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Purpose – The purpose of this paper is to identify and evaluate treatment for adult fire setters with an intellectual disability, given the specific risks they present, the complexities of criminal proceedings associated with their behaviour, and subsequent rehabilitation. However, the review also took into account programmes for fire setters in the wider population, including those for children and adolescents, given that such research might also inform the development of programmes for offenders with an intellectual disability.

Design/methodology/approach – A systematic review of the literature was undertaken.

Findings – Only four studies which evaluated treatment programmes specifically for arsonists with an intellectual disability were identified. Although each of these studies reported a reduction in fire-setting behaviour following programme completion, all employed relatively weak research designs. An additional 12 studies investigating programmes for arsonists without intellectual disability were also identified. It is concluded that there is a lack of evidence regarding treatment programme outcomes for arsonists with an intellectual disability. The extent to which such programmes can be adapted to suit adult offenders with an intellectual disability is discussed, with recommendations made for the design and evaluation of arson treatment programmes for offenders with intellectual disabilities.

Originality/value – Currently, minimal treatments programs exist for fire setting in offenders with intellectual disability. This review highlights the importance of further research into treatment programs for this specialised population.

Keyword(s): Arson; Intellectual disability; Learning disability; Treatment; Systematic review; Fire setting; Disabilities; Learning disabilities.

Introduction

Arson is considered to be an extremely serious crime, with sentences for convicted arsonists ranging upwards from ten years. In the UK, for example, arson offences can lead to life imprisonment (United Kingdom Legislation, 1971). Such sentences reflect not only the harms that are commonly associated with arson, but also the high costs to the community that this type of offence incurs (Mayhew, 2003) which include the costs in anticipation of fires, as a consequence of fires, and in response to fires (Ashe et al., 2009).

To date, no systematic review of the evidence supporting the provision of treatment programmes for arsonists has been published. The aim of this paper is thus to systematically review the published literature relating to the effectiveness of current treatments for fire setting behaviour in both offenders with an intellectual disability (learning disability) and offenders without an intellectual disability, given that research and programmes for the wider offender population might be relevant when developing programmes for offenders with an intellectual disability. The focus on treatment outcomes for arson offenders with an intellectual disability is particularly important given the legal and clinical complexities associated with their apprehension, adjudication, treatment and rehabilitation (Lindsay et al., 2010).

For the purpose of this review, arson is defined as any act of damaging property through the use of fire intentionally and maliciously (Australian Institute of Criminology (AIC), 2004). This definition was selected on the basis that it is accepted across the multiple legal jurisdictions. Although there are many different legal definitions of arson (AIC, 2012), in jurisdictions such as Australia, Canada and the UK it is the elements of
intention and malice that are most prominent in legal determinations. These constructs arguably involve a cognitive component, and so are of particular salience in cases involving people with an intellectual disability.

**Intellectual disability and arson**

Although arson has been asserted to be one of the most common crimes committed by offenders with an intellectual disability (Day, 1993; Mannynsalo et al., 2009; Simpson and Hogg, 2001), it is difficult to determine with certainty whether or not this is indeed the case (Taylor et al., 2004). Hogue et al. (2006) in their study of 212 offenders with an intellectual disability reported that 21.4 per cent of those from a low- and medium-security site had arson as an index offence, whereas only 2.9 per cent of those from a community site had been referred for this offence. In their study, Hogue et al. describe the community site as a ten bed open unit, with a large number of day places. This allows many of the clients at this site to be treated whilst also maintaining their community placement. Lindsay et al. (2010) proposed a prevalence rate of fire setting for offenders with an intellectual disability of 4.2 per cent in a population of 477 offenders with an intellectual disability, of whom 1.3 per cent were referred to the study by community generic services, 6.2 per cent by community specialist forensic services, 7.7 per cent by low and medium secure services and 8.0 per cent by maximum security facilities. However, possibly due to the relatively small numbers (n=20), variations across settings were not statistically significant. Regardless of their index offence, offenders with an intellectual disability who had a history of fire setting amounted to nearly 18 per cent of the sample, with two-thirds of this group housed in secure settings.

