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**The Characteristics and Treatment Needs of Fire Setters
with Intellectual Disability: Descriptive Data and
Comparisons between Offence Type**

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Manuscripts

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6 **The Characteristics and Treatment Needs of Fire Setters with Intellectual**
7 **Disability: Descriptive Data and Comparisons between Offence Type**
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12 **Abstract**
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16 *Purpose:* Fire setters who have an intellectual disability (ID) are often identified as
17 posing a particular danger to the community although relatively little is known about
18 their characteristics, treatment, and support needs.
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23 *Methodology:* This study describes the characteristics of 134 residents of low,
24 medium, and high security ID facilities in the United Kingdom who have either an
25 index offence of arson, ~~comparing them with those who have a violent~~ index
26 offence, ~~involving either violent or a sexual index~~ offending.
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32 *Findings:* Index arson offenders who had an ID had multiple prior convictions, a
33 history of violent offending, and a high likelihood of having a comorbid mental
34 disorder. There were many shared characteristics across the three groups.
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39 *Practical implications:* The current study suggests that offenders who have ID who
40 set fires have treatment needs that are similar to those of violent and sex offenders. It
41 follows that fire setters who have an ID may also benefit from participating in more
42 established offending behaviour treatment programs, such as cognitive behaviour
43 therapy programs, developed for other types of offender.
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50 *Originality:* This study is one of the few which has investigated the characteristics
51 and treatment needs of persons who have an ID who set fires. In particular, it is one of
52 the first to compare the characteristics and treatment needs for persons with ID who
53 set fires, to those who have committed violent and sexual offences.
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6 **Keywords:** intellectual disability; fire setting; treatment; characteristics; needs; arson
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11 ~~It has not been uncommon for F~~ fire setters ~~have often to been~~ identified as having an
12 Intellectual Disability (ID) (Johnston, 2004; Inciardi, 1970; Fineman, 1995), ~~and~~ yet
13 there have been few empirical investigations into the characteristics of this group, and
14 progress in the development of specialised interventions has been much slower than
15 for offenders who have committed violent or sexual offences (Curtis, McVilly and
16 Day, 2012). In fact, much of our current knowledge about fire setters with ID comes
17 mostly from descriptive studies that were conducted 20 years ago. For example,
18 Murphy and Clare (1996) described the characteristics of ten fire setters with ID
19 whose ages ranged from 18 to 38 ($M=26.4$, $SD=7.5$), with IQs, as measured by the
20 Wechsler Adult Intelligence Scale-Revised (Wechsler, 1981), ranging from 60 to 78
21 ($M= 68.4$, $SD= 5.7$). The fire setters with ID in this sample were reported to
22 commonly feel angry, not listened to, and sad or depressed before setting fires. Harris
23 and Rice (1996), in their study of 243 fire setters from a maximum security
24 psychiatric institution, reported that of all the different groups described within their
25 study, the 'multi fire-setter' group were the least intelligent, had a history of setting
26 fires, and displayed high levels of aggression. This latter finding, relating to a
27 previous history of aggression is noteworthy in light of evidence from some studies
28 that fire setters with ID have low levels of aggression (Blanco, Alegria, Petry *et al.*,
29 2010) with others reporting high levels and histories of violent offending (Dickens,
30 Sugarman, Ahmad *et al.*, 2007).
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51 There have been numerous assertions that fire setters who have an ID are
52 likely to repeat fire setting behaviour and engage in other offending (Devapriam,
53 Raju, Singh *et al.*, 2007). This has been attributed to limited social skills, impulsivity,
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6 and the inability to resist impulses to set fires (Johnston, 2004). Leong and Silva
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8 (1999) classified 32 fire setters into two groups, one of which was labelled 'cognitive
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10 pathology' and included persons with 'limited intellect' who were older and had a
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12 lengthy history of both criminal behaviour and fire setting. Labree, Nijman, van
