Explanations of Firesetting in Mentally Disordered Offenders: A Review of the Literature.

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Abstract

This paper reviews current explanations of firesetting in adult mentally disordered offenders. In particular attention is given to contemporary research that has examined the developmental and background characteristics, personality and associated traits, motivation for firesetting, neurobiological explanations, psychiatric diagnoses and frequency of self injurious behaviour; including suicide. In addition to this, the likelihood of recidivism and associated risk factors are considered. Evaluation of the existing research has highlighted that even though a significant proportion of the existing research has been conducted with psychiatric populations little is understood about firesetting by mentally disordered offenders. In addition to this, little research has been conducted which compares mentally disordered firesetters to other mentally disordered offenders and non-mentally disordered offenders. Recommendations are made for future research in this area to help develop knowledge of this behaviour further.

Key Words: Firesetting, Arson, Mentally Disordered Offenders, Self Incineration.
Explanations of Firesetting in Mentally Disordered Offenders

Deliberate firesetting is a huge problem worldwide. Recent statistics show that in the UK alone in 2008 there were 53,000 deliberately set fires and there were 451 fire-related deaths (Department for Communities and Local Government, 2010) with estimated costs to the total economy in 2004 being £2.53 billion (Office of the Deputy Prime Minister, 2006). Similarly high figures have also been reported for both Australia (Bryant, 2008) and the US, where the cost to the economy in direct property damage alone in 2007 was $1.3 billion (Hall, 2010). Of the 1407 adults who were brought before the courts in England and Wales in 2009 for arson offences, 42 received hospital orders and limitation directions (Ministry of Justice, 2011). It has been suggested that firesetting is highly prevalent amongst the mentally disordered offender population (Swaffer, Haggett & Oxley, 2001) and research has generally reflected this assertion. For example, Geller and Bertsch (1985) report that in a sample of 191 state hospital inpatients, 26% had set a fire. Furthermore, Ritchie and Huff (1999) concluded that 90% of arsonists had histories of mental health issues. To date there have been only two reviews that have focused specifically on firesetting in mentally disordered offenders (Geller, 1992a; Smith & Short, 1995). However, these reviews were conducted over a decade ago and fail to explore the psychological variables of firesetting in mentally disordered offenders that are necessary to guide assessment and treatment. Thus, there is an inherent need for a literature review on firesetting in mentally disordered offenders. Given that firesetting is such a huge societal problem, both economically and physically, it is surprising that understanding of this behaviour from both psychiatric and psychological perspectives is relatively poor and the literature impoverished.

This paper does not intend to provide an exhaustive review of the literature on firesetting in mentally disordered offenders. However, it does aim to provide a contemporary overview of the various explanations that have been formulated in an attempt to explain acts of firesetting in this population. This paper also aims to provide professionals who may be working with
mentally disordered firesetters with a comprehensive understanding of mentally disordered firesetters paying particular attention to developmental and background features, offence histories, personality and associated features, psychiatric disorders, and motives. In addition to this, factors that have been found to be predictive of recidivism in mentally disordered firesetters will be explored. Therefore, this review will evaluate research that has employed samples of mentally disordered offenders or firesetters who have been referred for psychiatric evaluation. Unless otherwise stated, this review will focus on firesetting committed by mentally disordered offenders who are over the age of 18. In addition to this, because the majority of mentally disordered firesetters are male (Smith & Short, 1995) this review will focus on male mentally disordered firesetters only (readers interested in female firesetters should consult Gannon, 2010). An extensive search of the firesetting literature was conducted (limited to the English language) using both electronic databases (e.g. PsycINFO, PsycARTICLES, Web of Science and PubMed) and reference lists from empirical articles, which returned 69 articles, book chapters and commentaries in English that had either employed samples of adult male mentally disordered firesetters or had discussed firesetting in relation to this population. All of these articles are discussed and evaluated in this review.