Accurate estimates of prevalence are confounded by methodological issues such as whether those with borderline intellectual disability are included in summary statistics, and the different definitions of intellectual disability that are used. What is clear, however, is that fire setting does occur in the intellectually disabled population and that there is a need for effective targeted intervention programmes to be developed and delivered to this group (Taylor et al., 2002a, b). It has been asserted, however, that currently no programmes which might be considered to be evidence-based have been developed for use with adults with an intellectual disability as their primary intended focus (Palmer et al., 2007). Rather, many of the existing treatments address fire setting behaviour by children and adolescents, rather than adults (Gannon and Pina, 2010), although examples of emerging programmes for adults are beginning to be reported (to be discussed later).

For the purposes of this review, intellectual disability is defined according to the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR; American Psychiatric Association, 2000), which consists of three components:

1. significant sub-average intellectual functioning: an IQ of approximately 70 or below on an individually administered IQ test;
2. concurrent deficits or impairments in present adaptive functioning in at least two of the following areas – communication, self-care, home living, social/interpersonal skills, use of community resources, self-direction, functional academic skills, work, leisure, health and safety; and
3. the onset is before the age of 18.

In considering this definition, it seems apparent that fire setters with an intellectual disability will have a set of distinctive needs which will require specialist treatment responses. For example, their understanding of the extent and severity of the consequences of their actions for both themselves and others will be different from those without an intellectual disability. Delayed (impaired) development of their moral reasoning may also affect the extent to which they take into account (or are concerned with) the needs of others (Kohlberg, 1984). So too their comprehension of the circumstances associated with their offending, and their ability to identify and moderate emotional impulses that might be the precursor to offending might also be impaired. Intellectual deficits might also impede effective participation in both individual and group-based interventions, and finally, and possibly of greatest concern, people with an intellectual disability may experience considerable difficulty generalising learning acquired in one setting (e.g. group work in a custodial facility) to another (e.g. a community setting when released). Combined, all these issues can be expected to affect the person's support needs and treatment responsivity (American Association on Intellectual and Developmental Disabilities, 2010; American Psychiatric Association, 2000).
Programme integrity and evidence-based practice

In most Western criminal justice settings rehabilitation programs are typically conceptualised in relation to what has been described as the “what works” approach to offender rehabilitation (Andrews and Bonta, 2010). This approach is based on applying the aggregated results of a large number of offender programme evaluations that have led to the identification of a series of practice principles. These have subsequently been widely endorsed by correctional services around the Western World (Ogloff and Davis, 2004; Wormith et al., 2007), and include the frequently cited principles of risk-need-responsivity (RNR; the “big three” or major assumptions), as well as those of professional discretion and programme integrity (Andrews and Bonta, 2006). These principles have been well documented elsewhere but, in brief, the risk principle suggests that higher risk offenders stand to benefit more from rehabilitation programmes than low-risk offenders; the needs principle suggests that programmes should target individual “criminogenic” needs, or those dynamic risk factors that are directly related to offending behaviour; and the responsivity principle refers to those internal and external factors that may impede an individual's response to interventions, such as weak motivation or programme content and delivery, and which require adaptation for the individual. Whilst intellectual disability is sometimes considered to be a responsivity issue, influencing how programme material is delivered, the discussion above suggests that this group may also have a distinctive risk profile and set of criminogenic needs that should be targeted in rehabilitation programmes.

Method

A systematic review of the peer-reviewed literature was conducted to identify relevant studies reporting on treatment of arson for offenders with an intellectual disability and for offenders without an intellectual disability. Searches of multiple computer databases (PsycInfo, PsycArticles, Psychology and the Behavioural Sciences Collection, Medline, Social Work Abstracts, SocINDEX and Academic Search Complete) were conducted using the following search terms: arson* or “fire setting” or firesetting or fire-setting and treatment or intervention or rehab* or program*. For searches including intellectually disabled offenders: “intellectual* disabilt*” or “mental retardation” or “intellectual* impair*” or “learning disabil*” or “developmental disabil*”. Reference lists of relevant articles were also read to identify further articles that could be included.

Titles and abstracts were reviewed manually to determine if they met the inclusion criteria for the review that:

- the paper was in a relevant field (related to the treatment of arson and related crimes);
- the paper was not a duplicate of a previous paper; and
- the paper had been peer-reviewed.

The exclusion criteria included the removal of articles pertaining to general treatment programmes (i.e. not related to arson), and those which did not evaluate the effectiveness of the treatment. Although literature in all languages was initially included in the search, there were no relevant articles located that were written in any language other than English. Programmes not systematically evaluated and published in the peer-reviewed literature were not included in the current review, as they need not have meet the standards expected to establish their scientific integrity.