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14 Marle, and Rassin (2010), however, suggested that although fire setters with ID do
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16 typically have lengthy criminal histories, the number of previous convictions they
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18 receive does not necessarily differentiate them from other offender groups, nor have
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20 these differed from fire setters without an ID (Dickens, Sugarman, Ahmad *et al.*,
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22 2008). It is also difficult to draw robust conclusions given that these studies described
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24 persons with 'low intelligence' or 'limited intellect', leaving it unclear whether
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26 participants had been formally diagnosed with an ID.
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29 Mental disorders have been argued to be common for fire setters who have an
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31 ID. For example, Lees-Warley and Rose (2015) identified that psychiatric diagnoses
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33 were present in two thirds of the studies included in their systematic review regarding
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35 fire setters with ID. The identified disorders included Pervasive Developmental
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37 Disorder, Schizophrenia, Recurrent Depressive Disorder, Affective Disorder,
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39 Psychosis, Schizoaffective Disorder, Psychotic Depression, Alcohol Dependency, and
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41 'Psychiatric Disorder'. Many studies have identified a diagnosis of Schizophrenia in
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43 fire setters, including those who have an ID (Anwar, Langstrom, Grann *et al.*, 2011;
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45 Dickens, Sugarman, Ahmad *et al.*, 2007; Enayati, Grann, Lubbe *et al.*, 2008; Harris
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47 and Rice, 1996; Koson and Dvoskin, 1982; Repo and Virkkunen, 1997; Rice and
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49 Harris, 1991; Ritchie and Huff, 1999; Long, Banyard, Fulton *et al.*, 2014; Murphy and
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51 Clare, 1996). Personality Disorder has also been commonly identified for fire setters
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53 who have an ID (Alexander, Chester, Green *et al.*, 2015; Lees-Warley and Rose,
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55 2015; Devapriam, Raju, Singh *et al.*, 2007). It has been suggested, however, that
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57 psychiatric diagnoses may simply occur commonly among persons who commit
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6 crimes, or who engage in problematic behaviours, rather than playing any causal role
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8 (Anwar, Langstrom, Grann *et al.*, 2011; Ducat, McEwan and Ogloff, 2013).
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11 In summary then, fire setters who have an ID are a poorly understood
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13 population. Nonetheless, Taylor, Thorne, Robertson, and Avery (2002) have argued
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15 that they present a set of complex needs that must be addressed in treatment, and yet
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17 very few studies have been able to identify specific treatment needs. This includes the
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19 extent to which the offending reflects a broader pattern of anti-sociality. The aim of
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21 this study then is to examine the distinctive characteristics of arson offenders with ID
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23 who had been treated by the UK's National Health forensic mental health service. It
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25 compares those persons with ID who had an index offence of arson, a sexual index
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27 offence, or a violent index offence. ~~The variables of investigation chosen for this
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29 study were largely based on those used in previous studies of persons with ID who
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31 were known to have engaged in general offending behaviour (Hogue, Steptoe, Taylor
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33 *et al.*, 2006; Hogue, Mooney, Morrissey *et al.*, 2007; Lindsay, Hogue, Taylor *et al.*,
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35 2008; O'Brien, Taylor, Lindsay *et al.*, 2010), as well as on data that were available in
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37 the dataset utilised in the current study.~~

