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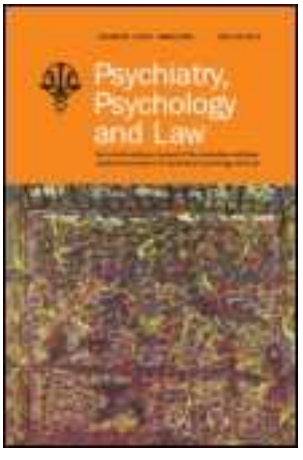

Psychiatry, Psychology and Law

Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/tppl20

Juvenile Fire-Setting: A Review of Treatment Programs

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Available online: 03 Aug 2011

To cite this article: Katarina Fritzon, Mairead Dolan, Rebekah Doley & Troy E. McEwan (2011): Juvenile Fire-Setting: A Review of Treatment Programs, Psychiatry, Psychology and Law, 18:3, 395-408

To link to this article: http://dx.doi.org/10.1080/13218719.2011.585223

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Psychiatry, Psychology and Law
Vol. 18, No. 3, August 2011, 395–408

Routledge
Taylor & Francis Group

Juvenile Fire-Setting: A Review of Treatment Programs

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The current paper provides a review of the literature on juvenile fire-setting, focusing on psychological contributions to the assessment and treatment of this population. The paper discusses research on the actions associated with deliberately lit fires by juveniles, as well as the psychological characteristics of the perpetrators. International perspectives on intervention are reviewed, and in conclusion the paper highlights the need to develop standardised protocols for intervention, which include a systematic assessment strategy for identifying high risk individuals, as well as a structured evidence-based approach to treatment incorporating psychological and fire-educational components.

Key words: juveniles; fire-setting; treatment; assessment.

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Adolescent fire-setting is of increasing concern in our community. It is estimated that in Australia approximately 20% of fires are started by young people under the age of 18 (Dadds & Fraser, 2006). While alarming, differences in how official data are collated and reported across jurisdictions, as well as legal definitions, and the inherent difficulties in detection and apprehension are probably responsible for the Australian figures being somewhat lower than those reported internationally. For example, in the United States it is suggested that adolescents are responsible for 50% of all deliberately lit fires (Kolko, Day, Bridge, & Kazdin, 2001; Snyder, 1988), and in the United Kingdom 40% of those convicted for arsons reported to be young people (Arson Prevention Bureau, *Key arson factsheet*). While the extent of actual juvenile fire lighting may vary internationally, it is widely accepted that curiosity about fire is believed to be an expected part of adolescent development (Simonson & Bullis, 2001), along with engaging in generally antisocial behaviour (Johnston, Bachman, & O'Malley, 1997).

What is less clear is the extent and frequency of fire-setting that might reasonably be attributable to these 'normal' developmental factors. For example, Simonson and Bullis (2001) surveyed 5,416 children in 13 school districts in the United States and found that 57% of children reported having started a fire by the age of 11 years. In contrast an Australian study found that fire-setting was only present in approximately 5% of a sample of 302 boys

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ISSN 1321-8719 print/ISSN 1934-1687 online
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DOI: 10.1080/13218719.2011.585223
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aged between seven and nine years of age, and there was only a single case in the sample of 255 girls within the same age range (Dadds & Fraser, 2006). Discrepancies in these figures may be due to the finding that fire-setting emerges relatively late in childhood; around age 12 (Grolnick, Cole, & Schwartzman, 1990; Terjestam & Ryden, 1996).

It should also be noted that the suggestion that fire-setting is a common occurrence in adolescence does not imply the behaviour is inevitable. Some commentators have argued that deliberate fire-setting represents a failure of parents to properly educate their children about fire and its effects, and is enabled through lax supervision (Pinsonneault, 2002).