The quality of the evaluation design for short-listed articles was then rated according to the Maryland Scale for Scientific Rigor (Sherman et al., 1998). The Maryland Scale is a measure of the overall internal validity of scientific methods, and is rated from one to five, with a score of one representing the weakest design. Five key criteria define the levels of the scale, as shown in Table I.

Results

The initial search discovered 499 articles, which were then subjected to further review against the inclusion criteria, as described above. After reviewing the remaining 42 articles, and removing duplicates and articles not meeting the review criteria, only 26 articles were identified. Each of these were read in depth to determine if they were suitable for inclusion in the current review, specifically based on whether they reported the results of an arson programme evaluation. 16 studies were identified in this way. A flowchart of the search strategy can be seen in Figure 1. For each article included in the current review, the quality of the evaluation design was rated according to the Maryland Scale for Scientific Rigor (Sherman et al., 1998) (Table I). Only one study met the Level 5 criteria for strong scientific method (Adler et al., 1994), and three studies reached the Level 4 criteria.
(Kolko, 2001; Kolko et al., 2006, 1991). Each article is summarised in Table II (studies evaluating arson treatments for offenders with an intellectual disability who set fires) and Table III (studies evaluating arson treatments for offenders without intellectual disability who set fires) according to country of origin, the treatment population under consideration and sample size, the treatment type, the evaluation methodology employed, the outcome measures used, the follow up time, and the overall findings.

**Study characteristics**

Eleven of the studies involved children as participants, with a total of 492 children taking part in the evaluations. The average age of children was 9.4 years, with the oldest reported to be 17 years (Franklin et al., 2002) and the youngest in the one to four year age range (Bennett et al., 2004).

Three studies were conducted in forensic psychiatry centres (177 participants). 13 studies used participants who were being detained as an in-patient in a psychiatric unit, or were referred via the courts, and four involved people referred by mental health professionals, fire brigade members, or their parents. More specifically, seven studies involved participants who were in-patients in a psychiatric unit, 12 studies used participants who were referred from mental health professionals, fire brigade members and parents, and three used participants referred directly by the courts. Five studies utilised participants who were being detained under mental health laws. Only one study focussed solely on women, and four studies involving a total of 159 participants, focussed on individuals with mild to borderline intellectual disabilities. All four of these studies were undertaken in the UK.

Nine of the studies were undertaken in the USA, four in the UK, and one each in Australia, Canada and The Netherlands. In addition, five of the studies were individual case studies, seven were quasi-experimental, and one study utilised a randomised control trial design. The average treatment length was 18.2 h for all treatment programmes, with the average ranging from 40 h for those with an intellectual disability down to 14.8 h for those without an intellectual disability. There was considerable variation in the follow up times for participants, with some studies re-assessing progress at six, 12, and 24 month intervals, and others reporting up to four year follow ups. Two studies did not report the follow up period utilised (Alexander et al., 2011; Bennett et al., 2004).

**Type of intervention**

The majority (11 out of 16) of the studies identified in these searches evaluated the use of fire safety education (FSE) to reduce fire setting behaviour (Adler et al., 1994; Alexander et al., 2011; Bennett et al., 2004; DeSalvatore and Hornstein, 1991; Koles and Jenson, 1985; Kolko, 2001; Kolko et al., 1991, 2006; McGrath et al., 1979; Taylor et al., 2002a, b, 2006). Eight of these studies involved treating children, and three utilising participants with an intellectual disability.

Three of the studies included an evaluation of cognitive behavioural therapy (CBT) (Kolko, 2001; Kolko et al., 2006; Timmerman and Emmelkamp, 2005), with a further two described as education programmes based on a cognitive behavioural framework (Taylor et al., 2006, 2002a, b). However, none of the studies reported a formal evaluation of the degree to which the programmes adhered to the principles underpinning CBT. Four studies included a social skills training component within the intervention programme (Clare et al., 1992; Koles and Jenson, 1985; McGrath et al., 1979; Timmerman and Emmelkamp, 2005).