The Association between Firesetting and Mental Illness

Research suggests that although mental health problems appear to be one factor relating to a risk of firesetting, the majority of apprehended firesetters are not deemed to be mentally ill. There has long been an association between mental illness and firesetting. Early German writers theorised that firesetting was generally committed by pubescent mentally disordered girls who lived in rural areas, exhibited abnormal psychosexual development, and menstrual difficulties (Henke, 1812; Platner, 1797, as cited in Inciardi, 1970). The impulse to set fires was attributed in
these young girls to disturbed or irregular psycho-sexual development and reproductive mental problems around and during puberty (Henke, 1812; Platner, 1797, as cited in Inciardi, 1970). In the 1800’s writers began to develop the first discussions in English with regard to the connection between mental illness and pathological firesetting (Prichard, 1833; Ray, 1844 as cited in Geller, McDermeit & Brown, 1997). Since this point in history the connection between poor mental health and firesetting has consistently been made. This is demonstrated by the inclusion of pyromania as an impulse control disorder in the Diagnostic and Statistical Manual of Mental Health Disorders (DSM-IV-TR, American Psychiatric Association; APA, 2000). However, true cases of pyromania that meet all of the diagnostic requirements are very rarely found in firesetting populations (Lindberg, Holi, Tani & Virkkunen, 2005). In addition to this, the psychiatric firesetting literature has substantially contributed to the widely held belief that firesetters are generally a dangerous group of offenders with a poor prognosis (Rice & Harris, 1996); a perspective that appears to be still widespread today. This is reflected by the way in which research has categorised arson and homicide similarly in respect to the increase in risk of offending that the presence of a mental illness confers (Anwar, Langstrom, Grann, & Fazel, 2009). Recent research has also reported that psychiatric disorders such as antisocial personality disorder are 12 times more likely to be prevalent in firesetters compared to those individuals who do not set fires (Vaughan, Qiang, DeLisi, Wright, Perron, & Howard, 2010). In addition to this, 14% of patients who were admitted to psychiatric hospitals in England and Wales in 2008 had committed arson offences (Ministry of Justice, 2010). Consequently, it has been assumed that firesetting is often a symptom of poor mental health (Geller, 1987). This is reflected by Justice Boreham’s commentary in the case of R v Calladine [1975] where he recommended that psychiatric reports were obtained for everyone brought before the courts for arson, prior to sentencing. Other findings, however, suggest that firesetting and poor mental health are not inextricably entwined. For example, only approximately 2% of arsonists receive hospital orders...
from the courts each year and of those arrested for the crime of arson, approximately 10% are considered to be mentally ill (Barker, 1994). These statistics do not suggest that there is a strong connection between arson and psychiatric illness. However, 62% of all psychiatric hospital transfers in England and Wales in 2008 came from prisons (Ministry of Justice, 2010); such transfers would not be counted in any court referral figures suggesting that there may be many offenders convicted of arson in the prison system who are mentally ill who may not be accounted for. Further, Geller (1987) suggests that firesetting is, in fact, a symptom found in many Axis I disorders which may explain some of the seeming overrepresentation of firesetting behaviours in psychiatric populations.

Ritchie and Huff (1999) found from an examination of the mental health records and/or prison files of 283 arsonists (234 male and 49 female), that 25% \((n = 71)\) had experienced some sort of psychiatric symptoms in the days leading up to the offence. The most prevalent symptoms included delusions (35.2%), psychosis (33.8%), paranoia (29.6%), depression (25.4%), and suicidality (11.3%). The presence of a mental illness has also consistently been reported in the literature as a risk factor for repeat firesetting (Barnett, Richter, Sigmund & Spitzer, 1997; Dickens, Sugarman, Edgar, Hofberg, Tewari, & Ahmad, 2009; Lindberg et al., 2005; O'Sullivan & Kelleher, 1987). Clearly, more definitive research is required in order to explore the exact links between mental health and firesetting. The combination of research outlined above, however, suggests that although mental health problems appear to be one factor relating to a risk of firesetting, the majority of apprehended firesetters are not deemed to be mentally ill.

Background and Characteristics of Mentally Disordered Firesetters

Socio-Demographic Characteristics
Compared to other mentally disordered offenders, firesetters have been found to be younger, less intelligent (Rice & Harris, 2008) and more likely to exhibit low IQ and/or intellectual disability (Räsänen, Hirvenoja, Hakko & Väisänen, 1994; Rice & Harris, 1991). However, compared to non-mentally disordered firesetters mentally disordered firesetters appear to be older (Barker, 1994; Barnett et al., 1997; Smith & Short, 1995). It has been suggested that this difference in age is due to the fact that psychiatric illnesses (e.g., schizophrenia and personality disorders) have a propensity to onset in early adulthood (Smith & Short, 1995). For example, the average age of onset for schizophrenia is 26.2 years (Faraone, Chen, Goldstein & Tsuang, 1994) and both antisocial and borderline personality disorder is most prevalent amongst those aged 20-29 (Grant et al., 2008). This suggests that firesetting may coincide with the onset of these psychiatric disorders in these individuals. Despite these differences, the preponderance of male firesetters admitted for psychiatric evaluation have been found to be similar to both property and violent offenders on factors such as low socio-economic status (Rice & Harris, 1991, Ritchie & Huff, 1999), poor levels of educational attainment (Harris & Rice, 1984; Räsänen, Puumalainen, Janhonen, & Väisänen, 1996), and being either unemployed or engaged in unskilled employment (McKerracher & Dacre, 1966; Ritchie & Huff, 1999).