Field Code Changed

38 39 Method

40 41 *Ethics Approval*

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43 ~~The current study received full approval from a University Human Research
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45 Ethics Committee.~~

46 47 *Study Sites*

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49 Three study sites contributed to the database, and were identified as L1, L2,
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51 and L3. All three sites were UK forensic mental health services, which accepted
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53 people who had a full-scale IQ of less than 75 and who presented with significant
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55 deficits in adaptive behaviour which were evident from childhood/adolescence
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6 (Hogue, Steptoe, Taylor *et al.*, 2006). L1 is a high security site and is the national
7 centre for high-secure ID services. L2 is a medium and low security site which
8 provides inpatient forensic services for people with ID on a local, regional, and
9 national basis. L3 is a community site, and comprises a 10-bed open unit and a large
10 number of day places. These settings are described in detail by Hogue, Steptoe,
11 Taylor *et al.* (2006).
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18 ***Procedure and Materials***

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20 The current study received approval from a University Human Research
21 Ethics Committee. All original data were collected from clinical files by Research
22 Assistants with help from relevant support workers. All of those involved in data
23 collection received extensive training in reviewing, collecting, and coding
24 information. Although data were collected for many variables (see Hogue *et al.*, 2006
25 for description of original ethics approval and data collection protocol), the key data
26 utilised in the current analyses were age, number of prior convictions, history of fire
27 setting, violent offending, and sexual offending, comorbid mental disorder and ratings
28 on the Short Dynamic Risk Scale (SDRS). The variables of investigation chosen for
29 this study were largely based on those used in previous studies of persons with ID
30 who were known to have engaged in general offending behaviour (Hogue, Steptoe,
31 Taylor *et al.*, 2006; Hogue, Mooney, Morrissey *et al.*, 2007; Lindsay, Hogue, Taylor
32 *et al.*, 2008; O'Brien, Taylor, Lindsay *et al.*, 2010), as well as on data that were
33 available in the dataset utilised in the current study
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49 The SDRS is an eight-item scale that assesses a range of different dynamic
50 risk factors/needs, such as hostile attitude, coping skills, self-care skills, and
51 consideration of others. Ratings are made on a 0 to 4 scale (where 0= No problem,
52 and 4= Severe problem). The scale has been shown to predict violent and sexual
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6 incidents with a high level of accuracy (Quinsey, Book and Skilling, 2004) however,
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8 no psychometric properties have been reported by the authors. In the current study the
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10 internal reliability of the scale, as measured by Cronbach's alpha, was 0.91.

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12 Offence information within the existing database was classified according to
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14 the original case notes, such that any violent offence was labelled in case notes as
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16 'violent', any sexual offence was labelled as a 'sex offence', and any fire setting
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18 related offence was labelled as 'arson'. A separate variable indicated their index
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20 offence. It should be acknowledged that although an offender was classified in one
21
22 group based on their index offence, he or she may still have had other convictions, or
23
24 a reported history of other offending behaviour. Further, whilst the original database
25
26 contained 212 male offenders with ID, the current study utilised only 134 of these
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28 offenders, specifically those who had violent, sexual, or arson-related index offences.

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30 As none of the variables to be used in the analyses met the assumption of normality,
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32 even after transformations were applied, non-parametric tests were used when
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34 appropriate.

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37 ~~Results~~ ~~As none of the used in the analyses met the assumption of normality, even~~
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39 ~~after transformations were applied, non-parametric tests were used when appropriate.~~

40 41 *Descriptive Statistics*

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43 Data from a total of 134 male offenders with ID were used in the analysis. All
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45 had a diagnosis of Intellectual Disability. Of these, 114 were diagnosed using the
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47 International Classification of Diseases (ICD) criteria (World Health Organisation,
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49 2010) as having a mild ID (85.7%), 14 as having a moderate ID (10.5%), one as
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51 having a severe ID, and five as having an unspecified ID (3.7%).

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54 As shown in Table 1, those with an offence of arson (n=18) were, on average,
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56 the youngest at the time of admission to services, but they were on average the oldest

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6 group at the time of data collection (i.e., assessment). However, these differences
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8 were not significant between groups.
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10 <INSERT TABLE 1 ABOUT HERE>
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13 A Kruskal-Wallis Independent Samples *H*-test was used to compare the mean
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15 number of convictions prior to 18, $\chi^2(2, n=134)=2.15, p=.34$, and mean convictions
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17 after 18, $\chi^2(2, n=133)=3.06, p=.22$. No significant differences were found between
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19 index arson, index violent, or index sexual offenders. As might be expected, a history
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21 of fire setting was most commonly recorded in those participants who had an index
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23 offence of arson (44.4%; $\chi^2(2, n=134)=15.71, p<.001, V=.34$). A history of violent
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25 offending was most common for those with an index violent offence (60.4%; $\chi^2(2,$
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27 $n=134)=12.58, p<.01, V=.31$), and a history of sexual offending was most common
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29 for those with an index sexual offence (52.4%; $\chi^2(2, n=134)=13.91, p<.001, V=.32$).
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31 All groups were rated as experiencing high levels of comorbid mental disorder, with
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33 the highest rate experienced by the index violent offence group (73.6%; $\chi^2(2,$
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35 $n=133)=9.50, p<.01, V=.27$).
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37 <INSERT TABLE 2 ABOUT HERE>
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40 A Kruskal Wallis *H* Test was then used to determine differences between the
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42 three groups on each of the offender needs as measured by the SDRS. As shown in
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44 Table 3, there were no statistically significant differences between groups for any of
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46 the eight items.
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48 <INSERT TABLE 3 ABOUT HERE>
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50 51 52 53 54 Discussion