**Outcome measures**

Many of the outcome measures utilised in studies were self-report, including the fire interest rating scale (FIRS; Murphy and Clare, 1996) and the fire setting history screen (FHS; Kolko and Kazdin, 1988). There is only limited data to support the validity and reliability of these measures, but Kolko and Kazdin (1988) did report that the FHS had a relatively high agreement between parental reports and self-reports of children when the measure was administered in an inpatient setting. Five of the studies relied solely on parental/guardian monitoring to determine whether fire setting behaviour had returned. Seven of the studies used a combination of self-report measures, semi-structured interviews and parental/teacher reports such as the child behaviour checklist (CBCL; Achenbach and Edelbrock, 1983). Ten studies used recidivism as their sole outcome measure, typically defined as any setting of a fire post-treatment.
Quality and effectiveness of programmes for arsonists with an intellectual disability; characteristics and treatments

All four studies that specifically examined the treatment outcomes for fire setters with an intellectual disability were undertaken in the UK. Three employed quasi-experimental designs and one was a case study. Two of the treatments consisted of group-based education treatments offered from a broad cognitive behavioural framework (Taylor et al., 2002a, b, 2006). The framework focused on the offence cycles of participants, the antecedents and consequences of their offending and cognitions, emotions and behaviours surrounding the fire setting behaviour, whilst also providing education regarding the dangers and costs involved with setting fires. The remaining two focused on multicomponent treatment packages, including education, psychotherapy, and social skills training. Many of those who participated in the cognitive behavioural framework education programmes were reported to have experienced improvements on the goal attainment scale (GAS), a measure used to monitor change in areas operationally defined for each individual participant; such as awareness of offence related targets, acceptance of guilt, acknowledgement of responsibility, and understanding victim issues (Taylor et al., 2002a, b, 2006). In addition, significant reductions were reported in fire interest and improvements in fire attitudes after such programmes (Taylor et al., 2002b). Given the relatively small numbers involved in these studies, individualised measures of treatment outcome using GAS techniques appear to be one promising approach to outcome evaluation. However, the effectiveness of the multicomponent treatments for fire setting in arsonists with intellectual disability has yet to be demonstrated. Alexander et al. (2011) did report, however, that fire setters were less likely to be discharged from an inpatient service after treatment than other offenders. Clare et al. (1992) study only utilised a case study approach, making generalisation of the findings problematic.

Quality and effectiveness of treatments for offenders without intellectual disability

Given the paucity of peer-reviewed research investigating the quality and effectiveness of programmes for offenders with intellectual disability, the current review also considered generic programmes for arson offenders without intellectual disability, including FSE programmes, CBT, and multicomponent treatments. The findings of these studies were considered potentially informative for the development of programmes for offenders with an intellectual disability.

Fire safety education

FSE has been evaluated in relation to children and juvenile fire setters, and recently offenders with intellectual disability (Alexander et al., 2011; Taylor et al., 2002a, b, 2006), with many benefits being reported. FSE has been reported to improve both parent's and children's fire safety knowledge and fire safety skills (Kolko et al., 2006), to reduce the numbers of fires set (Adler et al., 1994; Bennett et al., 2004; DeSalvatore and Hornstein, 1991; Koles and Jenson, 1985; Kolko, 2001), and to reduce match play, fire-related acts, curiosity about fire, interest in fire and attraction to fire (Kolko, 2001; Kolko et al., 2006).

An example of a treatment programme comprising FSE as the only form of intervention was that evaluated by Bennett et al. (2004). Known as the burn education awareness recognition and support (BEARS) programme, the programme was offered to 42 children from Illinois who were referred by the courts, law enforcement, fire departments, hospitals or parents. Participants received an educational curriculum which had been developed by fire-fighters, with programme success measured by the return of fire setting behaviours after the programme had been completed, as reported by the parents of the child or the child themselves. Upon completion of the programme and at the time of writing their article, Bennett et al. discovered that none of the children had returned to fire setting behaviours, however, no further follow ups were conducted. A key limitation of the study by Bennett et al. was that they did not specify the follow up period rendering the reader unable to accurately interpret the findings.

Cognitive behavioural therapy

The effectiveness of CBT on children, juveniles and adult fire setters has been the subject of a number of evaluations, which have consistently reported positive results in regard to reducing fire setting behaviour (Kolko, 2001; Kolko et al., 2006; Timmerman and Emmelkamp, 2005). For example, the use of CBT was associated with greater improvement in positive problem solving skills (Kolko et al., 2006), coping skills, interpersonal functioning and well-being (Timmerman and Emmelkamp, 2005). In addition, CBT demonstrated
a greater reduction in fire setting and match play incidents than FSE and resulted in a reduction in fire related acts, curiosity about fire, interest in fire, attraction to fire and a reduction in severity of problems with fire (Kolko, 2001). Also, CBT has been reported to have demonstrated the greatest reduction in deviant fire behaviour compared to home visits from a fire-fighter (HVF) and FSE (Kolko, 2001). In this context, deviant fire behaviour was understood to consist of inappropriate interest in fire, deviant fire activities such as playing with fireworks, candles or cigarettes and negative peer influences.