Background/Developmental Characteristics

Mentally disordered firesetters, like most offenders, have been found to come from deprived backgrounds and have experienced disruptive childhoods (Yesavage, Benezechim, Ceccaldi, Bourgeois, & Addad, 1983) and maltreatment, including sexual and physical abuse (Hill et al., 1982; Jayaraman & Frazer, 2006). In particular, mentally disordered firesetters have been found to come from large families, having an average of 4.4 siblings (Bradford, 1982), and the
father is often found to be absent or when present aloof, distant, and hostile (Boling & Brotman, 1973; Hill, Langevin, Paitich, Handy, Russon & Wilkinson, 1982; Regehr & Glancy, 1991). When there is physical abuse the perpetrator is often found to be the father (Hill et al., 1982). Parental alcoholism has also consistently been identified in the backgrounds of mentally disordered firesetters (Repo & Virkunnen, 1997a).

Fineman (1995) hypothesizes that maltreatment and adverse childhood events may precipitate firesetting in some juvenile offenders where it is used as a tool to draw attention to their situation and distress. Root, MacKay, Henderson, Del Bove and Warling (2008) investigated the link between juvenile firesetting and childhood maltreatment further and found that the link is mediated by behavioural and emotional difficulties. However, no research has examined whether this link continues into adulthood.

In addition to adverse events in childhood, Koson and Dvoskin (1982) found that 77% of their sample of 26 firesetters referred by the courts to a maximum security hospital for pre-trial examination had a history of previous admissions to a psychiatric hospital or previous engagement with mental health services. Similar rates have been reported by other researchers (Geller, Fisher & Moynihan, 1992; Leong, 1992; Ritchie & Huff, 1999).

Several studies have reported that mentally disordered firesetters have low levels of educational achievement (Koson & Dvoskin, 1982; Labree, Nijman, Van Marle, & Rassin, 2010; Rice & Harris, 1991) with the average number of school grades being completed reported as being approximately 8.57 (Rice & Harris, 1991). In addition to this, many mentally disordered firesetters do not complete their high school education which may, in part, explain the fact that they are often either unemployed or in unskilled employment (Rice & Harris, 1991; Räsänen, Hakko & Väisänen., 1995a; Ritchie & Huff, 1999).
Research into the offence histories of firesetters has found that mentally disordered firesetters are more likely than non-mentally disordered firesetters to have previous convictions for firesetting (Koson & Dvoskin, 1982; Jayaraman & Frazer, 2006) and are more likely to have previous convictions for non-violent than violent offences (Hill et al., 1982; Rix, 1994). Rice and Harris (2008) also report that mentally disordered firesetters frequently set fires as children. However, in contrast to this Geller, Fisher and Bertsch (1992) found that there was no difference in the number of future firesetting episodes between those mentally disordered offenders who had a prior history of firesetting and those that did not. Further, O’Sullivan and Kelleher (1987) found that firesetters who were detained in hospital were significantly less likely to have engaged in other previous antisocial behaviour compared to firesetters in prison. This suggests that firesetting may be part of a spectrum of antisocial behaviour that is potentially engaged in by non-mentally disordered offenders and that firesetting may hold some other meaning for mentally disordered offenders.

Interestingly, in line with this, research has suggested that mentally disordered firesetters are more similar to property offenders than violent offenders (Hill et al., 1982; Jackson et al., 1987). Hill et al. (1982) found that their sample of 38 arsonists referred for psychiatric assessment were more similar to property offenders in terms of personality, psychiatric diagnosis, substance abuse history, and offence histories compared to assault offenders. Another explanation for why mentally disordered firesetters may appear to be more similar to property offenders has been suggested to be their choice of using fire as a tool for interpersonal communication. McKerracher and Dacre (1966) suggested that arsonists may transfer feelings of hostility away from ‘person’ targets to ‘property targets’ – consistent with the displaced aggression hypothesis (Marcus-Newhall, Pederson, Carlson, & Miller, 2000). Some evidence for the application of the displaced aggression hypothesis in firesetters can be found in the literature. For example, Jackson et al. (1987) found that mentally disordered firesetters demonstrated lower
levels of interpersonal aggression than violent offenders even though revenge and jealousy were
categorised as the underlying motive for firesetting in 47.2% of their sample.

**Personality and Other Associated Traits**

It is not surprising that mentally disordered firesetters have deficits in their personal and
social lives, due to the difficult upbringings they have had. Räsänen, Puimalainen, Janhonen and
Väisänen (1996) analysed the written offence narratives of 40 arsonists (36 men and 4 women),
who were admitted to a psychiatric hospital for pre-trial psychiatric examination. Qualitative
analysis of the scripts highlighted firesetters’ self destructive personalities which were
characterised by difficulties sustaining relationships, an absence of social support, and aroused
suicidal thoughts. Räsänen et al. (1996) also found that arsonists’ texts illustrated that they did
not value themselves, mistrusted themselves, had difficulties in expressing emotions, and were
often extremely dependent on others. In addition to this, the firesetters considered themselves
inconsistent and unbalanced individuals stating that they frequently suffered from mood swings,
anxiety, and loss of control. Räsänen et al. (1996) suggested that this may be reflective of low self
esteem in these individuals.

