be important. As Gannon and Pina (2010) summarise, firesetters are likely to have had childhoods characterised by neglectful parenting. Therefore, childhood fire play is likely, as Ó Ciardha and Gannon (2011) suggest, to have taken place in the absence of an attentive caregiver. Neglectful parenting coupled with unsupervised fire play may result in fire being used as a way to elicit attention from neglectful caregivers (Jackson et al., 1987). As a consequence of this, firesetters may have developed beliefs around the use of fire as a way to gain attention for their unmet needs. Therefore, when they experience a situation in which they feel upset, lonely, isolated, depressed, and in need of attention they are motivated to utilise fire to meet their needs. These concepts were all shown in the subthemes articulated by participants in Study 1. The sub-themes of *I'll be taken seriously* and *fire will get me what I want* echo the sentiments above. Furthermore, the sub-theme, *I cannot get help,* outlined in Study 1 reinforces the

hypothesis that firesetters may utilise fire because they are unable to communicate that they need help.

Also, present within this motivational script maybe the use of fire to self-harm or commit suicide. Participants in Study 1, albeit a small number, did discuss using fire in this manner, and it was encapsulated in the theme *I want to end my life.* Gannon et al. (2012) do refer to the use of fire as a means of self-harm or to commit suicide. Again, it is the inability to communicate an unmet need in a more conventional manner that motivates the use of fire in this way.

Fire is the best way to destroy evidence

This motivational script refers to the use of fire to destroy evidence generated through engaging in criminal behaviour. Multiple authors have suggested crime concealment as a motive for firesetting (Canter & Almond, 2002; Douglas, Ressler, Burgess, & Hartman, 1992; Icove & Estepp, 1987; Karchmer, 1984; Kocsis 2002; Swaffer & Hollin, 1992). Furthermore, *fire destroys evidence,* was a very popular theme from Study 1, with all but two participants discussing the use of fire to destroy evidence. Often fire is used to destroy DNA evidence (e.g. fingerprints, hair fibres etc.) generated from engaging in criminal behaviour such as joy riding or committing murder. Such a motivational script may develop throughout an offender's criminal career. As evidence suggests, some firesetters generally engage in a criminal lifestyle (i.e. those following the antisocial trajectory of the M-TTAF; Gannon et al., 2012), therefore, it is not unreasonable to suggest that they will have engaged in varied and multiple offences both alone and with accomplishes. Through engaging in the criminal process offenders will have had experience of trialling various methods of destroying evidence, as well as gain knowledge gained relating to the pervasive and destructive nature of fire through engaging in childhood fire play. Beliefs may develop around the utility of fire as a successful tool to destroy evidence. Furthermore, the more times fire is used to destroy evidence successfully, the more times they evade apprehension from authorities. Fire may come to

be perceived as the preferred or 'best' method. This was certainly true of the firesetters in Study 1. They spoke of fire being the preferred method of destroying evidence as, compared to other methods (e.g., dumping a car), due to the fact that: *fire is destructive, fire is quick and easy,* and *fire is more effective.* This could explain why this behaviour is so pervasive and yet fire interest is apparently absent – a problem which appears to have perplexed professionals.

Fire will get me attention

Firesetters holding this motivational script may utilise fire as a means of acquiring status or to gain recognition, as they have developed beliefs around the use of fire to gain attention. Evidence for this motivational script was seen in Study 1, with the theme *fire will get me attention*. Participants spoke of the idea that setting such a fire is dramatic, and may create a situation in which the emergency services have to attend, or crowds gather. This was encapsulated in the sub- theme *fire creates a scene.* Gannon et al. (2012) have suggested that some firesetters may set a fire in order to gain social standing or status, and cited problems with communication as a critical risk factor for such firesetting. They suggest that firesetters engaging in this form of firesetting normally aim to go undetected when setting the fire, so that they can then gain subsequent status from attempting to extinguish the fire. They proposed the concept of the "heroic" firesetters. Gannon et al. (2012) hypothesise that firesetters engaging in this form of firesetting will have problems achieving recognition in more pro-social ways. This was often referred to in Study 1, as participants, stated in order to gain attention from neglectful caregivers they would engage in firesetting behaviour, even if this resulted in negative attention.

Fire is soothing

This motivational script refers to the use of fire as a means to self-soothe, reducing unwanted negative affective states such as: loneliness, frustration, anger, and hopelessness. This was true of participants in Study 1, and the theme of *fire makes me feel better.* Both Gannon et al. (2012) and Ó Ciardha and Gannon (2011) propose that fire can be used by

firesetters in an attempt to create positive internal affect. As has already been outlined, firesetters generally lack appropriate problem solving and communication skills and can be characterised as lonely (Barracato, 1979; Bennett & Hess, 1984; Gannon et al. 2012 Inciardi, 1970; Leong, 1992; Rice & Harris, 1991; Ritchie & Huff, 1999). In addition, within Western cultures fire is met with a great deal of formality. There are limited opportunities for authorised fire play to take place (Fessler, 2006). Therefore, when such fire play does occur it may be, as Ó Ciardha and Gannon (2011) suggest, in the absence of an attentive caregiver. Through engaging in isolated fire play, and the absence of well developed problem solving and communication skills, an unhealthy relationship with fire may develop. Individuals holding this script will utilise fire to self-sooth as they believe that fire can restore positive affect.

Firesetters holding this motivational script may also have an inappropriate/serious interest in fire. Gannon et al. (2012) state that some firesetters may view fire as holding exhilarating properties, or find pleasure in setting fires due to the sensory stimulation it brings. This was true of participants in Study 1. Participants referred to the sub-themes of *I like watching fire* and *fire is exciting* as reasons for why they believed fire made them feel better. This motivational script is very similar to the fire coping script hypothesised by Gannon et al. (2012), and as such, the current motivational script should be viewed as an elaboration of Gannon et al's. (2012) fire coping script.

Motivational Scripts and Implicit Theories

When considering the concept of motivational scripts, other concepts relating to schema, such as implicit theories, can become interwoven and overlap. Whilst it is acknowledged that both scripts and implicit theories form part of an individual's overall schema, within this thesis motivational scripts are viewed distinctly different from implicit theories. Implicit theories are said to be a set of beliefs which affect how one interprets the world, and that make offending more likely (Ward, 1999). Recently, Ó Ciardha and Gannon (2011) hypothesised five implicit theories that firesetters may hold: dangerous

world, normalisation of violence, fire is a powerful tool, fire is fascinating/exciting, and fire is controllable.

In order to demonstrate the distinction between scripts and implicit theories it would be useful to examine an example of one of the hypothesised implicit theories in more detail. Ó Ciardha and Gannon (2011) argue that a firesetter may hold the implicit theory *fire is a powerful tool*. Central to this implicit theory is the idea that the firesetter feels entitled to use fire to achieve their goals. They may also hold strong cognitive representations of the relationship between power and fire. For example, a firesetter may feel they need to attract attention. If they hold the *fire is a powerful tool* implicit theory, they may feel entitled to use fire in order to do this. This differs from how motivational scripts should be viewed. Motivational scripts are knowledge structures that contain information about why to use fire. For example, the *fire is a powerful messenger* motivational script contains knowledge structures around the use of fire as a way to communicate. One such use is communicating a message of revenge. When presented with a situation in which the firesetter feels they have been wronged, due to having developed knowledge around the use of fire to communicate these feelings, the firesetter may feel motivated to use fire. Although, within this thesis, it is argued that the concepts of motivational scripts and implicit theories are distinct from each other, they should not be seen as mutually exclusive. To the contrary, this thesis would argue that firesetters who hold motivational firesetting scripts would also hold implicit theories relating to firesetting.

Dysfunctional Firesetting Expertise

Much like motivational fire scripts, it is plausible to consider that those individuals who have set multiple fires, in similar ways, and in a similar environmental context would hold some level of fire related expertise. They have had the opportunity to develop specific knowledge relating to their firesetting. It is also possible that the firesetters that hold script/s may also be considered more expert, as it has been demonstrated that scripts play an important role within expertise (Bourke et al., 2012; Nee & Ward, 2015; Rikers et al.,

2003; Schmidt et al., 1990; Ward, 1999). The subsequent section will hypothesise whether it is plausible to apply the concept of dysfunctional expertise to firesetting. The intention of hypothesising the potential for dysfunctional firesetting expertise is to provide a basis for which empirical investigation and revision can take place. It is not my intention to provide a definitive answer regarding the question of dysfunctional expertise within firesetting.

Grounding these hypotheses in the work of Nee and Ward (2015), it is proposed that firesetters demonstrate dysfunctional expertise based upon the knowledge structures and skills they have acquired. It is proposed that this knowledge and skill development may have arisen through similar mechanisms already considered in relation to scripts. These mechanisms include: childhood fire play and the continuation of this behaviour repeatedly into adolescence and adulthood, trialling various methods of destroying evidence, and associating with those who utilise fire. It is hypothesised that such knowledge structures and skills can be grouped into two categories of expertise: fire knowledge and avoiding detection.

Fire Knowledge

Fire knowledge was a prominent theme in Study 1. It is hypothesised that firesetting expertise would have developed through setting multiple fires, experimenting with various firesetting techniques. This may have started out as childhood fire play; however, this could have been become more problematic throughout adolescence and into adulthood. It is this experimentation that would enable the refinement and modification of one's firesetting technique. Much like the idea of deliberate practice proposed by Ericsson (Ericsson, 2006; Ericsson & Charness, 1994; Ericsson, Krampe, & Tesch-Römer, 1993), firesetters may also 'practice' their firesetting and as a result develop knowledge and skills regarding how to set an effective fire. Childhood fire play arose as a prominent theme in Study 1. Participants often spoke of their experimentation of fire as a child, and how this led to them learning about fire. The overarching aim of the fire may also play a role here. That is to say, dependent upon the end goal of the firesetting, the method of firesetting may

differ. For example, setting a fire to help cope with negative emotions may be different to setting a fire to send a message. When considering what constitutes expertise this could center around: the use of accelerant, setting multiple ignition points, using highly flammable material (e.g. paper, clothing etc.), and how best to contain the fire (e.g. using a metal rather than a plastic bin). These were all prominent sub-themes present in Study 1. Furthermore, multiple ignition points and the use of fuel and accelerants have been shown to predict highly dangerous firesetting behaviour (Dickens et al., 2009).

The dexterity firesetters display when setting a fire, in the pursuit of their desired goal, may often be dependent upon the above. In other words, the more 'expert' firesetters will achieve their desired goal more often due to having more experience, knowledge and skills related to the above. For example, an individual setting a fire to self sooth may choose to refrain from using accelerant, set only one ignition point, using paper, and set the fire in a metal bin as they want to watch the fire in a 'contained' way. An individual setting a fire to send a powerful message, however, may use an accelerant (such as petrol), set multiple ignition points, ensure highly flammable materials are ignited, and make no efforts to contain the fire as they want it to be as powerful as possible. Therefore, it is important to consider that expertise may well be goal dependent. This is important to consider when looking at how best to investigate the concept of firesetting expertise in the future. The concept of familiarity, a theme from Study 1, will also play a distinctive role here. Participants from Study 1 stated that they felt setting a fire was *easy*. This may be due to the fact that expert firesetters have amassed a great deal of fire knowledge, thus they will be familiar with setting a fire.

Avoiding Detection

Some offenders may make an effort to avoid being detected during the commission of a crime (Bennett & Wright, 1984; Bourke et al., 2012; Stevenson, Forsythe and Weatherburn, 2001). For example, Stevenson et al. (2001) found that around 40% ($n = 67$) of the imprisoned burglars they spoke to avoided detection by trading their stolen goods

with a trusted dealer. They also found around 35% ($n = 58$) employed one or more physical measures. These included: making phone contact with the dealer prior to arrival; avoiding being seen; not acting nervously; concealing the stolen goods (e.g. in a rucksack); using a radio scanner; using a middleman and having fake identification. However, Bennett and Wright (1984) found when interviewing imprisoned property offenders, that around 50% of those interviewed did not think about getting caught prior to committing a burglary. Therefore, there appears to be some variability in the thought given to avoiding detection.

Bourke et al. (2012) argued that expert sexual offenders might avoid detection over many years, allowing for the execution of many offences. The theme of avoiding detection was found as a theme in Study 1. Furthermore, the use of involving acquaintances/criminal associates to acquire specific items needed to set the fire (e.g. petrol) was found as a sub-theme. When considering what types of avoidance techniques firesetters might utilise, in addition to the sue of an acquaintance, could include: choosing a secluded or quiet area to set a fire, an awareness of Closed-Circuit Television (CCTV), or the existence of a firesetting toolkit which may include the tools needed to set a fire (e.g. a lighter and accelerant).

As previously argued, in relation to fire knowledge, the intended goal of the firesetting may be important here. For example, if the goal was to destroy evidence of a previous crime by using fire, an offender may have in advance purchased the petrol and identified a secluded area in which to set the fire. If the motivation of the fire is to send a message to somebody an awareness of involving an accomplice may demonstrate a higher level of expertise. For example, if the accomplice purchases the petrol the expert firesetter can ensure there is no CCTV evidence of them purchasing the petrol. This allows the offender to distance themselves from the incident should they be questioned about it at a later date, avoiding detection. One would expect an expert to engage in more of the techniques to avoid detection than somebody with less expertise in setting fires. However, it is important to make a distinction, not all firesetters will engage in avoidance techniques.

Some firesetters, like those who set a fire as a cry for help, believe that the fire will help them to gain help, and so would not seek to avoid detection.

Important to consider is that there is likely to be a strong element of automaticity in firesetting expertise. Automaticity was a prominent theme in Study 1. In other words, more expert firesetters may be better able at processing cues in their environment. For example, an expert firesetter, who is attempting to destroy evidence, may automatically process the presence of accelerant within the vicinity which may trigger him/her to use fire to destroy the evidence. However, a novice or non-firesetter may not automatically recognise the potential value of the accelerant and so may attempt to destroy the evidence using other methods.

Conceptualising the Relationship Between Motivational Firesetting Scripts and Firesetting Dysfunctional Expertise

Ward (1999) and Nee and Ward (2015) argue that an expert has often developed behavioural scripts that allow for quicker, more automated decision making when processing information. When applying this to sexual offenders Ward (1999) and Bourke et al. (2012) both argue that sexual offenders will often hold multiple scripts about different elements of an offence. The scripts, or behavioural guides, contain information about how and what order to perform certain actions and what the likely outcome of such actions would be. These scripts allow for the successful execution of an offence, thus demonstrating expertise.

However, within this thesis, it is proposed that the offence related scripts cannot be readily applied to firesetting behaviour. Within the domain of firesetting, a different conceptualisation of the relationship between scripts and expertise is proposed. As proposed earlier, motivational firesetting scripts represent *why* firesetters set a fire and firesetting expertise refers to *how* they achieve that successfully. That is to say the activation of the motivational script does not cause the subsequent offence to be perpetrated more smoothly. Rather the motivational script provides the knowledge of when

is an appropriate opportunity to commit the offence due to development of beliefs about fire, and the knowledge and skills developed through previous firesetting are responsible for its successful commission (demonstrating dysfunctional expertise). An example might be an individual who is experiencing strong negative emotions, such as depression. From an early age they have used fire as a way to sooth such negative affect. Therefore, they have developed beliefs around the use of fire to sooth themselves and restore their positive affect. This represents *why*. Now to the *how*. This individual has set multiple fires throughout their life as way to restore positive affect. They have in essence engaged in deliberate practice; developing and refining the way in which they set a fire. Thus, when they decide to set a fire, they have an acute awareness of *how* to set it to achieve their goal. Therefore, they may simply set fire to some paper in a metal bin as through experience they have developed an understanding that the paper is easily set alight and the metal bin allows for the fire to be 'contained'.

It is important to note that the conceptualisations of offence scripts and expertise relating to sexual offending, hypothesised by Ward (1999) and Bourke et al. (2012), are not being challenged. It is just proposed that the interplay between scripts and expertise in the firesetting domain to be different. However, although differences exist between my suggestion and those of Ward (1999) and Bourke et al. (2012) there are also some similarities. First, as I mentioned previously, I agree that there is a level of automaticity within expertise. That is to say that the most expert firesetters are likely to automatically process environmental cues which can assist them in the firesetting process. Second, like Nee and Ward (2015), it is also proposed that there exists a continuum of expertise in firesetting, with entirely novice at one end and expert at the other. It is conceptualised that an entirely novice firesetter would: not be well experienced; not hold any motivational firesetting scripts; not have been involved with fire play in childhood any more than the average child and subsequently would not have engaged in regular firesetting, or deliberate practice, as adolescent or adult. Their adulthood firesetting is likely to be an isolated

incident. An example might be using fire in an attempt to destroy evidence. This may have arisen out of a sense of urgency to destroy the evidence or perhaps through the suggestion of a co-defendant. However, it is conceptualised that an expert firesetter would hold a lot of experience with firesetting. They would hold multiple motivational fire scripts. They would have been involved with extensive fire play as a child perhaps multiple times a day, every day. Subsequently their firesetting is likely to have continued into adolescence and adulthood where they would have engaged in regular firesetting, or deliberate practice. Their adult firesetting history is likely to be extensive and they will often utilise fire in the achievement of goals, whether this is to self-soothe, send a message, or to destroy evidence.

Conclusions

The aim of this chapter was to be able to articulate hypotheses pertaining to the content, structure and etiological functions of motivational firesetting scripts and expertise, allowing for subsequent empirical investigation of these concepts. It is evident that from the conceptualisations outlined above, derived from existing firesetting literature and the findings from Study 1 that firesetters may hold specific motivational scripts relating to fire, contributing to why fire is utilised in a given situation. However, the preliminary firesetting scripts do not appear to fit into the dichotomous classification of procedural knowledge or behavioural guides. Instead, the scripts hypothesised in this thesis take the form of motivational beliefs about firesetting. Motivational firesetting scripts can be understood as a set of beliefs about fire that allow an individual to know when it is appropriate to use fire. The findings from this study also echoed the key components of automaticity and deliberate practice considered integral to the concept of dysfunctional expertise as outlined in Chapter Three. These concepts may provide promise when considering how to improve the improvised areas of firesetting assessment and treatment, and understand why acts of deliberate firesetting occur in the absence of fire interest. Therefore, the following chapter will, for the first time, empirically investigate the

existence of motivational scripts and dysfunctional firesetting expertise. The following study will also explore how these concepts interact with the concept of fire interest given its importance in current theories of firesetting (Fineman, 1980; 1995; Jackson et al., 1987). Importantly, the term script will be used throughout the remainder of this thesis, however, it is in reference to the motivational scripts outlined in this chapter.

Chapter Seven Study 2: An Empirical Investigation of the Scripts and Expertise Held by Firesetters and their Relationship to the Four Factor Fire Scales

Introduction

As outlined in Chapter One, most current theories of firesetting fail to account for the role of cognition and proficiency. Instead, they place a heavy reliance on the concept of fire interest to explain deliberate acts of firesetting. Such an oversight stands in stark contrast to the fact that cognition and behavioural factors, such as proficiency, have been shown to be important explanatory factors in other offending domains (see Chapters Two and Three). However, preliminary qualitative investigation in Study 1 provided promising initial findings for the concept of firesetting cognition (i.e., scripts) and proficiency (i.e., expertise), which warrant further empirical investigation.

The results from Study 1 were synthesised into a series of conceptualisations regarding firesetting scripts and expertise. In summary, four firesetting scripts were proposed. First, the *fire is a powerful messenger of either revenge/warning or distress/'cry for help'* script, hypothesised to be used by an individual who utilises fire to rectify situations where they believe they have been wronged or to satisfy an unmet need, such as a need for attention or to reduce feelings of depression. Second, the *fire is the best way to destroy evidence* script refers to knowledge structures around the use of fire to destroy evidence generated through engaging in criminal acts. Third, the *fire will get me attention* script, relates to setting a fire in order to gain some attention or recognition. Finally, the *fire is soothing* script relates to when an individual experiences negative emotions and utilises fire to self-soothe and restore their positive affect. These four goal orientated scripts are hypothesised to explain *why* a firesetter would use fire in a given situation, guiding an individual to know when it is appropriate to use fire.

With regards to expertise, it was conceptualised that firesetters possess expertise in two clear domains: fire knowledge and avoiding detection. Fire knowledge refers to the

firesetter holding knowledge/expertise about how to set the most proficient fire in a given situation. For example, setting a fire to destroy evidence may require the use of an accelerant and multiple ignition points to increase the speed and intensity of the fire. However, setting a fire to self soothe, may require a much smaller, more 'contained' fire. The second area of expertise, avoiding detection, refers to utilising techniques that will allow one to avoid being detected during the commission of a fire. These techniques could include: choosing a secluded or quiet area to set a fire, involving acquaintances/ criminal associates to acquire specific items needed to set the fire (e.g., petrol), an awareness of Closed Circuit Television (CCTV), or the existence of a firesetting toolkit which may include the tools needed to set a fire (e.g. a lighter and accelerant). Furthermore, the concepts of automaticity, deliberate practice, and familiarity were also key to firesetting expertise.

In addition, this research seeks to quantitatively investigate how the novel concepts of scripts and expertise interact with more established concepts related to firesetting behaviour, namely fire-related variables. Previous research has shown that, relative to non-firesetting comparisons including offenders, firesetters report higher levels of serious fire interest, normalise fire more, identify with fire more, and report lower levels of fire safety awareness (Clare, Murphy, Cox, & Chaplin, 1992; Dickens et al., 2009; Gannon et al, 2013; Gannon et al., 2015; Haines, Lambie, & Seymour, 2006; Ó Ciardha et al., 2014; Taylor, Thorne, Robertson & Avery, 2002). In fact, serious fire interest has been identified as one of the most successful predictors for distinguishing firesetters and non-firesetters (Gannon et al., 2013; Tyler, Gannon, Dickens, & Lockerbie, 2015). Serious fire interest, as well as viewing firesetting as normal, identification with fire, and perceived fire safety awareness are measured using the Four Factor Fire Scales (Ó Ciardha et al, 2014). The Four Factor Fire Scales combines items from the *Fire Interest Rating Scale* (Murphy & Clare, 1996), *Fire Attitude Scale* (Muckley, 1997), and *Identification with Fire Questionnaire* (Gannon, Ó Ciardha, & Barnoux, 2011). Ó Ciardha et al's. (2014) factor

analysis demonstrated that The Four Factor Fire Scales was able to successfully discriminate firesetting individuals from non-firesetting individuals (see also Gannon et al, 2013; Gannon et al., 2015).

Furthermore, research within clinical psychology, especially Social Learning Theory, suggests that firesetting is a product of learning through imitation and reinforcement (Bandura, 1976; Gannon & Pina, 2010; Kolko & Kazdin, 1986; Macht & Mack, 1968; Singer & Hensley, 2004; Vreeland & Levin, 1980). This learning occurs through both the positive reinforcement of fire (e.g., sensory excitement elicited by fire, the fanfare associated with a fire, or misplaced praise bestowed upon the firesetter for fighting the fire; Gannon & Pina, 2010; Vreeland & Levin, 1980) and (legitimate and illegitimate) observation (e.g., a fathers occupation as a firefighter or living in a family with a history of criminal firesetting; Gannon & Pina, 2010; Macht & Mack, 1968; Rice & Harris, 1991). Therefore, as outlined in Chapter 1 although scripts and expertise may be important in explaining firesetting behaviour that occurs in the absence of fire interest, the nature of this is still to be explored. Consequently, this study will seek to investigate the relationship between fire-related variables and scripts and expertise.

As outlined above, to further validate the initial findings from Study 1, this study will quantitatively investigate whether firesetters, compared with other participants, hold specific scripts relating to fire and demonstrate expertise in relation to their firesetting offending, as well explore the relationship between these concepts and fire related variables. This research is unique as, for the first time, fire service professionals (FSP) are being used as a comparison group. Given FSPs' vast experience with fire, it is plausible to expect to find some similarities between FSP and firesetters in concepts such as expertise and the fire related variables. This will be outlined in more detail below.

A number of hypotheses will be explored in this study. First, it is hypothesised that firesetters will report the highest levels of serious fire interest, normalise fire more, and identify with fire more, relative to offender and community comparisons. Second, whilst it

is anticipated that FSP will show elevated levels of serious fire interest that might also separate them from offender and community comparisons, it is not expected to be as elevated as that shown by individuals who set deliberate fires. Third, it is hypothesised that FSP, given their role, will possess the highest levels of fire safety awareness, relative to offender and community comparisons and firesetters, with firesetters possessing the lowest levels of fire safety awareness of any participant group. With regards to the other fire related variables of normalisation of fire and identification with fire, FSPs' scores compared to other participant groups will be explored. Fourth, with regards to scripts, it is hypothesised that compared to offender comparisons and community comparisons, firesetters will hold more firesetting scripts. The number of scripts held by FSPs' will be explored. Fifth, in line with the continuum of expertise proposed by Nee and Ward (2015), it is hypothesised that firesetters will possess more expertise than both offender and community comparisons. However, given FSPs' extensive knowledge about fire, and its acquisition, it is hypothesised that FSP may also occupy the expert end of the continuum. Finally, this study will explore whether The Four Fire Factor Scale can predict the presence of firesetting scripts and expertise.

Method

Participants

The sample consisted of 127 male participants (34 firesetters, 34 offender comparisons, 34 FSP, and 25 community comparisons). Firesetters were recruited from one English prison establishment in the South East of England ($n = 25$ firesetters from this study also participated in Study 1). Participants were selected from institutional file records indicating either a current or previous conviction for a firesetting offence (i.e., Arson; $n = 24$), fire used in the commission of a wider offence ($n = 4$), or prison firesetting activity (e.g., prison documented cell fires; $n = 6$). Fifteen participants were repeat firesetters and had received a previous conviction for a firesetting offence, ranging from 1 ($n = 9$) to 9 ($n = 1$) previous offences. Their security information was reviewed and any participant who

had a security alert relating to risk of hostage taking or risk to female staff were excluded. A further 29 firesetters were approached, but declined to take part (i.e., there was a firesetter participation rate of 54%).

Offender comparisons were recruited from the same English prison establishment, and were individuals who had received a conviction for a non-firesetting offence, held no previous firesetting conviction, or recorded history of firesetting. These participants were recruited randomly by searching for all prisoners located on each wing of the prison and then selecting every fifth name on the list generated. Again, security information was reviewed and any participant who had a security alert relating to risk of hostage taking or risk to female staff were excluded. Participants had either an index offence relating to violence ($n = 21$), theft ($n = 7$), drugs ($n = 4$) or property ($n = 2$). A further 19 offender comparisons were approached, but declined to take part (i.e., there was an offender comparison participation rate of 64%). None of the offender comparisons in this study participated in any other studies in this thesis.

FSP were recruited from three Fire and Rescue Services in the South East of England. Information about the study was cascaded through attending regional meetings, and the inclusion of the study in a multi-regional fire service newsletter. Individual participants were then identified with the assistance of a member of the Fire and Rescue service. All FSPs were current employees of the Fire and Rescue Service (M length of service = 21 years, $SD = 7.35$). All FSP who were approached agreed to take part (i.e., there was a FSP participation rate of 100%).

Community comparisons were recruited from two counties in the South East of England. Participants responded to advertisements placed in local community centres, supermarkets, University campus, and research participation websites. In order to maximise the similarity in demographic characteristics across participant groups (e.g., age and level of education) university students were not permitted to take part in the study. As community comparisons self-selected there was a participation rate of 100%.

In order to be eligible for participation, all participants were required to comprehend and speak English sufficiently to read and understand questionnaires. All non-firesetting participants (i.e., offender comparisons, FSP, and community comparisons) were screened for previous instances of firesetting. Participants were asked "Have you ever set a deliberate fire?". All non-firesetting participants answered "no" to this question.

One-way analysis of variances (ANOVAs) with Games-Howell post hoc testing and Chi-Square tests of independence were performed on important demographic information to explore the differences between the participant groups. An ANOVA indicated that participants differed significantly in age, $F(3, 123) = 3.41$, $p = .02$, $\eta_p^2 = .08$. Games – Howell post-hoc[1] testing revealed that firesetters were significantly younger than FSP ($p < .01$, $d = 0.90$) as were offender comparisons ($p < .05$, $d = 0.63$). Groups also significantly differed on years spent in formal education, $F(3, 123) = 15.87$, $p < .001$, $\eta_p^2 = .28$ with firesetters and offender comparisons self-reporting significantly lower numbers of years in education relative to FSP ($p < .001$, $d = 1.07$ and $p < .001$, $d = 0.78$ respectively) and community comparisons ($p < .001$, $d = 1.46$ and $p < .001$, $d = 1.24$ respectively). Furthermore, community comparisons self-reported a significantly higher number of years in education relative to FSP ($p < .05$, $d = 0.82$). Participants also differed significantly on ethnicity, $\chi^2 (3, N = 127) = 21.52$, $p < .001$, $\varphi_c = .41$[2]. Post-hoc testing using adjusted z scores and Bonferroni adjusted alpha levels highlighted that offender comparisons were less likely to report being White British than expected by chance ($p < .05$). Participant groups also differed significantly on their engagement with mental health services, $\chi^2 (3, N = 127) = 44.32$, $p < .001$, $\varphi_c = .59$. Adjusted z scores and a Bonferroni correction highlighted that offender comparisons and FSPs reported lower levels of engagement with mental health services than expected by chance ($p < .05$), as did community comparisons (p

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[1]Games-Howell post hoc testing was applied since equal variance could not be assumed.

[2] Although the expected count for the number of BAME community controls was less than 5 (12.5% of all expected counts), the rule of thumb of "No more than 20% of the expected counts are less than 5 and all individual counts are 1 or greater" (Yates, Moore & McCabe, 1999, p. 734) was applied.

<.01). However, firesetters reported higher levels of engagement with mental health services than expected by chance ($p <.001$; see Table 7.1). However, Ducat, Ogloff & McEwan (2015) have shown mental health problems are a known characteristic of firesetters, and so this finding is to be expected. Participants did not differ on their levels of engagement with offender behaviour programmes, χ^2 (1, $N =68$) $= .36$, $p =.55$, $\varphi =.$ -07.

Table 7.1

Study 2 Demographic Information

Variable	Firesetter	Offender Comparison	Fire Service Personnel (FSP)	Community Comparison	$F(3, 120)$ $\chi^2(3, N = 127)$ $\chi^2(1, N = 68)$
Age (Years) *M (SD)*	35.41 (10.77)	37.03 (12.05)	43.68 (7.46)	37.44 (15.31)	3.41*
Formal Education (Years) *M (SD)*	9.24 (3.46)	10.09 (3.31)	12.09 (1.46)	14.16 (3.28)	15.87**
Ethnicity					
White UK/Irish % (*n*)	82.4 (28)	58.8 (23)	97.10 (33)	96.00 (24)	21.52**
BME % (*n*)	17.60 (6)	41.20 (14)	2.90 (1)	4.00 (1)	
Engagement with Mental Health Services					
Yes % (*n*)	79.40 (27)	20.60 (7)	20.60 (7)	8.00 (2)	44.32**
No % (*n*)	20.60 (7)	79.40 (27)	79.40 (27)	92.00 (23)	
Engaged with Offender Behaviour Programmes					
Yes % (*n*)	82.40 (28)	76.50 (26)	-	-	.36
No % (*n*)	17.60 (6)	23.50 (8)			

*p < .05 **p < .001
Note. Participants' engagement with mental health services was measured by asking participants "Have you ever engaged with mental health services before?".
Participants' engagement with offender behaviour programmes was measured by asking participants "Have you ever taken part in any type of treatment programme for your offending?"

Measures

All measures were presented in a randomised order to participants. Internal reliability scores are reported according to the following criteria (George & Mallery, 2003): ≥ .90 excellent, .89 to ≥ .80 good, .79 to ≥ .70 acceptable, and .69 to .60 questionable.

Impression Management. The *Impression Management Scale* (IM) of the Paulhus Deception Scales (Paulhus, 1991) is a self-report measure of intentional fake good responses. The scale consists of 20 self-report items (e.g., "I never drive faster than the speed limit") rated on a 5-point scale (1 = not true, 5 = very true). The IM has been used extensively with offending populations (Paulhus, 1991), and has established psychometric properties. In the current study, measure reliability was acceptable ($\alpha = .72$). Each test was hand scored, and then checked using a computer algorithm for accuracy.

Fire-Related Measures. As directed by Ó Ciardha, Tyler, and Gannon (2016), three pre-existing questionnaires were administered to obtain each of the subscale and total scores that constitute the Four Factor Fire Scales; the Fire Interest Rating Scale (Murphy & Clare, 1996), the Fire Attitude Scale (Muckley, 1997), and the Identification with Fire Scale (Gannon et al., 2011; see Appendix Three). Ó Ciardha et al's (2014) factor analysis demonstrated that The Four Factor Fire Scales (identification with fire, serious fire interest, perceived fire safety, and firesetting as normal) discriminated firesetting individuals from non-firesetting individuals (see also Gannon et al., 2013) and had good internal consistency (αs = .88, .86, .68, .73 respectively; Gannon et al., 2013). The summed total score of these items is also reported to hold excellent internal consistency ($\alpha = .90$; see Gannon et al., 2015). This measure was scored using a computer algorithm designed from Ó Ciardha et al's. (2016) scoring sheet. There were varying reliability scores for each of the subscales. Identification with fire and serious fire interest exhibited good internal consistency, whereas both fire safety awareness and firesetting as normal exhibited questionable reliability (see Table 7.2).

Firesetting Script Generation Measure. This measure was adapted from Cazalis, Azouvi, Sirigu, Agar, and Burnod (2001), who utilised a script generation method to assess the script knowledge of participants after they suffered a Traumatic Brain Injury. Cazalis et al. (2001) asked participants to generate scripts relating to three different activities, differing in degree of familiarity: *Routine* ("preparing to go to work in the morning"), *Non-routine* ("taking a trip to Mexico"), and *Novel* ("opening a beauty salon"). Participants were asked to generate the script for each activity by stating the different individual actions/steps necessary to achieve the proposed goal. Additionally, each participant was asked to evaluate how important each step was, on a 5-point rating scale (1 = *no relevance at all*; 5 = *very important*), to the completion of goal.