One way of estimating the prevalence of potentially problematic fire-setting (as opposed to 'normal fire play') is to compare the above figures to those found for young people referred to mental health services. Across comparable age groups, these range from 15–19% for outpatient samples (Heath, Hardesty, Goldfine, & Walker, 1983; Kolko & Kazdin, 1988) to 22.6–34.7% in inpatient samples (Kolko & Kazdin, 1988; Moore, Thompson-Pope, & Whited, 1996), although it is also important to note that the severity and scope of fire-setting behaviour has been found not to vary between inpatient and outpatient samples (Pollinger, Samuels, & Stadolnik, 2005). On this basis then, it would seem that the decision to admit a young person with fire-setting behaviour into residential care appears to be one governed by non-fire-related factors, such as quality of parental relationship, and presence of additional pervasive behavioural problems.

It seems likely that for many of these young people fire-setting is a symptom of underlying psychosocial problems, such as family discord and dysfunction, or developing mental health symptomatology, in which case these factors might be considered more appropriate as the primary targets for intervention. Evidence from the adult literature on fire-setting, however, suggests there are some individuals for whom the act of fire-setting itself is the primary behavioural problem, and that this interest emerged in childhood (Fineman, 1995). Thus for this sub-group of children at least, relevant treatment goals would need to directly address their burgeoning interest or fascination for fire-setting in and of itself.

This article reviews treatment options for young people who set fires, as well as examining the evidence for the efficacy of these programs. Given the paucity of published data from Australia, much of what is discussed is derived from literature and programs originating from the United States and the United Kingdom. Whilst it could be argued that juvenile arson appears to be more widespread in those jurisdictions than in Australia, it is also important to consider the possibility that without a major political, clinical and academic focus upon juvenile fire-setting in Australia, a significant proportion of these fires will continue to go undetected and offenders untreated, since the number of fires actually set by juveniles is in all likelihood much larger than the number of reported fires. For example, in Massachusetts, where large-scale monitoring of juvenile fire-setting does occur, it has been documented that for every reported child-set fire, two to five child-set fires are not reported to the fire department (Massachusetts Coalition for Juvenile Fire-setter Intervention Programs, 2002 cited in Barreto, Boekamp, Armstrong, & Gillen, 2004).

Existing Treatment Approaches

Juvenile arson intervention programs generally take the form of two separate (although in the United States these are conjoined) approaches. One is primarily focused on promoting 'fire education and awareness', and in Australia this represents

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the only formal intervention program available specifically for juvenile fire-setters. Each State and Territory in Australia provides a program that is a variant of the general approach of educating children about the dangers of fire and emergency procedures (see Table 1 in Muller & Stebbins, 2007). These programs are run by fire services, and usually the sessions are conducted by volunteers from the paid and unpaid staff. It is important to note that in the United States and the United Kingdom, these types of programs are also staffed by mental health workers, for example, psychologists and social workers, and hence while the focus of the intervention is still primarily educational, there is also the opportunity for qualified staff to monitor and refer any juveniles to alternative services in cases where their treatment needs require a more in depth and formal psychological approach. Only one of the Australian fire service programs, the Victorian Juvenile Fire Awareness and Intervention Program, employs a clinical psychologist as consultant to the program (Muller & Stebbins, 2007).

This issue of 'screening out' those who may require a more intensive form of intervention than that offered by fire-service personnel is important for at least two reasons. Firstly, there is evidence that group intervention programmes for adolescents can in some cases be iatrogenic, particularly when the group is composed of a mixture of 'high-risk' and 'low-risk' individuals (Rhule, 2005). Anecdotally, a member of one of the Australian fire-service personnel involved in running juvenile arson programmes reported an example of a group adventure-based weekend activity in which only one (known) member of the group arrived with an amphetamine abuse problem, and several members of the group left with the problem. The second reason it is important to properly screen or assess participants for programs is of course to ensure that the program offers the best possible solution to the individual's particular treatment needs. Several authors have highlighted that while brief community intervention may be appropriate for those without major psychosocial problems, fire-setters with significant adjustment problems will require more intensive management (Adler, Northam, Lebnan, & Ross, 1994; Dadds & Fraser, 2006). In the absence of formal evaluation data (Muller & Stebbins, 2007) to inform 'best practice' for fire-setting intervention. However, screening potential participants presents one of the daunting tasks faced by those seeking to develop treatment models. More information on risk assessment approaches for juvenile fire-setters is presented elsewhere in this volume (Dolan, Doley, Fritzon, & McEwan, in press).