Other studies have found that adult firesetters may have unsatisfying sex lives, dating
problems with women, distant relationships with parents, friends, and siblings, disappointing
marriages, impotence, and hold insecure sexual identities (Räsänen et al., 1996; Rice & Harris,
1991; Ritchie & Huff, 1999). These findings highlight that mentally disordered firesetters
consistently appear to lack dependable human relationships with others both in childhood and as
an adult which may be reflective of, or causally associated with their deficient social skills and
low self esteem.
Neuropsychological and Biological Explanations

There has been some research suggesting that there may be a connection between some neuropsychological and biological disorders and firesetting in both mentally disordered and non-mentally disordered offenders (Carpenter & King, 1989; Eytan et al., 2002; Nielsen, 1970; Virkkunen et al., 1987). Several case studies conducted on mentally disordered pathological firesetters have all suggested that metabolic or neurotransmitter abnormality (Virkkunen et al., 1987) may be related to firesetting. In particular, significantly lower levels of cerebrospinal fluid monamine metabolite levels have been found in individuals with impulse control disorders (e.g. pyromania and kleptomania), specifically 3-methoxy-4-hydroxyphenylglycal (MHPG) and 5-HIAA (Virkkunen et al., 1987, Virkkunen, DeJong, Bartko & Linnoila, 1989b, Virkkunen et al., 1994). However, these conditions may not necessarily be related to firesetting behaviour but rather impulse control disorders more generally.

Several neuropsychological conditions have also been associated with firesetting in mentally disordered offenders. Puri, Baxter and Cordess (1995) found that 28% of their sample of 36 firesetters who were referred to a Forensic Psychiatry Service (26 men and 10 women) had a history of brain injury which they considered may be accountable for their firesetting behaviour. Kishimoto and colleagues (1995) also reported a case of a man who had a hemisphere lesion, which had induced personality change and dementia, who had been arrested for impulsive incendiaryism. Further, Bradford (1982) found in his sample of 34 arsonists (26 males and 8 females) referred for psychiatric assessment, that 20.5% \( (n = 7) \) had abnormal electroencephalogram readings (EEG) compared to only 10% \( (n = 5) \) of the control group of offenders who had been charged for crimes other than arson. The majority of this sample had a primary diagnosis of personality disorder (52.9%), depression (17.6%) or transient situational
Mentally Disordered Firesetters

Disturbance (11.7%). Similar findings were uncovered by Hill et al. (1982) who found in his sample of 92—largely personality disordered—psychiatric inpatients (38 arsonists, 30 property offenders, 24 violence against the person) that 18.42% of arsonists had abnormal EEG readings compared to only 3.33% of property offenders and 8.33% of assaultive offenders. Unfortunately, however, these findings were not investigated further.

Similarly to mentally disordered firesetters, neurobiological disorders have also been found in non-mentally disordered Firesetters. For example, case studies with non-mentally disordered juvenile and adult firesetters have found both frontal lobe dysfunction (Calev, 1995; Friedman & Clayton, 1996; Bosshart & Capek, in press) and posterior abnormalities (Meinhard, Oozeer and Cameron, 1988).

The majority of research that has investigated neurobiological and psychobiological disorders in mentally disordered firesetters consists of individual case studies or very small samples (Carpenter & King, 1989; Eytan et al., 2002; Kishimoto et al., 1995; Virkkunen et al., 1987) so there is no strong evidence—at present—suggesting that any of these conditions actually predispose sufferers to firesetting.

Psychosis and Psychiatric Diagnosis

There has been a substantial amount of research that has examined the frequency and types of psychiatric disorders in firesetters (Anwar, et al., 2009; Enayati, Grann, Lubbe & Fazel, 2008; Geller, 1992a; Rice & Harris, 1991) and the literature has mixed findings. Several psychiatric disorders have consistently been found to be present in firesetters including depression (O’Sullivan & Kelleher, 1987), schizophrenia (Anwar et al, 2009), mania (Geller, 1987), borderline and antisocial personality disorder (Dolan et al., 2002; Geller, 1987; Geller
Mentally Disordered Firesetters

1992a; Lindberg et al., 2005), developmental disorders (Bradford, 1982), bipolar disorder (Grant & Kim, 2007) and other psychotic disorders (Koson & Dvoskin, 1982).