In the current study, this script generation method was used to assess the presence of the hypothesised scripts outlined in Chapter Six (fire is a powerful messenger of either revenge/warning or a distress/'cry for help', fire destroys evidence, fire will get me attention, and fire is soothing). The scripts were presented, one-by-one, on paper, in the form of imaginary scenarios (e.g., "Imagine you wanted to send somebody a message using fire"; see Appendix Four for a full list of imaginary scenarios). Similar to Cazalis et al.'s study (2001), participants were asked to state the different individual actions/steps necessary to achieve the proposed goal, in this case setting a fire. Importantly, however, instead of asking participants to rate how important they thought each step was, in the current study participants were required to explain *why* they had included each step. As hypothesised in Chapter Six, a script can explain *why* somebody would use fire in order to solve a problem. Therefore, asking participants to explain *why* they had included each step was used to establish whether the participant held that script.

Participants were given an example scenario that had been completed to demonstrate what they were required to do:

> "Here is an example of somebody ordering a drink at a bar, and the steps they would need to take in order to do this:
> Step 1 - You walk into a Wetherspoons and walk up to the bar

> WHY – because you know you have to order your drink
> at the bar
> Step 2 – You wait in the queue to be served
> WHY – because you know you have to wait your turn
> Step 3 – You tell the person behind the bar what you want
> WHY – because you know that you have tell to them so that
> they can make your drink
> Step 4 – You pay for your drink
> WHY – because you know you have to pay in order to
> get your drink"

After being shown the example imaginary scenario participants were then presented with the four fire imaginary scenarios, representing the four scripts, for them to complete. An example response given by a participant to the imaginary scenario "Imagine you wanted to send somebody a message using fire" was:

> "*Step 1* – I would choose to set fire to their house.
> *Why* – Because setting fire to somebody's home means
> they'll get the message that you are serious. You mean
> business when you set someone's house on fire, you know
> what I mean?
>
> *Step 2* – I would get petrol from the garage and pour it through
> their letterbox.
> *Why* – Using petrol means you ain't messing about. They'll
> get the message alright.
>
> *Step 3* – I would light a rag and throw it through the
> letterbox.
> *Why* – To light the petrol. Using a rag would be safer
> than using a lighter.
>
> *Step 4* – I would run away as fast as I could.
> *Why* – Because I ain't getting caught for it."

This measure was scored, using scoring instructions, by two independent raters. The two raters were chosen due to experience of working clinically with firesetters, as well as conducting research in the firesetting field. One rater held an MSc in Forensic Psychology and one a doctorate in Forensic Psychology, and so were deemed competent. Both were entirely independent to the research being conducted. The scoring instructions were derived from clinical experience, the results from Study 1, and literature pertaining to expertise in other domains.

The raters were asked to give each scenario a score of either '0' (script absent) or '1' (script present). A '0' was awarded if the participant provided no answer (i.e., they were unable to see how fire could be used in that situation), little information was given as to *why* they had included a step, or their answer was strikingly different from the guidelines for that scenario (see below). A '1' was awarded when the participant clearly articulated why they had included each step, and it closely matched the guidelines for that scenario. The scoring guidelines provided to raters for the scenario above were:

> "Did the participant clearly articulate that they would use
>
> fire to send a message of revenge or a warning? Did the
>
> participant clearly articulate that they thought fire was a
>
> powerful way to send a message? Did the participant endorse
>
> that using fire means the victim will get the message?"

Instances of disagreement regarding the absence/presence of a script were rectified through the author facilitating a discussion between the two raters. Each rater was asked to explain their rationale for a specific score, and then encouraged to consider the merits of the others' rationale. Raters had to come to a unanimous decision of the absence or presence of a script, although this was not possible for three cases (0.6%, $n = 3$ of all cases rated) and so the author decided whether the script was present or absent. Then a total score, ranging from 0 to 4, was calculated for each participant by adding together the agreed score from all four imaginary scenarios and then dividing that combined score by four. A higher score represented a higher number of scripts held by that participant. The average script score for each participant group can be seen in Table 7.2. According to Landis and Koch (1977), the pre discussion interrater agreement for the presence of scripts was substantial (Kappa = 0.78, $p <. 001$), with the post discussion level being almost perfect (Kappa = 0.93, $p <.001$; see Table 7.2).

Expertise Scenario Solving Measure. Utilising principles derived from successful measures used with burglars (Nee & Taylor, 1988; Taylor & Nee, 1988), this measure

sought to assess the presence of firesetting expertise amongst participants. As scripts and expertise are hypothesised to be complimentary concepts, the scenarios mirrored the four scripts outlined earlier (fire is a powerful messenger of revenge/warning or distress/'cry for help', fire destroys evidence, fire will get me attention, and fire is soothing). The participants were presented with eight imaginary scenarios, such as:

> "Imagine, you have stolen a car with your friend, you've driven around in it for a while and now you have decided you need to dump it and get rid of the evidence".

Participants were required to imagine *how* they would solve the scenario using fire. This was to establish the level of expertise a participant held (see Appendix Five for a full list of scenarios). As outlined in Chapter Six, expertise represents *how* somebody would use fire in a given situation. An example response provided by a participant was:

> "I would drive the car to a secluded location. Put a rag in the petrol cap, and then set the rag a light with a lighter".

This measure was scored, using scoring instructions, by the same two independent raters as listed above. The scoring instructions provided to raters for the scenario above were:

> "Did the participant show a consideration of the location, preferably secluded? Did the participant use accelerant to increase intensity/speed of fire? Did the participant show an awareness of where they were obtaining accelerant? Did the participant make use of materials that were already present at the scene? Did the participant set fire to highly flammable material (e.g. car seats etc.)? Did the participant set multiple ignition points? Did the participant demonstrate an awareness of their own safety (e.g. using a 'wick' or trail to start fire)? Consideration of some/all of these points demonstrates

a higher level of expertise".

Again, scoring instructions were derived from clinical experience, literature pertaining to expertise in other domains, and the results from Study 1. For example, participants in Study 1 discussed the use of accelerants, utilising materials found at the scene, and setting multiple ignition points. The raters were asked to give each scenario a score between 0 – 10. Whereby '0' represented no demonstration of expertise and '10' represented a very expert answer. A score of '0' was always awarded if no answer was provided. Raters were invited to use the whole length of the scale, and they awarded a score based on how well the participant's answer matched the explanation given in the scoring instructions (see above and Appendix Five).

Raters were allowed to differ by a maximum of four points, as the scale ranged from 0 – 10, and as such represented a gradient approach to rating expertise. A total expertise score, ranging from 0-10, was created for each participant by averaging the two raters' scores, adding that averaged score for all 8 scenarios together, and then dividing by 8. Higher scores indicated a higher level of expertise. The average expertise score for each participant group can be seen in Table 7.2.

Instances of disagreement regarding the expertise score, similar to the presence/absence of a script, was rectified through the author facilitating a discussion between the two raters. Each rater was asked to explain their rationale for a specific score, and then encouraged to consider the merits of the others' rationale, and either one or both raters amend their score to within four points. Interrater agreement for the level of expertise, pre discussion (Kappa = .03, p = .04) and post discussion interrater agreement (Kappa = .04, p = .007; see Table 7.2) was considered to be a fair level of agreement according to Landis and Koch's (1977). However, given that the two raters were allowed to disagree by a total of four points without needing to amend their rating, and Kappa is sensitive to instances of invariance, the absolute level of agreement was also calculated. This was calculated by including all instances whereby raters disagreed by four or less

points as agreement on a given scenario, and any instances whereby the rater disagreed by more than four points, on a given scenario, as disagreement. Pre discussion the level of agreement showed that raters agreed on 92% ($n = 935$) of all scenarios rated, and post discussion agreement showed that raters agreed on 96% ($n = 975$) of all scenarios rated.

Procedure

All participants were assessed in one-on-one sessions (lasting approximately 45 minutes) so that study materials could be read aloud in order to maximise comprehension. The research was completed in an office either on the prison wing (firesetters and offender comparisons), at the fire station (FSP), or on the University campus (community comparisons). Participants provided written informed consent, key demographic information, and completed the questionnaires and imaginary scenarios. Participants were told that the study was investigating how and why firesetting behaviour occurs.

Ethics

The study was reviewed and approved ethically by the University Research Ethics Committee (REF 20143556). Participants were asked to suggest how they may set an imaginary fire, which could be considered to be asking participants to think in a pro-criminal manner. Therefore, all participants were fully debriefed, with emphasis placed on the negative consequences of firesetting behaviour (e.g., death, injury, and property damage).

<div align="center">

Results

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Power Analyses and Analysis Strategy

G*Power (Version 3.1; Faul, Erdfelder, Land, & Buchner, 2007; with at least 95% power and $\alpha = .05$) indicated that a total sample size of 127 participants would be required to conduct a multivariate analysis of covariance (MANCOVA) and detect a medium to large interaction effect (.21), a total sample size of 123 would be required to conduct each follow up univariate test and detect a medium to large effect (.38). Finally a total of sample size of 59 participants would be required to conduct each zero order correlation and detect a medium

to large effect (.40), and a total sample size of 81 participants would be required to conduct each multiple regression and detect a medium to large effect (.20). Thus, the current sample size was adequate for each planned analysis. The use of medium to large interaction effects is in line with previous research examining scripts and expertise (i.e., Krahe & Tomaszewska-Jedrysiak, 2011; Topalli, 2005; van Gelder et al., 2017; Wright et al., 1995).

Whilst ethnicity differed significantly between the four groups, there is no theoretical reason to believe that ethnicity would be linked with the measures, therefore, ethnicity was not entered as a covariate into the analysis. Furthermore, whilst years in education differed significantly between the four groups, years in education was not correlated with any of the dependent variables and, as such, was not entered as a covariate into the analysis[3]. There were no significant group differences on impression management scores, $F(3, 123) = 2.42$, $p = .07$, $\eta_p^2 = .06$. Furthermore, social desirability bias is now understood to be a sign of positive adjustment and therefore correlated with reduced risk, rather than a sign of antisocial behaviour. Correcting for it is seldom helpful since it removes variance that is shared with content variables (Mills, Loza, & Kroner, 2003; Uziel, 2010)[4]. Therefore, the following reported results represent scores unadjusted for the effects of impression management. However, age was entered as a covariate in the analysis as groups significantly differed in this regard, $F(3, 123) = 3.41$, $p = .02$, $\eta_p^2 = .08$, with firesetters being younger than FSP. Age is an important covariate, as age of first firesetting conviction is a risk factor for repeated firesetting (Rice & Harris, 1996).

To compare scores on the Four Fire Factor Scales (Ó Ciardha et al's., 2014), and establish the presence of firesetting scripts and expertise, differences between participant groups (i.e., firesetters, offender comparisons, FSP, and community comparisons) were examined using a multivariate analysis of covariance (MANCOVA) with follow up

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[3] Repetition of the forthcoming analysis with years in education entered as a covariate did not alter the results.
[4] Nevertheless, repetition of the forthcoming analysis with Impression Management entered as a covariate did not alter the results.

univariate analyses of covariance (ANCOVAs), a well as separate ANCOVAs, Chi-Square tests of independence, zero order correlations, and multiple regressions. A MANCOVA was conducted on the Four Fire Factor Scales (Ó Ciardha et al's., 2014) with fire identification, serious fire interest, fire safety, and firesetting as normal scores entered as the four dependent variables, and age entered as covariate. An ANCOVA, with age entered as a covariate, was conducted, on the script measure, with subsequent Chi-Square tests to investigate the presence or absence of the four scripts (i.e., fire is a powerful messenger, fire destroys evidence, fire gets me attention, and fire makes me feel better). An ANCOVA was also conducted on the expertise measure, with expertise entered as a dependent variable, in order to determine the existence of a continuum of expertise, with age entered as a covariate. Finally, to investigate the relationship between scripts, expertise, and the Four Fire Factor Scales, zero order correlations were conducted along with two multiple regressions. Factors on the Four Fire Factor Scales that were significantly correlated with scripts and expertise scores were entered simultaneously as predictors and the number of scripts and expertise as separate dependent variables.

The Four Fire Factor Scales

Analysis of the Four Fire Factor Scales using a MANCOVA, as hypothesised, revealed a significant group effect $F(12, 363) = 5.34$, $p < .001$; Pillai's Trace[5] $= .45$ $\eta_p^2 = .15$. Age, $F(4, 119) = 5.21$, $p < .001$; Pillai's Trace $= 0.15$, $\eta_p^2 = .15$ was a significant covariate. Univariate analyses, controlling for age, revealed a significant effect of group on the extent to which participants identified with fire, $F(3, 122) = 14.71$, $p < .001$, $\eta_p^2 = .27$, levels of serious fire interest, $F(3, 122) = 4.09$, $p < .01$, $\eta_p^2 = .09$, and perceived fire safety awareness, $F(3, 122) = 4.42$, $p < .01$, $\eta_p^2 = .10$. However, contrary to predictions, there was no significant effect of group on viewing firesetting as normal, $F(3, 122) = .86$, $p = .47$, $\eta_p^2 = .02$.

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[5] As there was an unequal sample size and equal variance could not be assumed Phillai's Trace statistic was used.

Subsequent post hoc comparisons, with Bonferroni adjusted levels, were conducted to investigate the significant univariate analyses. Contrary to predictions, it was FSPs who significantly identified with fire more than firesetters ($p = .001$, $d = 0.94$), offender comparisons ($p < .001$, $d = 1.58$), and community comparisons ($p = .001$, $d = 1.02$). Firesetters' identification with fire was not significantly different from offender or community comparisons. Furthermore, contrary to predictions, whilst there was a significant group difference in levels of serious fire interest, subsequent post hoc comparisons failed to demonstrate significant group differences in levels of serious fire interest. However, in line with predictions, firesetters' demonstrated an elevated level of serious fire interest compared to offender comparisons', which was trending towards significance ($p = .06$), with a medium effect size ($d = .55$). Finally, in line with predictions, FSPs had significantly higher levels of self-reported fire safety awareness than firesetters ($p < .05$, $d = 0.58$) and community comparisons ($p < .01$, $d = 0.86$), but there was no significant difference between FSP and offender comparisons.

Scripts

Analysis of the total script score using an ANCOVA, with age entered as a covariate, as hypothesised, revealed a significant group effect, $F(3,122) = 7.97$, $p < .001$, $\eta_p^2 = .16$. However, age was not a significant covariate, $F(1,122) = .01$, $p = .91$, $\eta_p^2 = .00$. Subsequent post hoc comparisons, using Bonferroni adjusted alpha levels, in line with predictions, revealed that firesetters were rated to hold significantly more scripts than both offender comparisons ($p < .001$, $d = 0.94$) and community comparisons ($p < .02$, $d = 0.75$). Interestingly, although not hypothesised, FSP were also rated to hold significantly more scripts than offender comparisons ($p < .01$, $d = 0.95$)[6]. Firesetters and FSP could not be differentiated by the number of scripts held.

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[6] Although an ANCOVA is robust to assumption violations, as the data was not normally distributed and both homogeneity of regression slopes and homogeneity of variance could not be assumed a Kruskal Wallis test was conducted to ensure reliability of the ANCOVA result. The Kruskal Wallis test confirmed the above result χ^2 (3, $n = 127$) = 20.81, $p = <.001$. Follow up Mann Whitney U tests, with a Bonferroni adjustment, confirmed that firesetters ($Md = 2$, $n = 34$), on average, were rated to hold more scripts than both offender comparisons ($Md = 1$, $n = 34$; $U = 304$, $z = -3.52$, $p = <.001$, $r = -0.43$) and community comparisons ($Md = 1$,

In order to establish what scripts may be driving the significant group effect, Chi-Square tests of independence were conducted to establish the presence or absence of the four scripts (i.e., fire is a powerful messenger, fire destroys evidence, fire gets me attention, and fire is soothing), across firesetters, offender comparisons, FSP, and community comparisons[7]. A significant association was found between groups and the presence of the fire is a powerful messenger script χ^2 (1, N =127) = 18.94, p <.001, φ_c = .39. In line with predictions, post-hoc testing using adjusted z scores and Bonferroni adjusted alpha levels highlighted that, firesetters were rated as holding the script more often than expected by chance (p <.05) and offender comparisons were rated as holding the script less often than expected by chance (p <.05). Whilst a significant association was also found between groups and the presence of the fire destroys evidence script, (p = .03, Freeman-Halton-Test)[8], post hoc analysis could not identify any differences, which is arguably due to the conservativism of the applied Bonferroni correction. However, it appears as though FSP were rated as holding the script more often than expected by chance (expected count n = 31.9 and observed count n = 34). Offender comparisons, however, were rated to hold the script less often than expected by chance (expected count n = 31.9 and observed count n = 29). The other groups' expected and observed counts did not differ.

A significant association was also found between groups and the presence of the fire gets me attention script χ^2 (1, N =127) = 7.77, p = .05, φ_c = .39. Whilst, post hoc analysis could not pinpoint the source of the association, this is, again, arguably due to the conservativism of the applied Bonferroni correction. In line with predictions, firesetters were rated as holding the script more often than expected by chance (expected count n = 9.1 and observed count n = 13). FSP were also rated as holding the script more often than

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n = 25; U = 252.5, z = -2.70, p = <.01, r = -0.32), and that FSP (Md = 2, n = 34) were rated to hold more scripts than offender comparisons (U = 302, z = -3.56, p = <.001, r = -0.43).

[7] As age was a non-significant covariate in the previous ANCOVA a Cochran-Mantel-Haenszel test was not deemed necessary, and age was not included in the analysis.

[8] Freeman-Halton-Test (Freeman & Halton, 1951), an extension of the Fisher's exact test, is reported as the expected frequency for some cells were less than 5.

expected by chance (expected count $n = 9.1$ and observed count $n = 12$). Offender

comparisons and community comparisons, however, were rated to hold the script less often

than expected by chance (expected count $n = 9.1$ and observed count $n = 6$ and expected

count $n = 6.7$ and observed count $n = 3$ respectively).

Contrary to predictions no significant association was found between groups and

the presence of the fire is soothing script, χ^2 $(3, N = 127) = 7.24$, $p = .07$, $\varphi_c = .24$.

Expertise

Analysis of the presence of expertise using an ANCOVA, with age entered as a

covariate, as hypothesised, revealed a significant group effect, $F(3,122) = 25.37$, $p < .001$,

$\eta_p^2 = .38$. However, age was not a significant covariate, $F(3,122) = .03$, $p = .87$, $\eta_p^2 = .00$.

Subsequent post hoc comparisons, using Bonferroni adjusted alpha levels, in line with

predictions, revealed that firesetters held a greater level of expertise relative to offender

comparisons ($p < .001$, $d = 1.40$) and community comparisons ($p < .001$, $d = 1.05$).

Similarly, FSP also had a greater level of expertise than both offender comparisons (p

$< .001$, $d = 1.99$) and community comparisons ($p < .001$, $d = 1.59$).

Table 7.2

Comparison of Means and Estimated Marginal Means on Outcome Measures

Measures	Firesetter N = 34 M (SE) M (SD)	Offender Comparison N = 34 M (SE) M (SD)	Fire Service Personnel N = 34 M (SE) M (SD)	Community Comparison N = 25 M (SE) M (SD)	F(3, 120) χ^2 (1, N = 127)	α	κ
Fire Related Measures							
Identification with Fire (Maximum Score = 55)	18.56 (1.07)	14.61 (1.06)	24.70 (1.08)	18.40 (1.23)	14.71***	.84	-
Serious Fire Interest (Maximum Score = 35)	11.99 (.76)	9.20 (.75)	12.09 (.77)	9.42 (.88)	4.09*	.82	-
Fire Safety Awareness (Maximum Score = 30)	10.76 (.46)	10.08 (.45)	8.92 (.47)	11.32 (.53)	4.42**	.30	-
Firesetting as Normal (Maximum Score = 35)	18.32 (.70)	16.94 (.69)	17.83 (.71)	17.07 (.80)	.86	.60	-
Script Measure							
Fire is a powerful messenger	.82 (.39)	.41 (.50)	.74 (.45)	.40 (.50)	18.94**	-	.97**
Fire destroys evidence	.91 (.29)	.85 (.36)	1.00 (.00)	1.00 (.00)	-*	-	1.00**
Fire gets me attention	.38 (.49)	.18 (.39)	.35 (.49)	.12 (.33)	7.77*	-	.98**
Fire is soothing	.26 (.45)	.03 (.17)	.18 (.39)	.16 (.37)	7.24	-	.81**
Total Script Score	2.35 (.15)	1.47 (.15)	2.26 (.16)	1.64 (.18)	7.97***	-	.93**
Expertise Score	3.32 (.23)	1.53 (.23)	4.05 (.23)	1.90 (.26)	25.37**	-	.04*

Note. Higher scores on the Fire Safety Awareness Scale indicated less perceived fire safety awareness. * $p < .05$, ** $p < .01$, *** $p < .001$

The Relationship between Fire Factors, Scripts, and Expertise

      Given that this research sought to investigate whether the novel concepts of scripts and expertise could be predicted by more established concepts of fire-related variables, regression analyses were conducted in order to identify which of the factors on the Four Fire Factor Scales are able to predict the presence of scripts and expertise. Prior to conducting the regression analyses, zero order correlations were examined (see Table 7.3). The total number of scripts held was significantly associated with Identification with Fire ($p < .01$), and Serious Fire Interest ($p < .05$). Furthermore, the level of expertise was also significantly associated with both Identification with Fire ($p < .01$) and Serious Fire Interest ($p < .01$).

      Table 7.3

      Correlations Between Variables

	Script	Expertise	Serious Fire Interest	Identification with Fire	Fire Safety Awareness	Firesetting as Normal
Script	------					
Expertise	.54**	------				
Serious Fire Interest	.21*	.33**	------			
Identification with Fire	.39**	.45**	.29**	------		
Fire Safety Awareness	.28	.04	.31**	.02	------	
Firesetting as Normal	.08	.17	.24**	.01	.03	------

* $p < 0.05$ ** $p < 0.01$

      In two subsequent multiple regression analyses, Identification with Fire and Serious Fire Interest were entered simultaneously as predictors with number of scripts and expertise as separate dependent variables. With regards to scripts, Identification with Fire and Serious Fire Interest together accounted for 40% of the variance in script score, $F = 11.64, p < .001$. Identification with Fire ($\beta = .36, t = 4.13, p < .001$) was the only significant independent predictor of the script scores. In relation to expertise, Identification with Fire and Serious Fire Interest together accounted for 49.4% of the variance in expertise score, F

$= 20.04$, $p <.001$. Both Serious Fire Interest ($\beta = .22$, $t = 2.74$, $p <.01$) and Identification with Fire ($\beta = .38$, $t = 4.69$, $p <.001$) were significant independent predictors of the level of expertise.

Discussion

Consistent with previous research in the areas of offending scripts and expertise (Brookman, 2015; Casey, 2015; Cornish, 1994; Day & Bowen, 2015; Gagon, 1990; Huesmann, 1988; Huesmann & Eron, 1984; Nee, 2015; Ó Ciardha, 2015; Topalli, 2005; Topalli, Jacques, & Wright, 2015; Vieraitis, Copes, Powell, & Pike, 2015; Ward & Hudson, 2000; Ward & Siegert, 2002) firesetters, relative to both offender and community comparisons, were rated to have increased cognitive and behavioural efficacy. Firesetters, when compared to both offender and community comparisons, were rated to hold more fire supportive scripts and were more expert. Furthermore, as hypothesised, there was a relationship between factors of the fire factor scale (i.e., serious fire interest and identification with fire) and scripts and expertise. Namely scripts can be predicted by the extent to which one identifies with fire, and expertise can be predicted by both one's serious fire interest and identification with fire.

The idea that identification with fire was able to predict both scripts and expertise is consistent with the conceptualisations outlined in Chapter Six regarding these concepts. First, with regards to scripts, within this thesis scripts are proposed to act as behavioural guides, representing why somebody may use fire in a given situation. Therefore, it is reasonable to suggest, in line with research in clinical psychology regarding the development of behaviour (e.g., social learning theory, classical conditioning, attachment theory; Bandura, 1977; Bowlby, 1969, 1973; Schachtman & Reilly, 2011) that individuals who identify with fire more would develop scripts about fire, as firesetting is a deeply entrenched behaviour. Second, in relation to expertise, as outlined in Chapter Three, expertise refers to a superior ability in a given domain developed through engaging in many hours of deliberate practice. Therefore, it is likely that this engagement occurred due

to identification with fire. Therefore, one would expect that identification with fire would predict firesetting expertise. This may also explain why expertise could also be predicted by levels of serious fire interest. Again, one would expect that a serious interest in fire would lead to an engagement in repeated firesetting behaviour, which would result in the development of firesetting expertise.

Another key finding is the fact that firesetters could not be differentiated from other groups based upon their interest in serious fires. Whilst, on average, firesetters did report being more interested in serious fires than the other participants groups, there were no significant differences between groups. This is surprising given that fire interest has been shown to be a prevalent risk factor for firesetters (Dickens et al., 2009; Gannon et al., 2013; Gannon et al., 2015; Tyler et al., 2015). However, given that script and expertise scores were able to discriminate between firesetters and other comparison groups this may point to the idea that these concepts are more important when attempting to explain firesetting behaviour than fire interest. However, an alternative explanation for this finding may be that some of the items used to establish serious fire interest may lack the required sensitivity to be able to adequately assess serious fire interest. For example, the idea that watching a fire detailed in the news can denote serious fire interest is also questionable.

Interestingly, as hypothesised, the findings of the current study indicated that FSP scored similarly to that of firesetters on their level of demonstrated expertise and increased levels of perceived fire safety awareness. Moreover, unexpectedly, FSP scored higher on their identification with fire and serious fire interest, and could even be differentiated from the other participant groups on the former. FSPs also possessed a similar number of scripts to firesetters. How can these findings be explained?

First, with regards to scripts, as hypothesised in Chapter Six, scripts are acquired through unique learning experiences with fire. When considering FSP, it is plausible to suggest that they too will have had unique experiences with fire and hold similar cognitive information as firesetters. FSP are observing firesetting behaviour daily. Furthermore,

some FSP provide safety interventions for firesetters, and as a consequence FSP are acquiring information about *why* firesetters have used fire in a given situation. These experiences with fire will arguably lead to the development of knowledge about fire and its misuse. However, there is a key difference as to why firesetters hold this information in the form of firesetting scripts, and use fire maladaptively, and FSP do not. As Gannon et al's. (2012) M-TAFF proposes, firesetters have multiple psychological vulnerabilities that contribute to an act of firesetting. These vulnerabilities include: offence supportive attitudes (e.g., believing one is entitled to offend), problems with emotional regulation (e.g., poor emotional expression), and problems with communication (e.g., low levels of assertiveness) which all interact to create and reinforce firesetting scripts. It is the combination of holding firesetting scripts, coupled with these psychological vulnerabilities, that guide a firesetter to use fire in a given situation. However, whilst FSP hold information about fire, this information will not translate into firesetting behaviour because FSP do not possess the psychological vulnerabilities that interact with these scripts to facilitate firesetting.

With regards to expertise, again as outlined previously in Chapters Three and Five, Nee and Ward (2015) propose that expertise refers to "cognitive processes and consequent behaviour that are demonstrably superior to those new to a given domain and are based on considerable experience and honing of skills over time" (p. 2). Conceivably, FSP will have developed similar expertise in relation to fire knowledge and accumulated considerable amounts of training and direct experience of dealing with the complexities involved with different types of fires (e.g., the use of accelerant, multiple ignition points, and the use of highly flammable material). When considering the concept of avoiding detection within firesetting expertise, FSP, especially those involved in fire investigation, will have a wealth of first-hand experience in investigating fires and the methods used to avoid detection. Thus, it is credible to suggest that FSP too will have stored retrievable information in their long-term memory. Having expert knowledge about firesetting does not necessarily lead

one to set a fire. It is this expertise, coupled with the scripts and psychological vulnerabilities that leads to deliberate firesetting.

Finally, concerning FSPs' high levels of identification with fire. The role of a FSP requires daily interaction with fire. It would be almost impossible to determine whether FSP are drawn to the profession because of an identification with fire, or whether their identification with fire develops as a result of their occupation. Whilst exposure to fire on a daily basis may account for FSPs' elevated levels of identification with fire, it remains plausible to suggest that the lack of psychological vulnerabilities exhibited by FSP means that their identification with fire does not lead them to engage in firesetting behaviour. Also, this finding suggests that practitioners can be optimistic when treating individuals who highly identify with fire. This aspect, alone, need not translate into destructive firesetting behaviour. In this respect, tackling other apparent vulnerabilities for firesetting (e.g., coping deficits) and examining other ways of satisfying a one's identification with fire (e.g., through providing fire safety information to other prisoners) may be key. Possible options for treatment will be discussed in more detail in Chapter Nine.

Despite the convincing evidence found in this study for the presence of scripts and expertise, the current study does suffer from some limitations. First, as previously outlined, this study is the first attempt to empirically investigate firesetting scripts and expertise. Therefore, one cannot know with absolute certainty that the methods employed were robust enough to measure the areas under investigation. Furthermore, the scenarios used were imaginary, and required participants to engage in hypothetical activities, which is substantially different from observing the actual behaviour. However, the measures employed were adapted from previously successful methodologies used to study these concepts (Cazalis et al., 2001; Nee & Taylor, 1988; Taylor & Nee, 1988). A further limitation of the script measure is that it is relatively short, without repeated trials, and could be considered as priming participants given participants are asked to imagine setting a fire for a specific purpose (e.g., to send a message). However, as outlined in Chapter

Two, it is extremely difficult to operationalise the concept of scripts (Gilbert et al., 2013), this meant that only a limited number of trials could be used to investigate scripts and the measures used are akin to other script measures in relation to the phrasing used. For example, Grisso et al's (2000) SIV, which measures the presence of aggressive scripts, directly asks participants whether they have thoughts about physically hurting somebody.

Second, the current study only included adult male participants. Therefore, the scripts and expertise that are evident within this sample may not be applicable to other types of firesetters, for example female or mentally disorder firesetters. However, the results show promise; suggesting that firesetters hold scripts and demonstrate expertise at a greater level than that of non-firesetting offenders. It could be suggested that these concepts may not merely be the result of general criminality, but are in fact specific to firesetters.

Third, the Firesetting Safety Awareness and Firesetting as Normal subscales of the Four Fire Factor Scales (Ó Ciardha et al., 2014) exhibited questionable reliability. Further analysis showed that this might have been due to FSP answering in a way that contravened expected responses. For example, with regards to the Firesetting Safety Awareness subscale, most FSP answered 'strongly disagree' to the item 'Parents should spend money on buying a fire extinguisher'. Presumably, this is because FSP would argue that civilians should not attempt to fight the fire. However, the general assumption of the public (and of this scale) is that it would be beneficial to have a fire extinguisher in one's home. Thus, the expected response to this item should be 'strongly agree'. With regards to the Firesetting As Normal subscale, FSP and community comparisons often answered 'disagree' or 'strongly disagree' to the items 'I get bored very easily in my spare time' and 'I usually go along with what my mates decide'. Whereas firesetters and offender comparisons often answered 'agree' or strongly agree'. Presumably, FSP and community comparisons generally engage in more prosocial activities in their spare time, and are less susceptible to pressure from others. However, this scale presumes that respondents will answer 'agree' or

'strongly agree' to these items, and it is these contradictions in responding, which may well account for the poor reliability of the scales.

A final limitation of the study is that the concepts of scripts and expertise were unable to discriminate between firesetters and FSP. As outlined above, FSP, like firesetters, have had unique experiences with fire and hold similar cognitive information. Furthermore, FSP will have developed similar expertise in relation to fire knowledge and accumulated considerable amounts of training and direct experience of dealing with the complexities involved with different types of fires (e.g., the use of accelerant, multiple ignition points, and the use of highly flammable material). Therefore, it is important to remember that whilst scripts and expertise may well be important when explaining firesetting behaviour, they are not a flawless discriminator between individuals who have had a lot of experience with fire, even though these experiences differ (i.e., illegal activity vs. occupational exposure to fire).

In summary, the results of this study provide further evidence to the emerging findings that firesetters do hold specific fire related scripts and that they possess expertise in relation to their firesetting. Furthermore, given that script and expertise scores were able to discriminate between firesetters and less experienced comparison groups, and levels of serious fires interest could not, this may provide evidence that scripts and expertise are important concepts when attempting to explain firesetting behaviour, in the absence of fire interest. Future research should seek to explore and validate the presence of these concepts further. Such replication of these findings is crucial. To establish the presence of these concepts unequivocally, will be crucial in adding to the limited literature that exists regarding how best to provide treatment to individuals who set fires.

Chapter Eight 3a and 3b: An Empirical Investigation of the Expertise Held by Firesetters

Introduction

As seen in Chapter Three, the concept of dysfunctional expertise has been applied in many areas of offending behaviour, namely: burglary, carjacking, drug offences, identity theft, sexual offending, and violent offending (Bennett & Wright, 1984; Bourke et al., 2012; Casey, 2015; Jacobs, 2012, 2013; Jacobs et al., 2003; Maguire & Bennett, 1982; Nee et al., 2015; Nee & Meenaghan, 2006; Nee & Taylor, 2000; Taylor & Nee, 1988; Topalli, 2005; Topalli & Wright, 2003; Topalli et al., 2015; Vieraitis et al., 2015; Ward, 1999; Wright & Decker, 1994; Wright et al, 1995). However, its application to firesetting behaviour is novel. Preliminary evidence for the existence of dysfunctional firesetting expertise was gathered in the semi-structured interviews seen in Study 1 and quantitative evidence, in Study 2, where firesetters, relative to offender comparisons, appeared to demonstrate an increased level of expertise.