The second approach to treatment is psychological in nature and focuses on the mental health, developmental, behavioural and/or social needs of the individual concerned. There are no reported treatment programs of this nature in Australia, specifically designed for juvenile fire-setters. In the United States and the United Kingdom, however, a two-tiered approach is generally utilised, combining primary and secondary interventions. Primary interventions are not specifically focused on any individuals needs but instead offer a broad-based approach to educate children and adolescents about fire, while secondary interventions target those believed to be 'at risk' for future fire-setting. For example, in the United States a combination of cognitive behavioural treatment with fire education has been promulgated nationally following funding from the National Association of State Fire Marshals in 1999 (Sharp, Blaakman, Cole, & Cole, 2006). The fire prevention/fire safety interventions have been developed to be included as part of the school curriculum, and evaluations have found significant improvements in fire-related knowledge (Sharp, Blaakman, Cole, & Cole, 2006). Since this program is not specifically targeting young people identified as being 'at risk' of

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fire-setting, or already known to be fire-setting, it represents a 'primary' intervention (Muller & Stebbins, 2007), while a more intensive strategy is needed when the young person is believed to be at risk (secondary prevention), or the behaviour has already been identified in a young person (tertiary intervention).

Kolko (2001, 2002) has outlined a model for providing cognitive behavioural therapy (CBT) for fire-setting, which includes educating the family to recognise that the fire-setting represents a purposeful behaviour on the part of the child who has learned to use this as way of expressing emotion, or achieving some other specific purpose. In terms of intervening with the child, the goals of Cognitive behavioural therapy are to assist the child in recognising and interrupting the urge to start a fire, and to substitute more socially acceptable problem-solving strategies in its place. Further details on specific CBT strategies are described below. This combined multi-disciplinary model has been suggested as 'best practice' in addressing the complex needs of young people who set fires (Palmer, Caulfield, & Hollin, 2005; Soltys, 1992).

The Evidence Base for Assessment and Treatment of Juvenile Fire-Setters

There is no standardised assessment package for juvenile fire-setters, although several authors have developed useful tools that can be useful when working with this population. Many of these are structured interview guidelines designed for use when interviewing the young person together with his/her parents. For example, the Children's Fire-setting Interview (CFI; Kolko & Kazdin, 1989a) is an example of an interview protocol designed to elicit information from children, and has been found to distinguish children who set fires from those who do not. The Fire-setting Risk Interview (FRI; Kolko & Kazdin, 1989b) measures risk perceptions parents have of their children's fire-related behaviour, is composed of 85 items (15 sub-scales) and has also been found to have good discriminatory validity. More serious fire-setting behaviour can be assessed by the Fire Interview and Risk Evaluation (FIRE) Protocol (Pinsonneault & Richardson, 1992), which is composed of 320 questions and must be administered over several assessment sessions. In addition to these fire-specific tools, several other instruments have been proposed as being suitable when assessing juvenile fire-setters. These focus on general psychosocial functioning, behavioural excesses or deficits, and aspects of the parental relationship; and include the Achenbach scales (Achenbach, 1991), the Jessness Inventory (Jesness, 1996), personality measures such as the MMPI-2 (Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989; Moore et al., 1996) and a parenting measure such as the Alabama Parenting Questionnaire (APQ, Shelton, Frick, & Wooten, 1996).

The purpose of assessment is to inform clinical formulation which in turn leads to a treatment approach that is designed to meet the particular needs of the individual. Several general approaches to formulation exist, and in relation to fire-setting the most comprehensive of these is Jackson's (1994) functional analysis model, which emphasises the social and environmental context for fire-setting, as the role of negative and positive consequences in maintaining the behaviour. To best represent the complexity of the treatment needs of adolescent fire-setters, the ensuing discussion will use a combined psychological formulation and functional analysis framework as well as highlighting the available empirical evidence concerning the effectiveness of existing treatment approaches.