The majority of studies conducted with psychiatric in-patients have found that schizophrenia and borderline personality disorder are the most common diagnoses in mentally disordered firesetters (Barnett & Spitzer, 1994; Geller, 1992a). In particular, higher than normal levels of schizophrenia have consistently been found among firesetting patients, however, reported rates range widely from 8% - 30% (Ritchie & Huff, 1999). Anwar et al. (2009) found 8.1% prevalence of psychotic disorders in arsonists compared with 0.7% in non-offender control subjects. Many studies of mentally disordered firesetters, especially case studies, highlight that mentally disordered firesetters who suffer from schizophrenia usually set fires under the influence of their psychiatric symptoms (Barnett & Spitzer, 1994; Geller, 1987; Koson & Dvoskin, 1982). Personality disorders have also been found to be highly prevalent amongst mentally disordered firesetters (Geller, 1992a), more so than schizophrenia, with reported rates ranging from 25% (Bradford & Dimock, 1986) to 90% (Virkkunen et al., 1989a). Similarly, in studies of firesetting prevalence in the general population, the strongest associations with firesetting were disorders associated with deficits in impulse control such as antisocial personality disorder, drug dependence, and bipolar disorder (Blanco, Alegría, Petry, Grant, Simpson, Liu, Grant & Hasin, 2010; Vaughan et al., 2010).

Substance abuse disorders — in particular alcoholism — have been found to be highly prevalent amongst mentally disordered firesetters (Grant & Kim, 2007; Labree et al., 2010; Ritchie & Huff, 1999). Substance abuse has been found to be one of the most common Axis I diagnoses for mentally disordered offenders (Enayati et al., 2008). Dickens et al. (2007) identified that 62.8% (n = 81) of their sample of male mentally disordered arsonists had an alcohol problem. Further, Lindberg et al. (2005) reported that 68% (n = 61) of their sample of mentally disordered arsonists were under the influence of alcohol at the time of setting the fire. Repo and
Virkunnen (1997a) and Lindberg et al. (2005) also noted that schizophrenia, personality disorders, psychosis, and learning disabilities were often comorbid with alcoholism. In particular Repo and Virkunnen (1997a) found that alcohol dependence was more prevalent in firesetters with a primary diagnosis of schizophrenia.

**Crime Scene Characteristics**

In other areas of offending crime scene characteristics have been identified for serial offenders such as distance travelled to commit the offence, specific ‘signature behaviour’ and targets of offending. There is no research that has focused specifically on the crime scene characteristics of firesetting behaviour in mentally disordered offenders. However, research that has paid some attention to this area has made several observations about the behaviour of serial firesetters who have a mental illness. For example, firesetters have been found to generally set fires close to their place of residence (Fritzon, 2001). However, the presence of psychosis or depression has been found to increase the distance travelled by the firesetter from their home to the offence location, with the average distance travelled for those with psychosis as 1.40km and .40km for those with depression (Fritzon, 2001). Further it has been noted in the literature that firesetters experiencing psychosis generally tend to set fire to their own flat (Rix, 1994).

The targets of mentally disordered offenders firesetting have been found to be mainly domestic settings including their own dwellings, the houses of spouses, ex-partners, relatives, and acquaintances (Ritchie & Huff, 1999; Rix, 1994). Canter and Fritzon (1998) found that those firesetters with some kind of psychiatric disorder either set fires in hospitals or public building and their fires were generally emotionally motivated (e.g. a cry for help). In addition to this, Virkkunen (1974) found that arsonists suffering from schizophrenia were commonly reported to set fire to uninhabited buildings.
Up to 71% of mentally disordered firesetters have been found to use some form of accelerant for setting their fires (Ritchie & Huff, 1999) suggesting an element of planning in their firesetting. Grant and Kim (2007) found that 66.7% of their sample of 16 pyromaniacs planned and bought utensils to set the fire. Interestingly, O’Sullivan and Kelleher (1987) also found that firesetters in hospital were more likely to endanger themselves and others with their firesetting than firesetters in prison.