As outlined previously, in Chapter Three, Nee and Ward (2015) propose that offenders demonstrate dysfunctional expertise in their given offending domain due to the fact that expert offenders are able to: automatically recognise cues in their environment, quickly access exemplars/heuristics of offending situations stored in LTM, gathered from engaging in deliberate practice (a key facet of expertise generally; Ericsson, 2006; Simon & Chase, 1973), and offend with a great deal of automaticity. Also key to Nee and Ward's (2015) conceptualisation of dysfunctional expertise is a continuum, ranging from novice to expert, with more experienced offenders occupying the expert end of the continuum.

As seen in Chapter Six, through applying the theory of dysfunctional expertise to firesetting a series of hypotheses regarding the content, structure, and etiological functions of firesetting expertise were explored. Distinct fire knowledge held by firesetters is thought to be key to firesetting expertise, including: the use of accelerants, setting multiple ignition

points, using highly flammable material, and how best to contain the fire. In addition to fire

knowledge, avoiding detection was also hypothesised to be key to firesetting expertise.

This could take the form of: choosing a secluded or quiet area to set a fire, involving

acquaintances/criminal associates to acquire specific items needed to set the fire (e.g.

petrol), an awareness of Closed-Circuit Television (CCTV), or the existence of a firesetting

toolkit. Finally, expert firesetters were hypothesised to be able to process cues in their

environment better than novices (i.e., automaticity), find firesetting *easy* (i.e., familiarity),

and have engaged in firesetting regularly and, as such, developed and refined their skills

(i.e., deliberate practice).

Studies 3a and 3b aim to explore hypothesised facets of firesetting expertise

further, this time using more implicit measures. Study 3a and 3b use the same sample of

participants across both studies. Investigating different facets of expertise, across the same

participants, controls for the influence of individual differences. Furthermore, if evidence

for expertise is consistently found across the two studies, one can be more confident that

the phenomena exists. Studies 3a and 3b will include an offender comparison group. FSP

will no longer be used as a comparison group given that, as outlined in Study 2, scripts and

expertise are not a flawless discriminator when comparing groups who have a great deal of

experience with fire, albeit in different ways.

Study 3a

This first study seeks to explore the hypothesis that experts hold heuristics in their

domain of offending. As Nee and Ward (2015) have suggested, the availability of

heuristics allows the offender to draw upon examples of when the offence has been carried

out successfully, leading to superior performance. Such an ability is similar to the

argument proposed by Simon and Chase (1973), as discussed in Chapter Three, who found

that chess players draw upon patterns and moves held in their LTM in order to win chess

matches. The ability to be able to draw upon such heuristics, and the resulting superior performance in a given domain, allows an individual to be considered as expert.

Given Nee and Ward (2015) propose that offenders hold such heuristics in their LTM, it is plausible to suggest that when an offender encounters a situation that contravenes their successful heuristic, they will be able to recognise such a contravention. This is due to the situation failing to align with the knowledge they hold. This study seeks to investigate this concept in relation to firesetting, by providing participants with correct and incorrect fire and non-fire related scenarios.

Three key hypotheses will be explored within this study. First, as outlined above, given that expert offenders are known to hold heuristics about their offending domain, and can access such offending exemplars quickly, it is hypothesised that when firesetters are presented with scenarios that depict somebody setting a fire, they will be more likely to identify any errors in the firesetting scenarios. Second, firesetters may also be able to detect such errors more quickly (measured using reaction time data) relative to offender comparisons, given they may compare the present scenario with the heuristics held in LTM. Third, when both firesetters and offender comparisons are presented with non-fire related scenarios, there will be no such difference in error detection or reaction time between the two groups. Finally, it is hypothesised that, in line with the continuum of expertise proposed by Nee and Ward (2015), and applied to firesetting behaviour in Chapter Six, firesetters are likely to occupy the expert end of the continuum, given their vast knowledge and experience of fire. Furthermore, there is likely to be a gradient of expertise. That is to say that one-time firesetters are likely to demonstrate more expertise than offender comparisons, but, in turn, firesetters who have set multiple fires are likely to demonstrate more expertise than both offender comparisons and one-time firesetters.

Method

Participants

The sample consisted of 88 male participants across two participant groups (44 firesetters and 44 offender comparisons). Firesetters were recruited from two English prison establishments in the South East of England. Firesetters were selected from institutional file records indicating either a current or previous conviction for a firesetting offence (i.e., Arson; $n = 26$), fire used in the commission of a wider offence ($n = 3$), or prison firesetting activity (e.g., prison documented cell fires; $n = 15$). Nineteen participants were repeat firesetters, as determined by the number of previous convictions received for a firesetting offence, ranging from one ($n = 15$) to two ($n = 4$) previous offences. Security information was reviewed and any participant who had a security alert relating to risk of hostage taking or risk to female staff were excluded. A further 11 firesetters were approached, but declined to take part (i.e., there was a firesetter participation rate of 80%). Ten (23%) of the firesetters in this study participated in Studies One and Two.

Offender comparisons were recruited from the same two English prison establishments, and were individuals who had received a conviction for a non-firesetting offence, held no previous firesetting conviction, or recorded history of firesetting. This was established through a screening question for previous instances of firesetting. Participants were asked "Have you ever set a deliberate fire?". All offender comparisons answered "no" to this question. Offender comparisons were recruited randomly by using the prisoner database and searching for all prisoners located on each wing of the prison and then selecting every fifth name on the list generated. Again, their security information was reviewed and any participant who had a security alert relating to risk of hostage taking or risk to female staff were excluded. Participants had either an index offence relating to violence ($n = 23$), theft ($n = 12$), drugs ($n = 4$), firearms ($n = 4$), or another unspecified offence ($n = 1$). A further 5 offender comparisons were approached, but declined to take

part (i.e., there was an offender comparison participation rate of 90%). None of the offender comparisons in this study participated in other studies in this thesis. In order to be eligible for participation, all participants were required to comprehend and speak English sufficiently to read and understand the study materials.

Mann Whitney U tests[9] and Chi-Square tests of independence were performed on important demographic variables to explore the differences between the participant groups. Tests indicated that there were no group differences in age, $U = 798$, $z = -1.43$, $p = .15$, $r = -0.15$, years spent in education, $U = 761$, $z = -1.74$, $p = .08$, $r = -0.19$, ethnicity (White vs BME), χ^2 (1, $N = 88$) = 3.29, $p = .07$, $\varphi = .19$, or engagement in offender behaviour programmes, χ^2 (1, $N = 88$) = 1.56, $p = .21$, $\varphi = -.13$. However, participants did differ on previous engagement with mental health services χ^2 (1, $N = 88$) = 8.98, $p < .01$, $\varphi = .32$. Post-hoc testing using adjusted z scores and Bonferroni adjusted alpha levels highlighted that firesetters reported higher levels of engagement with mental health services than expected by chance, and offender comparisons reported lower levels of engagement with mental health services than expected by chance ($p < .05$; see Table 8.1). However, as outlined in Study 2, mental health problems are a known characteristic of firesetters, and thus this finding is not surprising (Ducat et al., 2015).

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[9] Mann –Whitney U tests were conducted as equal variance could not be assumed.

Table 8.1.

Study 3a and 3b Demographic Information

Variable	Firesetter	Offender Comparison	U $\chi^2\,(1, N = 88)$
Age (Years) *M (SD)*	33.05 (10.32)	36.23 (11.80)	798
Formal Education (Years) *M (SD)*	9.07 (3.50)	10.07 (.99)	761
Ethnicity			
White UK/Irish % (*n*)	86.4 (38)	70.5 (31)	3.29
BME % (*n*)	13.6 (6)	29.5 (13)	
Engaged with Offender Behaviour Programmes			
Yes % (*n*)	70.5 (31)	81.8 (36)	1.56
No % (*n*)	29.5 (13)	18.2 (8)	
Engagement with Mental Health Services			
Yes % (*n*)	61.4 (27)	29.5 (13)	8.98*
No % (*n*)	38.6 (17)	70.5 (31)	

*$p < .01$ *Note.* Participants' engagement with mental health services was measured by asking participants "Have you ever engaged with mental health services before?". Participants engagement with offender behaviour programmes was measured by asking participants "Have you ever taken part in any type of treatment programme for your offending?"

Measures

Reading Speed Measure. To eliminate the possibility that individual differences in reading speed could affect participants' reaction times on the expertise measure all participants completed a reading speed task. The task consisted of 20 sentences (10 simple-structure and 10 complex structure sentences rated by Fischler & Bloom, 1980). All sentences were presented on a laptop (see Figure 8.1). Participants were instructed to read each sentence and then press any key on the keyboard to continue. In order to ensure that the participants read the sentences, thus increasing the accuracy of the measure, a multiple choice question was presented after each sentence. Participants were instructed to read the question and then choose the correct answer from three possible answers. Reading speed, captured in seconds (to two decimal places), and accuracy for each sentence was recorded using the PsychoPy programme. Reaction time was automatically captured using Python code built into the PsychoPy programme which measured, in seconds, from the moment

the page containing the sentence was displayed until the user pressed the continue button to close that page.
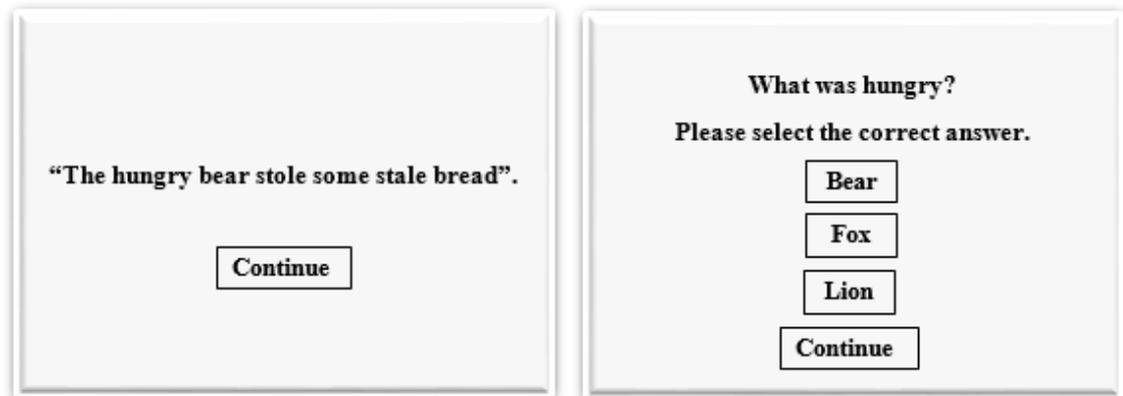
Figure 8.1. **An example of the reading speed test**

Heuristics Measure of Expertise. As outlined earlier, storing previous learning experiences and information in one's long term memory have been shown to be an important facet of expertise (Ericsson, 2006; Nee & Taylor, 2000; Simon & Chase, 1973). Specifically, Nee and Ward (2015) propose that offenders hold heuristics in their LTM of common examples of well practiced behaviour, in this case firesetting. Therefore, it is plausible to suggest that when an offender encounters a situation that contravenes their successful heuristic, they will be able to recognise such a contravention. This is due to the situation failing to align with the knowledge they hold. This measure sought to draw on this feature of expertise.

The fire scenarios within the measure were hypothetical and designed using the author's clinical experience of working with firesetters. The everyday (control) scenarios were developed through consulting with three PhD candidates about everyday tasks they may engage in. The steps included in all scenarios were constructed to ensure that they did

not imply an inherent order. Participants were presented with 22 scenarios (see Appendix Eight for a full list of scenarios), which described situations

Imagine somebody had set a bin on fire. Look at the following steps would this person have been able to set the bin alight? If you think they could then press Continue. If you think the person has got the steps in the wrong order, change them as quickly as you can.

Put paper in the bin

Spray aerosol can in the bin

Light the match

Throw match into the bin

Continue
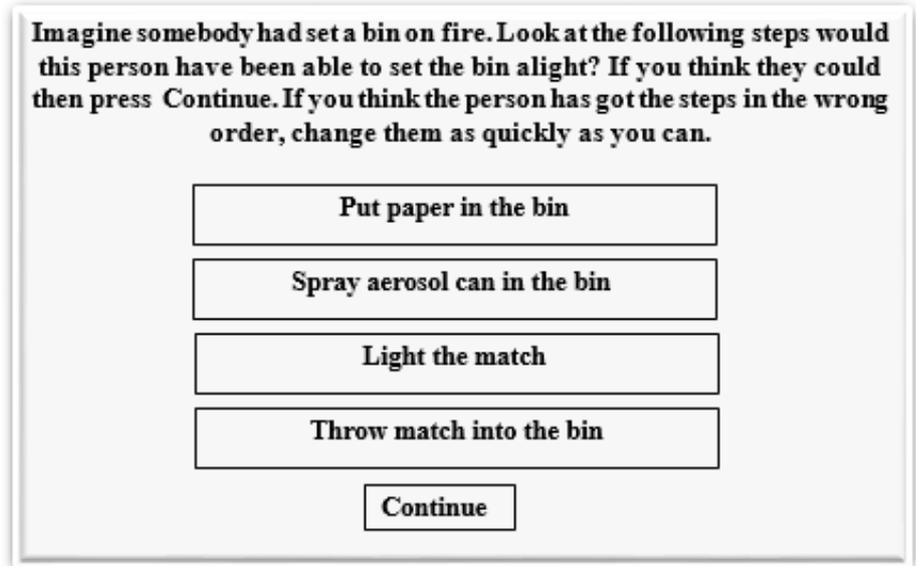
Figure 8.2. **An example of a correct fire related scenario**

whereby somebody had completed an everyday task (e.g., buying food shopping; $n = 10$)

or set a type of fire (e.g., setting fire to a car; $n = 10$; and two practice scenarios to allow

participants to get familiar with the task). Each scenario had a corresponding solution, broken down into individual steps. Nine scenarios had a three step

Imagine somebody had hung a picture. Look at the following steps would this person have been able to hang the picture? If you think they could then press Continue. If you think the person has got the steps in the wrong order, change them as quickly as you can.

Hang the picture on the wall

Bang nail into the wood

Mark where you want the picture to go

Adjust the picture so that it is straight

Continue

Figure 8.3. **An example of an incorrect everyday scenario**

solution (everyday $n = 4$; fire $n = 5$) and eleven had a four step solution (everyday $n = 6$;

fire $n = 5$)

Participants were asked to decide if they thought that the imaginary person had the

steps in the correct order, or if the steps needed to be changed in order to successfully

complete the task/set the fire (see Figures 8.2 and 8.3). Participants were instructed to

move the text box/s into a new position, by dragging and dropping the text box, if they

believed the steps were in the wrong order, or simply clicking on the continue button if they believed the order of steps were correct. Participants were told they could move each text box as many times as was necessary until the steps were in the right order. There were equal numbers of correct ($n = 10$) and incorrect ($n = 10$) scenarios.

The reaction time, captured in seconds (to two decimal places), and the accuracy for each completed scenario was recorded using the PsychoPy programme. Reaction time was automatically captured using Python code built into the PsychoPy programme which measured, in seconds, from the time the page containing the scenario was displayed until the participant pressed the continue button to move to the next page. The recording of both reaction time and accuracy for each scenario allowed the author to compare firesetters and offender comparisons on both the average reaction time and the average number of correct scenarios.

Materials

A Toshiba Satellite Pro C50-A-1E2 laptop, with a USB mouse and keyboard were used by participants' to complete the expertise measure. Informed consent and demographic information was captured on paper. The measures were presented on the laptop using the PsychoPy programme.

Procedure

All participants were assessed in one-on-one sessions lasting approximately 30 minutes. The research was completed in an office on the prison wing. All participants provided written informed consent, key demographic information, and completed the reading speed test and the heuristics measure of expertise. Participants were told that the study was investigating how and why firesetting behaviour occurs. Participants were told that they would be given scenarios and asked to use the information on the screen to solve the scenarios.

Ethics

The study was reviewed and approved ethically by the University Research Ethics Committee (REF 20153595). The study asked participants to provide solutions to scenarios that detailed somebody setting an imaginary fire, which could be considered to be asking participants to think in a pro-criminal manner. Therefore, all participants were fully debriefed, with emphasis placed on the negative consequences of firesetting behaviour (e.g., death, injury, and severe property damage).

Results

Power Analyses and Analysis Strategy

G*Power (Version 3.1; Faul et al., 2007; with at least 95% power and α = .05) indicated that a total sample size of 84 participants would be required to conduct each ANCOVA and detect a large interaction effect (.40). Thus, the current sample size ($n = 88$) was adequate for each planned analysis. As outlined in Study 2, the use of a large interaction effect is in line with previous research examining expertise (i.e., Topalli, 2005; van Gelder et al., 2017; Wright et al., 1995).

Although there was no significant effect of group on reading speed, $U = 954$, $z = -.12$, $p = .91$, $r = -0.01$, further investigation revealed significant correlations between firesetters' mean reading speed scores and mean reaction time on both the non-fire related ($r = .48$, $n = 44$, $p = .001$) and fire related ($r = .43$, $n = 44$, $p < .01$) scenarios. Additionally, offender comparisons' mean reading speed scores were significantly correlated with mean reaction time on the fire related scenarios ($r = .36$, $n = 44$, $p = .02$). Therefore, reading speed was entered as a co-variate in the forthcoming analysis[10].

To establish the existence of firesetting heuristics, a key facet of expertise, differences between firesetters and offender comparisons were examined using a series of

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[10] Repetition of the forthcoming analysis with the exclusion of reading speed as a co-variate did not alter the results.

ANCOVAs, with reading speed entered as a covariate. ANCOVAs were conducted on accuracy for both fire and non-fire related scenarios, each entered as a separate dependent variable, and on the mean reaction time, for both non firesetting and firesetting scenarios, again each entered as separate dependent variables. An overall MANCOVA was not used as the majority of the dependent variables were not significantly correlated with each other (with the exception of non-firesetting and firesetting reaction times, $r = .66$, $n = 88$, $p <.01$). A further ANCOVA was conducted to determine the existence of a continuum of expertise, comparing one time firesetters, repeat firesetters, and offender comparisons, with mean reaction time to firesetting scenarios entered as a dependent variable. Finally, a logistic regression was performed to determine if expertise could predict group membership (i.e., firesetter or offender comparison).

Accuracy of the Heuristics Measure of Expertise

Analysis of the accuracy for fire related scenarios using an ANCOVA, contrary to predictions, failed to reveal a significant group effect, $F(1, 86) = 1.82$, $p = .18$, $\eta_p^2 = .02$[11]. Firesetters could not be differentiated from offender comparisons on the number of correctly answered fire related scenarios, although means were in the expected direction with firesetters demonstrating great accuracy.

A second ANCOVA conducted on the number of correctly answered non-fire related scenarios also did not reveal a significant group effect, $F(1, 85) = .01$, $p = .93$, $\eta_p^2 = .00$[12]. However, this was in line with the hypothesis that firesetters would not be differentiated from offender comparisons on the number of non-fire related scenarios answered correctly.

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[11] Analysis, using two ANCOVAs, of accuracy to fire related scenarios with a three, $F(1, 85) = 2.13$, $p =.15$, $\eta_p^2 = .02$ and four step solution, $F(1, 85) = 1.15$, $p = .29$, $\eta_p^2 = .01$ also both revealed non-significant group effects.

[12] Analysis, using two ANCOVAs, of accracy to non-fire related scenarios with a three, $F(1, 85) = .47$, $p = .49$, $\eta_p^2 = .01$ and four step, $F(1, 85) = .45$, $p = .50$, $\eta_p^2 = .01$ solution also both revealed non-significant group effects.

Reaction Time on the Heuristics Measure of Expertise

Analysis of reaction time to fire related scenarios using an ANCOVA revealed a significant group effect, $F(1, 85) = 4.92$, $p < .05$, $\eta_p^2 = .06$[13]. As hypothesised, firesetters, on average, had a faster mean reaction time (measured in seconds; $M = 24.02$, $SD = 8.53$) than offender comparisons ($M = 28.75$, $SD = 12.04$). Average reading speed was a significant covariate, $F(1, 85) = 14.68$, $p < .001$, $\eta_p^2 = .15$[14].

An ANCOVA conducted on the reaction time to the non-fire related scenarios, as predicted, did not reveal a significant group effect, $F(1, 85) = 1.28$, $p = .26$, $\eta_p^2 = .02$. Firesetters could not be differentiated from offender comparisons on their reaction time to non-fire related scenarios[15].

Continuum of Expertise

The ANCOVA performed to test the hypothesis of a continuum of firesetting expertise, comparing the reaction time of one time firesetters, repeat firesetters, and offender comparisons failed to demonstrate a significant group effect, $F(2, 84) = 2.73$, $p = .07$, $\eta_p^2 = .03$ (although it was trending towards significance and had a small to medium effect size [Cohen, 1962]). Contrary to predictions, repeat firesetters (i.e., those who have set more than one fire) could not be differentiated from one-time firesetters or offender comparisons on their mean reaction times to imaginary fire related scenarios.

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[13] Analysis, using two ANCOVAs, of reaction time to fire related scenarios with a three, $F(1, 85) = 6.39$, $p = .01$, $\eta_p^2 = .07$ and four step solution $F(1, 85) = 4.22$, $p = < .05$, $\eta_p^2 = .05$ also both revealed significant group effects. Average reading speed was a significant covariate for both three step, $F(1, 85) = 14.71$, $p = < .001$, $\eta_p^2 = .15$, and four step solutions, $F(1, 85) = 9.57$, $p = < .01$, $\eta_p^2 = .10$.

[14] Although an ANCOVA is robust to assumption violations, as the data was not normally distributed and both homogeneity of regression slopes and homogeneity of variance could not be assumed a Mann-Whitney U test was conducted to ensure reliability of the ANCOVA result. The Mann-Whitney U confirmed that firesetters ($Md = 21.99$, $n = 44$), on average, had faster reaction time on fire related scenarios than offender comparisons ($Md = 28.02$, $n = 44$), $U = 737$, $z = -1.93$, $p = .05$, $r = 0.21$.

[15] A further two ANCOVAs conducted on the reaction time to the three step and four step solutions of the non-fire related scenarios also failed to reveal a significant group effect, $F(1, 85) = .82$, $p = .37$, $\eta_p^2 = .01$ and $F(1, 85) = .33$, $p = .57$, $\eta_p^2 = .00$ respectively. However, average reading speed was a significant covariate for both three step, $F(1, 85) = 19.22$, $p = < .001$, $\eta_p^2 = .18$, and four step solutions, $F(1, 85) = 10.94$, $p = .001$, $\eta_p^2 = .11$.

Discussion

Consistent with previous research in the areas of offending expertise (Bennett & Wright, 1984; Bourke et al., 2012; Casey, 2015; Gilbert et al., 2013; Jacobs, 2012, 2013; Jacobs et al., 2003; Maguire & Bennett, 1982; Nee et al., 2015; Nee & Meenaghan, 2006; Nee & Taylor, 2000; Taylor & Nee, 1988; Topalli, 2005; Topalli & Wright, 2003; Topalli, Jacques & Wright, 2015; Ward, 1999; Wright & Decker, 1994; Wright et al., 1995) and findings from Studies 1 and 2 firesetters, relative to offender comparisons, appeared to demonstrate an increased level of expertise.

Results revealed that firesetters and offender comparisons could not be differentiated by the number of correctly answered fire related scenarios (this was also true of non-fire related scenarios). Firesetters did not correctly answer the fire-related scenarios any more often than offender comparisons that firesetters. Suggestions as to why this might be will be outlined in the general discussion. However, relative to offender comparisons, firesetters had a significantly faster mean reaction time on fire related scenarios, designed to assess their ability to rely upon heuristics (Nee & Ward, 2015). This finding was also confirmed by a logistic regression analysis. Firesetters and offender comparisons could be successfully categorised based upon their reaction times to the fire related scenarios. However, despite there being a significant difference in the speed at which firesetters, relative to offender comparisons, completed the fire related scenarios, there was no evidence for the existence of a continuum of firesetting expertise. Results failed to show a significant difference between the number of recorded previous firesetting incidents and the speed at which participants answered the fire related scenarios. That is to say repeat firesetters were no quicker than one-time firesetters in their reaction times. A possible explanation for this is outlined later in the general discussion.

When comparing mean reaction times across the two groups with regards to non-fire related scenarios, the two groups could not be differentiated. This finding is

particularly interesting. The lack of difference in the non-fire related scenarios points to the fact that firesetters were not quicker at the task generally, their speed was unique to fire-related scenarios. Furthermore, the observed effect size for the reaction time to fire related scenarios was considered to be medium (Cohen, 1962). Therefore, it can be argued that this faster reaction time to fire-related scenarios, was in line with Nee and Ward's (2015) argument of the ability of expert offenders, in this case firesetters, to utilise known heuristics. This utilisation of previously held heuristics allowed firesetters to make quicker decisions regarding whether the scenario was correct based upon information held in LTM. Offender comparisons had no such basis for comparison, and so had a slower reaction time, despite controlling for reading speed. This finding points towards the existence of firesetting expertise.

Study 3b

The second study seeks to further explore the idea that firesetters are more expert relative to offender comparisons. As Nee and Ward (2015) have established, expert offenders are superior in their ability to automatically recognise offence-related cues in their environment, allowing them to perform at an expert level. Furthermore, in Study 1, initial findings suggested that firesetters may hold specific knowledge about fire. Namely, participants demonstrated (1) an awareness of what items are needed to set a fire, such as: accelerants and flammable materials, and (2) a situational awareness of where they can source these materials; specifically, a recognition of what items are available at the scene. Therefore, this study sought to test this by asking participants what items they believe an individual would have used to set hypothetical fires described in different scenarios. The measure is designed to test whether fire knowledge, increased situational awareness, and an ability to automatically process cues in the scenarios (e.g., the location), will be reflected in faster reaction times (i.e., demonstrating expertise). In addition, Dickens et al. (2009) have suggested that the use of fuel and accelerants is indicative of highly dangerous

firesetting behaviour in the future. Therefore, given the study asked participants to select items needed to start a hypothetical fire, participants' use of accelerant will also be investigated.

This study has a number of hypotheses. First, it is hypothesised that firesetters will be able to select the items needed to set the hypothetical fire more quickly, compared to offender comparisons. The ability for the firesetter to make faster decisions is predicted to be due to firesetters being more likely to (1) rely on their previous knowledge and (2) automatically process the offence related cues in the scenarios. Second, firesetters, compared to offender comparisons, will be more likely to choose items that make the fire more dangerous (i.e., the use of accelerants), given that the use of accelerants is predictive of highly dangerous future firesetting behaviour (Dickens et al, 2009). Third, similar to Study 3a, it is hypothesised that, in line with the continuum of expertise proposed by Nee and Ward (2015), and applied to firesetting behaviour in Chapter Six, firesetters are likely to occupy the expert end of the continuum, given their vast knowledge and experience of fire. Furthermore, there is likely to be a gradient of expertise. That is to say that one-time firesetters are likely to demonstrate more expertise than offender comparisons, but, in turn, firesetters who have set multiple fires are likely to demonstrate more expertise than both offender comparisons and one-time firesetters.

Method

Participants

The sample consisted of the same participants as in Study 3a, 88 male participants across two participant groups (44 firesetters and 44 offender comparisons).

Measures

Reading Speed Measure. To eliminate the possibility that individual differences in reading speed could affect participants' reaction times on the expertise, participants' reading speeds from Study 3a were utilised in this study.

Offence Related Cues Measure. This study sought to test the idea that expert offenders are superior in their ability to

Police have charged a man for an attempted arson following reports he set fire to his workplace after he was fired. Officers were called to an industrial estate in Woking, at 1am on Friday, after reports he was attempting to set fire to the office building. Reports suggest that the man had had a disagreement with his manager earlier in the day, and was subsequently sacked. He has been charged with attempted arson with intent to endanger life.

Select which of the following items, as quickly as possible, he may have been using to start the fire.
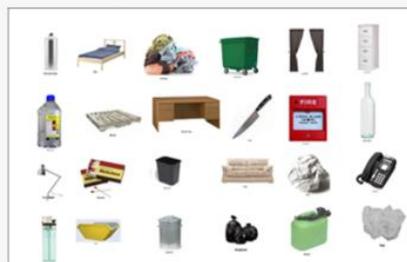
Continue

Figure 8.4. **An example firesetting scenario**

automatically recognise offence-related cues in their environment, a key facet of expertise To test this hypothesis each participant was presented with 14 scenarios in which an imaginary fire had been set (practice $n = 2$; experimental $n = 12$; see Appendix Nine for a full list of scenarios; see Figure 8.4), along with items that could or could not be used to start a fire. The measure was, again, designed using the author's clinical experience of working with firesetters. The scenarios were presented in the form of hypothetical news articles to limit the effects of priming. It was thought that asking participants to read hypothetical news articles about other people's firesetting activity, as opposed to asking participants to describe setting a fire themselves, would limit the possibility that participant's would attempt to start a real fire after participating in the research.

Images used to depict the items available to choose from when deciding upon how the fire in the scenario was set included: paper, petrol, wood, and a knife (see Appendix Nine for a full list of items). The items were selected through consultation with another two PhD candidates, who also had experience of working clinically with firesetters. Some items were easily recognisable as items commonly used when starting fires (e.g., a lighter), whereas other items could not be used to start a fire with (e.g., a knife) were included as filler items, to ensure that not every item presented to participants would be useful in

starting a fire. Furthermore, three types of accelerant (petrol, white spirit, and an aerosol can) were included in order to determine whether firesetters are more likely than offender comparisons to use an accelerant, given that the use of accelerants is predictive of more serious future firesetting behaviour (Dickens et al, 2009).

Scenarios were presented one at a time (practice scenarios, followed by the experimental scenarios). Each scenario displayed on the screen was accompanied by the same 24 images. Once participants read the scenario, they were instructed to select the items they thought the individual described in the scenario would have needed to start the fire. They were instructed to click on the picture/s they wanted to select one at a time. Once the picture was selected the picture would grey out, signifying it had been selected. If the participant wanted to deselect an item/s they were instructed to click on the picture/s again, and it would return to its original colour. All 12 scenarios, and the 24 images used for each scenario, were presented in a randomised order, as determined by PsychoPy (the two practice scenarios were always presented first, and were not randomised). This was deliberate and intended to: (1) reduce any order effect of the scenarios across participants and (2) prevent participants' reaction times being influenced by virtue of knowing where the item/s would appear on the screen. After the participant was happy with the items they had selected they were asked to click the continue button.

The reaction time to item selection, captured in seconds (to two decimal places), and items selected were recorded using the PsychoPy programme. Reaction time was automatically captured using Python code built into the PsychoPy programme which measured, in seconds, from the moment the page containing the scenario was displayed until the user pressed the continue button to close that page.

Materials

The same Toshiba Satellite Pro C50-A-1E2 laptop was used to present the expertise measure, with a USB mouse and keyboard, again utilising the PsychoPy programme.

Procedure

All participants were again assessed in one-on-one sessions (lasting approximately 30 minutes), with the measures presented on a laptop. The research was completed in an office on the prison wing. Participants were again told that the study was investigating how and why firesetting behaviour occurs. Participants were told that they would be given scenarios and asked to use the information on the screen to solve the scenarios.

<div align="center">

Results

</div>

Analyses Strategy and Power Analyses

G*Power (Version 3.1; Faul et al., 2007; with at least 95% power and $\alpha = .05$) indicated that a total sample size of 84 participants would be required to conduct each ANOVA and detect a large interaction effect (.40). Thus, the current sample size ($n = 88$) was adequate for each planned analysis. As outlined in Studies 2 and 3a, the use of a large interaction effect is in line with previous research examining expertise (i.e., Topalli, 2005; van Gelder et al., 2017; Wright et al., 1995).

As previously stated, in Study 3a, there was no significant effect of group on reading speed, $U = 954$, $z = -.12$, $p = .91$, $r = -0.01$. Further investigation also revealed no significant correlations between firesetters' or offender comparisons' mean reading speed scores and mean reaction time ($r = -.11$, $n = 44$, $p = .48$ and $r = -.08$, $n = 44$, $p = .62$). This effect is unsurprising as participants were not required to read as much text, the focus, was instead, on selecting the pictures. Therefore, reading speed was not entered as a covariate in the analysis[16].

To establish whether firesetters held fire related knowledge and were superior at processing offence related cues, two key facets of expertise, differences were examined using a series of ANOVAs. ANOVAs were conducted with mean reaction time to item selection and the use of accelerants entered as separate dependent variables. Furthermore,

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[16] Repetition of the forthcoming analysis with the inclusion of reading speed entered as a covariate did not alter the results.

an ANOVA to determine the existence of a continuum of expertise, comparing one time firesetters, repeat firesetters, and offender comparisons, with mean reaction time to item selection entered as a dependent variable was conducted. Finally, a logistic regression was also performed to determine if expertise could predict group membership (i.e., firesetter or offender comparison).

Reaction Time

Analysis of reaction time to the scenarios using an ANOVA, in line with predictions, revealed a significant group effect $F(1, 86) = 39.40$, $p < .001$, $\eta_p^2 = .31$[17]. Firesetters were significantly quicker at selecting items needed to start the fire than offender comparisons. Interestingly, an ANOVA revealed that there was no significant effect of group on the total number of items selected to start the fire, $F(1, 86) = 1.56$, $p = .22$, $\eta_p^2 = .02$. Importantly, this would suggest that the significant difference found in reaction time to item selection cannot be explained merely due to offender comparisons having a slower reaction time because they were choosing more items.

Use of Accelerant

The ANOVA conducted to investigate group differences in use of accelerant (i.e., aerosol can, lighter fluid, or petrol), contrary to predictions failed to reach conventional levels of statistical significance, $F(1, 86) = 2.28$, $p = .13$, $\eta_p^2 = .03$. Firesetters did not select items that would intensify fire severity more often than offender comparisons[18].

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[17] Although an ANOVA is robust to assumption violations, as the data was not normally distributed and homogeneity of variance could not be assumed a Mann-Whitney U test was conducted to ensure reliability of the ANOVA result. The Mann-Whitney U confirmed that firesetters (*Md* = 35.68(s), *n* = 44), on average, had faster reaction time to item selection than offender comparisons (*Md* = 58.96, *n* = 44), $U = 304$, $z = -5.54$, $p = <.001$, $r = 0.59$.