Pattern

Very few studies have actually described a typical pattern of juvenile fire-setting

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incidents which could lead to the development of a profile of arson behaviours typical of juvenile fire-setters generally. Such descriptions are useful both in terms of risk assessment and developing targeted treatment goals. In other areas of research, notably sex offender research, it has been established that different pathways towards offending behaviour exist, and that individuals committing essentially the same offence behaviour may nevertheless have different treatment needs (Ward & Siegert, 2002). The Dolan et al. paper (this volume) also outlines research that identifies patterns of fire-setting behaviour that can distinguish between high-risk (likely to be recidivist) versus low-risk (more likely to desist from fire-setting after a single incident) juvenile offenders.

In relation to adult arson, variations in behavioural patterns have been identified that correspond to potentially different functions for the behaviour, for example, research by Fritzon and colleagues has differentiated among object and person targets for fire-setting, with instrumental versus expressive motives (e.g. Canter & Fritzon, 1998). This typology has been placed within an action systems framework (Shye, 1985), and has been replicated in a number of studies, including one study on juvenile fire-setting (Santtila, Hakkanen, Alison, & Whyte, 2003). In this study involving a sample of $n = 66$ juveniles aged 6–17 years (mean = 13.65 years), the most common pattern of behaviour was for a group of juveniles to set a fire less than 1.5 km from home, in a public location. In 88% of cases, the offenders did not alert the police or others. In addition to these common behaviours, it was also possible to differentiate four sub-groups within the patterns of behaviour, suggesting that juvenile arsonists, like adult arsonists, should not be considered a homogenous group.

The first, and most common (59%, $n = 39$) pattern was labelled 'instrumental object', and commonly involved an arson co-occurring with other criminal activity, primarily break and enter, theft, and substance abuse. The second most frequent pattern (35%, $n = 23$) was termed 'instrumental person'. Offenders in this sub-group often identified a clear trigger for their fire-setting, which frequently involved an argument with another person who subsequently became the target for the fire. These fires were more likely to involve planning, with the arsonist bringing materials, such as accelerants, to the scene. The 'expressive object' fires (29%, $n = 19$) indicated more of an investment in, or attachment to fire-setting behaviour. Offenders tended to remain at the scene, and to have been involved in prior arson or fire-related activities (false alarm calls), and were more likely to set the fires by themselves. Finally, nine of the fires (14%) involved an 'expressive person' theme, in which offenders set fire to their own home (which included hospitals and/or institutions) in what appeared to be a 'cry for help'.

In addition to these four behavioural themes, the study also found evidence for two distinct groupings of offender characteristics. The two 'expressive' behavioural sub-groups were associated with an institutionalised offender with a diagnosis of depression or early signs of a personality disorder. The 'expressive person' sub-type in particular was more likely to be perpetrated by a female offender. The second offender type was associated with both 'instrumental' forms of fire-setting, and the characteristics of these offenders included having prior contact with the police, behavioural problems at school, involvement with family (social) services, and prior criminal involvement.

The combination of results from this study indicates at least two distinct avenues for intervention for juvenile arsonists. The first, focuses on the evidence that arson may be used by some (especially female) young people as either a 'cry for help' or a