Motives

Research exploring the motivations of firesetters has proved extremely popular. Mentally disordered offenders, like non-mentally disordered offenders, have been found to have multiple motives for setting fires which differ across individual firesetters (Koson & Dvoskin, 1982). Motives that have frequently appeared in the literature on mentally disordered firesetters include excitement (Bradford, 1982; Rix, 1994), attention seeking/ cry for help (Geller, 1992a), revenge (Koson & Dvoskin, 1982; O’Sullivan & Kelleher, 1987; Prins, 1994; Rix, 1994), suicide attempt (Dickens et al., 2007; Rix, 1994; O’Sullivan & Kelleher, 1987), communicative arson (Geller, 1992b; Geller, 1984), and vandalism (Rix, 1994). Interestingly, mental disorder itself has also sometimes been considered a motive for firesetting (Prins, 1994). The most common of all documented motives in mentally disordered firesetters, however, similarly to non-mentally disordered firesetters, appears to be revenge (Smith and Short, 1995). Revenge has been found as a motive in approximately one third of mentally disordered firesetters (Ritchie & Huff, 1999; Rix, 1994). The targets of mentally disordered firesetters who are motivated by revenge are usually the individual themselves whom the firesetter is angry with, property associated with that individual, or targets at the broad societal or organisational level (Regehr & Glancy, 1991; Ritchie & Huff, 1999; Rix, 1994).
Although the majority of motives for mentally disordered offenders’ firesetting are similar to those found in non-mentally disordered firesetters, there are some motives that appear to be unique to mentally disordered offenders. For example, ‘communicative arson’ (Geller, 1992b; 1992c) is specifically associated with deinstitutionalisation and a patient expressing their desire for a change in the type institution in which they are detained, a change in the location of the services provided, or their desire to come back to hospital. Geller (1992b) suggests that communicative arson is a good channel of expression for mentally disordered offenders as it is not confrontational and allows them to reduce tension and provoke change when they are unhappy with a situation. In contrast to this, firesetting which is motivated by vandalism appears to be more common amongst non-mentally disordered firesetters (Rix, 1994).

Interestingly, O’Sullivan & Kelleher (1987) divided their sample of 54 firesetters by diagnostic category and found that of those who had depression, learning disability, personality disorder, and alcohol dependence approximately 50% were motivated by revenge. However, only 2 firesetters with psychosis were motivated by revenge. Further, over half of those in the psychotic diagnostic category were motivated by delusions and a further 8 by suicide attempts. Virkkunen (1974) also found that 30% of arsonists suffering from schizophrenia were principally motivated by hallucinations/delusions.

The study of the motives of mentally disordered firesetters is fairly complex as generally more than one motive can be identified for firesetting (Rix, 1994). However, there is no research to date that has examined in detail which motives frequently co-occur in mentally disordered firesetters.

Suicide, Self Harm, and Self Incineration
Mentally disordered firesetters have been found to demonstrate higher levels of suicide attempts compared to other mentally disordered offenders (O’Sullivan & Kelleher, 1987). Repo, Virkkunen, Rawlings and Linnoila (1997a) studied 304 male arsonists who were referred for pre-trial psychiatric evaluation. The majority of patients in the sample were diagnosed with alcohol dependence, intermittent explosive disorder, antisocial personality disorder, and pyromania. Repo et al. (1997a) found that 50.9% of their sample had a history of suicide attempts and 20% of these had made serious suicide attempts. Firesetters referred for pre-trial psychiatric examination have also been found to have significantly higher rates of suicide attempts and suicidal thoughts in comparison to homicide offenders (Räsänen, Hakko & Väisänen, 1995a; 1995b). In addition to this, Räsänen, Hakko and Väisänen (1995a) found that over one third of their sample of 98 arsonists (86 male and 12 female) who had been referred for pre-trial psychiatric examination had used firesetting as a suicide attempt. Interestingly, mentally disordered firesetters who commit suicide also appear to be younger and more antisocial than those who do not commit suicide (Repo & Virkkunen, 1992).

Unsurprisingly, self harm has also been found to be highly prevalent amongst mentally disordered firesetters. Studies of psychiatric in-patients with a history of firesetting have shown that patients with a history of firesetting are significantly more likely to have histories of non-lethal self-injurious behaviour than other mentally disordered offenders (Geller, 1992a; Geller & Bertsch, 1985). Repo and colleagues (1997a) found that 16% of their sample of 304 male arsonists referred for pre-trial psychiatric assessment had slashed themselves. Interestingly O’Sullivan and Kelleher (1987) found that non-mentally disordered arsonists engaged in more self mutilation than mentally disordered firesetters although a history of parasuicide was more prevalent for firesetters detained in hospital than those in prison.

Self incineration (harming oneself by burning or fire) is frequently associated with psychiatric disorders in Western and Middle Eastern countries (Laloe, 2002) although it is a
relatively under researched method of self harm and suicide. Pham, King, Palmieri and Greenhalgh (2003) found that 91% of 1008 patients, admitted to University of California Davis Regional Burn Centre between 1996-2001, who had self-inflicted burns had an active psychiatric disorder and 47% had prior suicide attempts. Palmu, Suominen, Vuola and Isometsä (2010) also reported that 61% of their population of 107 acute burns patients (75 men and 32 women) admitted to two university hospitals in Finland had at least one lifetime Axis I or II disorder. Of those burn patients who had a mental disorder, 47% had substance abuse disorders, 14% had an anxiety disorder, 10% had a psychotic disorder, 5.6% had a mood disorder, and 23.4% had an Axis II personality disorder, with Cluster B disorders being the most prevalent (18.7%). Further, O’Donoghue, Panchal, O’Sullivan, O’Shaughnessy, O’Connor, Keeley, and Kelleher (1998) found that in their sample of 12 patients (7 females and 5 males) who had self-immolated by burning, all held a current psychiatric disorder, 10 held a previous psychiatric history and 8 had committed the current act of self-immolation by burning whilst resident on a psychiatric ward.