[18] ANOVAs were also conducted to investigate whether groups differed on the selection of other items. Groups were compaed on their selection of combustible materials (e.g., rags), miscellaneous items (e.g., knife), and their use of flammable (i.e., plastic bin) and non-flammable (e.g., metal skip) containers. There were no significant group differences across any of the categories.

Continuum of Expertise

To test the existence of a continuum of firesetting expertise, a further ANOVA was conducted, the univariate test revealed a significant group effect, $F(2,85) = 19.52$, $p < .001$, $\eta_p^2 = .32$[19]. Games-Howell post hoc testing[20] highlighted that both one time ($p < .001$, $d = 1.34$) and repeat firesetters ($p < .001$, $d = 1.38$) had a significantly quicker reaction time than offender comparisons. However, there was no difference between one time and repeat firesetters' reaction times ($p = .93$).

Group Membership

The predictive ability of reaction time to the scenarios (i.e., expertise) was assessed using a logistic regression. The model was statistically significant, χ^2 $(1, N = 88) = 19.82$, $p < .001$, indicating that group membership could be predicted by expertise. The model as a whole explained between 32.9% (Cox and Snell R^2) and 43.8% (Nagelkerke R^2) of variance in expertise scores, and correctly classified 78.4% of cases (81.8% $n = 36$ of firesetters, 75.0% $n = 33$ of offender comparisons). The predictor variable of reaction time reported an odds ratio of 1.09.

Discussion

Again, consistent with previous research in the areas of offending expertise (Bennett & Wright, 1984; Bourke et al., 2012; Casey, 2015; Gilbert et al., 2013; Jacobs, 2012, 2013; Jacobs et al., 2003; Maguire & Bennett, 1982; Nee et al., 2015; Nee & Meenaghan, 2006; Nee & Taylor, 2000; 2004; Taylor & Nee, 1988; Topalli, 2005; Topalli

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[19] Although an ANOVA is robust to violation of assumptions, the data was not normally distributed and homogeneity of variance could not be assumed, therefore, a Kruskal-Wallis test was conducted to ensure reliability of the ANOVA result. The Kruskal-Wallis confirmed that there was a significant effect of group on mean reaction time to item selection χ^2 $(2, n = 88) = 30.91$, $p = <.001$, $\omega^2 = 0.35$. Follow up Mann-Whitney U tests, with Bonferroni adjustments applied, confirmed that both one time and repeat firesetters had a significantly quicker mean reaction times to item selection compared to offender comparisons ($U = 144$, $z = -4.10$, $p = <.001$, $r = 0.44$ and $U = 160$, $z = -4.87$, $p = <.001$, $r = 0.52$ respectively). However, one time and repeat firesetters could not be differentiated by reaction time, $U = 212$, $z = -.60$, $p = .55$, $r = 0.06$.

[20] Games-Howell post hoc testing was applied since equal variance could not be assumed.

& Wright, 2003; Topalli, Jacques & Wright, 2015; Ward, 1999; Wright & Decker, 1994; Wright et al., 1995) and findings from Studies 1, 2, and 3a, firesetters, relative to offender comparisons, reported a higher level of expertise.

Specifically, in line with previous research findings regarding expert offender's ability to automatically process cues in the environment (Nee & Meenaghan, 2006; Nee & Taylor, 2000; Nee & Ward. 2015), results showed that firesetters could be differentiated from offender comparisons, on scenarios designed to assess this. Firesetters were faster at selecting which items they believed the imaginary person would need to use.

This finding was further supported through the use of a logistic regression, group membership (i.e., firesetter or offender comparison) could be determined based upon the time it took to select the items needed to set the fire. Moreover, when considering the existence of a continuum of expertise (Nee & Ward, 2015), both repeat and one time firesetters were significantly faster at selecting the items needed to start a fire than offender comparisons. This was in line with Nee and Ward's (2015) hypothesis that expert offenders, in this instance firesetters, occupy the more expert end of the continuum, and less experienced individuals (i.e., offender comparisons) occupy the novice end. However, results failed to identify a significant difference between repeat and one time firesetters and, thus, failing to provide evidence for the gradient of expertise hypothesised. It was expected that one time and repeat firesetters would be distinguishable, based on their level of expertise. Furthermore, the number of times participants opted to use an accelerant did not differ between participant groups. This is in contrast to Dickens et al. (2009), who found the use of accelerants to be indicative of highly dangerous firesetting behaviour.

Interestingly, the total number of items selected by participants did not differ across participant groups. This is important when considering the context of reaction time. As participants did not differ on the number of items selected, this means that the mere process of choosing the items did not cause the difference in reaction time. Arguably, the

difference in reaction time was the result of firesetters' ability to select what items they wanted to use more quickly. In line with the hypothesis outlined above this may well be due to firesetters' holding knowledge about fire, increased situational awareness, and the automatic processing of offence related cues, something offender comparisons do not have. These findings, together with those in Studies 1, 2, and 3a, can be taken as preliminary evidence for the existence of firesetting expertise.

General Discussion

Whilst both studies show promising findings, these results should be interpreted with caution for three main reasons. First, as previously outlined, these studies represent only the second and third attempts to empirically investigate firesetting expertise. Whilst the measures employed in both studies utilised the principles of previously successful methodologies used to study these concepts (Nee & Taylor, 1988; Taylor & Nee, 1988), the scenarios used across both studies were imaginary. The measures required participants to engage in hypothetical activities, which is substantially different from observing the actual behaviour. Moreover, it could be argued that the measures were not challenging enough. This may be especially true of the heuristics measure in Study 3a. Whilst firesetters, relative to offender comparisons, had a faster mean reaction time when completing the fire related scenarios there was no group difference observed in accuracy. Firesetters could not be differentiated from offender comparisons on the number of correctly answered fire related scenarios. This may be because, given enough time, all participants were able to accurately solve the fire related scenarios because they were too easy. Furthermore, participants had to read a substantial amount in both studies (although less in 3b), and whilst reading speed was controlled for and so did not have a bearing on reaction time, it must be acknowledged that the level of reading required may have affected participant's motivation when engaging in the tasks.

Second, the current studies only included adult male participants. Therefore, the expertise that are evident within this sample may not be applicable to other types of firesetters, for example female or mentally disorder firesetters. However, the results show promise; suggesting that firesetters do demonstrate expertise at a greater level than that of non-firesetting offenders. Consequently, one can begin to suggest this concept may not merely be the result of general criminality, but is specific to firesetters.

A final limitation of these studies, and arguably the most substantial, is that the firesetters recruited may have lacked the substantive firesetting history needed to be able to adequately demonstrate the existence of a continuum of expertise (Nee & Ward, 2015). That is to say, the majority of the firesetters recruited were one-time firesetters ($n = 25$). Furthermore, around a third of the firesetters ($n = 15$) in the study had only ever engaged in prison firesetting activity (i.e., cell fires), and for 11 of those 15 participants that was their only fire. Therefore, given that expertise is hypothesised to develop after engaging in deliberate practice, with skills developing after engaging in the activity repeatedly and across a long period of time, it is plausible to suggest that the majority of firesetters recruited in this study were not experienced enough to be considered at the expert end of the firesetting expertise continuum. This may explain why in Study 3a there was no evidence of a continuum of expertise; repeat firesetters could not be differentiated from one time firesetters on their reaction time to the scenarios. Furthermore, the use of an incarcerated sample is problematic, when attempting to study expertise, as one would expect the most expert of firesetters to have evaded apprehension.

The studies conducted in Chapters Five, Six, and Seven, represent, to the author's knowledge, the only attempts to empirically investigate the concepts of firesetting scripts and expertise which is an important development. However, these studies have utilised apprehended samples, including firesetters with limited repeat firesetting. Given that the concepts of firesetting scripts and expertise are associated with a well-practiced behaviour

that would lead to a superiority in dexterity and evasion of apprehension, it is imperative that these concepts are investigated with an un-apprehended sample. Therefore, the final empirical chapter will focus on the application of these concepts with men who have engaged in deliberate firesetting activity in the community and remain unapprehend.

Chapter Nine Study 4: An Empirical Investigation of the Scripts and Expertise Held by Un-apprehended Firesetters and Their Relationship to the Four Factor Fire Scales

Introduction

The findings from the studies conducted across this thesis appear to suggest that incarcerated firesetters hold scripts about firesetting and demonstrate firesetting expertise. The results from the preliminary qualitative analysis from Study 1 appeared to highlight clear themes regarding firesetting scripts and expertise. Those results, coupled with previous research evidence and the author's clinical experience, were subsequently synthesised into a set of clear conceptualisations (see Chapter Six for a detailed review) regarding these two key concepts. These conceptualisations were then empirically investigated in Studies 2, 3a, and 3b. Study 2 appeared to show that firesetters, when compared to both offender and community comparisons, were rated to have increased cognitive and behavioural efficacy. The results also suggested that serious interest in fires and identification with fire were predictive of the presence of scripts and expertise. Results from Study 3a appeared to show that firesetters utilised firesetting heuristics, allowing for quicker decision making, an important facet of expertise. As when comparing mean reaction times, firesetters were significantly faster when completing fire related scenarios. This was also confirmed by a logistic regression analysis, as firesetters and offender comparisons could be successfully categorised based upon the reaction times to the fire related scenarios. Finally, results from Study 3b, appeared to demonstrate that firesetters hold knowledge about fire and automatically process offence related cues in their environment, again another key facet of expertise.

As outlined in Chapter Three, a debate exists within the literature regarding the use of incarcerated offenders, with some authors questioning the validity of accounts provided by *failed* criminals (Cromwell, Olson, & Avery, 1991; Nee, 2010; Wright and Decker,

1994). As a result, researchers began to investigate the expertise with active burglars, car jackers, crack dealers, and violent offenders (Jacobs,1996a, 1996b; Jacobs, 2012, 2013; Jacobs & Miller, 1998; Jacobs et al., 2003; Nee et al., 2015; Topalli's, 2005; Topalli & Wright, 2003; Topalli et al., 2015; Wright & Decker, 1994). Moreover, recently a small number of US and UK studies have been conducted with un-apprehended firesetters, in an attempt to establish the prevalence of firesetting amongst those living in the community. Utilising data from the US National Epidemiological Survey of Alcohol and Other Related Conditions (NESARC) Blanco et al. (2010) and Vaughn et al. (2010) reported prevalence rates of firesetting, among US adults, ranging between 1.0% and 1.13 %. However, as outlined in Chapter One, the item used to determine previous firesetting behaviour was problematic (Barrowcliffe & Gannon, 2015; Dickens & Sugarman, 2012; Gannon & Barrowcliffe, 2012). Two subsequent UK studies have investigated the prevalence and characteristics of firesetting in un-apprehended community samples. First, Gannon and Barrowcliffe (2012) showed that 11% ($n = 18$) of participants reported having intentionally set a fire since the age of 10, and of these less than 1% had set a deliberate fire as adults ($n = 2$). In their second study, Barrowcliffe and Gannon (2015) randomly invited 10% of 5,568 households in Kent, UK to participate in the research. A total of 157 people elected to take part. Barrowcliffe and Gannon (2015) found that 11.5% ($n = 18$) of their sample could be classified as deliberate firesetters. A further study by Barrowcliffe and Gannon (2016), investigating both community firesetting prevalence and the psychological characteristics of un-apprehended firesetters found a prevalence rate of 17.78% ($n = 40$).

   Therefore, given that it is possible and, for some, preferable, to conduct research into expertise with those who remain un-apprehended (although as outlined in Chapter Three the use of active offenders may still be problematic). Furthermore, it has been established that there is a prevalence of firesetting in the general adult population, this study aimed to replicate the findings regarding differences in the presence of scripts and

expertise from Studies 2, 3a, and 3b with a sample of UK un-apprehended firesetters. Similar to Study 2, this study also investigated how these concepts interact with the Four Fire Factor Scales (Ó Ciardha et al., 2014). Finally, this study will also examine the similarity of the current sample of un-apprehended firesetters to the samples in Barrowcliffe and Gannon (2015, 2016).

A number of key hypotheses will be explored within this study. First, although not seen in findings from Study 2, previous research has shown that firesetters, relative to non-firesetting comparisons, differ significantly on fire-related variables (Clare et al., 1992; Dickens et al., 2009; Gannon et al, 2013; Gannon et al., 2015; Haines et al., 2006; Ó Ciardha et al., 2014; Taylor et al., 2002). Therefore, it is hypothesised that one time un-apprehended firesetters will report higher levels of serious fire interest, and both normalise fire and identify with fire more, but report lower levels of fire safety awareness, relative to community comparisons. It is also hypothesised that repeat un-apprehended firesetters (those that have set more than one fire) are likely to report the highest levels of serious fire interest, and both normalise fire and identify with fire more, but report the lowest levels of fire safety awareness, relative to both community comparisons and one-time un-apprehended firesetters. Second, given the findings from Studies 1 and 2, it is hypothesised that compared to community comparisons, one time un-apprehended firesetters will be rated as holding more firesetting scripts. In turn, it is hypothesised that repeat un-apprehended firesetters, will be rated as having more firesetting scripts than both one time un-apprehended firesetters and community comparisons. Third, given that firesetters were shown to hold heuristics about their firesetting, it is hypothesised that when un-apprehended firesetters are presented with the same scenarios that depict somebody setting a fire, they will also be more likely to identify any errors in the firesetting scenarios, and do this more quickly (measured using reaction time data) relative to community comparisons. However, when both un-apprehended firesetters and community comparisons

are presented with non-fire related scenarios, there will be no such difference in error detection or reaction time between the two groups. Fifth, it is hypothesised that when asked to selected items needed to set a hypothetical fire, un-apprehended firesetters will be able to select the items more quickly, compared to community comparisons. Similar to the findings seen in Study 3b, the ability for the un-apprehended firesetter to make faster decisions is predicted to be due to un-apprehended firesetters being more likely to (1) rely on their previous knowledge and (2) automatically process the offence related cues in the scenarios. Sixth, it is hypothesised that, in line with the continuum of expertise proposed by Nee and Ward (2015), and partially seen in Study 3b, when considering both expertise measures un-apprehended firesetters are likely to occupy the expert end of the continuum. It is hypothesised that one-time un-apprehended firesetters are likely to demonstrate more expertise than community comparisons, but, in turn, repeat un-apprehended firesetters, are likely to demonstrate more expertise than both community comparisons and one-time un-apprehended firesetters. Finally, exploratory descriptive analysis will examine the similarity of the current sample of un-apprehended firesetters to the samples in Barrowcliffe and Gannon (2015, 2016) studies in relation to motivations for firesetting behaviour and ignition targets.

Method

Participants

The original sample consisted of 301 male un-apprehended firesetters and community comparisons. All participants were recruited from Prolific Academic, an online recruitment platform for scientific research. Firesetting status was determined through participants answering 'yes' to the screening question "Since the age of 14 have you set a fire?". Participants were asked not to consider fires set accidentally, fires set for organised or social events (e.g. bonfire night, social occasions or hog roasts), fires set in their home to create atmosphere (e.g., in a fireplace or chimenea), fires set when out camping (e.g., to

keep warm or to cook food), or fires set before the age of 14. A total of 11 participants (3.65%) were removed from the study as they had answered 'yes' to the screening question, however, when asked more about their firesetting the fires set were in line with those listed above. A further 29 participants (9.63%) were removed from the study as the fires set were before the age of 14. This meant a sample of 249 participants were retained for analysis (107 un-apprehended community firesetters and 142 community comparisons).

Sixty two (57.94%) of the un-apprehended firesetters reported having set one fire, with 27 (25.33%) reporting having set two fires, and 10 (9.35%) reporting having set four or more fires. The mean age at which un-apprehended firesetters reported igniting their first fire was 17.31 years ($SD = 1.18$), with the majority (79%, $n = 86$) reporting igniting their first between 14 and 18 years of age. Whilst the mean age reported for setting their last/most recent fire was 21.97 years (SD 9.32), with just over half (55%, $n = 60$) reporting igniting their last/most recent fire between 14 and 18 years of age. Twenty three un-apprehended firesetters (21%) ignited their first fire in adulthood. None of the un-apprehended firesetters reported holding any convictions for arson, but some did report holding convictions for other offences, namely: vandalism ($n = 4$), violent crime ($n = 4$), driving offences ($n = 3$), drug offences ($n = 3$), and other unspecified offences ($n = 4$). Some community comparisons also reported holding convictions, namely: vandalism ($n = 2$), violent crime ($n = 1$), driving offence ($n = 3$), drug offences ($n = 3$), and other unspecified offences ($n = 3$), although overall participant groups did not significantly differ as to whether they held a previous conviction, χ^2 (1, $N = 251$) = 3.10, $p = .78$, $\phi = .11$.

Forty two (29.43%) un-apprehended firesetters reported setting fire to a rubbish bin outside, other common targets were: igniting grass shrubbery or dry leaves ($n = 38$, 26.57%), waste paper baskets and bins inside ($n = 17$, 11.89%) and clothing ($n = 12$, 8.90%; see Table 9.2). These ignition targets share some similarities with Barrowcliffe and Gannon's (2015, 2016) studies. However, in Barrowcliffe and Gannon's (2015) study un-

apprehended firesetters also cited empty/derelict garage/shed/beach hut as a common ignition target, which was not replicated in this study or Barrowcliffe and Gannon (2016). Thirty three (30.84%) un-apprehended firesetters reported setting the fire alone, whereas 20 (18.69%) set it with one other person, 29 (27.10%) set it with two other people, and 25 (23.64%) set it with three or more other people. This differs from both Barrowcliffe and Gannon (2015), whereby most un-apprehended firesetters reported setting the fire with either one or three or more other people, and Barrowcliffe and Gannon (2016), whereby most un-apprehended firesetters reported setting the fire with three or more other people.

The majority of un-apprehended firesetters ($n = 64$, 58.72%) reported multiple motivations for their firesetting. The predominant motivations were to alleviate boredom or create excitement ($n = 90$, 84.11%), experimentation and curiosity ($n = 62$, 57.94%), due to a dare to or as a prank ($n = 20$, 18.69%), and a love of fire ($n = 19$, 17.76%; see Table 9.1). These common motivations mirror those found in Barrowcliffe and Gannon's (2015, 2016) studies.

The majority of un-apprehended firesetters *($n = 76$, 71.03%)* reported setting one ignition point, with 31 (28.97%) reporting setting multiple ignition points. This follows a similar pattern to both the Barrowcliffe and Gannon (2015, 2016) studies. Forty two (38.53%) un-apprehended firesetters reported taking items needed to start the fire with them to the scene of the fire, and the majority ($n = 75$, 68.81%) reported staying at the scene (this was not reported for Barrowcliffe & Gannon, 2015, 2016). Finally, 56 (51.38%) un-apprehended firesetters took part in extinguishing their fire, but eleven un-apprehended firesetters (10%) indicated that the Fire Service extinguished their fires, this follows a similar pattern to both the Barrowcliffe and Gannon (2015, 2016) studies.

Table 9.1

Deliberate Firesetting Offence Characteristics

Offence Characteristics	Current Study Percentage yes (*n*)	Barrowcliffe and Gannon (2015) Percentage yes (*n*)	Barrowcliffe and Gannon (2016) Percentage yes (*n*)
Number of deliberate fires ignited			
One	57.94 (62)	16.7 (3)	37.5 (15)
Two	25.33 (27)	22.2 (4)	27.5 (11)
Three	7.48 (8)	16.7 (3)	17.5 (7)
Four or more	9.35 (10)	44 (8)	17.5 (7)
Ignition point and target			
One ignition point	71.03 (76)	81.8 (9)	67.5 (27)
Multiple ignition point	28.97 (31)	18.2 (2)	32.5 (13)
Ignited a rubbish bin outside	29.43 (42)	5.6 (1)	22.5 (9)
Ignited countryside (e.g., grass, shrubbery, or dry leaves)	26.57 (38)	33.6 (6)	27.5 (11)
Ignited a waste paper basket inside a building	11.89 (17)	-	12.5 (5)
Ignited clothing	8.90 (12)	5.6 (1)	12.5 (5)
Ignited a mattress or bedding	7.69 (11)	-	-
Ignited a house that was empty	4.90 (7)	-	-
Ignited toilet roll dispenser	4.20 (6)	-	12.5 (5)
Ignited an unoccupied car	2.80 (4)	5.6 (1)	2.5 (1)
Other (did not specify ignition target)	2.10 (3)		-
Ignited evidence relating to another crime	1.40 (2)	5.6 (1)	-
Ignited a dead animal	0.70 (1)	-	-
Ignited empty/derelict garage/shed/beach hut	-	27.8 (5)	-
Ignited flammable items	-	16.7 (3)	-
Paper, books, or newspaper	-	-	25.0 (10)
General rubbish	-	-	7.5 (3)
Furniture	-	-	5.0 (2)
Ignited an animal which was alive	-	-	2.5 (1)
Ignited a house knowing it was occupied	-	-	2.5 (1)
Fires ignited alone or with accomplices			
Ignited fire alone	30.84 (33)	7.7 (1)	27.5 (11)
Ignited fire with 1 other person	18.69 (20)	38.5 (5)	12.5 (5)
Ignited fire with 2 other people	27.10 (29)	15.4 (2)	20.0 (8)
Ignited fire with 3 or more other people	23.64 (25)	38.5 (5)	40.0 (16)

Note: Ignition targets do not add up to 100% due to multiple targets. Barrowcliffe and Gannon (2015, 2016) reported percentages to one decimal place.

Table 9.2

Motivations of Deliberate Firesetting

Motivation	Current Study Percentage yes (*n*)	Barrowcliffe and Gannon (2015) Percentage yes (*n*)	Barrowcliffe and Gannon (2016) Percentage yes (*n*)
To create fun/excitement or alleviate boredom	84.11 (90)	54.5 (6)	67.5 (27)
Curiosity or experimenting with fire	57.94 (62)	81.8 (9)	65.0 (26)
Dared or pranked	18.69 (20)	18.2 (2)	20.0 (8)
Love of fire	17.76 (19)	27.3 (3)	22.5 (9)
Other (did not specify motivation)	11.21 (12)	-	-
Problems at home or school	10.28 (11)	18.2 (2)	2.5 (1)
Vandalism	9.35 (10)	9.1 (1)	10.0 (4)
For attention	6.54 (7)		-
Anger	6.54 (7)		-
Stressed or frustrated	5.61 (6)		5.0 (2)
Reaction to stressful life event	3.74 (4)		-
Covering up another crime/destroying evidence	1.87 (2)	9.1 (1)	-
Practicing/Refining Firesetting Skills	1.87 (2)		-
Revenge	0.93 (1)		-
Protecting self	0.93 (1)		2.5 (1)
Financial Gain	-	9.1 (1)	-
Going along with friends	-	-	5.0 (2)

Note: Motivations do not add up to the number of firesetters as many firesetters (*n* = 64) indicated multiple motives. Barrowcliffe and Gannon (2015, 2016) reported percentages to one decimal place.

Mann Whitney U tests[21] and Chi-Square tests of independence were performed on important demographic information to explore the differences between the participant groups. Tests indicated that there were no group differences in age, employment status (employed vs. unemployed), engagement with mental health services, or education level (A-Level or less vs Degree or above). However, participants differed significantly on ethnicity, χ^2 (1, *N* =251) = 8.39, *p* <.01, φ =.18. Post-hoc testing using adjusted z scores and Bonferroni adjusted alpha levels highlighted that un-apprehended firesetters were more likely to report being White British than expected by chance (*p* <.05), whereas community

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[21] Mann –Whitney U tests were conducted as equal variance could not be assumed.

comparisons were less likely to report being White British than expected by chance (*p* <.05).

Table 9.3

Study 4 Demographic Information

Variable	Un-apprehended Firesetter	Community Comparison	U $\chi^2(1, N = 251)$
Age (Years) *M (SD)*	38.53 (10.85)	39.82 (11.77)	7249.00
Education Level (Up to A Levels)			
Yes % (*n*)	51.4 (55)	45.8 (65)	.76
No % (*n*)	48.6 (52)	54.2 (77)	
Ethnicity			
White UK/Irish % (*n*)	95.3 (102)	83.8 (119)	8.39*
BME % (*n*)	4.7 (5)	16.2 (23)	
Employment Status			
Employed (Full Time/Part Time) % (*n*)	90.7 (97)	83.1 (118)	2.38
Unemployed/Retired % (*n*)	9.3 (10)	16.9 (24)	
Engagement with Mental Health Services			
Yes % (*n*)	15.9 (17)	14.1 (20)	.12
No % (*n*)	90 (84.1)	85.9 (122)	

*p < .05. Note. Participants' engagement with mental health services was measured by asking participants "Have you ever engaged with mental health services before?".

Measures

The measures used in this study have been used previously in Studies 2, 3a, and 3b. From Study 2, impression management, the Four Factor Fire Scales (Ó Ciardha et al., 2015), and the script generation measure were administered, and from Studies 3a and 3b the reading speed measure, the expertise heuristics and offence related cues measures were administered. The presentation of the measures were randomised (with the exception of the screening questions and reading speed test, which were always presented first and second respectively), in an attempt to reduce order effects.

Reading Speed Measure. To eliminate the possibility that individual differences in reading speed could affect participants' reaction times on the expertise measures all

participants completed a reading speed task with reaction time recorded (see Chapter Eight, Studies 3a and 3b, for a more detailed overview).

Impression Management. The *Impression Management Scale* (IM) of the Paulhus Deception Scales (Paulhus, 1991) measures a participant's level of faking good (i.e., attempting to represent themselves in a positive light; see Chapter Seven, Study 2, for a more detailed overview). In the current study, measure reliability was considered acceptable ($\alpha = .76$).

Fire-Related Measures. The Four Factor Fire Scales (Ó Ciardha et al., 2015) was used in an attempt to discriminate between un-apprehended firesetters and community comparisons. This measure was scored using a computer algorithm designed from Ó Ciardha et al's. (2016) scoring template (refer to Chapter Seven, Study 2, for a more detailed overview). The present study had varying reliability scores for each of the subscales. Identification with fire ($\alpha = .89$) and serious fire interest ($\alpha = .84$) exhibited good reliability, firesetting as normal exhibited acceptable reliability ($\alpha = .74$), whereas fire safety awareness exhibited questionable reliability ($\alpha = .63$).

Firesetting Script Generation Measure. To investigate the presence of scripts between un-apprehended firesetters and community comparisons, participants were required to provide a step by step solution to the four scenarios outlined in Study 2 (see Appendix Four for a full list of scenarios; see Chapter Seven, Study 2, for a more detailed overview). The presence or absence of a script was determined by an independent rater (described in more detail below). The average script score for each participant group can be seen in Table 9.4.

Heuristics Measure of Expertise. To investigate the presence of firesetting heuristics, a key facet of expertise, participants were presented with the 22 scenarios outlined in Study 3a (see Appendix Eight for a full list of scenarios; see Chapter Eight, Study 3a, for a more detailed overview).

Offence Related Cues Measure. To investigate the ability of participants to process offence related cues, participants were presented with the 14 fire related scenarios outlined in Study 3b (practice $n = 2$; experimental $n = 12$; see Appendix Nine for a full list of scenarios; see Chapter Eight, Study 3b, for a more detailed overview).

Materials

The study was available to access to participants who were registered to use Prolific Academic, the online recruitment platform for scientific research. Restrictions for the study meant that only males, aged over 18, and who lived in the U.K. were eligible to take part. Participants completed the study online using the study platform Qualtrics, accessed via a unique study link provided on the Prolific Academic site.

Procedure

Eligible participants were invited to participate in this study online via Prolific Academic. Participants were told that the study was investigating how and why firesetting behaviour occurs. Participants were told that they would be given scenarios and asked to solve the scenarios. Participants were not asked for any identifiable information. As participants completed the study online, and did not download any software, the recorded reaction time data was not affected by the speed of the user's computer. After giving informed consent, participants were prompted to provide non-identifiable demographic information (e.g., age, ethnicity, education level, and information about criminal convictions) as well as complete screening questions regarding their previous firesetting behaviour (see Appendix Eleven). Participants then completed the reading speed test, the Four Fire Factor Scales, the script measure, and the expertise measures. Participants were debriefed online immediately following completion of the study and were paid £5.00 into their Prolific Academic account. There were three attention checks within the study, all participants retained for analysis passed a minimum of two checks ($M = 2.76$, $SD = .43$). Participants were allowed 90 minutes to complete the study, after which the study would

be terminated, and their information was not collected (*M* Completion Time 41.23 minutes, *SD* = 21.31 minutes).

Ethics

The study was reviewed and approved ethically by the University Research Ethics Committee (REF 4497). The study asked participants to provide solutions to scenarios that detailed somebody setting an imaginary fire, which could be considered to be asking participants to think in a pro-criminal manner. Therefore, all participants were fully debriefed, with emphasis placed on the negative consequences of firesetting behaviour (e.g., death, injury, and severe property damage).

Interrater Reliability

Due to the substantial agreement between the two raters employed to rate the script measure in Study 2, it was decided that the script measure would be analysed by one rater, and a subset of 15% (*n* = 45) would be analysed by the author. The independent rater was chosen due to experience of working clinically with firesetters, as well as conducting research in the firesetting field, and had previous experience of rating the scenarios in Study 2. The rater held an MSc in Forensic Psychology, and was entirely independent to the research being conducted. There were no instances of disagreement regarding the presence/absence of a script.

<div align="center">

Results

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Power Analyses and Analysis Strategy

G*Power (Version 3.1; Faul et al., 2007; with at least 95% power and α = .05) indicated that a total sample size of 52 participants would be required to conduct each multivariate analysis of variance (MANOVA) and detect a large interaction effect (.40), a total sample size of 82 would be required to conduct each ANOVA and detect a large effect (.40), and a total sample size of 52 would be required to conduct each Chi-Square test of independence and detect a large effect (.50). Thus, the current sample size (*n* = 249)

was adequate for each planned analysis. As outlined in Studies 2, 3a, and 3b the use of a

large interaction effect is in line with previous research examining scripts and expertise

(i.e., Krahe & Tomaszewska-Jedrysiak, 2011; Topalli, 2005; van Gelder et al., 2017;

Wright et al., 1995).

Whilst ethnicity differed significantly between the two groups there is no

theoretical reason to believe that ethnicity would be linked with the concepts, therefore,

ethnicity was not entered as a covariate into the analysis.

Un-apprehended firesetters could be differentiated from community comparisons

on their overall impression management scores, $F(1, 248) = 16.00$, $p < .001$, $\eta_p^2 = .06$.

However, the following reported results represent scores unadjusted for the effects of

impression management as social desirability bias is now understood to be a sign of

positive adjustment and therefore correlated with reduced risk, rather than a sign of

antisocial behaviour. Correcting for it is seldom helpful since it removes variance that is

shared with content variables (Mills et al., 2003; Uziel, 2010)[22].

To compare scores on the Four Fire Factor Scales (Ó Ciardha et al's., 2014), and

establish the presence of firesetting scripts and expertise differences between participant

groups (i.e., comparing un-apprehended firesetters and community controls, as well as

comparing one time un-apprehended firesetters, repeat un-apprehended firesetters, and

community comparisons) were examined using a series of MANOVAs with follow up

ANOVAs, Chi-Square tests of independence, and a series of ANOVAs. Two MANOVAs

were conducted on the Four Fire Factor Scales (Ó Ciardha et al's., 2014) with fire

identification, serious fire interest, fire safety, and firesetting as normal scores entered as

the four dependent variables. Chi-Square tests of independence were conducted to test the

presence or absence of each script (i.e., fire is a powerful messenger, fire destroys

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[22] Nevertheless, repetition of the forthcoming analysis with impression management entered as a covariate
did not alter the results.

evidence, fire gets me attention, and fire is soothing). Four ANOVAs were conducted on the Heuristics expertise measures, with accuracy of both fire and non-fire related scenarios, each entered as a separate dependent variables, and on the mean reaction time, to both non firesetting and firesetting scenarios, again each entered as separate dependent variables. To establish whether firesetters were superior at processing offence related cues, a key facet of expertise, differences between un-apprehended firesetters and community comparisons as well as differences between one time un-apprehended firesetters, repeat un-apprehended firesetters, and community comparisons were examined using an ANOVA with mean reaction time to item selection entered as a dependent variable.

Fire-Related Measures

Analysis of the Four Fire Factor Scales using a MANOVA, comparing un-apprehended firesetters and community comparisons, as hypothesised, revealed a significant group effect $F(4, 241)$[23] $= 4.51$, $p <.01$; Pillai's Trace[24] $= .07$ $\eta_p^2 = .07$. This significant effect of group, in line with predictions, was also true when comparing one time un-apprehended firesetters, repeat un-apprehended firesetters, and community comparisons, $F(8, 482)$[25] 2.91, $p <.01$; Pillai's Trace[26] $= .09$, $\eta_p^2 = .05$.

Univariate analysis revealed that, in line with predictions, un-apprehended firesetters reported identifying with fire more $F(1, 246) = 17.52$, $p <.001$, $\eta_p^2 = .07$ than community comparisons[27]. This was also the case when comparing one time un-

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[23] After calculating Mahalanobis distance, two cases (24.24 and 40.98) exceeded the critical value of 18.47, and were therefore removed.

[24] As the data was not normally distributed and there some issues with linearity Phillai's Trace statistic was used.

[25] As above, after calculating Mahalanobis distance, two cases (24.24 and 40.98) exceeded the critical value of 18.47, and were therefore removed.

[26] As above, the data was not normally distributed and there some issues with linearity, therefore, Phillai's Trace statistic was used.