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6 There is a paucity of literature reporting on characteristics and rehabilitation needs of
7 fire setters with ID. As such the aim of the current study was to investigate and
8 compare the characteristics and needs of 134 fire setters/offenders with ID who are
9 located in community, low, medium, and high secure sites in the UK, who have an
10 index offence of arson, a violent index offence, or a sexual index offence.
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17 Although the index violent offenders had a relatively higher number of prior
18 convictions than index arson or sexual offenders, the differences between groups were
19 not statistically significant. This suggests that prior convictions and an extensive
20 criminal history for other offences are relatively common for fire setters with ID. It
21 follows that there is a need for treatment programs for this group to include
22 treatment targeting a range of criminal behaviours, rather than only specialised
23 treatment focussed on fire setting. Over one third of those with an index offence of
24 arson also had a history of violent offences, despite previous studies reporting
25 relatively low levels of violence in this group (Rice and Harris, 1991).
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35 Three quarters of index violent offenders had been diagnosed with a comorbid
36 mental disorder, compared with two thirds of those with an index arson offence.
37 Those with an index sex offence were least often diagnosed with a comorbid mental
38 disorder, with under half reporting a comorbid diagnosis. Rates of personality
39 disorder were comparable between index violent offenders and index arson offenders,
40 but far higher than for index sex offenders. For example, a diagnosis of Schizophrenia
41 was far more common in those with an index violent offence. However, it is
42 important to note that many fire setters who provided data used in this study were
43 from a population of ID offenders who had been referred to secure mental health
44 services. As such, they are more likely to have comorbid mental disorders, together
45 with challenging and complex behaviours.
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6 In summary, the characteristics of index arson offenders with ID in this
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8 sample are: a history of fire setting behaviour; multiple prior convictions; a history of
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10 violent offending; and a high likelihood of having a comorbid mental disorder. These
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12 characteristics are shared by other offender groups, rather than being exclusive to fire
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14 setters. There is little to suggest that those with an index offence of arson present with

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16 treatment needs distinct from either index violent or index sex offenders with ID.

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18 Whilst this highlights the potential for arson offenders to attend similar treatment
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20 programs to other types of offender (i.e. violent or sexual offenders), this must be
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22 considered in the context of existing programs for offenders with ID. For example, a
23
24 commonly used treatment program for sex offenders with ID is the Sex Offender
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26 Treatment Services Collaborative – Intellectual Disability (SOTSEC-ID) cognitive
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28 behavioural treatment, which includes components focussed on sex education and
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30 sexual offending behaviour in particular. Whilst these are important treatment targets
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32 for sex offenders with ID (Lindsay, 2002), they might not be relevant to all fire
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34 setters. Existing programs for violent offenders, that generally adopt a cognitive
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36 behavioural approach (Taylor, Novaco, Gilmer *et al.*, 2002), on the other hand, may
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38 be more relevant and useful given the concepts addressed in these programs include
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40 those identified as relevant to fire setters through the current study, such as anger
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42 management. Whilst cognitive behavioural programs have been designed for fire
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44 setters (Curtis, McVilly and Day, 2012; Hall, Clayton and Johnson, 2005), these have
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46 not undergone extensive evaluation, and it is not clear whether they have benefits
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48 above and beyond other cognitive behavioural programs, such as those designed for
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50 violent behaviour, or behaviour change more generally. If such programs were able to
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52 reduce offending behaviour, including fire setting, for those with an ID, as might be
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54 expected given the lack of distinct characteristics and treatment needs identified in the