Kolko's (2001) study compared the effects of FSE, CBT, and HVF to determine whether these programmes were able to reduce fire setting behaviour in children. Kolko described CBT as targeting behavioural dysfunctions and environmental conditions to result in an enhancement in pro social skills and improved parent-child relationship. A focus was placed on child self-control, parent management skills and/or appropriate and positive family interactions. Within CBT, problem solving skills, assertiveness, and interpersonal conflict resolution skills can be taught. For this research, 54 boys who were referred for services by the City of Pittsburgh Bureau of Fire were attained for the study. He discovered that overall each of the conditions showed improvements in some aspect of the fire setting behaviour, with CBT demonstrating the strongest effects. The post-CBT group demonstrated a significant reduction in the number of fire setting and match play incidents. In addition, CBT demonstrated the largest reduction in deviant fire behaviour of all groups.

**Multicomponent treatments**

Many of the studies included multicomponent treatment programmes in which there was a combination of treatments packaged together. For example, DeSalvatore and Hornstein (1991) combined education with behavioural modification and discovered that after a one year follow up, of the 56.5 per cent of children who completed the programme, there was only one account of recidivism. Further, Adler et al. (1994) created a programme known as the juvenile fire awareness and intervention program (JFAIP). The study was conducted in Australia and involved fire-fighters from the metropolitan fire brigade delivering a programme to children between the ages of five and 16 who in the past 12 months had three episodes of fire play or one episode of fire setting which threatened or caused damage to property or an injury to another person. The programme consisted of an education component, behaviour modification, negative consequences and graphing behaviour. The education component consisted of providing parents with details of fire safety in the home, as well as the dangers of fire setting. Additionally, lack of understanding or misconceptions about fire by the child were corrected by fire-fighters. In regards to behaviour modification, the children were required to undertake an eight week programme of repetitive fire setting under strict parental supervision. The goal of this component of the programme was to eliminate the child's desire to light fires through satiation. The parents were asked to use positive reinforcement when the child would not light an unsupervised fire for certain periods of time. The third component, which referred to encouraging the parents to respond to episodes of fire setting without supervision by using negative consequences (e.g. withdrawal of identified privileges), but avoiding the use of punishment. The final element of the programme is the graphing exercise. This involved the fire-fighter preparing a graph of the events that led up to the fire setting and immediately after the fire setting, and the feelings associated with each event. The aim of this part was to encourage the child to recognise the emotional antecedents of the fire setting behaviour, and to discuss alternative ways of expressing these emotions in a similar circumstance in the future. In total, 138 children were referred to the programme. Adler et al. discovered that the mean rate of fire setting significantly reduced in the 12 months after the intervention and there was a marked reduction in the seriousness of fire setting. However, as noted by the authors, there was no evidence to suggest this was attributable to the multicomponent programme. As with any multi-faceted intervention, the relative effectiveness of any one component is difficult to quantify without the use of a more systematic design. Additionally, several key limitations existed in the study that may have detrimentally affected the results, including the 30 per cent drop out rate of participants, the highly dysfunctional sample utilised, and the lack of a true control group. For example, the control group were exposed to the initial interview focussing on the child's fire setting behaviour, and were also provided with a fire safety pamphlet. The authors note that this may have been sufficient to encourage the parents to seek outside help for their fire setting children, which was not accounted for at the final follow up.

**Discussion**

This review identifies the paucity of literature evaluating the effectiveness of arson treatment programmes, especially for offenders with an intellectual disability who set fires. Furthermore, only one of the 16 studies identified in this review adopted a randomised control design, with the majority relying on pre- and post-test data to determine programme effectiveness. Although this type of evaluation provides some indication of
treatment effectiveness, it does not allow for the control of confounding variables that might have impacted the treatment groups during treatment completion (Taylor et al., 2002a, b).

The majority of the published evaluations involved small sample sizes (the average sample size was 43), with 13 of the 16 studies involving fewer than 50 participants (Tables II and III). This raises an issue regarding the power of the designs in discovering treatment effects. Further, many of the studies did not report significance levels or effect sizes (Clare et al., 1992; DeSalvatore and Hornstein, 1991; Franklin et al., 2002; Koles and Jenson, 1985; Kolko, 1983; McGrath et al., 1979; Wolff, 1984), resulting in an inability to compare across studies.