[27] Although an ANOVA is robust to assumption violations, as the data was not normally distributed and there were problems with homogeneity of regression slopes a Mann-Whitney U test was conducted to ensure reliability of the ANOVA result. The first Mann-Whitney U confirmed that un-apprehended firesetters ($Md = 14.00$, $n = 107$), identified with fire more than community comparisons ($Md = 11.00$, $n = 136$), $U = 5167$, $z = -3.97$, $p =< .001$, $r = - 0.25$.

apprehended firesetters, repeat un-apprehended firesetters, and community comparisons, $F(2, 243) = 10.52$, $p < .001$, $\eta_p^2 = .08$. Subsequent Post Hoc comparisons, with Bonferroni adjusted levels, revealed that one time un-apprehended firesetters ($p < .05$, $d = 0.39$) and repeat un-apprehended firesetters ($p < .001$, $d = 0.73$) significantly identified with fire more than community comparisons firesetters. However, contrary to predictions repeat un-apprehended firesetters did not significantly identify with fire more than one time un-apprehended firesetters ($p = .21$)[28].

Un- apprehended firesetters did not report more interest in serious fires than community comparisons, $F(1, 244) = 3.16$, $p = .07$, $\eta_p^2 = .01$, although, this was trending towards significance, and exhibited a small effect size (Cohen, 1962). Un-apprehended firesetters also did not report normalising fire more, $F(1, 244) = .33$, $p = .56$, $\eta_p^2 = .01$ or report lower levels of perceived fire safety awareness, $F(1, 244) = 1.45$, $p = .23$, $\eta_p^2 = .01$, relative to community comparisons. This was also true when comparing one time un-apprehended firesetters, repeat un-apprehended firesetters, and community comparisons. There were no significant group effects in participants' levels serious fire interest, $F(2, 243) = 1.58$, $p = .21$, $\eta_p^2 = .01$, normalisation of fire, $F(2, 243) = .34$, $p = .71$, $\eta_p^2 = .00$ or perceived fire safety awareness, $F(2, 243) = 1.30$, $p = .28$, $\eta_p^2 = .01$.

Script Measure

Analysis of the presence of the four scripts was performed using Chi-Square tests for independence. In line with predictions, a significant association was found between

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[28] Although a MANOVA is robust to assumption violations, as the data was not normally distributed and both homogeneity of regression slopes and homogeneity of variance could not be assumed a Kruskal Wallis test was conducted to ensure reliability of the ANOVA result. The Kruskal Wallis test confirmed the above result χ^2 (2, $n = 247$) $= 18.00$, $p = <.001$. Follow up Mann Whitney U tests confirmed, with a Bonferroni adjustment, confirmed that one time un-apprehended firesetters ($Md = 12$, $n = 62$) and repeat un-apprehended firesetters ($Md = 16$, $n = 45$) significantly identified with fire more than community comparisons firesetters ($Md = 11$, $n = 140$; $U = 3389$, $z = -2.50$, $p = 0.01$, $r = -0.18$ and $U = 1921$, $z = -3.95$, $p = <.001$, $r = -0.3$ respectively).

groups and the presence of the fire is a powerful messenger script χ^2 (1, N =249) = 3.93, p <.05, φ = -.13. Whilst, post hoc analysis could not identify any differences, this is arguably due to the conservativism of the applied Bonferroni correction, as more un-apprehended firesetters were rated as holding the script more often than expected by chance (expected count n = 24.5 and observed count n = 31), and less community comparisons were rated to hold the script less often than expected by chance (expected count n = 32.5 and observed count n = 26). This significant association was also found between one time un-apprehended firesetters, repeat un-apprehended firesetters, and community comparisons and the presence of the fire is a powerful messenger script, χ^2 (2, N =249) = 5.84, p = .05, φ_c = .15. Again, whilst, post hoc analysis struggled to identify any differences, due to the conservativism of the applied Bonferroni correction, more repeat un-apprehended firesetters were rated as holding the script than expected by chance (expected count n = 10.3 and observed count n = 16), and less community comparisons were rated to hold the script than expected by chance (expected count n = 32.5 and observed count n = 26) may be driving the overall significant effect. One time un-apprehended firesetters' expected and observed counts did not differ.

Contrary to predictions no other significant associations were found between un-apprehended firesetters and community comparisons in the presence of the fire is the best way to destroy evidence, χ^2 (1, N =249) = .38, p = .54, φ = -.04 fire will get me attention, (p = .08, Fisher's Exact Test[29]), and fire is soothing, χ^2 (1, N =249) = .04, p = .85, φ = -.01 scripts. There was also no significant association found between one time un-apprehended firesetters, repeat un-apprehended firesetters, and community controls in the presence of the fire is the best way to destroy evidence, χ^2 (2, N =249) = .52, p = .77, φ_c = -.05 or fire

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[29] Fisher's exact test is reported as the expected frequency for some cells were less than 5.

is soothing, χ^2 (2, N =249) = 5.40, p = .07, φ_c = -.15, although the latter was trending towards significance, with a small effect size.

However, a significant association was found between one time un-apprehended firesetters, repeat un-apprehended firesetters, and community controls and the presence of the fire will get me attention script, (p < .05, Freeman-Halton-Test)[30]. Again, post hoc analysis struggled to identify any differences, but similar to the fire is a powerful messenger script, repeat un-appended firesetters' and community comparison expected and observed counts may be driving the overall significant effect. Repeat un-apprehended firesetters were rated to hold the script more than expected by chance (expected count n = 0.5 and observed count n = 2), whereas community comparisons were rated to hold the script less than expected by chance (expected count n = 1.7 and observed count n = 0). Again, one time un-apprehended firesetters' expected and observed counts did not differ.

Heuristics Measure of Expertise

Analysis of the accuracy for fire scenarios using an ANOVA, contrary to predictions, failed to reveal a significant group effect, F(1, 247) = .15, p = .70, η_p^2 = .00. Un-apprehended firesetters could not be differentiated from community comparisons on the number of correctly answered fire related scenarios. This non-significant effect of group, contrary to predictions, was also true when comparing one time un-apprehended firesetters, repeat un-apprehended firesetters and community comparisons, F(1, 246) = .08, p = .93, η_p^2 = .00. An ANOVA conducted on the number of correctly answered non-fire related scenarios also did not reveal a significant group effect, F(1, 247) = .12, p = .74, η_p^2 = .00. However, this was in line with the hypothesis that un-apprehended firesetters would not be differentiated from community comparisons on the number of non-fire related

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[30] Freeman-Halton-Test (Freeman & Halton, 1951), and extension of the Fisher's exact test, is reported as the expected frequency for some cells was less than 5.

scenarios answered correctly. This non-significant effect of group, in line with predictions, was also true when comparing one time un-apprehended firesetters, repeat un-apprehended firesetters and community comparisons, $F(1, 246) = .07$, $p = .93$, $\eta_p^2 = .00$.

Analysis of reaction time to fire related scenarios using an ANOVA revealed a non-significant group effect, $F(1, 247) = .32$, $p = .57$, $\eta_p^2 = .00$[31]. Contrary to predictions, un-apprehended firesetters, on average, were no quicker when completing the fire related measures than community comparisons. This non-significant effect of group, contrary to predictions, was also true when comparing one time un-apprehended firesetters, repeat un-apprehended firesetters and community comparisons, $F(2, 246) = .22$, $p = .80$, $\eta_p^2 = .00$[32]. Thus, failing to demonstrate the existence of a continuum of expertise.

An ANOVA conducted on the reaction time to the non-fire related scenarios, as predicted, did not reveal a significant group effect, $F(1, 247) = .13$, $p = .72$, $\eta_p^2 = .00$[33]. Un-apprehended firesetters could not be differentiated from community comparisons on their reaction time to non-fire related scenarios. This non-significant effect was also confirmed when comparing one time un-apprehended firesetters, repeat un-apprehended firesetters and community comparisons, $F(2, 246) = .19$, $p = .83$, $\eta_p^2 = .00$[34].

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[31] There were a substantial number of outliers ($n = 53$) that were greater than three times the interquartile range. However, the analysis is representative of retention of the outliers as repeating the analysis with the removal of these outliers did not change the result.

[32] There were a substantial number of outliers ($n = 51$) that were greater than three times the interquartile range. However, the analysis is representative of retention of the outliers as repeating the analysis with the removal of these outliers did not change the result.

[33] There were a substantial number of outliers ($n = 73$) that were greater than three times the interquartile range. However, the analysis is representative of retention of the outliers as repeating the analysis with the removal of these outliers did not change the result.

[34] There were a substantial number of outliers ($n = 75$) that were greater than three times the interquartile range. However, the analysis is representative of retention of the outliers as repeating the analysis with the removal of these outliers did not change the result.

Offence Related Cues Expertise Measure

Analysis of reaction time to item selection using an ANOVA, contrary to predictions, failed to reveal a significant group effect $F(1, 247) = .01$, $p = .93$, $\eta_p^2 = .00$[35]. Un-apprehended firesetters were no quicker at selecting items needed to start the fire than offender comparisons. This non-significant effect of group, contrary to predictions, was also true when comparing one time un-apprehended firesetters, repeat un-apprehended firesetters and community comparisons, $F(2, 246) = .07$, $p = .93$, $\eta_p^2 = .00$[36][37]. Thus, failing to demonstrate a continuum of expertise.

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[35] There were a substantial number of outliers ($n = 55$) that were greater than three times the interquartile range. However, the analysis is representative of retention of the outliers as repeating the analysis with the removal of these outliers did not change the result.

[36] There were a substantial number of outliers ($n = 57$) that were greater than three times the interquartile range. However, the analysis is representative of retention of the outliers as repeating the analysis with the removal of these outliers did not change the result.

[37] Un-apprehended firesetters were not distinguishable from community comparisons on the number of items selected to start the fire. Furthermore, given the non-significant result of reaction time no further exploration of item selection was conducted.

Table 9.4

Comparison of Means on Outcome Measures

Measures	Un-apprehended Firesetter N = 107 M (SD)	Community Comparison N = 142 M (SD)	α
Fire Related Measures			
Identification with Fire	14.72 (5.25)	12.19 (4.22)	.89
Serious Fire Interest	9.31 (4.31)	8.42 (3.55)	.84
Fire Safety Awareness	7.94 (2.32)	7.61 (1.91)	.63
Firesetting as Normal	12.14 (3.34)	11.84 (3.70)	.74
Script Measure			
Fire is a powerful messenger	.29 (.46)	.18 (.39)	-
Fire destroys evidence	.14 (.35)	.17 (.38)	-
Fire gets me attention	.03 (.17)	.00 (.00)	-
Fire is soothing	.08 (.28)	.08 (.27)	-
Total Script Score	.54 (.78)	.43 (.60)	-
Expertise Measures			
Fire Related Heuristics Measure RT (seconds)	17.63 (10.48)	16.91 (9.34)	-
Offence Cues Measure RT (seconds)	16.55 (7.20)	16.47 (8.15)	-

Discussion

Inconsistent with previous research findings in the areas of offending expertise

(Bennett & Wright, 1984; Bourke et al., 2012; Casey, 2015; Gilbert et al., 2013; Jacobs,

2012, 2013; Jacobs et al., 2003; Maguire & Bennett, 1982; Nee et al., 2015; Nee &

Meenaghan, 2006; Nee & Taylor, 2000; 2004; Taylor & Nee, 1988; Topalli, 2005; Topalli

& Wright, 2003; Topalli, Jacques & Wright, 2015; Ward, 1999; Wright & Decker, 1994; Wright et al., 1995) and findings from Studies 2, 3a, and 3b un-apprehended firesetters, relative to offender comparisons, did not report a higher level of expertise. However, un-apprehended firesetters did report identifying with fire more, and were trending towards reporting more interest in serious fire, than community comparisons. This finding was also confirmed when comparing one time un-apprehended firesetters, repeat un-apprehended firesetters, and community comparisons, with both one time and repeat un-apprehended firesetters identifying with fire significantly more than community comparisons. These findings in part replicate previous research into fire related variables (Clare et al., 1992; Dickens et al., 2009; Gannon et al, 2013; Gannon et al., 2015; Haines et al., 2006; Ó Ciardha et al., 2014; Taylor et al., 2002). Furthermore, un-apprehended firesetters were rated as holding the fire is a powerful messenger script more often than expected by chance and community comparisons were rated as holding the script less often than expected by chance. This finding was confirmed when comparing one time un-apprehended firesetters, repeat un-apprehended firesetters, and community comparisons. Repeat un-apprehended firesetters were rated as holding the fire is a powerful messenger script more often than expected by chance and community comparisons were rated as holding the script less often than expected by chance. Additionally, differences were also found in the presence of the fire will get me attention script when comparing the three participant groups. Repeat un-apprehended firesetters were rated to hold the script more than expected by chance, whereas community comparisons were rated to hold the script less than expected by chance. Taken together these findings demonstrate some replication of the findings from other research within scripts and findings from Study 2 with regards to scripts in aggression (Anderson & Bushman, 2002; Anderson & Carnagey, 2004; Anderson et al., 2007; DeWall & Anderson, 2011; Huesmann, 1988; Huesmann & Eron, 1984) and sexual offending (Gannon et al., 2008; Ward, 1999; Ward & Hudson, 2000).

Moreover, the motivations and targets for firesetting behaviour in this study share similarities to those identified in Barrowcliffe and Gannon's (2015, 2016) studies. It is encouraging to see the similarities in both motivation and ignition target between this study to previous prevalence studies of un-apprehended firesetters (Barrowcliffe & Gannon, 2015, 2016).

However, caution should be drawn when interpreting these findings, as the sample and study design may provide key explanations as to why some of the findings from Studies 1, 2, 3a, and 3b were not replicated more comprehensively. First, with regards to the sample, 62 (57.94%) of the un-apprehended firesetters reported having only ever set one fire, with a further 27 (25.33%) reporting having only ever set two fires. Furthermore, the majority (79%, $n = 86$) of un-apprehended firesetters reported igniting their first fire between 14 and 18 years of age, and just over half (55%, $n = 60$) reported igniting their last/most recent fire between 14 and 18 years of age. This meant that only 23 (21%) un-apprehended firesetters ignited their first fire in adulthood. The research regarding expertise outlined in Chapter Three, states that expertise develops as a result of well-practiced behaviour, performed across several years, and includes multiple instances of engaging in that behaviour which leads to superiority and dexterity. The un-apprehended firesetters who participated in this study may have lacked the substantive firesetting history needed to be able to adequately demonstrate expertise, and were not experienced enough to be considered expert, as the majority engaged in one time instances of firesetting, during adolescence.

The lack of previous firesetting activity may also explain why very few significant differences were found between un-apprehended firesetters and community controls in regards to the presence of scripts. Similar to expertise, scripts have also been shown to develop over a period of time and represent activities that are common, routine, or well-practiced (Abelson, 1981; Anderson, 1995). The script should become activated more

readily when the behaviour associated with a given script is repeatedly and successfully enacted (Tedeschi & Felson, 1994). It could be argued that the un-apprehended firesetters in this study did not possess well developed firesetting scripts given their lack of repetitive firesetting behaviour. Furthermore, one script refers to the use of fire to destroy evidence after engaging in criminal activity. However, only a limited number of participants ($n = 18$, 16.82%) in this study reported having received a criminal conviction. This may have limited the number of participants to which that script could apply in the first instance.

The third limitation of this study refers to the use of an online study platform to conduct this research, as well as the length of the study. Whilst Prolific Academic is a popular way to recruit participants among scientific research and clear instructions were provided to participants along with practice trials when measures required more detailed input (along with attention checks) conducting a study online is still problematic. Participants are unable to clarify instructions with the researcher should they not understand elements of the study. Furthermore, the measures used to determine expertise were based on reaction time, however, as the study is completed by their participant in their own surroundings the researcher has no knowledge regarding what circumstances the participant is completing the research in. The participant may be engaging in all manner of other activities which could affect their reaction time. Therefore, one cannot be sure that the recorded reaction times are genuine. Furthermore, participants were asked to engage with the study for an extremely long time. The average completion time for the study was 41.23 minutes, therefore, it could be argued that the lack of significant differences found between participant groups may due to participant fatigue. Further replication of this study should seek to reduce the number of tasks participants are asked to complete.

A final limitation of the study is the questionable reliability exhibited by the Firesetting Safety Awareness of the Four Fire Factor Scales (Ó Ciardha et al., 2014). Similar to the poor reliability of the Fire Safety Awareness Scale in Study 2, further

analysis showed that this might have been due to participants answering in a way that contravened expected responses. For example, most participants answered 'undecided' to the item 'I know a lot about how to prevent fires'. However, the general assumption of this scale is that most people do have an awareness regarding fire prevention. Thus, the expected response to this item should be 'strongly agree'. Therefore, it is these contradictions in responding, which may well account for the poor reliability of the scales.

Given the limitations above with regards to the sample used in this current study, future research should seek to further validate the scripts and expertise of firesetters using a sample of firesetters more akin to the sample of active burglars, carjackers, and crack dealers (Jacobs,1996a, 1996b; Jacobs, 2012, 2013; Jacobs & Miller, 1998; Jacobs et al., 2003; Nee et al., 2015; Topalli's, 2005; Topalli & Wright, 2003; Topalli, et al., 2015; Wright & Decker, 1994) reported in some other expertise research.

Chapter Ten General Discussion and Concluding Comments

Overview of the Research

This thesis began by reviewing the existing theories of firesetting, followed by an examination of the literature pertaining to scripts and expertise. Two key areas of deficit were highlighted. First, whilst considered in other offending domains, to date, the role of cognition, and specifically the concept of scripts is yet to be meaningfully applied to firesetting. The concept of firesetting scripts was lacking from all but one of the current theoretical explanations that exist to explain firesetting behaviour; the M-TTAF (Gannon et al., 2012). However, although the M-TTAF considers the of role scripts, Gannon et al. (2012) only provide a very brief overview of two scripts. Minimal detail is provided about the content, structure, and etiological function of the proposed scripts and, to date, these scripts have remained untested.

The second clear area of deficit reviewed in this thesis has been the consideration of the proficiency of the firesetter, i.e., expertise. Whilst the concept of expertise has been shown both generally, and in relation to offending, it was evident that the concept of expertise has, to date, been absent from any current theory of firesetting. This omission has meant that the concept of firesetting expertise has never before been conceptualised, or empirically investigated. The lack of consideration for both of these concepts may be a crucial oversight. As highlighted in Chapter One, current theories of firesetting, with the exception of the M-TAFF (Gannon et al., 2012), are unable to adequately account for firesetting behaviour that occurs in the absence of fire interest. Therefore, these two concepts may prove to be key explanatory concepts that may account for this phenomenon, perhaps both in the presence and absence of fire interest.

Study 1: A Qualitative Exploration of the Scripts and Expertise Held by Firesetters

Study 1 aimed to gain exploratory information regarding whether firesetters hold firesetting scripts and demonstrate expertise in their firesetting. Given that very little is

known about the concept of firesetting scripts and expertise it was vital to gain preliminary information in order to (1) understand if firesetters hold scripts about fire and demonstrate expertise in their firesetting activity, and (2) adequately formulate hypotheses regarding the content, structure, and etiological functions of firesetting scripts and expertise, allowing for subsequent empirical investigation.

A sample of 25 imprisoned firesetters were interviewed about their previous firesetting, using a semi-structured interview schedule. Thematic analysis of the 25 semi-structured interviews yielded six clear themes about fire: *fire is a powerful tool, fire destroys evidence, fire is a cry for help, fire will get me attention, fire makes me feel better, and fire will end my life.* The findings from the study suggest that firesetters may hold specific scripts relating to fire, and that these scripts contribute to why they utilise fire in a given situation. In addition, the study also uncovered knowledge around firesetting expertise. The study yielded five clear themes that relate to: *fire knowledge, avoiding detection, automaticity, familiarity,* and *childhood fire play.* As outlined in Chapter Two, in addition to domain specific knowledge, the concepts of automaticity and deliberate practice are considered integral to the concept of dysfunctional expertise. Therefore, the emerging findings from this preliminary investigation regarding the presence of firesetting scripts and expertise warranted further investigation.

However, given that firesetting scripts and expertise had not been meaningful conceptualised before, it was thought to be premature to empirically investigate these concepts any further without first attempting to better articulate the content, structure, and etiological functions of these concepts. In the following chapter a preliminary conceptual framework of the potential scripts and types of expertise that are likely to characterise firesetters, was hypothesised. Important to note was that it was felt that the preliminary findings regarding scripts from Study 1, did not fit with the existing dichotomous classification of scripts being either: (1) behavioural guides or (2) procedural knowledge

present in the current literature. Instead, the themes appeared to relate to a set of motivational beliefs about firesetting, as opposed to cognitive frameworks which outline how to set a fire or knowledge structures which help understand criminal behaviour. These motivational beliefs appeared to provide the firesetter with information about why to set the fire, as opposed to how to do it. Therefore, as neither of the previous conceptualisations of scripts could be readily applied, the motivational beliefs observed in Study 1 were conceptualised into a novel framework of motivational firesetting scripts in order to distinguish them from other more behavioural or procedural definitions of scripts. The themes generated in Study 1, coupled with previous firesetting research and the author's clinical experience, were synthesised into a framework of coherent conceptualisations. Four clear scripts were hypothesised: *fire is a powerful messenger of revenge/warning* or *distress/'cry for help'*, *fire is the best way to destroy evidence, fire will get me attention,* and *fire is soothing.* In addition, two categories of expertise were hypothesised: *fire knowledge* and *avoiding detection*. The concepts of *automaticity*, *familiarity*, and *deliberate practice* were also hypothesised to be important to firesetting expertise.

Study 2: An Empirical Investigation of the Scripts and Expertise Held by Firesetters and Their Relationship to the Fire Factor Scale

Whilst Study 1 provided initial qualitative evidence that firesetters possess motivational scripts and expertise, it was imperative to test the conceptualisations hypothesised in Chapter Six empirically. Therefore, Study 2 aimed to empirically investigate, for the first time, the presence of motivational firesetting scripts and expertise. Furthermore, Study 2 investigated how the concepts of expertise and motivational scripts related to other more established concepts found to be important in firesetting behaviour; namely serious fire interest, perceived fire safety awareness, viewing firesetting as normal, and identification with fire (the Four Factor Fire Scales; Ó Ciardha et al, 2014). Importantly, Study 2 utilised fire service professionals (FSP) as a comparison group.

Results suggested that firesetters, relative to both offender and community comparisons, held increased cognitive and behavioural efficacy in relation to fire. Firesetters, when compared to both offender and community comparisons, reported holding more motivational firesetting scripts and were more expert. Interestingly, findings from the study indicated that FSP scored similar to that of firesetters on the number of motivational scripts held, and their level of demonstrated expertise. However, unexpectedly, FSP scored similarly to firesetters on their level of serious fire interest, and reported much higher levels of identification with fire, that differentiated them from the other participant groups. Finally, Study 2 also suggested that one's identification with fire was predictive of the presence of motivational firesetting scripts and both serious interest in fires and identification with fire was predictive of expertise.

Study 3a and 3b: An Empirical Investigation of the Expertise Held by Firesetters

Whilst Study 2 provided initial empirical evidence for the existence of firesetting expertise, the replication of those findings was crucial, given firesetting expertise is still in its infancy. Study 3 was formed of two studies, utilising 88 participants across two participant groups (44 firesetters and 44 offender comparisons). Study 3a tested the hypothesis that expert firesetters hold heuristics about firesetting, leading to superior performance. Results from Study 3a revealed that when comparing mean reaction times, firesetters were significantly faster when completing fire related heuristic measures. This was also confirmed by a logistic regression analysis; firesetters and offender comparisons could be successfully categorised based upon their reaction times to fire related heuristic measures. This finding is particularly interesting given that firesetters and offender comparisons could not be differentiated based upon their reaction time to the non-fire related scenarios. Therefore, the results appeared to confirm that firesetters utilised previously held successful heuristics, allowing for quicker decision making, and demonstrating expertise. However, there was no evidence for the existence of a continuum

of firesetting expertise. Results failed to show a significant difference between the number of recorded previous firesetting incidents and the speed at which participants answered the fire related scenarios.

Study 3b investigated the hypothesis that expert offenders hold more knowledge about fire and are superior in their ability to automatically recognise offence-related cues in their environment. Results showed that firesetters could be differentiated from offender comparisons on their mean reaction time to selecting items needed to start a fire. Furthermore, a logistic regression confirmed that group membership could be determined based on the reaction time. The difference in reaction time was the result of firesetters' ability to select what items they wanted to use more quickly, as a result of firesetters' holding knowledge about fire and the automatic processing of offence related cues, displaying expertise. Furthermore, there was evidence of a continuum of expertise, with offender comparisons being significantly slower than one time and repeat firesetters or non-firesetters on their mean reaction times to selecting items needed to start a fire. However, there was no evidence of a gradient of expertise as one time and repeat firesetters could not be differentiated.

Study 4: An Empirical Investigation of the Scripts and Expertise Held by Un-apprehended Firesetters and Their Relationship to the Fire Factor Scale

Whilst Studies 1, 2, 3a, and 3b provided qualitative and quantitative evidence that firesetters possess motivational firesetting scripts and expertise, and the links between fire concepts (i.e., identification with fire and fire interest) it was imperative to replicate these findings with un-apprehended sample of firesetters. Therefore, Study 4 aimed to empirically investigate, for the first time, the presence of motivational firesetting scripts and expertise with un-apprehended firesetters, and how these concepts related to the fire related variables of: serious fire interest, perceived fire safety awareness, viewing

firesetting as normal, and identification with fire (the Four Factor Fire Scales; Ó Ciardha et al, 2014).

Results found that un-apprehended firesetters reported identifying with fire more, and were trending towards reporting more interest in serious fire, relative to community comparisons. This finding was also confirmed when comparing one time un-apprehended firesetters, repeat un-apprehended firesetters, and community comparisons, with both one time and repeat un-apprehended firesetters identifying with fire significantly more than community comparisons. Furthermore, results suggested that un-apprehended firesetters did differ on the presence of the fire is a powerful messenger script. This finding was confirmed when comparing one time un-apprehended firesetters, repeat un-apprehended firesetters, and community comparisons, with repeat un-apprehended firesetters rated as holding the fire is a powerful messenger script more often than expected by chance and community comparisons less often than expected by chance. Additionally, differences were also found in the presence of the fire will get me attention script when comparing the three participant groups. Repeat un-apprehended firesetters were rated to hold the script more than expected by chance, whereas community comparisons were rated to hold the script less than expected by chance. However, un-apprehended firesetters, relative to community comparisons, did not demonstrate a higher level of expertise. With regards to holding heuristics about firesetting, a key facet of expertise, firesetters could not be differentiated from community comparisons on the number of correctly answered fire related heuristic measures. Furthermore, when measuring un-apprehended firesetters ability to process offence related cures, another key facet of expertise, analysis of reaction time to item selection failed to reveal a significant group effect. Firesetters were no quicker at selecting items needed to start the fire than offender comparisons. Both of these non-significant effects of group were also true when comparing one time un-apprehended

firesetters, repeat un-apprehended firesetters, and community controls. Thus, failing to demonstrate the existence of a continuum of expertise.

The Motivational Scripts and Expertise of Firesetters

This thesis sought to contribute to the developing knowledge base regarding deliberate firesetting in male imprisoned offenders through examining whether they hold firesetting scripts and have developed expertise in their firesetting. The findings from each study have been discussed in detail in Chapters Five to Nine. However, taken together, four key conclusions can be drawn from the combined findings: (i) preliminary evidence suggests that firesetters hold scripts about fire and this should be considered in both script and firesetting theory; (ii) there is a clear need to consider the concept of firesetting scripts in the treatment of firesetters; (iii) firesetters appear to possess expertise in regards to the offending and this should be considered in both expertise and firesetting theory, and (iv) the concept of firesetting expertise should be considered in the treatment of firesetters. Theory implications, treatment options, limitations, and future research directions are subsequently discussed.

Theory Implications

Motivational Firesetting Scripts

Before considering the implications of these findings to both script theory more generally, and firesetting theory specifically, it would be beneficial to consider the extent to which the proposed conceptualisations outlined in Chapter Six found support in the empirical findings from Studies 2 and 4. As outlined in Chapter Six, four motivational firesetting scripts were hypothesised: *fire is a powerful messenger of revenge/warning or distress/ 'cry for help', fire is the best way to destroy evidence, fire will get me attention,* and *fire is soothing.* In general, findings from Study 2 suggest that firesetting scripts are unique to firesetting offenders, as opposed to being a generally criminogenic trait, as there was a statistically significant difference between the number of scripts held by firesetters

and the number held by offender comparisons. Further, specific, analysis regarding the presence of each script confirmed that both apprehended and un-apprehended firesetters hold the fire is a powerful messenger and fire gets me attention motivational scripts. However, interestingly, it was FSP who were found to hold the fire destroys evidence script most often and there was no significant difference between the groups regarding the likelihood of holding the fire is soothing script. However, given this is only the first attempt to operationalise these motivational firesetting scripts, taken as a whole, there is scope to be optimistic about the conceptualisations proposed in Chapter Six as they did appear to find some support in the empirical studies conducted in this thesis. However, future empirical investigation is needed in order to increase the reliability and validity of these initial findings.

Now to consider the implications of these findings in relation to script theory generally, and firesetting theory specifically. In relation to the former, script theory, despite the clear oversight in previous literature regarding offending and scripts, this thesis demonstrated that firesetting offenders do appear to hold scripts. However, the key theoretical implication of these findings for script theory relates to the fact that the underlying function of the scripts held by firesetters is hypothesised to differ from what has been previously eluded to in the offending script literature. Through analysing the results of Study 1 it was felt that the preliminary findings regarding scripts did not fit with the existing dichotomous classification of scripts being either: (1) behavioural guides, which are cognitive frameworks that contain information that directs criminal behaviour in a given situation (Huesmann, 1988; Huesmann & Eron, 1984; Ward & Hudson, 2002), or (2) procedural scripts, that pertain to knowledge structures that are used to understand criminal behaviour. Instead, the themes appeared to relate to a set of motivational beliefs about firesetting. The motivational beliefs appeared to provide the firesetter with information about why to set the fire, as opposed to how to do it. Consequently, the motivational

beliefs observed in Study 1 were conceptualised into a novel framework of motivational firesetting scripts in order to distinguish them from other more behavioural or procedural definitions of scripts. As outlined in Chapter Two the literature surrounding scripts related to different types of offending is predominately theoretical in nature, and empirical evidence of hypothesised scripts is relatively sparse. Therefore, the suggestion of the concept of motivational scripts has important implications for the development of theory relating to scripts and offending. Although future research is needed into to explore this novel concept of motivational scripts in more detail, it is proposed that they would develop and operate in a similar way to behavioural guides/procedural scripts. Like these scripts, motivational scripts would be stored in long term memory, unconscious, and socially learnt through a linear process of encoding, retrieval, and rehearsal. Similar to Huesman's (1988) aggression scripts, the process of retrieval and rehearsal of these beliefs about firesetting would be self-perpetuating, in that the encoding of situations in which a fire has been set provides both motivational scripts for future firesetting behaviour, as well as triggering the retrieval of pre-existing motivational firesetting scripts. Therefore, despite there being differences in the functions they serve, it is suggested that the underlying mechanisms for how these motivational scripts develop would be very similar to behavioural guides/procedural scripts.

In relation to implications for firesetting theory, with the exception of the M-TTAF (Gannon et al., 2012) the idea that firesetters may hold scripts about fire has not been considered in any previous theoretical explanations of firesetting. Furthermore, although attention was paid to scripts in the M-TAFF very little information was given regarding what these scripts may contain, what function they take during the offence, or how they relate to other aspects known to be crucial to firesetting (e.g., psychological vulnerabilities). However, in this thesis the use of exploratory semi-structured interviews in Study 1, and subsequent conceptualisations, led to the development of four motivational

firesetting scripts (*fire is a powerful messenger of revenge/warning* or *distress/'cry for help'*, *fire is the best way to destroy evidence, fire will get me attention,* and *fire is soothing*). As outlined above, further empirical investigation conducted found that firesetting scripts are unique to firesetting offenders, as opposed to being a generally criminogenic trait, as there was a statistically significant difference between the number of scripts held by firesetters and the number held by offender comparisons. This represents an important development in firesetting theory, as it is the first time firesetters have been shown to hold firesetting scripts.

Furthermore, through the conceptualisation and empirical investigation conducted in this thesis, it can be suggested that the motivational firesetting scripts hypothesised in this thesis should subsume the basic firesetting scripts proposed by Gannon et al. (2012) referred to in Chapter One. The current motivational scripts in this thesis develop and refine Gannon et al's. (2012) scripts further, as well as presenting a novel script, *fire is the best way to destroy evidence*, never before alluded to in this area. However, although it is suggested that these motivational scripts should subsume the basic ones proposed by Gannon et al. (2012) this thesis is in agreement that motivational scripts should remain within the psychological vulnerabilities/critical risk factors as proposed in the M-TTAF. As it is the interaction between the psychological vulnerabilities and these motivational scripts, which contain beliefs about fire, that results in firesetting behaviour. How these motivational firesetting scripts can be effectively synthesised into Tier 2 of the M-TTAF and used within the treatment of deliberate firesetting will be outlined later in this chapter.

The interaction between psychological vulnerabilities and motivational scripts is seen in the finding in Study 2, and the fact that FSPs also appeared to hold scripts about fire to a similar extent as firesetters. Whilst initially this finding may appear as perplexing, this finding can be explained. Given that scripts are acquired through unique learning experiences with fire, it is plausible to suggest that FSP will too have had unique

experiences with fire and hold similar cognitive information as firesetters. FSP are observing firesetting behaviour daily. Furthermore, some FSP provide safety interventions for firesetters, and as a consequence FSP are acquiring information about *why* firesetters have used fire in a given situation. These experiences with fire will inevitably lead to the development of knowledge about fire and firesetting motivations. However, the reason why firesetters hold this information in the form of firesetting scripts, and use fire maladaptively, and FSP do not may be due to the multiple psychological vulnerabilities that contribute to an act of firesetting outlined by Gannon et al (2012) in the M-TTAF. Therefore, whilst FSP hold information about the motives of firesetting behaviour, this information will not translate into firesetting behaviour as FSP do not possess the other psychological vulnerabilities that interact with these scripts to facilitate firesetting.