Where firesetting is engaged in, self harm also appears to be concurrent in many mentally disordered offenders. This is not surprising since self harm and suicide are diagnostic symptoms of some psychiatric disorders that have been found to be particularly prevalent amongst mentally disordered firesetters (e.g. borderline personality disorder and depression; DSM-IV-TR, American Psychiatric Association; APA, 2000). In addition to this, self harm and suicide has been shown to be associated with low levels of 5-HIAA (Asberg, Traksman & Thoren, 1976; Traskman-Bendz & Mann, 2002), a biological disorder that has also been connected with firesetting. Self harming has also been linked to those who have poor problem solving, impulsivity, adverse life events, and are intoxicated all which are psychological and situational factors that have been identified in mentally disordered firesetters. In addition to this, similarly to the ‘cry for help’ motive for firesetting common motives behind self harming have been reported to include tension relief, the reduction of dissociative symptoms, and communication of distress.
Mentally Disordered Firesetters

(Briere & Gill, 1998). This suggests that firesetting may act as another coping mechanism for these individuals.

Recidivism

There is very little research currently available that has investigated recidivism and associated risk factors in mentally disordered firesetters. However, there is a general consensus that firesetters are in the main a dangerous group of offenders who are highly likely to repeat this behaviour again (Sugarman & Dickens, 2009). Mentally disordered firesetters are believed to be more likely to re-offend than non-mentally disordered firesetters (Barnett et al., 1997) and research in this area has provided support for this assumption (Philipse, Koeter, Van der Staak & Van den Brink, 2006). Rates of recidivism for mentally disordered firesetters have been found to range between 4% (Barnett et al., 1997) and 43% (Geller & Bertsch, 1985). Geller (1984) found in a sample of 14 psychiatric in-patients detained for firesetting in a state hospital, over a third had previously set fires prior to their index offence. However, there are currently no standardised treatment programmes provided by the mental health services to reduce recidivism and those that do exist are very few and far between (Palmer, Caulfield & Hollin, 2007; see Russell, Cosway, & McNicholas, 2005 or Swaffer et al., 2001 for examples).

Interestingly mentally disordered firesetters have been found to be more likely to reoffend non-violently (e.g. property offences) or violently (including sexual offences) than to set further fires (Philipse et al., 2006; Rice & Harris, 1996). For example, Rice and Harris (1996) found that in their sample of 243 male firesetters admitted to a maximum security hospital, the majority were likely to reoffend by committing a non-violent (57%) or violent offence (31%) than setting another fire (16%). Further, violent recidivism and firesetting had a very low intercorrelation, sharing only 3% of the variance. This suggests that the majority of mentally
Mentally Disordered Firesetters

disordered firesetters desist from firesetting after having set one fire and that it is only the minority that repeat this behaviour.

However, to date, research on recidivism has been conducted retrospectively from hospital records (e.g. number of previous recorded fires, Barnett et al., 1997; Geller & Bertsch, 1985; Lindberg et al., 2005) and longitudinal follow up studies are rare (Rice & Harris, 1996). Where there is a follow up period these are normally relatively short. In addition to this, recidivism has not been measured in a consistent way throughout the research so no rigorous base rate of recidivism can be determined (Brett, 2004).

Risk Factors

In examining the dearth of recidivism research available, several variables have been reported as differing between recidivist and non-recidivist mentally disordered firesetters that could potentially be targeted as part of treatment. Specific risk factors that have been identified as positively predicting recidivism in mentally disordered firesetters include never having been married or experience of relationship problems (i.e., intimacy or communication problems; Dicken et al., 2009; Rice & Harris, 1996), a lack of peers and socialization opportunities (Repo & Virkkunen, 1997b), a history of childhood firesetting (i.e., perhaps due to fire interest or antisocial personality variables such as conduct disorder; Rice & Harris, 1996), poor school adjustment (Dickens et al., 2009), alcoholism (Koson & Dvoskin, 1982; Repo, Virkkunen, Rawlings & Linnoila, 1997b; Repo & Virkkunen, 1997b), non compliance with psychiatric medication (Ritchie & Huff, 1999), and the presence of a mental disorder (Barnett et al., 1997; Dickens et al., 2009; Lindberg et al., 2005; Soothill & Pope, 1973). In particular, recidivistic firesetters have been found to be more likely to have a personality disorder than one time firesetters (Rice & Harris, 1991). Personality disordered firesetters have also been found to be
more likely to be criminally recidivistic than firesetters suffering from schizophrenia (Koson & Dvoskin, 1982). Further, research has found that those mentally disordered offenders who previously set multiple fires were more likely to set future fires than those who were psychotic or those with little previous criminal activity (Harris & Rice, 1996).