To address these concerns, and given the practical problems that face programme evaluators in this area, it seems that multi-site designs, and potentially international collaboration will be important to progress research in this field. This would result in larger sample sizes that enable more robust statistical analysis of treatment effects. Assessments of clinical significance and reliable change based on multiple base line designs may also go some way to addressing these issues.

Most of the programmes used to treat arsonists have adopted either a psycho-educational focus, or a cognitive behavioural focus. Both of these approaches have demonstrated effectiveness; however, the current review suggests that CBT may be superior to education. While CBT has been demonstrated to be effective in other settings, there is a paucity of evidence for its use in the treatment of arson, and in particular, for offenders with an intellectual disability.

Based on this review of the literature, it seems as though the next step could be to adapt programmes that have been developed for offenders without intellectual disability to suit the needs of those with intellectual disabilities. Two studies in the current review evaluated the use of adapted education programmes for the treatment of fire setters with an intellectual disability, and found that they were successful; however, the extent of success was unable to be determined due to a lack of reporting any effect size. Adapting cognitive behavioural programmes may be the next step to determine whether these are effective or perhaps more effective than education alone for the intellectually disabled population, considering their superior effectiveness in the normal intellectual functioning individuals. This would involve adapting the language and approach used in such a programme (Clare and Murphy, 1996; Lindsay, 2009) to enhance the understanding of those functioning at a lower cognitive level and at an earlier stage of moral development than their age equivalent peers. In addition to adapting the delivery style, programme development needs to take into account the criminogenic needs and risk profile of offenders with an intellectual disability, as these may be quite different to those of the non-intellectually disabled offending population.

A further question is whether the adaptation of an adult programme would be sufficient, or whether adapting a juvenile/children's fire setting intervention programme would be more suitable due to similarities in cognitive and moral development. A psycho-educational programme, similar to those utilised with children and juveniles, has been implemented on two occasions for adult fire setters with an intellectual disability, and has demonstrated some success (Taylor et al., 2002a, b, 2006).

It is not clear from the studies identified in this review, the extent to which current programmes adhere to the principles of the RNR model, as outlined in the introduction. For example, in line with the risk principle, it has been estimated that 300 h of treatment are required to ensure it is sufficiently intensive for high risk offenders (Bourgon and Armstrong, 2005), however, in the current study the longest treatment programme was 50 h long, and this was a programme for those without an intellectual disability (the average treatment length was 40 h for those with an intellectual disability, 14.8 h for those without an intellectual disability, and 18.2 h for all treatment programmes). However, it is unknown whether these groups present as high risk, as none of the studies reported the assessed risk of re-offending, even in relation to scores on general measures of risk-needs such as the Level of Service Inventory-Revised (LSI-R; Andrews and Bonta, 1995). There is a deficiency in the literature in regards to the assessment and reporting of the level of risk posed by offenders with an intellectual disability who set fires, and, as such, further research needs to be conducted to determine the risks presented by this particular population. Additionally, a review by Morgan et al. (2007) of 374 correctional programmes concluded that the majority (61 per cent; n=230) failed to reach even a basic level of adherence to good practice principles, with less than 1 per cent (n=6) of forensic mental health service documents making any reference to targeting criminogenic needs. It is therefore perhaps unsurprising that the disability programmes reviewed here do not appear to adhere to what is commonly regarded as good practice in offending behaviour programmes. It
may be that treatment effectiveness can be improved if programmes are developed that align more closely with the RNR principles.

**Conclusion**

In conclusion, current treatment programmes for fire setting, such as FSE and CBT, appear to be effective in reducing fire setting behaviour in the general, non-intellectually disabled population. However, small sample sizes and a lack of effect size reporting have rendered these studies incomparable, and treatment effectiveness is unable to be accurately gauged. Thus, far, education has demonstrated some effectiveness for offenders with an intellectual disability; however, the use of CBT for fire setting behaviours has yet to be effectively evaluated for this population.