Firesetting Expertise

As outlined in Chapter Three, the concept of expertise has not previously been considered in any theoretical explanation of firesetting, consequently there has been no attempts to formally conceptualise what may constitute firesetting expertise, or to empirically investigate the concept. However, similar to that of firesetting scripts, through the use of exploratory semi-structured interviews in Study 1, the conceptualisation of expertise, and the quantitative investigation of expertise in Studies 2, 3a, 3b, and 4 represent the first known attempts to explore the concept of expertise with firesetters. Therefore, before considering the findings in relation to wider expertise theory and firesetting theory, it would be helpful to consider how the conceptualisations outlined in Chapter 6 found support in Studies 2, 3a, 3b, and 4.

As outlined in Chapter Six, it is proposed that firesetters demonstrate dysfunctional expertise based upon the knowledge structures and skills they have acquired, which can be grouped into two categories of expertise: fire knowledge and avoiding detection. In relation to fire knowledge, this included: the use of accelerant, setting multiple ignition

points, using highly flammable material (e.g. paper, clothing etc.), and how best to contain the fire (e.g. using a metal rather than a plastic bin). When considering what types of avoidance techniques firesetters might utilise, these could include: the use of an acquaintance, choosing a secluded or quiet area to set a fire, an awareness of Closed-Circuit Television (CCTV), or a firesetting toolkit which may include the tools needed to set a fire (e.g. a lighter and accelerant). Furthermore, familiarity and automaticity in relation to being better able at processing cues in their environment were also hypothesised as important elements of firesetting expertise.

Results from Study 2 confirmed a hypothesised key facet of firesetting expertise, fire knowledge, as firesetters were rated as holding more expertise, than offender comparisons, when asked to describe how they would use fire to solve a problem. The presence of firesetting expertise was further confirmed in Studies 3a and 3b as firesetters appeared to utilise previously held successful heuristics in order to solve firesetting puzzles, as well as increased knowledge about fire and an ability to automatically process offence related cues when asked to consider how somebody set an imaginary fire. Unfortunately, these findings were not confirmed with a sample of un-apprehended firesetters. However, again similar to motivational scripts, given this is only the first attempt to operationalise firesetting expertise there is scope to be optimistic about the conceptualisations proposed in Chapter Six as they did appear to find some support in the empirical studies conducted in this thesis. However, further research is needed not only to confirm these initial findings, but to also investigate in more detail the hypothesise that crucial to firesetting expertise is the ability to avoid detection. Arguably, this was not operationalised and investigated as clearly as some of the other elements of firesetting expertise within this thesis. Discussions for future research are outlined later in this chapter.

Now to turn attention to the theoretical implications for dysfunctional expertise in general. The DEM (Nee & Ward, 2015) proposes four key elements of dysfunctional expertise: (1) an ability to automatically and unintentionally appraise the immediate environment without conscious awareness; (2) a superior ability to automatically recognise offence-related cues in the environment; (3) the possession of heuristics which contain examples of previously successful behaviour; and (4) behavioural scripts which allow for the quicker processing of information and automatic commission of a crime. From reviewing the findings observed in this thesis, it is clear that the proposed components of firesetting expertise can be readily mapped onto several proponents of the DEM (Nee & Ward, 2015).

First, in relation to both the unintentional appraisal of the environment and the recognition of offence related cues, these two facets of the DEM (Nee & Ward, 2015) found support in both Studies 2 and 3b. In both studies firesetters demonstrated a superior knowledge about fire and an ability to automatically process the presence of objects that would allow them to successfully set a fire (i.e., offence related cues), relative to offender comparisons. This was confirmed in both being rated as more expert in Study 2 when asked to solve a problem using fire, as well as being faster at suggesting how somebody may have set a fire and what items that may have used to do so in Study 3b. Second, in relation to the possession of heuristics, another key facet of the DEM (Nee & Ward, 2015), results from Study 3b appeared to support this facet. As firesetters, relative to offender comparisons, were significantly quicker at solving fire related puzzles which were designed to encourage firesetters to draw on their firesetting heuristics in order to solve the puzzles.

However, in relation to the final proponent of Nee and Ward's (2015) model, behavioural scripts, the current findings do not support this proponent of the model. The behavioural guides outlined in the DEM (Nee & Ward, 2015) are suggested to contain

information about how and what order to perform certain actions and what the likely outcome of such actions would be. However, within this thesis, it is proposed that these offence related scripts cannot be readily applied to firesetting behaviour. Within the domain of firesetting, a different conceptualisation of the relationship between scripts and expertise is proposed. As proposed earlier, motivational firesetting scripts represent a set of beliefs about firesetting and account for *why* firesetters set a fire and firesetting expertise refers to *how* they achieve that successfully. That is to say the activation of the motivational script does not cause the subsequent offence to be perpetrated more smoothly. Rather the motivational script provides the knowledge of when is an appropriate opportunity to commit the offence due to development of beliefs about fire, and the knowledge and skills developed through previous firesetting are responsible for its successful commission (demonstrating dysfunctional expertise). Therefore, this thesis would challenge the final proponent of the DEM (Nee & Ward, 2015) and suggest that this is in fact different for firesetting expertise. However, as outlined above, this thesis does still acknowledge that scripts and expertise are complimentary concepts and inextricably linked. Overall, the results from this thesis in relation to firesetting expertise appear to align with the majority of the proponents of the DEM (Nee & Ward, 2015), with the exception of the behavioural scripts outlined above. However, further empirical investigation is necessary in order to confirm these findings and provide additional support for the DEM (Nee & Ward, 2015).

Finally, with regards to the implications for firesetting theory, as outlined above, the conceptualisations and subsequent empirical investigations conducted in this thesis represent the first attempts to apply and research the concept of firesetting expertise. However, despite the lack of application up until now, within this thesis, apprehended firesetters consistently demonstrated more expertise than offender comparisons. This would suggest it is not simply a generic feature of all offenders, but rather firesetting

expertise is unique to firesetters. This finding has crucial significance when considering the theories that exist to explain firesetting. Given the M-TTAF (Gannon et al., 2012) is the most comprehensive explanation of firesetting to date, it would be important to consider these findings in relation to this theory. As outlined earlier, motivational firesetting scripts have been conceptualised as a key concept representing *why* firesetters set a fire and expertise refers to *how* they achieve that successfully. Therefore, it would be sensible to include firesetting expertise within both the Psychological Vulnerabilities and Critical Risk Factors components of the M-TTAF (Gannon et al., 2012), and extend Inappropriate Fire Interest/Scripts to include expertise; making it Inappropriate Fire Interest, Scripts, and Expertise. The reason being that, as outlined by Nee and Ward (2015), scripts and expertise are complementary concepts and it is acknowledged in this thesis that they are inextricably linked. Furthermore, as outlined in Chapter Three, dysfunctional expertise is viewed as a dynamic risk factor, and seen as a crucial concept to explain offending behaviour. Therefore, as the Psychological Vulnerabilities and Critical Risk Factors components of the M-TTAF (Gannon et al., 2012) also contain other dynamic risk factors, including: offence supportive attitudes, emotional regulation problems, and issues with communication, which could also interact with a firesetters level of expertise, it would seem most sensible for expertise to be included here. For example, if a firesetter holds offence supportive attitudes, such as feeling entitled to use fire, as well as holding motivational firesetting scripts, such as fire is a powerful messenger of revenge, these will in turn interact with the level of expertise the firesetter has. Once primed by an event, such as feeling they have been wronged, these psychological vulnerabilities will interact with one another and become critical risk factors, and it is the role of dysfunctional expertise that will allow the firesetter to set a more expert fire, as the firesetter may hold more knowledge of fire, be able to rely on previous firesetting behaviour, or be able to automatically recognise offence-related cues in their immediate environment.

This interaction is demonstrated in the finding that, similar to that of scripts, FSP scored similarly to firesetters on their level of expertise, yet FSP do not use fire maladaptively. This is because although FSP will have developed similar expertise in relation to fire knowledge, but they do not possess the psychological vulnerabilities that interact with expertise and motivational scripts, which results in an act of deliberate firesetting. FSP will have had considerable amounts of training and direct experience of dealing with the complexities involved with different types of fires (e.g., the use of accelerant, multiple ignition points, and the use of highly flammable material). Furthermore, when considering the concept of avoiding detection within firesetting expertise, again FSP, especially those involved in fire investigation, will have a wealth of first-hand experience in investigating fires. They will have seen many examples of firesetters attempting to avoid detection. Thus, it is conceivable to suggest that FSP too will have stored information about different materials used to set fires and avoid detection in their long-term memory, and thus can retrieve it readily. However, again, merely having expert knowledge about firesetting does not lead one to set a fire. It is this expertise, coupled with the motivational scripts and other psychological vulnerabilities that is likely to lead to deliberate firesetting.

Treatment Implications

Another clear implication of this research is that there appears to be a need for motivational firesetting scripts and expertise to be considered in the treatment of imprisoned firesetters. This seems particularly prudent, given that firesetters and FSP hold motivational firesetting scripts and firesetting expertise, but only firesetters use fire maladaptively. The following section will outline the potential implications for treatment, as well as suggest treatment options, for both motivational firesetting scripts and firesetting expertise.

First, in relation to motivational firesetting scripts, it is crucial that clinicians explore the potential scripts held by firesetters and the relationship between those scripts and other psychological vulnerabilities possessed by the firesetter. One such way clinicians could explore the presence of potential motivational scripts would be to map firesetters onto the typological classifications provided within Tier 2 of the M-TTAF (Gannon et al., 2012). These typologies are provided in order to aid the clinical utility of the model as they consider risk factors, motivators, and clinical features; which include scripts. Therefore, it would be prudent to synthesise the motivational scripts investigated in this thesis into the current M-TAFF trajectories in order to aid clinicians to consider how these scripts may present during treatment.

First, the antisocial cognition trajectory. Those following this trajectory are generally antisocial in nature, and fire is viewed as an instrumental tool utilised as a means to end (Gannon et al., 2012). Gannon et al. (2012) suggests that those firesetters following this trajectory may utilise fire to enact revenge, to conceal another crime, for profit, to vandalise, or to relieve boredom. Therefore, clinicians may want to explore whether the firesetters who have set such fires hold the scripts: *fire as messenger of revenge/warning* and *fire is the best way to destroy evidence*. As firesetters holding these scripts may have developed beliefs around fire's destructive, frightening, and harmful nature, as well as the speed and ease at which it can destroy evidence.

Second, the grievance trajectory. Firesetters following the grievance trajectory are hypothesised to utilise fire to gain revenge (Gannon et al., 2012). Similar to antisocial firesetters, grievance firesetters were hypothesised to hold no real interest in fire. However, Gannon et al. (2012) hypothesised that these firesetters have learnt to prefer fire as a tool due to its powerful and startling properties. Therefore, it would appear setting a fire for revenge may, again, be a common motive amongst these firesetters. Consequently, clinicians working with firesetters who have set fires motivated by revenge may want to

explore whether they hold the *fire as messenger of revenge/warning* script. Firesetters who hold this script will hold beliefs around the intimidatory nature of fire, and how fire can be explicitly used to right a wrong, or express a grievance due to fires harmful, destructive and frightening nature.

Third, firesetters following the fire interest trajectory are hypothesised to have a fascination with fire. Fire may be utilised as a way to cope or as a pleasurable, thrill seeking experience. Gannon et al. (2012) argue these firesetters may set a fire to help reduce unwanted negative emotions or to alleviate boredom. Firesetters following this trajectory may have often set fires and stayed close by to watch them or have engaged in cell firesetting activity in order to satisfy their fascination. Therefore, clinicians should investigate whether these firesetters hold the *fire is soothing* script. This script is associated with using fire to cope, and relieving negative emotions due to fire's relaxing and hypnotic qualities of fire, as well as fire being exciting.

Fourth, firesetters following the emotionally expressive/need for recognition trajectory can be divided into two subtypes: emotionally expressive and need for recognition. Gannon et al. (2012) hypothesised that emotionally expressive firesetters usually set fires when they feel their only option is to communicate their problems via fire in order to 'cry for help', self-harm, or commit suicide. However, those following the need for recognition subtype are hypothesised to pre-plan their firesetting, and often firesetting is used in order to enhance standing or status in the community. It is plausible then to suggest that clinicians should consider that firesetters following the emotionally expressive trajectory may hold the *fire is a powerful messenger of distress or a 'cry for help'* script as this script encapsulates beliefs around fire being seen as a viable way to enact a chain of events that would result in help being offered. Firesetters following the need for recognition trajectory may hold the *fire will get me attention* script as within this fire is believed to a way to gain attention, because it is dramatic in nature.

Finally, the multi-faceted firesetters. Firesetters following this trajectory are hypothesised to be similar to those following the antisocial trajectory; general criminality is common. However, multi-faceted firesetters are also extremely interested in fire (Gannon et al., 2012). Paying consideration to the multi-faceted nature of firesetters following this trajectory, it would be likely that consulting clinicians may encounter firesetters who hold the following scripts: *fire as messenger of revenge/warning, fire is the best way to destroy evidence,* and *fire is soothing*. Beliefs around the use of fire as an intimidatory tool (fire is a powerful tool), as well as an effective means of destroying evidence (fire destroys evidence) would explain why firesetters follow the antisocial nature of this trajectory. Coupled with the belief that fire is thrilling and hypnotic (fire makes me feel better) means that fire can also be used in order to satisfy firesetters intense interest in fire.

If consulting clinicians believe that the firesetters they are working with holds some or all of these scripts they should aim to address these in treatment. Ward (1999) and Bourke et al. (2012) propose that this can be achieved through conscious coping strategies. This treatment involves the offender consciously breaking down each step of the offence process generating consequences and alternatives at each step. Applied to firesetting, this would require the firesetter to recondition themselves to not rely on previous knowledge structures relating to fire, but instead to use conscious coping strategies.

In relation to expertise, as both Ward (1999) and Bourke et al. (2012) argue, offenders who have become highly skilled at their offending, and deemed as experts, may find it hard to relinquish feelings of mastery. This hypothesis can be readily applied to firesetters. Therefore, in order to combat feelings of mastery in what is clearly an antisocial skill, it may be beneficial to introduce individuals who have offended to the Good Lives Model (GLM), developed by Ward (2002). The model emphasises an individuals' strengths and encourages the acquisition of primary human goods (e.g. relationships, self-

direction, and healthy living) in a pro-social way. In this instance, firesetters could be encouraged to develop an understanding of other pro-social skills that they have and these could replace the antisocial skill, or expertise, in firesetting.

Nee and Vernham (2017; see also Vernham & Nee, 2015) have taken this even further. They conceptualise that offending expertise could be viewed as a protective factor, to promote desistence from offending. Protective factors are seen as strengths the offender has, which can be utilised within the risk assessment and management process, to outweigh the preoccupation with an offender's deficits and help prevent future offending (Nee & Vernham, 2017). In line with the GLM (Ward, 2002) the competencies related to dysfunctional expertise (e.g., ability to access information stored in long-term memory, or superior ability to process environmental cues), could be translated into more prosocial behaviours. Nee and Vernham (2017) give the example of an experienced child sex offender. It is known that expert child sex offenders have developed superior abilities in order to assess the vulnerability of a potential victim. However, through the GLM lens, what the offender is actually attempting to do is to gain intimacy. Therefore, utilising these skills in a prosocial manner could help towards developing relationships with adults. Applied to firesetting expertise, the extensive fire knowledge held by firesetters could be used in a more pro-social way, for example through providing fire safety information on the prison wing. Firesetters knowledge of accelerants, combustible material, ignition points, and fire trajectory could all be utilised in order to prevent both intentional and unintentional firesetting in the prison establishment. Expertise can be harnessed as force for change, as opposed to it being seen as a deficit that will hinder future desistence. Expertise is an important factor that practising professionals should case formulate with regards to the role it played in the offending process, and should then be targeted in treatment alongside scripts and other psychological vulnerabilities. The interplay between firesetting expertise and other psychological vulnerabilities should be explored in

treatment, given that possessing firesetting need not result in an act of firesetting, given that FSP also hold expertise but do not fireset.

The extensive fire scripts and firesetting expertise, that may facilitate firesetting, present challenges for consulting clinicians. These knowledge structures, that inform firesetters in what situations they should set a fire and how best to do it, may be activated without conscious awareness. Therefore, this makes such concepts harder to address in treatment. It would also be plausible to suggest that those firesetters with multiple scripts and at the expert end of the continuum present the greatest risk. Therefore, the more experienced, or expert, the offender is the lengthier and more intensive the treatment needs to be. However, in addition to possessing scripts and expertise, unlike other comparison groups in this research, firesetters also possess psychological vulnerabilities which we know contribute to their firesetting. Therefore, it would be beneficial to consider all of these concepts when assessing and treating firesetters within secure establishments.

Limitations

The limitations of each study are discussed in detail in the corresponding chapter, however there are some limitations that are applicable to the combined findings of this thesis which require attention. First, this research represents the first attempt to conceptualise and empirically investigate the concepts of firesetting scripts and expertise. Therefore, replication of these findings in future studies is needed in order to be more confident in the existence of these concepts. However, the conceptualisations were grounded in previous research findings, clinical experience of working with firesetters, and the empirical evidence gained from Study 1. Therefore, the hypothesised conceptualisations were well supported. Furthermore, the findings produced from this research can be replicated and developed with ease given the use of transparent, replicable statistical techniques and adaptable measures.

A second limitation of this research concerns the sample of participants used. One of the clear aims of this thesis was to assess whether firesetters have developed skills that make them expert in their firesetting. However, the study predominately used an incarcerated sample, with a limited firesetting history. By virtue of using an incarcerated sample, this research assessed the expertise of men who had been apprehended, and thus may be limited in the expertise they possess. Incarcerated firesetters may not adequately represent the entire population of deliberate firesetters who have not been apprehended. The firesetters who remain undetected may possess knowledge and skills which reflect more well defined, or superior, expertise that was not captured in this research. Furthermore, the firesetters recruited may have lacked the substantive firesetting history needed to be able to adequately deemed expert. That is to say, the majority of the firesetters recruited for Study 3a and 3b were one-time firesetters ($n = 25$), and around a third of firesetters ($n = 15$) had only ever engaged in prison firesetting activity (i.e., cell fires), 11 of which had only ever set one fire. Therefore, given that expertise is hypothesised to develop after engaging in deliberate practice, with skills developing after engaging in the activity repeatedly and across a long period of time, it is plausible to suggest that the firesetters recruited in this thesis may not have been experienced enough to be considered at the expert end of the firesetting expertise continuum.

Furthermore, although in Study 4 an un-apprehended sample was recruited, the extent to which these un-apprehended firesetters were representative of all un-apprehended firesetters is questionable. As, similar to the incarcerated sample, the majority of the un-apprehended firesetters lacked a substantive firesetting history. The majority (83%, $n = 89$) reported having engaged in one or two instances of firesetting, predominately during adolescence. Again, given expertise is said to develop as a result of well-practiced behaviour, performed across several years, and includes multiple instances of engaging in that behaviour which leads to superiority and dexterity. The un-apprehended firesetters

who participated in this study may have lacked the substantive firesetting history needed to be able to adequately demonstrate expertise, and were not experienced enough to be considered expert.

A further limitation of the sample used for this thesis relates to the fact that a proportion of firesetters in each of the studies had gone through firesetting specific treatment (50% $n = 17$ in Study 2 and 23%, $n = 10$ in Studies 3a and 3b). Through participating in treatment, firesetters may have challenged the schema they hold around their firesetting. Furthermore, those firesetters who have received treatment, may not want to appear to be skilled at firesetting as they may be fearful of how this may be interpreted by professionals. Therefore, the scripts and expertise held by firesetters who have completed fire specific treatment, again, may not represent un-apprehended firesetters, or even those incarcerated but untreated. However, the concepts of scripts and expertise, to date, have not been conceptualised or empirically investigated and so current firesetting treatment programmes do not specifically target these concepts. Consequently, whilst it would have been preferable to recruit firesetters who had not received any form treatment for their firesetting, as current treatment options do not specifically target these concepts, the possible effects of treatment on the results are, to some extent, likely to be limited. A further limitation of the sample is in regards to its size, and lack of diversity. Whilst the sample was sufficient enough to detect statistically significant effects throughout, the data is limited to England and only included males. Therefore, caution should always be given to the generalisability of the findings to all firesetters. The findings are unlikely to be applicable to other populations (e.g., juveniles, women, psychiatric samples etc.) or across cultures.

A final limitation, in regards to the sample, relates to participation rates. In Study 2 46% of firesetters and 36% of offender comparisons declined to take part in the research and in Studies 3a and 3b approximately 20% firesetters and 10 % offender comparisons

declined to take part. Whilst it is acknowledged that researchers must rely on voluntary participation, it is possible those imprisoned firesetters who declined to take part may hold different scripts or expertise that were not captured. However, the research did include individuals with varying firesetting backgrounds, including those who had an index offence of Arson, those who had used fire in the commission of a wider offence, and those who had engaged in prison firesetting activity. Furthermore, there is also the potential that some individuals with a firesetting history may not have been approached. Whilst efforts were made to be find all those with recorded incidents of firesetting, it is possible that some individuals were missed due to their firesetting being subsumed under another conviction (e.g., murder) or their prison cell fire activity was not formally recorded.

Fourth, the information gathered in this thesis to assess scripts and expertise relied upon participants consciously accessing this knowledge. This methodology is fraught with problems. As it has been outlined throughout this thesis, the concepts of scripts and expertise are unconscious by their nature. Therefore, asking participants to recall information around these concepts may not allow one to gain the full range of scripts and expertise associated with firesetting. Furthermore, this methodology relied upon the participant to recall the information truthfully. As highlighted above, participants, especially those who are incarcerated and who have gone through treatment, may be less inclined to be truthful when participating in research due to the fear of their responses being used to inform decisions about their parole, or conditions. Whilst it is fully emphasised in the consent form that this is not possible, some suspicion may persist which could affect truthful responding. As Polaschek, Hudson, Ward, and Siegert (2001) note research involving human participants, is by its nature, a product of what the participant wants the researcher to think they think, feel, and do. However, whether participants had the ability to fully understand the underpinnings of the research being conducted, and manipulate their responses accordingly, is questionable.

There are also limitations in this thesis with regards to the measures used. Whilst this has been addressed in Chapters Five, Six, Seven, and Eight, it is important to consider this further. First, the majority of the measures used in this thesis were entirely novel. Although they were derived, or adopted, from measures that had been used in previous research successfully, it is difficult to claim with certainty that the measures adequately captured the data needed to investigate scripts and expertise adequately. Second, specifically in regards to Study 1, there may be issues with subjectivity in this research. The results from Study 1 may have been subject to researcher biases given that they were analysed using Thematic Analysis. However, conscious efforts were made throughout the thesis to counter-act potential biases. For example, the use of an impression management scale, the use of inter-raters, and cross validation techniques were all employed to maximise experimental robustness and counter act potential biases as much as possible.

A final limitation to be aware of in regards to the reporting of questionable reliability scores in regards to the Firesetting Safety Awareness and Firesetting as Normal subscales of the Four Fire Factor Scales (Ó Ciardha et al., 2014). Whilst it was important to include direct fire-related measures in this thesis to investigate how they interacted with the concepts of scripts and expertise there were some concerns regarding reliability. Whilst the scales themselves have been subject to reliability and validity analyses (Ó Ciardha et al., 2015), it is possible these scales may not necessarily be suitable for use with populations other than firesetters. For example, as it was seen in Study 2, most FSP answered 'strongly disagree' to the item 'Parents should spend money on buying a fire extinguisher' on the Firesetting Safety Awareness subscale of the Four Fire Factor Scales (Ó Ciardha et al., 2014). Presumably, this is because FSP would argue that civilians should not attempt to fight the fire. However, the general assumption of the public (and of this scale) is that it would be beneficial to have a fire extinguisher in one's home. Thus, the expected response to this item should be 'strongly agree'. The contradiction in expected

responding may account for the questionable reliability of the scale. Having said this, given that firesetting research is still in its infancy it is important to utilise fire-related scales as it allows for continued validation, refinement, and development.

Future Research Directions

There are a number of important future research directions that have emerged from the findings of this thesis. First, it would be prudent to conduct further research with the aim of replicating the current findings. Whilst the findings from this study are important, they represent the very first attempt to investigate the concepts of scripts and expertise. Therefore, further cross-validation studies are required in order to increase the reliability and validity of the findings. Second, evaluating the applicability of these findings to other firesetting populations, such as female and mentally disordered firesetters would also be beneficial. This would not only serve to increase the generalisability of the findings, but may also allow for the emergence of other potential scripts and facets of expertise.

Third research should also seek to investigate if the motivational scripts and expertise held by firesetters vary depending on the type of fires they set. As outlined in Chapters Two and Five, given that scripts are goal dependent it is plausible to suggest that a firesetter who sets a fire for revenge is likely to hold different scripts to those who set fire as a cry for help. It is also highly likely that firesetting expertise will vary between different types of firesetting, since expertise is goal dependent. Therefore, future research should seek to investigate this further.

Fourth, the majority firesetters who participated in this research were incarcerated. As outlined above, in reference to the limitations of this thesis, the use of an incarcerated sample when investigating expertise is fraught with limitations. Furthermore, the un-apprehended sample utilised in Study 4, as outlined above, reported limited previous firesetting activity. Therefore, future research should seek to further validate the scripts and expertise of firesetters using a sample of firesetters more akin to previous research with

active burglars, carjackers, and crack dealers (Jacobs,1996a, 1996b; Jacobs, 2012, 2013; Jacobs & Miller, 1998; Jacobs et al., 2003; Nee et al., 2015; Topalli's, 2005; Topalli & Wright, 2003; Topalli, et al., 2015; Wright & Decker, 1994).

Fifth, future research into firesetting expertise should seek to explore different empirical paradigms. Interestingly, with regards to expertise, the work of Klein (2009) and Woollett & Maguire (2010) have shown that elements of expertise, namely automaticity and habitually learnt behaviour, can be a hindrance when an individual encounters a particularly stressful or unexpected situation. The individual can make errors, or is unable to demonstrate flexibility when problem solving. Future research should seek to investigate this in relation to firesetting expertise, as the paradigms in this thesis were not unduly inflexible nor did they particularly challenge over leant behaviour.

Another example of a fruitful experimental paradigm is the work of Nee et al (2015) and van Gelder et al (2017) and simulated environments. As outlined in Chapter Three, Nee et al. (2015) conducted a ground breaking experiment utilising previously active burglars to 'burgle' real and simulated houses. The study sought to compare those with expertise in burglary, with novices with no previous offending experience. An important finding from this research was the similarity in the results between the real and simulated environments. Such similarity means that the use of simulated environments holds real promise for the future of expertise research. Given the inherent and obvious danger of creating an experiment using active fires, the use of a simulated environment may prove fruitful. Furthermore, the use of a simulated environment may also help to circumvent the problems seen in Study 1, where firesetters may have been reluctant to share information about their offending history in the format of interview. As Meenaghan et al. (2018) demonstrated, once offenders began to engage with the virtual reality task, whilst initial reluctance was shown, the simulated environment. Future research should seek to investigate firesetting expertise in the context of a simulated environment.

Finally, it may be advantageous to explore developing a better way to empirically investigate the concept of motivational scripts. As outlined in Chapter Two, Gilbert et al. (2013) contend, it is difficult to assess the concept of scripts, in part due to the lack of measures that exist to investigate scripts. However, recently, researchers have begun to investigate the presence of aggression scripts using the Schedule of Imagined Violence (SIV; Gilbert et al., 2013; Grisso, et al., 2000; Hosie et al., 2014; Kelty et al., 2011; Nagtegaal et al., 2006). The SIV is a semi structured interview, focussed on eight criteria (presence, recency, frequency, chronicity, similarity or diversity in type of harm, target, change in seriousness of harm, and proximity to target), which screens for the presence or absence of participants' aggressive scripts. It may be advantageous to design a similar tool to evaluate the presence of motivational firesetting scripts.

Conclusions

Deliberate firesetting results in devastating financial and human consequences. This thesis has shown that empirical investigation and theory development regarding deliberate firesetting has been slow to respond to this apparent need, however, momentum is growing. The research undertaken in this thesis represents a comprehensive attempt to advance theory development by examining two concepts that hold great promise, but have been paid little, to no, attention. A number of novel findings have emerged from the five studies conducted in this thesis indicating that evidence exists to support the argument that firesetters hold scripts about fire and possess expertise with regards to their firesetting, and that these concepts may hold promise when attempting to explain firesetting that occurs in the absence of fire interest. 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 Information Questionnaire and Semi – Structured Interview Schedule: Study 1

Background Information Questionnaire

What is your age? …………………….

What best describes your ethnicity? Please Circle

1. English / Welsh / Scottish / Northern Irish / British

2. Irish

3. Gypsy or Irish Traveller

4. Any other White background, please describe……………………

5. White and Black Caribbean

6. White and Black African

7. White and Asian

8. Any other Mixed / Multiple ethnic background, please describe……………

9. Indian

10. Pakistani

11. Bangladeshi

12. Chinese

13. Any other Asian background, please describe……………………………..

14. Black - African

15. Black - Caribbean

16. Any other Black / African / Caribbean background, please describe

17. Arab

18. Any other ethnic group, please describe…………………………..

How many years have you spent in formal education? ……………

Please specify your index offence?......................................

What year were you convicted of your index offence? ……………

Did your index offence involve you setting a fire?

Yes   No

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) ………………………………………

Do you have any past convictions for offences that involved you setting a fire (e.g.,

arson, criminal damage)?   Yes   No

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?

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) …………………………………………

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

Yes   No

If yes please specify below:

Have you ever engaged in mental health services? Yes   No

If yes, have you ever been diagnosed with a mental health disorder?   Yes

No

If yes, what diagnosis did you receive?

When were you diagnosed?

Was this before/after/at the time of firesetting incident?

Semi Structured Interview Schedule

Thank you for agreeing to participate in this interview. I am going to ask you some questions about your firesetting. But, for the purpose of this interview I would really like you to think "why would you use fire in that way", so why did you use fire in the way that you did. I will remind you of this as we go through the interview.

1. Can you tell me, roughly, how many fires you have set?
2. Can you tell me about a fire you have set that you can remember well?
        Prompt – How did you set it? Where was it? Did you use any accelerants?

How big was the fire? Did it cause any damage?
3. Why did you set the fire?
    Prompt – That's really interesting, can you tell me a little more about that
        please?
4. What thoughts did you have that made you want to set the fire?
    Prompt – What did they sound like in your head? Are you able to describe
        them to me?
5. Have you set other fires for similar reasons?
    Prompt – How many? Can you describe them to me?
6. Have you ever set fires for any different reasons that what you have already said?
    Prompt – What was the reason? That's really interesting, can you tell me a
        little more about that please?
Alternative Question Route if interview is difficult:
Do you think that fire can be used as a tool?
    Prompt – Tell me a bit more about that
        - In what sort of ways could it be used as a tool?
        - Why would you use fire in that?
        - Have you ever used fire in that way?

Do you think fire can sometimes make you feel better?
    Prompt – Tell me a bit more about that
        - What sorts of feelings/emotions can setting a fire help with
        - How does it help/how does it make you feel better?
        - Why would you use fire in that?
        - Have you ever used fire in that way?

Do you think that you can use fire to get peoples attention?
    Prompt – Tell me a bit more about that
        - What is it that gets peoples attention?
        - How does it get their attention?
        - Why would you use fire in that?
        - Have you ever used it to get somebody's attention?

Do you think that fire is the best way to destroy evidence?
    Prompt – Tell me a bit more about that
        - What makes fire a good thing to use to destroy evidence?
        - Why would you fire in that?
        - Have you ever used fire to get rid of evidence?

Do you think fire can be used in other ways, other than what we have already talked about?
Prompt – What sorts of reasons are these? That's really interesting, can you tell me a little more about that please?

Appendix Two: Example Information, Consent, and Debrief Forms:

Study 1

Information Sheet

A Study Investigating Attitudes Towards Firesetting Part 1
Information Sheet

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 Miss Helen Butler a PhD Candidate, under the supervision of Professor Theresa Gannon a Researcher in Forensic Psychology. This research is being funded by the University of Kent 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?
This research is investigating how and why firesetting behaviour occurs. In order to gain a better understanding of firesetting I need to examine the thoughts, feelings and behaviours of men who have set a fire as some people are better at setting fires than others. We hope that the results of this research will help with the assessment and treatment of firesetters.

Why have you been chosen to take part?
We are asking a number of men in your wing/establishment whether they will help us with this research. In particular, we are interested in speaking with men who are willing to describe a fire they have set in the past (perhaps even the distant past).

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. This research is independent and so it will not be used to inform any decisions about your future.

What will happen if you do decide to take part?
If you agree to take part, we will ask you to come along for about an hour.

Firstly, you will be given full information and a form to sign saying that you would agree to take part. If you don't want to, you simply don't sign the form. Saying that you will take part today <u>DOES NOT</u> mean that you have to take part. If you agree to take part but then decide that you don't want to, you can just tell me. If you do decide to withdraw, we will destroy any information that you have given to me and you will not be included in the research project.

If you do decide to take part, then there are two things that I will ask you to do. First of all, I will ask you to answer 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 general questions about your previous firesetting and this will be audio recorded. If you do not wish to be recorded, that is not a problem, I will instead write down all that you say. 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 session at any point or take a break, during the session, should you wish to do so.

Will your taking part in this study be kept confidential?
Information 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 that leaves the prison, will have your name removed so that you can not 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. We would also need to inform relevant professionals if you reveal a new crime that we did not previously know about. 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.

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 NOMS National Research Committee.

Thank-you for taking the time to read this Participant Information Form and hear about this research. It has some important implications and I 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.

Helen Butler
PhD Candidate

Professor Theresa A. Gannon
Supervisor
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.

Consent Form

Participant Number: _____

Title of Project: A Study Investigating Attitudes Towards Firesetting Part 1

Name of Researchers: Miss Helen Butler

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 sections of my prison records may be looked at by approrpiate members of the University of Kent research team, where it is relevant to my takig part in the 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

_____   _____   _____
Name of Researcher   Date   Signature
One for prisoner, one for researcher; one to be kept with prison files

Debrief Sheet

University of **Kent** | Centre of Research and Education in Forensic Psychology (CORE-FP)

A Study Investigating Attitudes Towards Firesetting Part 1 Debrief Sheet

Firstly, thank you for your participation in this study. I would now like to take this opportunity to explain a little more about the study.