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suicide attempt, and thus for these young people a clinical mental health intervention would seem the most appropriate as a primary response. The second form of intervention would appear to be more appropriate for those for whom fire-setting forms but one feature of an overall repertoire of criminal activity, and thus the focus for treatment would be to prevent the further development of these antisocial tendencies, including intervening within the peer group and offender's family. Another interesting finding from the Santtila et al. (2003) study was that behavioural themes could only be identified for those offenders over the age of 12, suggesting that early intervention (before age 12) could potentially halt the progression of fire-setting from curiosity-driven to a more pathological and differentiated form of behaviour. It must also be noted, however, that with a sample of $n = 66$ for this study, these findings can only be used to form tentative suggestions for intervention strategies. On the other hand, accordance is found with the results of other studies, for example, Swaffer (1993) found support for the existence of all but the Expressive Person sub-type, within her study of fire-setting children referred to a Youth Treatment Centre in the United Kingdom. Utilising results from a 262-item manual completed for all residents of the Centre since 1978, Swaffer (1993) identified three sub-groups of young fire-setters, which she recognised as paralleling similar distinctions found within the general population of the Treatment Centre. The first sub-group was labelled 'Delinquent'. This was similar to Santtila et al's Instrumental Object category in that it involved young people who presented with a range of other antisocial behaviours in addition to fire-setting. The second sub-group was the 'Destructive' fire-setters, and these were young people with poor social skills for whom fire-setting was a revengeful act against a person whom they felt unable to confront directly. This was similar to Santtila et al's Instrumental Person sub-group. Finally, Swaffer identified the 'pathological group' for whom the sensory qualities of the fire, as well as the aftermath, were of strong interest. This sub-group was similar to the Expressive Object category identified by Santtila et al. It is unclear why Swaffer did not identify an equivalent to the Expressive Person sub-group, but it may be that young people presenting with severe psychopathology and self-harming behaviours are considered to require more intensive clinical management rather than focusing on their offending behaviour, including fire-setting.

Presenting Characteristics

A number of studies have described the general presenting characteristics of juvenile fire-setters. Typical of offenders generally, juvenile arsonists are usually males (Fineman, 1995), from unstable family backgrounds (Dickens et al., 2009), and/or with a high degree of parental psychopathology (Kolko & Kazdin, 1986). Juvenile fire-setters are likely to engage in more generally antisocial behaviours than do non-fire-setters (Kolko, Kazdin, & Meyer, 1985) and to represent the more severe end of the conduct disorder spectrum (Forehand, Wierson, Frame, Kemptom, & Armistead, 1991). Where psychiatric disorders are present, fire-setters are also likely to have more severe psychopathology than non-fire-setters, particularly within an inpatient sample (Moore et al., 1996).

The severity of disturbance will dictate to a large extent the treatment approach. Young people who present with severe psychopathology, or other forms of internalising or externalising behaviours in addition to fire-setting, will require a tailored assessment and intervention process focused specifically on their criminogenic needs. Research by Kolko and Kazdin (e.g. Kolko, 2002; Kolko &

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Kazdin, 1991) have utilised psychiatric assessments in addition to psychological instruments including the Child Behaviour Checklist (CBCL; Achenbach & Edelbroek, 1991), Children's Hostility Inventory (Kazdin, Rodgers, Colbus, & Siegel, 1987), and Loneliness Scale for Children (Asher & Wheeler, 1985) to assess for differences among sub-groups of fire-setting and non-fire-setting children. Fire-setters were more likely to have received a psychiatric diagnosis than non-fire-setters, while the severe fire-setters were more likely to have received a diagnosis of either conduct disorder or major depression when compared to the match playing and non–fire-setting children (Kolko & Kazdin, 1991). A number of other psychosocial characteristics were found to differentiate the three sub-groups including internalising and externalising behaviours (defined by results on composite sub-scales from the CBCL), fighting/ arguing, covert behaviours and self-injury, lying, substance use, property damage, and secretiveness. All of the results were in the direction of the more severe fire-setters displaying more of these problem behaviours. Although this particular study does not differentiate pattern/nature of fire-setting beyond the severity of the fire-setting behaviours (defined by fire-setting as opposed to match play) results do clearly indicate that the treatment needs of fire-setting children are likely to be diverse and complex. Additionally, and as stated previously these findings highlight the importance of screening in order to plan interventions that balance the specific treatment implications of the fire-setting behaviour, as well as the treatment needs of antisocial behaviour and psychopathology more generally.

Predisposing Factors

Research findings support an ecological risk model (Kolko & Kazdin, 1986) that includes learning experiences, the child's cognitive, behavioural and motivational repertoire; and parental and family influences and stressors (Barreto et al., 2004) as factors likely to increase propensity to deliberately light fires. Children who go on to develop repeated fire-setting behaviours may have been exposed to early modelling, fire interest and fire-related experiences (Kolko & Kazdin, 1989a) including being exposed to caregivers who smoke, gaining easy access to fire-setting materials, and having siblings or peers who have set fires. Individual risk factors include limited social and emotional regulation skills, covert behaviour and fire-setting interest.