This review has demonstrated the need for further studies into the treatment of fire setters, and in particular those with an intellectual disability. The client group might be small in number, however, the harm that their actions can cause, the severity of their offences (as reflected in sentencing guidelines) coupled with the complexities of the issues surrounding the criminal proceedings associated with their behaviour, their rehabilitation and longer term support combined, all serve to escalate the need to develop evidence-based and effective treatment programmes. Future studies will need to carefully develop an appropriate methodology, ensuring it is suitable for the sample size utilised. Given the relatively small populations available, multi-site trials of a manualised programme might provide a solution. A focus on the use of a control group, and the reporting of significance levels and effect sizes will be essential to ensure treatment programmes are evidence based, and can be evaluated for effectiveness. Longitudinal follow up will also be important to gauge the effectiveness of any such treatment. Also, as noted earlier, given the relatively small clinical population and their idiosyncrasies, individualised measures of treatment outcome using GAS techniques appears to be one promising approach to outcome evaluation.

The development of a fire setting treatment programme for offenders with an intellectual disability which is of a cognitive behavioural nature may be beneficial in providing an alternative treatment programme to the current psycho-education programmes. As CBT interventions have been shown to be generally superior to education programmes, their adaptation for arsonists with an intellectual disability seems like a logical next step in attempting to reduce fire setting behaviour in this specialised population. Such directions would be supported by recent research which supports the effectiveness of CBT for people with an intellectual disability in other clinical contexts, such as anger management and other such clinical presentations (Haddock and Jones, 2006; Oathamshaw and Haddock, 2006; Taylor et al., 2008, 2005, 2002a, b). Further, a focus on the RNR model in the development of programmes may assist in enhancing treatment effectiveness for this specialised population.

![Flowchart of search strategy](image-url)
### Table I  Maryland scale

<table>
<thead>
<tr>
<th>Level</th>
<th>Key criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Correlation between a crime prevention programme and a measure of crime or crime risk factors at a single point in time</td>
</tr>
<tr>
<td>2</td>
<td>Temporal sequence between the programme and the crime or risk outcome clearly observed, or the presence of a comparison group without demonstrated comparability to the treatment group</td>
</tr>
<tr>
<td>3</td>
<td>A comparison between two or more comparable units of analysis, one with and one without the programme</td>
</tr>
<tr>
<td>4</td>
<td>Comparison between multiple units with and without the programme, controlling for other factors, or using comparison units that evidence only minor differences</td>
</tr>
<tr>
<td>5</td>
<td>Random assignment and analysis of comparable units to programme and comparable groups</td>
</tr>
</tbody>
</table>

*Source: Sherman et al. (1998)*

### Table II  Studies evaluating Arson treatments for offenders with an intellectual disability who set fires

<table>
<thead>
<tr>
<th>Article name</th>
<th>Country</th>
<th>Sample</th>
<th>Treatment type</th>
<th>Methodology</th>
<th>Outcome measures/follow up period</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation of treatment outcomes from a medium secure unit for people with intellectual disability</td>
<td>UK</td>
<td>136 patients from an assertive service for offenders with mild intellectual disabilities</td>
<td>Pharmacotherapy, Psychotherapy, Offence specific therapy Education</td>
<td>Quasi-experimental, Non-equivalent control group design</td>
<td>Successful treatment outcome was defined by a move to a lower level of therapeutic security. No follow-up period reported.</td>
<td>Of those who were discharged, 11 per cent of total patients had a history of fire setting. Of those who were not discharged, 60 per cent had a history of fire setting.</td>
</tr>
<tr>
<td>Responses of female fire setters with mild and borderline intellectual disabilities to a group intervention</td>
<td>UK</td>
<td>Six women detained under the Mental Health Act in a single sex secure forensic unit, all with mild and borderline intellectual disabilities</td>
<td>Based on Jacobson’s (1984) “functional analysis paradigm” Broad DBT framework Education Group therapy format 40th treatment</td>
<td>Quasi-experimental, Before and after design</td>
<td>Fire interest rating scale (FIRE, Murphy and Clare, 1996) Fire attitude scale (FAS, MacKay, 1977) Goal attainment scale (GAS) Culture-free self-esteem Inventory – 2nd ed., form AD (CPM-2, Bell, 1992) Beck depression inventory-short form (BDI-SF; Beck and Beck, 1972) Follow-up occurred immediately post-treatment and after two years</td>
<td>Significant improvements were found following treatment on the FIRE and GAS. All GAS mean scores improved following treatment. Participants improved on the BDI-SF. The CFSQ2 score was higher after treatment. There were no differences on the BDI-SF.</td>
</tr>
<tr>
<td>Evaluation of a group intervention for convicted arsonists with mild and borderline intellectual disabilities</td>
<td>UK</td>
<td>14 adults eight men and six women with mild and borderline I.D. All but two of the participants were being detained under the Mental Health Act, 1983</td>
<td>A comprehensive and multi-faceted programme based on Jacobson’s (1994) approach “functional analysis” Broad cognitive-behavioural framework Education Group therapy format 40th treatment</td>
<td>Quasi-experimental, Before and after design</td>
<td>Fire interest rating scale (FIRE, Murphy and Clare, 1996)</td>
<td>Significant improvements were found following treatment on the FIRE and GAS.</td>
</tr>
<tr>
<td>Assessment and treatment of fire setting: a single case investigation using a cognitive behavioural model</td>
<td>UK</td>
<td>One 23-year-old man who was previously diagnosed with a psychosis discor and an IQ of 65</td>
<td>Focal surgery, Social skills and assertiveness training, Alternative coping strategies, Assisted covert secretion</td>
<td>Case study</td>
<td>The fire assessment interview Follow-up occurred 48 months post-treatment</td>
<td></td>
</tr>
</tbody>
</table>