During the research you were asked to participate in an interview about a recent or well remembered firesetting offence. This allowed me to gain a greater understanding of the thoughts, feelings and behaviours of men who have set a fire, so thank you.

Research has suggested that people that set fires may hold some rules about fire that help them to interpret situations and then guide behaviour. These are called fire scripts. This current study was hoping to look at that further. To investigate what these fire scripts may be, by talking to men who have set fires.

If you have any serious concerns about the ethical conduct of this study then please notify the Chair of the Psychology Research Ethics Panel (via the Psychology Department Office) in writing, providing a detailed description of your concern. The address to write to is as follows:

Chair of the Psychology Research Ethics Panel
Department of Psychology
Keynes College
University of Kent
Canterbury
Kent
CT2 7NP

If at anytime you decide that you want to withdraw your data from the study please write to the **Department of Psychology**, using the address above, citing your personal identification number and the title of this study.

If any of the responses you have provided results in you feeling adversely affected you may want to speak to your Personal Officer, or the Listeners. The following information may also be of use.

Samaritans - 08457 90 90 90

Once again thank you for your participation.

Helen Butler
PhD Candidate
Professor Theresa A. Gannon
Supervisor

Appendix Three: Fire Factor Scales: Identification With Fire, Everyday Fire Interest, Serious Fire Interest, Normalisation Of Fire: Study 2
(Gannon, Ó Ciardha, & Barnoux, 2011; Muckley, 1997; Murphy & Clare, 1996; Ó Ciardha et al., 2013)

		Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5
1.	Fire is an important part of my identity					
2.	I have sometimes lit matches or flicked a lighter for no particular reason					
3.	I don't need fire					
4.	Fire is almost part of my personality					
5.	If I never saw another fire again it wouldn't bother me					
6.	Fire is an important part of my life					
7.	I have never been careless with fire					
8.	I don't know who I am without fire					
9.	As a child I had no interest in fireworks or bonfires					
10.	I've never owned a box of matches or a lighter					

11.	I need fire in my life					
12.	Without fire, I am nobody					
13.	In the past I have accidentally scalded or burnt myself with fire or hot water					
14.	Fire is a part of me					
15.	Lighting a fire or a couple of candles can make a room look nicer					
16.	I have to have fire in my life					
17.	If an empty building on my road caught fire I would go have a look					
18.	Most people carry a box of matches or a lighter around					
19.	People often set fires when they are angry.					
20.	I would like to work as a fireman.					
21.	The best thing about fire is watching it spread.					
22.	I have never put a fire out.					
23.	I know a lot about how to prevent fires.					

24.	Setting just a small fire can make you feel a lot better.					
25.	Fires can easily get out of control.					
26.	I get bored very easily in my spare time.					
27.	People who set fires should be locked up.					
28.	When you're with your mates, you act now and think later.					
29.	If you've got problems, a small fire can help you sort them out.					
30.	Most families have had a fire accident at home.					
31.	Parents should spend money on buying a fire extinguisher.					
32.	Most people have set a few small fires just for fun.					
33.	I usually go along with what my mates decide.					
34.	Playing with matches can be very dangerous.					

35.	Most people have been questioned about fires by the police.					
36.	They should teach you about fire prevention at school.					
37.	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   OK   Exciting, fun, or lovely

Watching an ordinary coal fire burn in a grate

1   2   3   4   5   6   7

Upsetting/frightening   OK   Exciting, fun, or lovely

Watching a bonfire outdoors, like on bonfire night

1   2   3   4   5   6   7

Upsetting/frightening   OK   Exciting, fun, or lovely

Seeing firemen get their equipment ready

1   2   3   4   5   6   7

Upsetting/frightening   OK   Exciting, fun, or lovely

Watching a fire engine come down the road

1   2   3   4   5   6   7

Upsetting/frightening   OK   Exciting, fun, or lovely

Striking a match to light a cigarette

         1   2   3   4   5   6   7

Upsetting/frightening   OK   Exciting, fun, or lovely

Watching a house burn down

         1   2   3   4   5   6   7

Upsetting/frightening   OK   Exciting, fun, or lovely

Going to a police station to be questioned about a fire

         1   2   3   4   5   6   7

Upsetting/frightening   OK   Exciting, fun, or lovely

Watching people run from a fire

         1   2   3   4   5   6   7

Upsetting/frightening   OK   Exciting, fun, or lovely

Watching a person with his clothes on fire

         1   2   3   4   5   6   7

Upsetting/frightening   OK   Exciting, fun, or lovely

Striking a match to set fire to a building

         1   2   3   4   5   6   7

Upsetting/frightening   OK   Exciting, fun, or lovely

Seeing a hotel on fire in the TV news

         1   2   3   4   5   6   7

Upsetting/frightening   OK   Exciting, fun, or lovely

Seeing firemen hosing a fire

         1   2   3   4   5   6   7

Upsetting/frightening   OK   Exciting, fun, or lovely

Giving matches back to someone

         1   2   3   4   5   6   7

    Upsetting/frightening   OK   Exciting, fun, or lovely

Appendix Four: Studies 2 and 4 Script Generation Measure

I am interested in looking at scripts, these are like a set of rules that act as a guide to aid in the interpretation of situations as well as guiding behavioural responses to these situations.

Here is an example of going into a Whetherspoons Pub for a drink to help you:

Step 1 -You walk into a Wetherspoons and walk up to the bar
WHY – because you know you have to order your drink at the bar
Step 2 – You wait in the queue to be served
WHY – because you know you have to wait your turn
Step 3 – You tell the person behind the bar what you want
WHY – because you know that you have tell to them so that they can make your drink
Step 4 – You pay for your drink
WHY – because you know you have to pay in order to get your drink

What I am interested in is looking at scripts about fire. So, I am going to ask you to imagine that you are in the situations below, and describe from start to finish how you might set a deliberate fire in the situations below. Telling me the steps you would take to do this. It is important for you to know that this is purely asking you to imagine yourself in that situation. This means that you don't have to have done it before, or have any intention of doing it in the future. You just have to simply imagine yourself in that situation.
After each step please explain **WHY** this step was included, just like in the example above. Please try to do this step by step. If I am a little confused how you may have got from one step to the other I might ask you to explain that to me? I might say something like "is that really the next step, or would something come before?". I will write down everything that you tell me.

1. Imagine you wanted to send somebody a message using fire. Describe step by step how you would send somebody a message using fire and **WHY.**

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2. Imagine you wanted to destroy evidence using fire. Describe step by step how you would destroy evidence using fire and **WHY.**

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3. Imagine you wanted to get somebody's attention using fire. Describe step by step how you would get somebody's attention using fire and **WHY**.

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4. Imagine you wanted to make yourself feel better using fire. Describe step by step how you would use fire to make yourself feel better and **<u>WHY</u>**.

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Appendix Five: Study 2 Expertise Scenario Solving Measure

I am going to ask you about some situations in which you could or could not use fire. What I would like you to do is tell me **HOW** you would solve the problem. It is important for you to know that this is purely asking you to imagine yourself in that situation. This means that you don't have to have done it before, or have any intention of doing it in the future. You just have to simply imagine yourself in that situation.

1. Imagine you have stolen a car with your friend, you've driven around in it for a while and now you have decided you need to dump it and get rid of the evidence.
How would you use fire to get rid of the car?

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2. Imagine you have committed a Burglary and your fingerprints are all over the house. You are starting to worry that you might get caught.
How would you use fire to get rid of your fingerprints from the house?

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3. Imagine you are about to be evicted from your flat, and despite asking for help from the council several times, nobody has listened to you.
How would you use fire to make the council listen to you?

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4. Imagine you have become more and more lonely lately, you feel like your family doesn't want to know you anymore and your friends have all stopped talking to you. You feel like you need to do something drastic to get their attention.
How would you use fire to get your family and friends attention?

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5. Imagine you have become really depressed lately, and are feeling hopeless. You feel like nothing ever goes right for you and you think that nothing is ever going to change.
How would you use fire to make yourself feel better?

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6. Imagine you often struggle to express how you feel, and at the moment you feel isolated and abandoned.

How would you use fire to communicate how you feel?

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7. Imagine you have had an argument with your neighbour and you are livid. You go away thinking "I need to show you, you can't mess with me".
How would you use fire to show your neighbour not to mess with you?

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8. Imagine you come home and find your partner has been brutally attacked, you think you know who has done and you feel that you want to teach them a lesson.
How would you use fire teach them a lesson?

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Appendix Six: Instructions for Independent Raters

Scripts

What is a script?

Firesetting scripts explain why someone may set a fire. The idea that scripts are a form of behavioural guide. Firesetting scripts can be understood as guiding an individual to know when it is appropriate to use fire.

How should I rate it?

Each scenario should be rated on the presence or absence of a script from the description

provided. One of the following scores should be given to each of the 4 scenarios:

0 – if the participant has provided no answer OR the answer provided does not represent

a clear example, with explicit 'why's', based on the definition for that scenario.

1 – if the participant has provided a clear example, with explicit 'why's', based on the

definition for that scenario.

Scenario 1 - Imagine you wanted to send somebody a message using fire. Describe step

by step how you would send somebody a message using fire and **WHY.**

Definition - Did the participant clearly articulate that they would use fire to send a message of revenge or a warning? Did the participant clearly articulate that they thought fire was a powerful way to send a message? Did the participant endorse that using fire means the victim will get the message"

OR

Definition – Did the participant clearly articulate that they would use fire to send a

message of a cry for help? Did the participant clearly articulate that they thought that fire

would someway enact a chain of events that will result in help being offered to them? Did

the participant state that using fire in this way would allow them to be taken seriously, or

their problem would be perceived as being more serious? Did the participant state that

they would use fire in this way because they felt unable to ask for help in another way or

that they would not be listened to? Did they say they would use fire in this way as it would get them what they wanted?

Scenario 2 - Imagine you wanted to destroy evidence using fire. Describe step by step how you would destroy evidence using fire and **<u>WHY.</u>**

Definition – Did the participant use of fire to destroy evidence generated through engaging in criminal behavior? Did the participant view the use of firesetting as effective means of destroying evidence? Did the participant perceive fire as the preferred or 'best' method for destroying evidence?

Scenario 3 - Imagine you wanted to get somebody's attention using fire. Describe step by step how you would get somebody's attention using fire and **<u>WHY</u>**.

Definition – Did the participant state that they would use fire to gain some attention or recognition? Did the participant state that fire is a good way to gain attention because it creates a scene (e.g., draw a public crowd). Did the participant state that setting a fire in a public place would create a lot of interest? Did they state that fire is dramatic and attention grabbing? Did the participant state that they would set the fire in order for the emergency services to attend? Did the participant state that this would give them a sense of satisfaction/pleasure? Did the participant say that they would use fire in this way in order to gain social standing or status or some form of recognition?

Scenario 4 - Imagine you wanted to make yourself feel better using fire. Describe step by step how you would use fire to make yourself feel better and **<u>WHY</u>**.

Definition – Did the participant state that they would use fire as a means to self-soothe? Did the participant state that they would use fire in an attempt to reduce unwanted negative affective states such as: loneliness, frustration, anger, and hopelessness? Did

they participant state that they would use fire because they were experiencing negative emotions and thought fire would make them feel

Expertise

What is expertise?

Expertise refers to an expert being an individual who has a large body of knowledge and skill. We conceptualize expertise as the *how* to set a fire; *how* to set a fire to successfully achieve their goal.

Some examples of domains of expertise:

Fire Knowledge

Knowledge and skills surrounding the most proficient and effective way to set a fire. The overarching aim of the fire may also play a role here. When considering what constitutes expertise this could center around: the use of accelerant, setting multiple ignition points, using highly flammable material (e.g. paper, clothing etc.), and how best to contain the fire (e.g. using a metal rather than a plastic bin).

The dexterity displayed when setting a fire, in the pursuit of a desired goal, may often be dependent upon the above. An individual setting a fire to self sooth may choose to refrain from using accelerant, set only one ignition point, using paper, and set the fire in a metal bin as they want to watch the fire in a 'contained' way. An individual setting a fire to send a powerful message, however, may use an accelerant (such as petrol), set multiple ignition points, ensure highly flammable materials are ignited, and make no efforts to contain the fire as they want it to be as powerful as possible. Therefore, expertise may well be goal dependent.

Avoiding Detection

Types of avoidance techniques could include: choosing a secluded or quiet area to set a fire, involving acquaintances/criminal associates to acquire specific items needed to set the fire (e.g. petrol), an awareness of Closed Circuit Television (CCTV), or the existence of a firesetting toolkit which may include the tools needed to set a fire (e.g. a lighter and accelerant).

The intended goal of the firesetting may be important here. For example, if the goal was to destroy evidence of a previous crime by using fire an offender may have in advance purchased the petrol and identified a secluded area in which to set the fire. If the motivation of the fire is to send a message to somebody an awareness of involving an accomplice may demonstrate a higher level of expertise. For example, if the accomplice purchases the petrol the expert firesetter can ensure there is no CCTV evidence of them purchasing the petrol. This allows the offender to distance themselves from the incident should they be questioned about it at a later date, avoiding detection. One would expect an expert to engage in more of the techniques to avoid detection than somebody with less expertise in setting fires.

How should I rate it?

Each scenario should be rated on a scale of 0 – 10. Whereby 0 represents no demonstration of expertise based on the description provided and 10 represents a very expert answer based on the description provided. A score ranging from 0 – 10 should be given to each scenario. It is important to note that not all of the factors listed in the description have to be given for it to be given a higher score. However, a score of 0 should be awarded if no answer is provided. The more factors that the participant has considered may represent a more expert answer.

Scenario 1 - Imagine you have stolen a car with your friend, you've driven around in it for

a while and now you have decided you need to dump it and get rid of the evidence.

Description – Did the participant show a consideration of the location, preferably secluded? Did the participant use accelerant to increase intensity/speed of fire? Did the participant show an awareness of where they were obtaining accelerant? Did the participant make use of materials that were already present at the scene? Did the participant set fire to highly flammable material (e.g. car seats etc.)? Did the participant set multiple ignition points? Did the participant demonstrate an awareness of their own safety (e.g. using a 'wick' or trail to start fire)? Consideration of some/all of these points demonstrates a higher level of expertise.

Scenario 2 – Imagine you have committed a Burglary and your fingerprints are all over the

house. You are starting to worry that you might get caught.

Description – Did the participant attempt to make the fire look inconspicuous/accidental? Did the participant make use of materials that were already present at the scene? (e.g., cleaning products). Did the participant set fire to highly flammable material (e.g. paper, clothing, beds etc.)? Setting multiple ignition points. Did the participant use a strategic/particular method (e.g., setting fires upstairs then downstairs)? Did the participant set multiple ignition points? Did the participant demonstrate an awareness of their own safety (e.g. using a 'wick' or trail to start fire)? Consideration of some/all of these points demonstrates a higher level of expertise.

Scenario 3 – Imagine you are about to be evicted from your flat, and despite asking for

help from the council several times, nobody has listened to you.

Description – Did the participant attempt to make the fire look inconspicuous/accidental

(e.g., leaving a cigarette to burn on an armchair)? Did the participant attempt to make a

smaller more contained fire that they perceived was less likely to get out of control (e.g.,

in a mental bin with no use of accelerants)? Did the participant attempt to set a fire in

which they could claim that they were the victim of an arson attack (e.g., attempting to

have an alibi at the time of the attack or the use of a petrol bomb?) Consideration of

some/all of these points demonstrates a higher level of expertise.

Scenario 4 – Imagine you have become more and more lonely lately, you feel like your

family doesn't want to know you anymore and your friends have all stopped talking to

you. You feel like you need to do something drastic to get their attention.

Description – Did the participant appear to consider the location of the fire which would attract lots of attention (e.g., local high street)? Did the participant attempt to utilise materials already present at location (e.g. bin full of rubbish). Did the participant demonstrate and awareness of their own safety (e.g., using a 'wick' or trail to start fire). Did the participant state that they would likely stay at the scene, either hidden or in sight? Consideration of some/all of these points demonstrates a higher level of expertise.

Scenario 5 – Imagine you have become really depressed lately, and are feeling hopeless. You feel like nothing ever goes right for you and you think that nothing is ever going to change.

Description – Did the participant attempt to make a smaller more contained fire that they perceived was less likely to get out of control (e.g., in a mental bin with no use of accelerants)? Consideration of some/all of these points demonstrates a higher level of expertise.

Scenario 6 – Imagine you often struggle to express how you feel, and at the moment you feel isolated and abandoned.

Description – Did the participant attempt to make a smaller more contained fire that they perceived was less likely to get out of control (e.g., in a mental bin with no use of accelerants)? Consideration of some/all of these points demonstrates a higher level of expertise.

Scenario 7 – Imagine you have had an argument with your neighbour and you are livid. You go away thinking "I need to show you, you can't mess with me".

Description – Did the participant appear to show a consideration of time of day (e.g., preference for night time)? Did the participant use accelerant in order to intensify or

increase the speed of the fire? Did the participant demonstrate an awareness of where obtaining accelerant (e.g., try to gain it from a shed/garage as opposed to being seen on CCTV at a garage)? Did the participant attempt to utilise materials already present at the scene? Did the participant show an awareness of own safety (e.g. using a 'wick' or trail to start fire)? Consideration of some/all of these points demonstrates a higher level of expertise.

Scenario 8 - Imagine you come home and find your partner has been brutally attacked, you think you know who has done and you feel that you teach them a lesson.

Description – Did the participant appear to show a consideration of time of day (e.g., preference for night time)? Did the participant use accelerant in order to intensify or increase the speed of the fire? Did the participant demonstrate an awareness of where obtaining accelerant (e.g., try to gain it from a shed/garage as opposed to being seen on CCTV at a garage)? Did the participant attempt to utilise materials already present at the scene? Did the participant show an awareness of own safety (e.g. using a 'wick' or trail to start fire)? Consideration of some/all of these points demonstrates a higher level of expertise.

Appendix Seven: Example Information, Consent, and Debrief Forms:

Study 2

Information Sheet

A Study Investigating Factors Associated with Firesetting

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 us 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 Miss Helen Butler a PhD Candidate, under the supervision of Professor Theresa Gannon a Researcher in Forensic Psychology. This research is being conducted as part of my PhD thesis.

Why are we doing this research?
This research is investigating how and why firesetting behaviour occurs. In order to gain a better understanding of firesetting we need to examine the thoughts, feelings and behaviours of men who have set a fire as some people are better at setting fires than others. We hope that the results of this research will help with the assessment and treatment of firesetters.

Why have you been chosen to take part?
We are asking a number of men in your wing/establishment whether they will help us with this research. In particular, we are interested in speaking with men who have set a fire in the past (perhaps even the distant past).

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 up until 31st October 2015 without giving a reason. If you decide that you would like to withdraw from the study please contact the psychology department via a general application including your participant number (located on the top of your consent form). The psychology department will then contact the researcher with your participant number indicating your request to withdraw from the study. 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. This research is independent and so it will not be used to inform any decisions about your future.

What will happen if you do decide to take part?
If you agree to take part, we will ask you to come along for about an hour.
Firstly, you will be given full information and a form to sign saying that you would agree to take part. If you do not want to, you simply do not sign the form. Saying that you will take part today <u>DOES NOT</u> mean that you have to take part. If you agree to take part but then decide that you do not want to, you can just tell us. If you do decide to withdraw, we will destroy any information that you have given to us and you will not be included in the research project.

If you do decide to take part, then there are four things that we will ask you to do today. First of all, we will ask you to answer 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, we will ask you to answer some simple questionnaires. Third, we will give some scenarios and ask you to provide some ideas about how you might solve these scenarios. Fourth, we will ask you to generate some scenarios yourself about how you might solve a problem. 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 session at any point or take a break, during the session, should you wish to do so.

Will your taking part in this study be kept confidential?
Information 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 that 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. Your anonymous data from will be transported securely from the prison to the University by the researcher separate from your signed consent form which will be sent separately via secure post mail.

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. We would also need to inform relevant professionals if you reveal a new crime that we did not previously know about. Other than in these areas however, none of the information, resulting from the research, 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 Kent and Sussex Regional Forensic Psychology Service for Public Sector Prisons.
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.

Helen Butler
PhD Candidate

Professor Theresa A. Gannon
Supervisor

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 psychology department in writing. The psychology department will pass

on any concerns that you may have on to the University of Kent's Research Ethics Committee.

Should you require any support or are feeling adversely affected due to being invited to participate/or having participated in this research you may want to speak to your Personal Officer, or the Listeners. The following information may also be of use.

Samaritans - 08457 90 90 90

Consent Form

Participant Number: _____

Title of Project: A Study Investigating Factors Associated with Firesetting

Name of Researchers: Miss Helen Butler

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 sections of 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 consent to hard copies of my anonymous data being transported securely by the researcher to the secure storage arrangements at the University of Kent, separate to my signed consent form, which I understand will sent separately via secure post mail. ☐

5. I agree to take part in the above study. ☐

_____   _____   _____
Name of Participant   Date   Signature

_____   _____   _____
Name of Researcher   Date   Signature
One for prisoner, one for researcher; one to be kept with prison files.

Debrief Sheet

A Study Investigating Factors Associated with Firesetting Debrief Sheet

Firstly, thank you for your participation in this study. I would now like to take this opportunity to explain a little more about the study.

Research has shown that people that set fires tend to have more of an interest in fire than the average person. Research has also suggested that people that set fires may hold a set of cognitive rules about fire. These rules act as a guide to aid in the interpretation of situations as well as guiding behavioural responses to these situations. These are called fire scripts, an example would be holding the view that fire is a powerful tool for sending messages to people not to mess with you. In this current study we wanted to investigate these two things (fire interest and fire scripts). Also I wanted to investigate if people who set fires have some level of expertise in setting fires, i.e. are they expert in setting a fire? We asked a number of individuals to take part in the research. Some who have set fires and some who have not set fires.

I expected to find that people who set fires would be more interested in fire than people who had not set fires. I also expected to find that people who have set fires hold some fire scripts. Finally, I expected to find that those who have set fires would show a level of expertise in firestting. Learning more about these aspects is important since it will help us know what we should be targeting for people who are receiving treatment for firesetting behaviour.
It is important to note that although in this study you were asked to suggest how and why you might use fire to solve given scenarios, in no way does this research encourage or endorse the misuse of fire in this way. Firesetting has devastating finical and human costs. In 2008, Arson cost the economy an estimated £2 billion (Department for Communities and Local Government, 2008) and between 2010-2011 71 people died and 1,700 were injured as a result of deliberate firesetting (Department for Communities and Local Government, 2011).
I would like to take this opportunity to thank you for having taken part in this research aimed at reducing future firesetting.

If you have any serious concerns about the ethical conduct of this study then please notify the psychology department in writing. The psychology department will pass on any concerns that you may have on to the University of Kent's Research Ethics Committee.
If any of the responses you have provided results in you feeling adversely affected you may want to speak to your Personal Officer, or the Listeners. The following information may also be of use.

Samaritans - 08457 90 90 90

Once again thank you for your participation.

Helen Butler
PhD Candidate

Professor Theresa A. Gannon
Supervisor

Appendix Eight: Study 3a Heuristic Measure

Green = Correct Scenarios and **Red = Incorrect Scenario**			
Practice Scenarios			
Imagine somebody had lit a BBQ. Look at the following steps. Based on the order of the steps would this person have been able to light the BBQ? If you think they could then press Next. If you think the person has got it in the wrong order, change them as quickly as you can.			
Place BBQ in an area with plenty of space	**Put the coals on the BBQ**	**Add BBQ lighter fluid**	**Set the BBQ coals alight with a match**
Imagine somebody had ordered some food at a restaurant. Look at the following steps. Based on the order of the steps would this person have been able to order the food? If you think they could then press Next. If you think the person has got it in the wrong order, change them as quickly as you can.			
Order food	**Ask for the bill**	**Wait to be seated**	**Eat your food**
Fire Related Scenarios			
Imagine somebody had set fire to their bed. Look at the following steps. Based on the order of the steps would this person have been able to set fire to their bed? If you think they could then press Next. If you think the person has got it in the wrong order, change them as quickly as you can.			
Put flammable materials onto the bed	**Set a piece of paper alight to create a wick**	**Set flammable material alight**	
Imagine somebody had set a room alight. Look at the following steps. Based on the order of the steps would this person have been able to set the room alight? If you think they could then press Next. If you think the person has got it in the wrong order, change them as quickly as you can.			
Open all the windows	**Throw petrol around the room**	**Hold match to curtains until they are alight**	
Imagine somebody had set a whole house on fire. Look at the following steps. Based on the order of the steps would this person have been able to set the house alight? If you think they could then press Next. If you think the person has got it in the wrong order, change them as quickly as you can.			

Spray lighter fluid on to bed upstairs	Set bed alight upstairs	Spray lighter fluid on the sofa downstairs	Set sofa alight downstairs
Imagine somebody had set a fire in a bin. Look at the following steps. Based on the order of the steps would this person have been able to set the bin alight? If you think they could then press Next. If you think the person has got it in the wrong order, change them as quickly as you can.			
Put paper in the bin	Sprayed aerosol can in the bin	Lit the match	Threw match into bin
Imagine somebody had set fire to a sofa. Look at the following steps. Based on the order of the steps would this person have been able to set fire to the sofa? If you think they could then press Next. If you think the person has got it in the wrong order, change them as quickly as you can.			
Put magazines on top of the sofa	Set a piece of scrap rubbish alight	Set magazines alight	
Imagine somebody had set a fire in the woods. Look at the following steps. Based on the order of the steps would this person have been able to set the fire in the woods? If you think they could then press Next. If you think the person has got it in the wrong order, change them as quickly as you can.			
Set the wood alight	Spray petrol onto wood	Set small branch alight	Stack the wood
Imagine you somebody had set fire to some clothes. Look at the following steps. Based on the order of the steps would this person have been able to set fire to the clothes? If you think they could then press Next. If you think the person has got it in the wrong order, change them as quickly as you can.			
Hold lighter to a piece of paper	Pour white spirit onto the clothes	Set clothes alight	Make a pile of clothes
Imagine somebody had set fire to some rubbish. Look at the following steps. Based on the order of the steps would this person have been able to set the fire to some rubbish? If you think they could then press Next. If you think the person has got it in the wrong order, change them as quickly as you can.			
Set alight to some rubbish in the wheelie bin	Push the wheelie bin up against the back door	Spray some lighter fluid into the wheelie bin	
Imagine somebody had to set fire to a car. Look at the following steps. Based on the order of the steps would this person have been able to set fire to the car? If you think they could then press Next. If you think the person has got it in the wrong order, change them as quickly as you can.			
Dump the car in a quiet spot	Set alight to rag	Shove rag into petrol cap	
Imagine somebody had set a fire through someone's letterbox using petrol. Look at the following steps. Based on the order of the steps would this person have been able to set the fire through somebody's letterbox? If you think they could then press Next. If you think the person has got it in the wrong order, change them as quickly as you can.			
Throw lit match through the letterbox	Spray petrol through the letterbox	Spray petrol around the door	Pour petrol into a plastic bottle
Everyday Scenarios			

Imagine somebody had ordered a drink at a bar. Look at the following steps. Based on the order of the steps would this person have been able to order the drink at the bar? If you think they could then press Next. If you think the person has got it in the wrong order, change them as quickly as you can.			
Walk up to the bar	Order a drink	Pay for drink	Find a table to sit down
Imagine somebody had made a sandwich. Look at the following steps. Based on the order of the steps would this person have been able to make the sandwich? If you think they could then press Next. If you think the person has got it in the wrong order, change them as quickly as you can.			
Butter two pieces bread	Place filling between two pieces of bread	Put two pieces of bread together	Cut the bread in half
Imagine somebody had filled up their car with petrol. Look at the following steps. Based on the order of the steps would this person have been able to fill up their car with petrol? If you think they could then press Next. If you think the person has got it in the wrong order, change them as quickly as you can.			
Park car by petrol pump	Fill up car with petrol	Pay for petrol at the kiosk	
Imagine somebody had posted a letter. Look at the following steps. Based on the order of the steps would this person have been able to post the letter? If you think they could then press Next. If you think the person has got it in the wrong order, change them as quickly as you can.			
Address the envelope	Stick stamp onto the envelope	Post letter in postbox	
Imagine somebody had fired an egg. Look at the following steps. Based on the order of the steps would this person have been able to fry an egg? If you think they could then press Next. If you think the person has got it in the wrong order, change them as quickly as you can.			
Crack egg into a pan	Fry egg in pan	Remove egg from pan	Place egg onto plate
Imagine somebody had run a bath. Look at the following steps. Based on the order of the steps would this person have been able to run a bath? If you think they could then press Next. If you think the person has got it in the wrong order, change them as quickly as you can.			
Run water into the bath	Put plug into plughole	Take plug out of plughole	
Imagine somebody had bought some groceries. Look at the following steps. Based on the order of the steps would this person have been able to buy the groceries? If you think they could then press Next. If you think the person has got it in the wrong order, change them as quickly as you can.			
Pay for shopping	Put items into shopping basket	Put shopping items onto checkout	Put shopping items into plastic bag

Imagine somebody had brushed their teeth. Look at the following steps. Based on the order of the steps would this person have been able to brush their teeth? If you think they could then press Next. If you think the person has got it in the wrong order, change them as quickly as you can.			
Rinse mouth	Put toothpaste on toothbrush	Brush teeth	Spit out toothpaste
Imagine somebody had made a coffee. Look at the following steps. Based on the order of the steps would this person have been able to make a coffee? If you think they could then press Next. If you think the person has got it in the wrong order, change them as quickly as you can.			
Pour water into a mug	Boil the water	Put coffee granules into a mug	
Imagine somebody had hung a picture. Look at the following steps. Based on the order of the steps would this person have beeen able to hang the picture? If you think they could then press Next. If you think the person has got it in the wrong order, change them as quickly as you can.			
Hang picture on the nail	Bang the nail into the wall	Mark where the nail should go	Adjust picture until it is straight

Appendix Nine: Study 3b Offence Related Cues Measure Scenarios and

Pictures

Practice Scenarios

1. "Police have arrested a man and charged him with arson after a family BBQ went wrong. The man's neighbour called the emergency services after he felt that the BBQ had become out of control. The man has been released on police bail and is due to appear in court later this month".

2. "Police have charged a man for an attempted arson after a garden fire got out of control. Emergency services were called to the man's address after the fire began to engulf the entire garden. Firefighters who tackled the blaze said the man had not taken adequate safety precautions."

Experiment Scenarios

1. "Police have charged a man for an attempted arson following reports he set fire to his workplace after he was fired. Officers were called to an industrial estate in Woking, at 1am on Friday, after reports he was attempting to set fire to the office building. Reports suggest that the man had had a disagreement with his manager earlier in the day, and was subsequently sacked. He has been charged with attempted arson with intent to endanger life."

2. "Police are investigating a suspected arson attack on a local building site. Witnesses say that they saw a man set a fire on the building site in the early hours of the morning on Sunday 23rd May, apparently just for fun. The Police are appealing for any witnesses to come forward, specifically those who may have been around the Hove are."

3. "A 21-year-old man who attempted to set fire to his girlfriend's house has been jailed. John Smith, of The Street, York, appeared at Court after he pleaded guilty to a charge of attempted arson. The court heard Smith had had a disagreement with his girlfriend and whilst she was out of the house he set a fire in her house to seek revenge."

4. "Police have reported a popular children's play area was set on fire last night. The incident happened in Green Gardens in Amble, with fire crews called to deal with the blaze at around 8.20pm. One local resident captured the fire on camera and called the local Fire and Rescue Service."

5. "A man has been charged with GBH after he was discovered attempting to burn the clothes he had used in the attack. Mark Dickens, 45, was seen by a local dog walker starting a fire. The dog walker called the emergency services and Dickens was arrested at the scene. Dickens stated that he was attempting to burn the clothes to "get rid of them, get rid of the evidence"."

6. "Emergency services were called after reports of a fire in a prison cell at HMP London. A spokesperson from the Fire and Rescue service told us that two engines were deployed at 18.29. The prisoner thought to be responsible for the fire stated that he was being bullied on the wing, but "nobody was helping him", so he decided

that setting a fire would get the attention of officers, in the hopes that he could be moved to a different location."

7. "A man has been charged with robbery after being caught attempting to set fire to a car, a court heard. Christopher Wren was spotted by a member of the public, attempting to set fire to a stolen car at 9.30am on June 2 this year. Hull Crown Court was told the vehicle had been used in the commission of a robbery earlier that day and Wren was attempting to destroy any DNA evidence that may have been left in the car."

8. "A man has been hospitalised after he set a fire in order to express to his family that he was struggling to cope. The young man is thought to have built up debts that he couldn't pay and felt he couldn't ask his family for help. He set a fire to show his family how he felt."

9. "A man has been charged with setting fire to his own flat after he claimed he had been the victim of an arson attack. Mr Brown, 44, stated that he set the fire to make it look like an accident as he was unhappy with the flat and wanted the council to move him to "the nicer flat's they built.""

10. "A local man has been charged with Arson with intent to endanger life after he set a fire in order to recover money he was owed. Jason Dean, 42, of First Road is facing a lengthy prison sentence. Emergency services were called to the scene to put out the blaze. Reports suggest the victim owed a large sum of money to Mr Dean and Mr Dean was attempting to give the victim a warning about his lack of payment."

11. "Police are appealing for witnesses after a man was seen setting a fire. They are particularly interested in speaking to a Mr Greg Wright, of Virginia Close. He is said to have set the fire after an argument with a known associate, who threatened the safety of his family. Anybody who has seen Mr Wright is urged to contact 0124 5458 2542 immediately."