In terms of family factors, it is a consistent finding in the literature on juvenile fire-setting that levels of parental dysfunction are often considerably higher than for non-fire-setting juveniles. This finding also holds for clinical samples and is therefore not accounted for merely by presence of psychopathology. Fire-setters have reported greater parental use of physical punishment and physical abuse (Ritvo, Shanok, & Lewis, 1983; Wooden & Berkey, 1984;) and have experienced more frequent residential placement (Ritvo et al., 1983) than non-fire-setters. Parents of fire-setters have also acknowledged greater psychological dysfunction, depression and interparental conflict than parents of non-fire-setters (Kazdin & Kolko, 1986). In summary, Kolko and Kazdin (1986, 1990) have highlighted the main potential environmental predisposing risk factors for fire-setting as: (a) poor supervision and monitoring, (b) parental uninvolvement, (c) parental pathology, and (d) stressful events. It must be noted however, that these studies have employed cross-sectional designs, and therefore in the absence of prospective studies it is not possible to determine the direction of causality. In other words, it is possible that having a child exhibit fire-setting behaviour in itself contributes to the family dysfunction that

is found to differentiate the fire-setting versus non-fire-setting groups.

Nevertheless, the above findings indicate that a potential additional target for intervention is the parent (s) of the fire-setting young person. Literature has found that substance abuse, major depression and other affective disorders, anxiety disorders, schizophrenia and other psychotic disorders, and antisocial personality characteristics are all present to a greater extent in parents of children who set fires. Other difficulties include anger management, inter-personal violence, and a history of maltreatment. Given that what appears to be current best practice treatment requires the training of parents in adopting positive parenting practices, clearly the parents' ability to engage with these methods would be hampered by their own mental health needs and general level of functioning.

Precipitating Factors

It is widely held that understanding the motives for fire-setting is a necessary step towards developing an effective treatment strategy. In most cases, the young person will need to be assisted in recognising his/her own motives, identifying triggering situations and emotions, in order to take an active role in their own relapse prevention strategy. A useful strategy in identifying potential emotional and/or cognitive triggers for fire-setting is the graphing technique (Bumpass, Fagelman, & Brix, 1983; Kolko, 2002). Changes in the child's feelings and thoughts are drawn on a graph with time and intensity of emotion/thought as its two axes. The time axis can be charted according to the sequence of events associated with the fire (precipitating event such as argument, aftermath of argument, setting the fire, attempting to put out the fire, alerting another person, or leaving the scene, etc.). Once developed, the graph can assist in understanding the relative contributions of antecedent emotions. For example, if curiosity and anger were cited as important factors, it would be important to understand which of these was experienced most intensely as at its extreme form curiosity may represent more of a fascination with fire, which would be harder to redirect. Fire that is primarily motivated by anger, on the other hand, would suggest treatment goals emphasising the acquisition of problem-solving and emotion regulation skills and developing alternative behaviours for expressing anger (Kolko, 2002). The use of the graphing technique is also helpful in providing a rationale for proceeding with a skills-based approach, as well as reassuring others (such as parents) that the child's behaviour can be understood as a strategy (albeit a dysfunctional one) that serves a particular purpose (Kolko, 2002).

Perpetuating Factors

Studies have adopted a functional analytic approach for understanding repeat fire-setting, the most well-developed model being that put forward by Jackson (1994). According to this model, as well as complementary work by Swaffer (1993) and Fineman (1995), social and environmental factors are most influential in the development of fire-setting behaviour, through an operant conditioning paradigm that sees positive and negative reinforcements operating to maintain the behaviour and cause it to be repeated. Fineman (1995) emphasises that both internal and external reinforcers can exist, with internal (sensory) rewards being the hardest to target in terms of treatment. A set of forms have been developed by Fineman (1995) to assist mental health and fire-service personnel who may be working with a young person to conduct a functional analysis of the fire based on his dynamic-behavioural model. For example, the detailed Fire-setting Sequence Analysis form encompasses behaviours, thoughts and feelings

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accompanying the act of fire-setting and will assist in identifying the most appropriate targets for intervention. Similarly, the Fire-setting Motive Analysis Form requires an evaluation of perceived risk, which can be used to generate recommendations regarding the need for incarceration, inpatient or community treatment.