*Table II  Studies evaluating Arson treatments for offenders with an intellectual disability who set fires*
<table>
<thead>
<tr>
<th>Article name</th>
<th>Country</th>
<th>Sample</th>
<th>Treatment type</th>
<th>Methodology</th>
<th>Outcome measures/follow up period</th>
<th>Findings</th>
<th>Maryland Score rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education and treatment for boys who set fires: specificity, moderators and predictors of recidivism</td>
<td>USA</td>
<td>48 boys referred by several sources such as the City of Pittsburgh Bureau of Fire and parental solicitation for fire setting behaviour</td>
<td>CBT</td>
<td>Experimental Pre-test, post-test design</td>
<td>No control group</td>
<td>Fire setting history screen (FHS), Koho and Kazdin, 1989.</td>
<td>4</td>
</tr>
<tr>
<td>The effects of CBT for forensic inpatients</td>
<td>Netherlands</td>
<td>30 inpatients of the Forensic Psychiatric Center, 18-65Y old, 17.9% of the offenders were an sanction</td>
<td>Multi-disciplinary</td>
<td>Quasi-experimental Before and after design</td>
<td>No control group</td>
<td>The symptom checklist (SCL-90, Antidell and Efendi, 1995)</td>
<td>2</td>
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<tr>
<td>BEARS: a community based juvenile fire setters assessment and treatment program</td>
<td>USA</td>
<td>42 children, 29 were referred by the Cook County Juvenile court. The rest came from law enforcement, outside fire departments, hospitals or parents</td>
<td>PSE</td>
<td>Experimental Pre-test, post-test design</td>
<td>No control group</td>
<td>Coping skills increased, interpersonal functioning increased</td>
<td>2</td>
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<tr>
<td>Decreased juvenile arson and fire setting recidivism after implementation of a multi-disciplinary prevention program</td>
<td>USA</td>
<td>132 juveniles referred to the program from January 1999 to July 2001</td>
<td>CBT, FSH, CF</td>
<td>Experimental Pre-test, post-test design</td>
<td>No control group</td>
<td>None of the children referred to the program have returned to fire setting behaviour</td>
<td>2</td>
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<tr>
<td>Efficacy of cognitive-behavioural treatment and PSE for children who set fires; initial and follow up outcomes</td>
<td>USA</td>
<td>54 boys referred for services by the City of Pittsburgh Bureau of Fire, direct parental solicitation, or mental health practitioner</td>
<td>7.5h of treatment</td>
<td>Experimental Pre-test, post-test design</td>
<td>No control group</td>
<td>Reductions in number of fire setting and match play</td>
<td>4</td>
</tr>
<tr>
<td>Secondary prevention of childhood fire setting</td>
<td>Australia</td>
<td>13 children referred via self-referral, the fire brigade, family doctors, schools or other child mental health centres</td>
<td>8h of treatment</td>
<td>Experimental Pre-test, post-test design</td>
<td>No control group</td>
<td>Fire setting rates were significantly lower after the intervention</td>
<td>5</td>
</tr>
</tbody>
</table>
**Table III** Studies evaluating arson treatments for offenders without intellectual disability who set fires

**References**


Spielberger, C.D. (1980), "Preliminary manual for the state-trait anger scale (STAS)", unpublished manuscript, University of South Florida, Tampa, FL.


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Further Reading


Battle, J. (1992), Culture-Free Self-Esteem Inventory, Pro-ed, Austin, TX.


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