12. "Police officers have reported that on Tuesday afternoon they attended the scene of a fire at a disused office building. According to official reports, the person responsible was on the scene and admitted to setting the building on fire and as he wanted to return to prison. He stated that he was experiencing difficulties in his life, and felt that returning to prison would be simpler."

Aerosol Can

BBQ

Bed

Clothing

Coal Briquettes

Commerical Bin

Curtains

Filing Cabinet

Fire Alarm

Glass Bottle

Knife

Lamp

Lighter

Matches

Metal Bin

Paper

Petrol

Plastic Bin

Rags

Rubbish

Skip

Sofa

Telephone

White Spirit

Wood

Wooden Desk

Appendix Ten: Examples of Information, Consent, and Debrief Forms:

Studies 3a and 3b

Information Sheet

A Study Investigating Factors Associated with Firesetting

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 us 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 Miss Helen Butler a PhD Candidate, under the supervision of Professor Theresa Gannon a Researcher in Forensic Psychology. This research is being conducted as part of my PhD thesis.

Why are we doing this research?
This research is investigating how and why firesetting behaviour occurs. In order to gain a better understanding of firesetting we need to examine the thoughts, feelings and behaviours of men who have set a fire as well as who have not. We hope that the results of this research will help with the assessment and treatment of firesetters.

Why have you been chosen to take part?
We are asking a number of men in your wing/establishment whether they will help us with this research. In particular, we are interested in speaking with men who have set a fire in the past (perhaps even the distant past).

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 up until 28th February 2016 without giving a reason. If you decide that you would like to withdraw from the study please contact the psychology department via a general application including your participant number (located on the top of your consent form). The psychology department will then contact the researcher with your participant number indicating your request to withdraw from the study. 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. This research is independent and so it will not be used to inform any decisions about your future.

What will happen if you do decide to take part?
If you agree to take part, we will ask you to come along for about an hour.

Firstly, you will be given full information and a form to sign saying that you would agree to take part. If you do not want to, you simply do not sign the form. Saying that you will take part today DOES NOT mean that you have to take part. If you agree to take part but then decide that you do not want to, you can just tell us. If you do decide to withdraw, we will destroy any information that you have given to us and you will not be included in the research project.

If you do decide to take part, then there are four things that we will ask you to do today. First of all, we will ask you to answer 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, we will present you with some sentences. We will ask you to read the sentences, and then answer a multiple choice question based on the sentences that you read. The sentences will be presented on a computer. You will be given instructions about how to use the computer before starting. Third, we will give you some firesetting puzzles that we want you to solve. You will need to do this as quickly as possible, and make as few errors as possible. The puzzles will be presented on a computer. The puzzles will only require you to imagine different situations, you do not need to have had a similar experience to be able to complete the puzzles. Fourth, we will give you some hypothetical news articles that describe a fire along with some items that could have been used to set the fire described. The scenarios and items will be presented on the laptop. We would like you to select which item/s you think somebody may have used in the hypothetical news article to set the fire, and explain why they may have chosen those items. You will be given instructions about how to use the computer, as well as practice scenarios for both tasks before you begin. 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 session at any point or take a break, during the session, should you wish to do so.

Will your taking part in this study be kept 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 that 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. Your anonymous data from will be transported securely from the prison to the University by the researcher separate from your signed consent form which will be sent separately via secure post mail. A note will be placed on your P-Nomis record, stating that you participated in the research. No more information will be recorded on the P-Nomis note than that.

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. We would also need to inform relevant professionals if you reveal a new crime that we did not previously know about. Other than in these areas however, none of the information, resulting from the research, 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 Kent and Sussex Regional Forensic Psychology Service for Public Sector Prisons.
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.

Helen Butler
PhD Candidate

Professor Theresa A. Gannon
Supervisor

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 psychology department in writing. The psychology department will pass on any concerns that you may have on to the University of Kent's Research Ethics Committee.

Should you require any support or are feeling adversely affected due to being invited to participate/or having participated in this research you may want to speak to your Personal Officer, or the Listeners. The following information may also be of use.
Samaritans - 08457 90 90 90

<div align="center">

Consent Form

</div>

Participant Number: _____

Title of Project: A Study Investigating Factors Associated with Firesetting

Name of Researchers: Miss Helen Butler

<div align="right">

Please initial box

</div>

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 sections of 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 and to comment that I took part in the research. I give permission for these individuals to have access to my records.

4. I consent to my anonymous electronic data file and hard copies of my anonymous data being transported securely by the researcher the secure storage arrangements at the University of Kent, separate to my signed consent form, which I understand will sent separately via secure post mail.

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

_____   _____   _____

Name of Participant   Date   Signature

_____   _____   _____

Name of Researcher   Date   Signature

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

Debrief Sheet

A Study Investigating Factors Associated with

Firesetting Debrief Sheet

Firstly, thank you for your participation in this study. I would now like to take this opportunity to explain a little more about the study.

I wanted to investigate if people who have set fires before would find it easier to solve the puzzles about the imaginary fires compared to people that have never set a fire before. We asked a number of individuals to take part in the research. Some who have set fires and some who have not set fires.

I expected to find that some people who have set fires in the past would find it easier to select the materials somebody may have used to set an imaginary fire because they would rely on what they know. In other words they would have more information about *how* to set a fire. In this research that meant some people who had set a fire in the past would be able to spot the sequences that were in the wrong order more often and in a faster time compared to people who have not set a fire before. People who have set fires in the past would know if the sequences were in the wrong order, and how to put it in the right order. I expected to find that the non-fire related sequences would be answered generally the same by all participants. Also, I expected to find that some people who have set a fire before would be quicker at selecting items they thought somebody may have used to set an imaginary fire. Again this is because they have done it in the past and so know *how* to do it. I also expected to find that the explanations as to why these items were chosen would be based upon previous experience. Learning more about this is important since it will help us know what we should be targeting for people who are receiving treatment for firesetting behaviour to help reduce it from happening in the future.

It is important to note that although in this study you were asked to look at examples of firesetting sequences and suggest what materials you may use to set a fire, in no way does this research encourage or endorse the misuse of fire in this way. Firesetting has devastating finical and human costs. In 2008, Arson cost the economy an estimated £2 billion (Department for Communities and Local Government, 2008) and between 2010-2011 71 people died and 1,700 were injured as a result of deliberate firesetting (Department for Communities and Local Government, 2011).

I would like to take this opportunity to thank you for having taken part in this research aimed at reducing future firesetting. If you have any serious concerns about the ethical conduct of this study then please notify the psychology department at HMP Swaleside in writing. The psychology department will pass on any concerns that you may have on to the University of Kent's Research Ethics Committee.

If any of the responses you have provided results in you feeling adversely affected you may want to speak to your Personal Officer, or the Listeners. The following information may also be of use.

Samaritans - 08457 90 90 90

Once again thank you for your participation.

Helen Butler
PhD Candidate

Professor Theresa A. Gannon
Supervisor

Appendix Eleven: Study 4 Screening Questions

1. **What is your age?**

2. **What best describes your ethnicity?**
   Please Choose One of the following:

○ English / Welsh / Scottish / Northern Irish / British

○ Irish

○ Gypsy or Irish Traveller

○ White and Black Caribbean

○ White and Black African

○ White and Asian

○ Indian

○ Pakistani

○ Bangladeshi

○ Chinese

○ Black - African

○ Black - Caribbean

○ Arab

○ Other

3. *What is the highest level of education you have?*

○ No qualifications

   ○ GCSE or O Levels, NVQ Level 1 or 2
   ○ A Levels, NVQ Level 3 or above
   ○ Apprenticeship
   ○ Degree (for example BA/BSc)
   ○ A Masters degree or higher (for example MSc, MA, PGCE, PhD)
   ○ Foreign Qualifications

4. *How would you describe your employment status?*
   ○ In full-time work
   ○ In part-time work
   ○ Unemployed
   ○ Retired

5. **Have you ever been diagnosed with a mental health disorder?**
   Yes
   No (will automatically skip to question 8)

6. **If yes, what diagnosis did you receive?**

7. **If yes, when where you diagnosed?**

8. **Have you ever been convicted of a crime?**
   Yes

No (will automatically skip to question 10)

9. **If you have ever been convicted of a crime? Please select all that apply**

- ❑ Vandalism
- ❑ A violent crime
- ❑ Anti-Social Behaviour
- ❑ Arson
- ❑ Other - please be more specific below _____

10. When answering the next question please think about fires which have been started deliberately for example;

- Fires set to annoy other people
- Fires that are set as a result of boredom (e.g. setting fire to things because it is something to do)
- Fires set to create excitement (e.g. fires set because they are interesting and exhilarating)
- Fires set for revenge (e.g. to get back at someone and to scare or harm them or their property)
- Fires set for insurance purposes (e.g. to gain money from a false insurance claim)
- Fires set as a result of peer pressure(e.g. because of a dare, or being bullied or just going along with a group of friends)
- Fires set to destroy evidence (e.g. to get rid of evidence and cover up another crime)
- Please do not consider fires set accidentally, fires set for organised or social events (e.g. bonfire night, social occasions or hog roasts) or fires set before the age of 14.

11. Since the age of 14, how many intentional fires have you started?
- ○ 0 (will automatically skip to the end of the demographic/screening section)
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5 or more
- ○ I am thinking of a fire which does not fit into these categories.

12. How old where you when you first started a deliberate fire?

13. How old where you when you last/most recently started a deliberate fire?

Please think about any fires you have started after the age 14 and answer the following questions by selecting either yes or no.

	Yes	No
14. Have you ever been caught starting a fire on purpose?	○	○
15. Have you ever received any therapy for your deliberate firesetting?	○	○

16. Have you ever set a deliberate fire at your house?   ❍   ❍

17. Have you ever set a deliberate fire at your workplace?   ❍   ❍

18. Do you tend to plan the deliberate fire before setting it   ❍   ❍

19. Do you tend to start the deliberate fire impulsively   ❍   ❍

20. Do you tend to light the deliberate fire with things I have taken with me   ❍   ❍

21. Do you tend to light the deliberate fire using things I find at the scene   ❍   ❍

Thinking about all of the intentional fires you have set:

	Yes	No
22. Do you tend to stay at the scene of the deliberate fire?	❍	❍
23. Do you tend to revisit the scene of the deliberate fire afterwards?	❍	❍
24. Do you tend to take part in putting out the deliberate fire?	❍	❍

25. How many other people tend to be with you when you light a deliberate fire(s)?

- ❍ Zero (0) I started the fire(s) alone
- ❍ 1
- ❍ 2
- ❍ 3
- ❍ 4 or more other people

26. What were your motives or reasons for deliberately starting a fire(s)? Please tick all that apply. I started a fire deliberately because;

❑ I was experimenting and was curious but I had a lack of fire safety knowledge and did not understand the dangers of fire
❑ I was experimenting and was curious but understood the dangers of fire
❑ I was having issues/problems at home
❑ I was having issues/problems at school

❑ I was having issues/problems at work
❑ I was stressed and/or frustrated
❑ I wanted to get attention
❑ I was dared to or as a prank
❑ I was bored
❑ I was angry
❑ I wanted to get revenge
❑ It was a reaction to a stressful life event or crisis (e.g. the death of a loved one, parental separation etc).
❑ It was as an act of vandalism
❑ I wanted to create excitement
❑ I was protecting myself
❑ I wanted an insurance payout or for other financial gain
❑ I was covering up another crime and destroying evidence
❑ I love fire
❑ Other - please describe your reason _____

27. When starting a deliberate fire do you tend to light one point or more than one point to make sure the fire takes hold?
      ◯ I only set fire using one point
      ◯ I set fire to more than one point to make sure the fire starts

28. What do you tend to use to start a deliberate fire(s) and keep it lit? Please choose all that apply

      ❑ Matches
      ❑ A lighter
      ❑ Candles
      ❑ Petrol
      ❑ Lighter fuel, White spirit or other flammable liquid
      ❑ Gas bottle
      ❑ Tampering with electrical equipment
      ❑ Aerosol can
      ❑ Cigarette
      ❑ Magnifying glass
      ❑ A crisp packet
      ❑ Other - please give details _____

29. What have you deliberately set fire to? Please tick all that apply

      ❑ A waste paper basket or a rubbish bin inside a building 1
      ❑ A rubbish bin outside 2
      ❑ Mattress or bedding 3
      ❑ Clothing 4
      ❑ A toilet roll dispenser 5
      ❑ A car with a person inside 6
      ❑ A car without a person inside 7
      ❑ An animal that was alive 8
      ❑ A dead animal 9
      ❑ A house or building that you knew had a person inside 10
      ❑ A house or building that you believed did not have a person inside e.g. a derelict building 11
      ❑ The countryside for example grass or shrubbery 12

❑   A shed or beach hut that you knew had a person inside 13
❑   a shed or beach hut that you believed to be empty 14
❑   Evidence relating to another crime 15
❑   Other - please give details but do not include anything that could specifically
13 identify the location 16

30. Please think about the fire/s that you have set and the reasons why you set the fire/s select all that apply

❑I set the fire because I wanted to show that I am not somebody to be messed with.
❑I set the fire because I needed help, and I thought setting a fire would help me get it.
❑I set the fire because I had committed a crime, and needed to get rid of the evidence.
❑I set the fire because I wanted to harm myself/end my life.
❑I set the fire because I wanted to get attention.
❑I set the fire because I thought it would make me feel better.

	Yes	No
31. Did you believe you were in control of the fire?	○	○
32. Did you expect the fire to turn out the way it did?	○	○
33. Do you tend to leave the fire to burn itself out?	○	○
34. Do you tend to try and put the fire out yourself?	○	○
35. Do the fire service tend to put the fire out?	○	○

Thinking about the last deliberate/most recent fire that

36. How serious do you think the fire was?

1 Not at all serious	2	3	4 A bit serious, some harm was caused	5	6	7 Extremely serious, lots of damage was caused and the fire was harmful to others

37. How serious do you believe other people would think the fire was?

1	2	3	4	5	6	7
Not at all serious			A bit serious, some harm was caused			Extremely serious, lots of damage was caused and the fire was harmful to others

_____

38. Wat do you believe would have prevented you from setting a fire(s)? Please tick all that apply

- ❑ Having better fire safety knowledge e.g. knowing how to use fire responsibly
- ❑ Having more knowledge relating to how fire develops
- ❑ Being more aware of the dangers of fire
- ❑ Having more support
- ❑ Having more confidence to stand up to peers
- ❑ Knowing ways to control my anger
- ❑ Having more parental supervision
- ❑ Nothing would have prevented me from setting a fire
- ❑ Other - please give more details _____

39. What do you believe would prevent you from setting a fire(s) in the future?

_____

Appendix Twelve: Examples of Information, Consent, and Debrief

Forms: Study 4

Information Sheet

A Study Investigating Factors Associated with Firesetting

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. Please feel free to ask us 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 Miss Helen Butler and Professor Theresa Gannon.

Why are we doing this research?
This research is investigating how and why firesetting behaviour occurs. In order to gain a better understanding of firesetting we need to examine the thoughts, feelings and behaviours of men who have set a fire as well as those who have not. We hope that the results of this research will help with the assessment and treatment of firesetters.

Why take part?
We are asking a number of men whether they will help us with this research. We are interested in speaking with men who have different backgrounds, with different experiences of fire.

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 asked to virtually 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, and will have no implications.

What will happen if you do decide to take part?
If you agree to take part, there will be a series of tasks you will be asked to complete.

Firstly, you will be given full information and asked to virtually sign a consent form. If you do not want to, you simply do not sign the form. If you agree to take part but then decide that you do not want to, you can just stop answering the questions. If you do decide to withdraw, we will destroy any information that you have given to us and you will not be included in the research project.

If you do decide to take part, then there are four things that I will ask you to do today. First of all, we will ask you to answer some questions about you, such as your age, ethnicity, how old you were when you left school, as well as your experiences of firesetting. Second, we will present you with some sentences. We will ask you to read the sentences, and then answer a multiple choice question based on the sentences that you read. Third, we will ask you to answer some simple questionnaires. Fourth, we will give you some scenarios and ask you to provide some ideas about how you might solve these scenarios. Fifth, we will give you some firesetting puzzles that we want you to solve. You will need to do this as quickly as possible, and make as few errors as possible. The puzzles will only require you to imagine different situations, you do not need to have had a similar experience to be able to complete the puzzles. Sixth, we will give you some hypothetical news articles that describe a fire along with some items that could have been used to set the fire described. We would like you to select which item/s you think somebody may have used in the hypothetical news article to set the fire, and explain why they may have chosen those items. You will be given examples and practice scenarios where needed. 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 session at any point.

Will your taking part in this study be kept confidential?
Information collected about you during the course of the research will be kept strictly confidential. None of the information will be shared in a way that can identify you with anyone outside of the study. Importantly, if you do tell us that you have started a fire, this information will **NOT** be passed onto anyone. There will be no repercussions if you tell us that you have set a fire, as we have no obligation to pass this information on. Nothing will happen us a result of you telling us that you have set a fire in the past.

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.

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. If you do wish to take part in the study, please sign the consent form.

Thank you for your time.

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.

Consent Form

1. I confirm that I have read and understand the information sheet for the
   above study.

2. I understand that my participation is voluntary and that I am free to
   withdraw at any time.

3. I understand that I will be asked to answer questions about fire.

Click here to agree to take part in the above study.

Debrief Sheet

<u>**A Study Investigating Factors Associated with Firesetting Debrief Sheet**</u>

Firstly, thank you for your participation in this study. We would now like to take this opportunity to explain a little more about the study.

We asked a number of individuals to take part in the research. Some who have set fires and some who have not set fires. We wanted to investigate if people who have set fires would respond differently to the questions, compared to people who have not set a fire before. Research has shown that people that set fires tend to have more of an interest in fire than the average person. Therefore, we expected to find that that people who have set fires before would be interested in, and identify with fire, more, as well as see firesetting as normal. Research has also suggested that people that set fires may hold rules that act as a guide to aid in the interpretation of situations as well as guiding behavioural responses to these situations. These are called fire scripts, and example might be fire is a powerful tool. Therefore, we also expected to find that people who have set fires before would hold some of these fire scripts, and would find it easier to provide step by step information when asked about different situations in which fire could be used. Finally, research suggests that people who have set fires before have developed skills about how to set a fire. Therefore, we expected to find that some people who have set fires in the past would find it easier to solve the puzzles than people that have never set a fire before. That meant that people who had set fires before would be able to spot the sequences that were in the wrong order more often and in a faster time, compared to people who have not set a fire before. People who have set fires in the past would know if the sequences were in the wrong order, and how to put it in the right order. We expected to find that the non-fire related sequences would be answered generally the same by all participants. Also, we expected to find that some people who have set a fire before would be quicker at selecting items they thought somebody may have used to set an imaginary fire. Again this is because they have done it in the past and so know *how* to do it and they would rely on what they know. Learning more about this is important since it will help us know what we should be targeting for people who are receiving treatment for firesetting behaviour to help reduce it from happening in the future.

It is important to note that although in this study you were asked to look at examples of firesetting sequences and suggest what materials you may use to set a fire, in no way does this research encourage or endorse the misuse of fire in this way. Firesetting has

devastating finical and human costs. In 2008, Arson cost the economy an estimated £2 billion (Department for Communities and Local Government, 2008) and between 2010-2011 71 people died and 1,700 were injured as a result of deliberate firesetting (Department for Communities and Local Government, 2011).

We would like to take this opportunity to thank you for having taken part in this research aimed at reducing future firesetting.

If you have any serious concerns about the ethical conduct of this study then please notify the Chair of the Psychology Research Ethics Panel (via the Psychology School Office) in writing, providing a detailed description of your concern. The address to write to is as follows:

Chair of the Psychology Research Ethics Panel

School of Psychology

Keynes College

University of Kent

Canterbury

Kent

CT2 7NP

If any of the responses you have provided results in you feeling adversely affected you may find the following information may be of use.

Samaritans - 08457 90 90 90

For any general questions about the research, please contact:

Professor Theresa Gannon: T.A.Gannon@kent.ac.uk

School of Psychology, Keynes College, University of Kent, Canterbury, Kent, CT2 7NP

Once again thank you for your participation.

Appendix Thirteen: Ethics Approvals

University of Kent

Study 1 and 2

APPROVAL BY PSYCHOLOGY RESEARCH ETHICS COMMITTEE

Your study has been approved. You can now proceed to do your study without resubmitting documents to the ethics committee. However, before proceeding with the research, please ensure you deal with all the issues outlined below. You MUST deal with these issues prior to data collection, otherwise this Ethics approval is not vaild.

This project requires a valid CRB check in addition to this approval. It is your responsibility to provide it to the departmental office before you begin collceting data.

Date: 2014/02/23
Code: 20143376

Applicant details:
Name: Helen Butler
Status: PhD Student
Email address: hlb31@kent.ac.uk

Title of the research:
A Study Investigating Factors Associated with Firesetting

When carrying out this research you are reminded to
* follow the School Guidelines for Conducting Research with Human Participants
* comply with the Data Protection Act 1998
* refer any amendments to the protocol to the Panel

Study 3a and 3b

APPROVAL BY PSYCHOLOGY RESEARCH ETHICS COMMITTEE

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

This project requires a valid CRB check in addition to this approval. It is your responsibility to provide it to the School office before you begin collecting data.

Date: 2015/05/05
Code: 20153595

Applicant details:
Name: Helen Butler
Status: PhD Student
Email address: hlb31@kent.ac.uk

Title of the research:
A Study Investigating Factors Associated with Firesetting (Studies 3 and 4)

When carrying out this research you are reminded to
* follow the School Guidelines for Conducting Research with Human Participants
* comply with the Data Protection Act 1998
* refer any amendments to the protocol to the Panel

Study 4

APPROVAL BY PSYCHOLOGY RESEARCH ETHICS COMMITTEE

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

Date: 2017/08/18
Code: 201715030573194497

Applicant details:
Name: Helen Butler
Status: PhD Student
Email address: hlb31@kent.ac.uk

Title of the research:
A Study Investigating Factors Associated with Firesetting

When carrying out this research you are reminded to
* follow the School Guidelines for Conducting Research with Human Participants
* comply with the Data Protection Act 1998
* refer any amendments to the protocol to the Panel

NOMS

Study 1 and 2

<div align="right">

National Offender Management Service
Kent & Sussex Regional Forensic Psychology Service
80 Sir Evelyn Road
Rochester
Kent
ME1 3NF

</div>

30th April 2014

Title: A Study Investigating Factors Associated with Firesetting
Establishment: HMP Swaleside

Dear Miss Butler,

Thank you for your application to undertake research in NOMS. Your application was well presented and informative. You provided a clear and thorough outline of your research proposal and the methods to be used, and you demonstrated a good understanding of security and information assurance considerations. Your CV demonstrates that you have gained significant research experience, and experience of working with different client groups, including those with a history of firesetting. Your research application would seem to build upon past research conducted to address deficiencies in academic knowledge in an under-researched field. You aim to apply your research findings clinically to contribute to the continued development of intervention and treatment for firesetters; and as such your research has value for NOMS in the field of reducing reoffending and associated harms.

After careful consideration your application to conduct research within HMP Swaleside **is approved subject to modifications** by the Kent and Sussex Regional Forensic Psychology Service. However, please note that it is the decision of the establishment Governor whether to grant you access to the establishment and you should contact the establishment directly to seek permission for access following final approval after the modifications. The feedback below should be attended to and **amended materials must be submitted for consideration prior to final approval being given and communicated to the NRC.**

1. Research Application

1.1 In section 3 you state participants who decline to take part will be provided with a contact point. In terms of determining the impact on prison resources could you please specify who this contact point would be?

1.2 In section 3 when highlighting the 'risk of potential distress caused by methodology' you state *'if distress were to arise, this will be mitigated by the fact that I have developed the necessary skills to deal with such a situation should it occur.'* Could you please include additional information specifying the exact procedures you would go through to deal with a distressed participant?

1.3 In section 4 you state you intend to bring in a digital audio recorder (Dictaphone), and that you are aware of the need for this equipment to be security cleared and the procedures to do so. On the presumption your audio equipment is security cleared could you please specify how the recordings will be stored (e.g. CD), where (location(s)) you intend to transport the audio recordings to (if you intend to do so), and how you intend to ensure the secure transport of any audio recordings from the prison to any destination? Could you also provide information as to how the audio recordings will be transcribed and destroyed? In addition, information about the storage, destruction, (and if relevant) transportation of the audio recordings should also be included in the information sheet for participants suitable to their level of understanding.

1.4 In section 5 you state you would require access to prisoners' Core Records in order to obtain offence related information to obtain participants and ascertain any relevant security information. Although you may already have access to this information through your role as a facilitator on the Fire Intervention programme for prisoners (FIPP) you may need to confirm with the Governor whether you are permitted access to prisoners' Core Records for the purposes of completing your research.

1.5 There is no reference in the research application as to whether participation in the research may result in a loss of earnings for prisoners. As this may impact a prisoner's decision to engage in the research it is advised that you liaise with relevant prison staff (Activities Department/Governor) to confirm whether participants will be paid for the time they spend engaging in the research. In addition, this information should be included in the information sheet for participants.

1.6 In section 6 you state a relevant Ethics Committee has approved the research. Could you please provide a copy of this approval, to be sent with the amendments (which should be extracted from the application) and emailed to Jane Roberts, Research Coordinator (email address below)

2. Information Sheet

2.1 A deadline by which participants can withdraw is not specified, and as this research will be written up for the purpose of a PhD and possibly published research, a deadline date must be stated and this date should be prior to data analysis. It should be clearly stated how applications to withdraw should be made. Prison Service Policy states that researchers should not put their contact addresses/emails on materials and that any requested contact with them must be directed through the establishment. Currently, a postal address is provided for the University of Kent ethics board. An agreement with HMP Swaleside of how communication will be maintained between participants and the researcher/supervisor and/or the ethics board must be made and stated within the research materials.

2.2 Reference to the support services available to participants within custody should be made within the information sheet (as is in the debrief form) should they have any negative experiences during or after participation related to the research.

2.3 The information sheet states the NOMS Regional Research Committee (NRC) has reviewed and approved the research. If your modifications are received and are satisfactory, and your research is subsequently approved, this will need to be amended to reflect that approval has been made by the Kent and Sussex Regional Forensic Psychology Service for Public Sector Prisons.

3. Consent Form

3.1 As the consent forms will bear the name and signature of a prisoner, this information will be considered at least OFFICIAL via the Government Security Classifications (GSC) which

came into effect on 2nd April 2014. It should be considered how this data will be transported out of the establishment and to the University of Kent to enable participants to consider this factor in the consent process. If a participant consents to take part but does not consent to the storage arrangements, alternative arrangements will have to be agreed.

4. Appendices

4.1   In Appendix 2 and 4 you wrote: *'Also, please remember, anything that you tell me will be kept entirely confidential'.* This may be misleading to participants due to different perceptions of what *'entirely confidential'* means; the information provided by participants will be published and also as you are aware there is a duty for you to report any information that may result in a breach of security or harm to the participant or others as described in your information sheet. Therefore, it is recommended that you remove this statement, or amend it to reflect the aforementioned.

The required amendments should be made to the research materials and these resubmitted, along with confirmation of approval from the University of Kent Ethics Board to Jane Roberts, Research Application Coordinator, Jane.Roberts@hmps.gsi.gov.uk prior to final approval for this research being made.

Should you wish to discuss any of the above feedback please contact me in the first instance via email – Caitriona.Gill@hmps.gsi.gov.uk to arrange a convenient discussion time.

Yours sincerely,

Caitríona Gill	**Kerry Joy**
Trainee Psychologist	**Registered Forensic Psychologist**
Kent and Sussex Regional Forensic Psychology Service	Kent and Sussex Regional Forensic
Psychology Service	
Public Sector Prisons	Public Sector Prisons
Author	*Supervisor*

Cc: **Jane Roberts, Registered Forensic Psychologist,** Research Application Coordinator, Kent and Sussex Regional Forensic Psychology Service, Public Sector Pris

Study 3a and 3b

National Offender Management Service
Kent & Sussex Regional Forensic Psychology Service
80 Sir Evelyn Road
Rochester
Kent
ME1 3NF

11th September 2015

Ref: 2015-163

Title: A Study Investigating Factors Associated with Fire Setting (Part 2).

Establishment: HMP Swaleside

Dear Ms. Helen Butler,

Further to your application to undertake research in NOMS, after careful consideration your application to undertake the above research has been **approved with modifications.**

Methodology:

Initially there were concerns that it appeared 90 fire-setters would be required to achieve the study. It has been confirmed that in fact only 45 fire-setters will be required, with an additional 45 prisoner (non-fire setters) to act as a control group. Therefore, this first point has been addressed.

I understand appendices, which contain all the consent forms, briefing sheets and materials, were not sent through to Kent and Sussex Regional Forensic Psychology by NOMS National Research via the functional mailbox. The attached documents, including curriculum vitae, information sheet, consent forms and materials to be used on a computer have now been received and reviewed in detail. This information also helped to answer a number of the other enquires or concerns.

Limitations of proposed research:

There were concerns about the use of hypothetical scenarios where participants are asked to think in an offence related manner, which would essentially be rehearsing offence related thinking. Firstly, I understand that the offenders will not be using their own experience(s). Reviewing the stimulus material, the scenarios are brief in duration and observed to be hypothetical in nature. It is acknowledged this method has been tried and tested before in your previous research and is an established method used by other researchers. You make a clear account and explain why effects of priming, rehearsal and reinforcement, either would be expected to have no effect, or short lived effects, or would require substantial rehearsal with regular schedules of positive reinforcement to have an effect. On reviewing the materials, in particular the visual aids to be used on the computer, the exposure to the tasks is recognised to be short in duration with no intended positive reinforcement. Furthermore, any short lived effects are intended to be managed through the debriefing. Therefore, with the additional materials and explanation into the current research regarding priming, rehearsal and reinforcement, it would appear that most of our concerns have been addressed. Nevertheless, there are still some concerns regarding the examples used within this task, for instance encouraging prisoners to consider how they would make a petrol bomb. Although scientifically, we are satisfied with the evidence that you have provided that the risk of priming, rehearsal and reinforcement is low, there are still concerns about how this material might be viewed. The Prison's Governor for security reasons may not be comfortable about an offender being encouraged to explore such themes as making a petrol bomb. We will raise this with the Governor, and, as with all research, they will make the final decision about whether they are happy for the research to proceed in their establishment.

Further consideration has been given to the content of the debrief sheet for the firesetters, as it refers to firesetters as 'experts', i.e. "people who have set fires would show a level of expertise in fire setting". There are concerns surrounding the use of the term 'expert'. Many prisoners are vulnerable with low self-esteem and any use of the term 'expert' with regards to their offending may lead them to consider their offending in a positive light, even though this is clearly not intended. Therefore, it would be helpful to refer to the 'expert' firesetters by using more neutral terminology, so we request that the participant materials are rephrased accordingly and resubmitted to us prior to approval of this application stage being granted.

Data protection/security information:

After reviewing the information and consent forms, limits of confidentiality have been made explicitly clear. There is a clear indication of how data will be handled through either secure email or by making the data anonymous, which is to be handled by the researcher themselves. Please note that researchers must store and handle all personal data securely in line with Prison Service AI 03/2009 and PSO 9015 Information Assurance and PSO 9010 I.T. Security.

Ethical issues:

There was an initial concern that the issuing of appointment letters which required offenders to 'opt-out' of taking part in the research was coercive in nature. It is now understood that in effect there are 2 phases to recruiting prisoners. Initially you propose that you will meet

and engage with prisoners in order to explain the research and if they are interested, then a formal appointment would be made. The appointment would then allow more time to provide more detail information about the research and then allow for informed consent which can be taken in a more appropriate manner. Therefore, if offenders are not initially interested they will not be given an appointment to explain the research or to take informed consent. It is also confirmed that appointments will be made with consent of the prisoner and at a time which suits them. Finally, it is confirmed that all recruitment of prisoners, due to their likely vulnerabilities, will occur in person, and not by letter. This will increase the researcher's responsivity to the offenders. We are happy that meeting with the offenders will allow more appropriate opportunities to decline or withdraw from the research, which in turn will make the recruitment process more voluntary.

Thank you for taking the time to provide the materials again, the problem with not receiving them first time has been noted. Also thank you for taking the time to explain in more detail the potential problems, or lack of, with priming, rehearsal and reinforcement of offending behaviour for the fire-starters. The detailed explanation of the proposed recruitment process has also been helpful in identifying and addressing any previous concerns we had. Please make the final amendments as requested and supply them to Hannah Callum, Research Application Coordinator, Hannah.Callum@hmps.gsi.gov.uk or Lloyd.Catley@hmps.gsi.gov.uk, the research reviewer.

Once you have supplied the final amended documents, and before the research can commence, you must agree formally by email to the NRC (National.Research@noms.gsi.gov.uk), confirming that you will comply with the terms and conditions (separately attached to the email) and the expectations set out in the NOMS Research Instruction (http://www.justice.gov.uk/downloads/offenders/psipso/psi-2012/psi-13-2012-research-applications.doc).

Please note that the decision to grant access to prison establishments or probation trusts (and the offenders and practitioners within these establishments/trusts) ultimately lies with the Governing Governor or Contract Manager of the establishment/trust concerned. If establishments/trusts are to be approached as part of the research, a copy of the approval letter must be attached to the request to prove that the research has been through the NRC process and has received approval in principle. The decision to grant access to existing data lies with the Information Asset Owners (IAOs) for each data source and the researchers should abide by the data sharing conditions stipulated by each IAO.

Please quote your NRC reference number in all future correspondence.

Yours sincerely,

Lloyd R.Catley B.Sc (Hons) M.Sc MBPsS   **Jane Roberts, C. Psychol.**
Trainee Forensic Psychologist   **Registered Forensic Psychologist**
Kent and Sussex Regional Forensic Psychology Service Kent and Sussex Regional Forensic Psychology Service
Public Sector Prisons   Public Sector Prisons
Author   Supervisor

Cc: **Hannah Callum, C. Psychol.**
         Cluster Lead Forensic Psychologist
         Kent and Sussex Regional Forensic Psychology Service, Public Sector Prisons