Kolko (2002) outlines a series of parenting strategies that are designed to interrupt the reinforcement cycle, and thus discourage continuing fire-setting. The first step in the development of a contingency management plan is for the parents to be encouraged to monitor their child's activities, and find out what activities the child enjoys doing. Parents are also taught that their attention is a powerful reward, and to use planned attending and ignoring to encourage and discourage positive and negative behaviours, respectively (though dangerous behaviours are never ignored). Parents are also taught to use praise and rewards, fines and lost privileges, time out and contingencies and points systems (Kolko, 2002). This approach is very similar to other models of parenting interventions, particularly the Positive Parenting Program (Sanders, Markie-Dadds, & Turner, 2003), that has been well validated generally, as well as being more recently adapted to fit with specific behavioural problems in children, such as conduct disorder (Sanders, Markie-Dadds, Tully, & Bor, 2000). Further research is therefore warranted in terms of the applicability of these manualised programs to the specific issue of fire-setting behaviour in children.

Prognosis and Potentials

A cognitive behavioural therapy program for treating juvenile fire-setters within the context of their family invariably involves the acquisition and rehearsal of social skills, which, when mastered, are expected to lead to the enhancement of the young person's functioning, and ultimately a better prognosis. Kolko (2002) identifies a set of strategies that are employed in a sequential order during treatment. The first is identification of emotion (see previous section on graphing technique), including the normalisation and acceptance of feelings, understanding physical responses to feelings, and that feelings can change, especially when we understand them better. Strategies for managing emotional arousal, e.g. anger, are then taught both in relation to the over- and under-control of affective arousal. Thirdly, the child is taught the link between thoughts and emotions, and the concept of automatic thoughts and unhelpful/ irrational thoughts. Finally, problem-solving and assertiveness skills are taught and generalised to situations that have been triggers for fire-setting in the past.

In addition to these tailored behavioural strategies, another potentially important target for intervention with young fire-setters is to identify whether the fire-setting was triggered by a traumatic or critical event (Fineman, 1995). Understanding the nature and extent of trauma may be essential to the motivation for starting a fire, and thus in extinguishing the behaviour. However, in the case of the antisocial or conduct disordered child, the identification of trauma may be less helpful in treatment than the acquisition of social skills and disruption of the antisocial peer group influence through, for example, self-esteem building.

Evaluation of Treatment

Two of the earliest studies of collaborative interventions found significant reductions in repeat fire-setting (Birchill, 1984; Bumpass, Brix, & Preston, 1985). The first of these employed a two-year follow-up period, whereas the second simply compared the number of fires set in the community before and after the intervention (31.4% reduction). More recent studies have focused on the educational component of the programs and found reductions in fire-setting after a

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few hours or a full day of intervention (Franklin et al., 2002; Kolko, 2001).

Interestingly, in one Australian study employing a randomised control group design, no difference was found between the groups of children who received a pamphlet and discussion of fire safety, versus the group who received a combination of the educational and home-based psychosocial intervention, both delivered by trained fire-service personnel (Adler, Nunn, Northam, Lebnan, & Ross, 1994). In both groups, 42% of the children set no further fires across a 12-month period, and 15% set fewer than three fires (thus considered to be 'improved' compared to the numbers of fires set prior to the intervention).

Clearly, for some children, the brief format fire education component of intervention may be sufficient in reducing subsequent fire-setting. For example, in the Franklin et al. (2002) study only 1 of 132 children provided with this hospital-based intervention (including, controversially a trip to the burn unit) set a further fire over a 30-month follow-up period, compared to 32% of the children in the no-intervention control group. However, as stated previously, different levels of intervention are needed for different types of fire-setters, and it is crucial to distinguish high-risk from low-risk.