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6 current study, then this would have significant resource saving implications for
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8 treatment services.
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11 Of course this study has some limitations. First, the majority of the sample
12 were detained in secure settings, resulting in limited scope to generalise the findings
13 outside of this context. Further, the majority fell into the mild ID range, which means
14 that the findings might only apply to those with an index offence of arson who have a
15 mild ID, rather than representing a broader range of persons with ID who set fires. A
16 second limitation is that these data were collected for a prior study, and consequently
17 only certain needs and characteristics were able to be investigated. In addition, data
18 were collected solely from the original client case notes and as such were dependent
19 on the quality of these (Hogue, Steptoe, Taylor *et al.*, 2006), as well as the ability of
20 the research assistants to collect these data accurately and consistently. There was also
21 a relatively small proportion of persons with an index offence of arson within the
22 sample, and no control group of offenders who would fit into the categories but who
23 did not have an ID. A comparison with this latter group would have allowed direct
24 distinctions to be drawn between fire setters who have an ID and those who do not.
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39 Nonetheless, the findings of this study provide further evidence of the
40 complexity of the rehabilitation and support needs of offenders with ID who set fires.
41 Given they share many of the characteristics of violent and sex offenders, it is
42 possible that they might benefit from participation in aspects of programs that have
43 been developed for these groups. However, given what we know about the inherent
44 problems this population experience with generalisation of learning, further work is
45 needed with respect to the targeting of fire setting behaviours within existing
46 programs.
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Table 1

Demographic Variables

	Index Arson Offence N=18	Index Violent Offence N= 53	Index Sex Offence N= 63
Mean age at admission (SD; Range)	29.66 (9.88; 17-48)	29.80 (9.00; 14-50)	31.42 (11.69; 16-59)
Mean age at time of assessment (SD; Range)	49.22 (14.04; 30-77)	47.56 (10.38; 30-79)	48.65 (11.89; 28-73)
Mean prior convictions before 18 (SD; Range)	2.17 (2.59; 0-8)	3.81 (7.13; 0-39)	1.59 (2.43; 0-10)
Mean prior convictions after 18 (SD; Range)	5.17 (10.48; 0-45)	7.54 (10.44; 0-43)	3.79 (5.63; 0-28)

Table 2

Mean frequencies of fire setting and violent offending history, as well as comorbid mental disorder

	Index Arson Offence N=18	Index Violent Offence N= 53	Index Sex Offence N= 63	χ^2	<i>V</i>
N with history of fire setting	8 (44.4%)	5 (9.4%)	7 (11.1%)	15.71***	.34
N with violent offending history	6 (33.3%)	32 (60.4%)	18 (28.6%)	12.58**	.31
N with sexual offending history	3 (16.6%)	12 (22.6%)	33 (52.4%)	13.91***	.32
N with comorbid mental disorder	12 (66.6%)	39 (73.6%)	29 (46.0%)	9.50**	.27
N of those with comorbid mental disorder with schizophrenia	1 (5.5%)	16 (30.2%)	6 (9.5%)	10.62**	.28
N of those with comorbid mental disorder with personality disorder	8 (44.4%)	24 (55.3%)	10 (15.9%)	13.23**	.31

Note: $p < 0.05^*$, $p < 0.01^{**}$, $p < 0.001^{***}$.

Table 3

Mean (SD) SDRS clinician ratings split by arson, violent, and sex offences

SDRS Items	Index Arson Offence N=18	Index Violent Offence N=53	Index Sex Offence N=63	χ^2
1- No responsibility	1.53 (1.41)	2.07 (1.50)	1.83 (1.50)	1.55
2- Few positive coping skills	1.40 (1.55)	2.14 (1.42)	1.41 (1.59)	5.70
3- Anxiety /anger/frustration in past month	1.69 (1.40)	2.10 (1.24)	1.54 (1.45)	3.75
4- Anger in past month resulting in inappropriate temper	1.06 (1.48)	1.59 (1.26)	1.05 (1.36)	4.76
5- Insulting, teasing, obnoxious	1.19 (1.51)	1.26 (1.42)	1.09 (1.39)	0.28
6- Callousness/little empathy	1.50 (1.67)	1.49 (1.34)	1.45 (1.51)	0.09
7- Poor housekeeping	0.93 (1.28)	1.34 (1.51)	0.83 (1.08)	2.05
8- Poor self-care/hygiene	0.67 (1.05)	1.10 (1.28)	1.09 (1.41)	1.57

Note: $p < 0.05^*$, $p < 0.01^{**}$, $p < 0.001^{***}$. Rating scale: 0=no problem, 2=moderate problem,

4=severe problem