In addition to this some factors have been found to negatively predict repeat firesetting in mentally disordered offenders. These include no attempt to extinguish the fire, setting the fire in a home or domestic setting (Dickens et al., 2009), high levels of aggression, setting the fire at the weekend, and having a concurrent criminal charge (Rice & Harris, 1991). Since firesetters have repeatedly been reported in the literature to have low levels of assertiveness and interpersonal aggression it would make sense that the higher the person’s aggression score the less likely they are to set future fires. However, there have been no suggestions in the literature as to why setting fire to a domestic setting and not attempting to extinguish a fire may predict desistance in firesetting behaviour. This makes it particularly difficult to establish convincing hypotheses in relation to these findings.

Despite its prevalence in mentally disordered firesetters, schizophrenia has not been found to positively predict repeat firesetting, however, amongst those mentally disordered firesetters who have a psychiatric diagnosis of schizophrenia having a second diagnosis of alcohol abuse has been found to positively correlate with repeat firesetting (Repo & Virkkunen, 1997a). It is interesting that the presence of a mental disorder has been identified as being a positive predictor of repeat firesetting, as mentally disordered firesetters appear to share many of the same characteristics as non-mentally disordered firesetters (i.e. low socio-economic status, absent father, unemployed, poor educational attainment). It could therefore be suggested that mental disorder is not a predictive risk factor of firesetting per se. Rather, in line with current theoretical conceptualisations of firesetting (see Gannon, Doley, Ó Ciardha, & Alleyne, 2011), mental health may act largely as a moderator thus increasing the likelihood of repetitive
firesetting if other predictive risk factors are present. However, to our knowledge there is no research to date that has investigated which risk factors are the best predictors of recidivism in mentally disordered offenders or compared these risk factors to an adequate control group.

**Conclusions and Future Directions**

Compared to the wealth of research on sexual and violent offending relatively little is known about firesetting. Despite a significant proportion of the firesetting research being conducted with mentally disordered offenders, our review highlights that there is still much to be learnt about this behaviour. For example, we know very little about the exact aetiological link between mental health and firesetting or of the features of mentally disordered firesetters that distinguish them from non-mentally disordered firesetters or mentally disordered individuals who either do not offend or who offend in other ways. Surprisingly little attention has also been paid to the psychological variables that underpin the motives for firesetting in mentally disordered firesetters relative to adequate comparison groups. A plethora of basic research exists that describes the categories of motive underlying firesetting in mentally disordered offenders yet there is very little understanding around why such individuals choose firesetting as a method of problem solving. Future research focussing on the elucidation of psychological processes underlying various motives for firesetting would be extremely illuminating in this respect.

Another area that appears to have been greatly neglected in the research is that of recidivism. It is unclear at present as to what risk mentally disordered firesetters pose with regard to repeat offending as no overall base rate of recidivism has not been formally established. It is also unclear as to what factors may place mentally disordered firesetters at risk of reoffending and what characteristics need to be changed or alleviated to reduce this risk. Further research is needed regarding risk of recidivism and of the associated risk factors (1) this population may be
adequately compared to the non-mentally disordered firesetting population, and so that (2) specific risk assessment tools and interventions can be developed for use with this population.

Specific risk factors that have been found to effectively predict recidivism have been identified in sexual offenders (Hanson & Morton-Bourgon, 2005) and have been incorporated in treatment programmes and risk assessment tools alike. If professionals are to develop similar interventions for mentally disordered firesetters then research is needed that focuses on examining which variables are most predictive of risk.

Mentally disordered firesetters appear to share many of the same characteristics as non-mentally disordered firesetters. However, only a handful of studies have adequately compared mentally disordered firesetters to a comparison group (Hill et al., 1982; Jackson et al., 1987; O'Sullivan & Kelleher, 1987; Räsänen et al., 1995a, 1995b). This makes it difficult to determine how or if mentally disordered firesetters differ significantly from non-mentally disordered firesetters and also other mentally disordered offenders in general. Identifying any differences between mentally disordered firesetters, non-mentally disordered firesetters and other mentally disordered offenders will allow for a greater understanding of firesetting by this population and assist practitioners working with such offenders in developing tailor made interventions for each of these groups. We therefore encourage professionals to consider using such comparison groups when conducting future research in this field to help improve our understanding of this behaviour.
References


*R v Calladine* [1975]. Times Law Reports.