This is demonstrated by another randomised control group study (Kolko, 2001) in which a one-off home visit by fire-service personnel was compared to a five-session fire safety education and a seven-session cognitive behavioural intervention. The latter two groups set significantly fewer subsequent fires in the two-year follow-up period, than those children in the first group.

Whilst there does appear to be evidence for the efficacy of both the fire safety and cognitive behavioural interventions, it must be noted that a significant barrier to the development of a 'best practice' model is the lack of specific information on which components of both types of intervention are actually the most effective. Currently, a variety of individual and family cognitive behavioural techniques are used, and these appear to be more heavily weighted on the cognitive rather than behavioural components. Furthermore, very few standardised manualised fire skills/education tools exist, so that this aspect too is hard to evaluate. The literature on criminogenic intervention has developed a framework that emphasises the need for standardisation of program delivery and integrity (Andrews & Bonta, 1998; Hollin, 1999) to control for factors such as length of intervention, training and experience of personnel, and the form of the delivery (e.g. punitive language used by facilitator).

A recently developed family-centred model has addressed several of the concerns with previous interventions, but has not yet been formally evaluated. The adoption of a manualised approach, together with the involvement of multiple family members, and an emphasis on behavioural skills acquisition, offers several promising developments, however (Barreto et al., 2004).

Family, and/or broader systems-oriented approaches to treatment have received widespread support elsewhere in the literature on treatment for juvenile offenders. For example, multi-systemic treatment have been found to offer superior long-term outcomes over individual treatment in reducing antisocial behaviour (Bordiun et al., 1995; Henggeler, Clingempeel, Brondino, & Pickrel, 2002) and thus might offer best practice treatment approach for the sub-group of young fire-setters who have been found to have more generalised antisocial criminogenic risk and treatment needs.

Potentially Harmful Interventions

In the history of approaches to treatment of juvenile fire-setting, there have been a number of specific practices which at best have not been found to be effective, and at worst may in fact increase the likelihood of

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fire-setting. The practice of repetitively lighting a fire until bored (satiation) may be therapeutic in a sense as repeated exposure may increase the child's sense of mastery over fire (Grolnick, Cole, & Schwartzman, (1990). It is also important to recognise that overly harsh punishments for fire-setting are likely to lead only to situational compliance, as opposed to internalised motivation to change following a supportive, skills building style of managing the behaviour (Sharp et al., 2006).

Conclusions

While there is a reasonably high volume of literature on treatment for juvenile fire-setters compared to adult fire-setters, there are still a number of gaps that need to be addressed. Firstly, treatment programs appear to primarily adopt a 'one-size-fits-all' approach especially in relation to the education and awareness training offered by fire departments. Although individualised formulation and treatment is also offered by clinical psychologists and counsellors, there does not appear to be an attempt to develop large-scale manualised programs based on the typology of motivational approaches that had clearly identified at least four separate, though perhaps overlapping areas of treatment need.

Secondly, evaluation outcome data are still sparse, and somewhat contradictory in that some studies seem to suggest that intensive psychological intervention offers no more improvement over basic fire education when it comes to preventing recidivism among some young fire-setters. It is important to examine more closely the selection criteria and referral pathways for the young people participating in these programs in order to determine whether this apparently minimal level of intervention can really offer long-term success for those fire-setters whose behaviour is a manifestation of deep-seated psychological and family-contextual problems.

Thirdly, despite the evidence from international researchers and clinicians that offers promise to the possibility of programmatic treatment for juvenile offenders, such interventions have not received political or academic attention in Australia to date. Thus compared to other countries, we remain somewhat ignorant of even the extent of the juvenile fire-setting problem, let alone what particular identification, assessment and treatment approaches are required to address this issue in the Australian context. Furthermore, in the absence of systematic approaches to focussing on this problem, there exists the potential for a catch-22 situation whereby agencies which would be best placed to offer the needed clinical services to fire-setters are not made aware of this need due to unclear or non-existent knowledge about referral sources and pathways. For example, legal services that come into contact with fire-setting individuals may not recognise the pathological nature of the behaviour and/or have the connections with mental health services in order to refer clients whose treatment needs would be better met by such services, as opposed to through the traditional criminal justice system.

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