

Firesetting in Children

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Abstract

This article reviews the literature regarding the history, etiology, diagnosis, and treatment of firesetting. A critique of the literature reveals the need to generate a clearer definition of firesetting as well as more stringent criteria for diagnosing firesetting. The standard treatments for firesetting are reviewed. Linkage of childhood firesetting to future adolescent and adult crimes is also examined. Finally, avenues for future research are discussed.

INTRODUCTION

The intentional setting of fires by juveniles is a serious and costly problem. Firesetting may coexist with such disturbances as aggressive behavior, low frustration tolerance, cruelty to animals and scholastic difficulties as well as certain disorders such as enuresis and conduct disorders. In the field of psychiatry knowledge about firesetting is limited. The purpose of this paper is to address the difficulty encountered in assessing the firesetter, to provide a critique of the research conducted, and to discuss possible etiological factors and treatment modalities. The review also suggests future research directions based on information obtained through a comprehensive literature search.

History

Firesetting has been described since the 19th century. Meckel described firesetting as a distinct mental disorder in 1820; he coined the term "impulsive incendiarism" (6). "Monomaniac incendiatic" and "pyromania" were described in 1833 (7) and Jessen later described "reasoning monomania" or "manie avec conscience" (8). These terms all intimated a rather limited but specific form of insanity.

Freud (9) warned of the possible consequences of setting fires, and for many years, firesetting was considered to be an aspect of libidinal excitement associated with the phallic level of development. Psychodynamic theory has postulated that the child in the genital phase of development may fear castration and consequently masturbates, which is also prohibited in the child's mind. The regression may lead the child to find a substitute for masturbation, resulting in firesetting (10).

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In her psychoanalytic work, Klein (11) described the relationship between aggression and firesetting, and the role of firesetting as a symbol of either destruction or restitution. She felt that urethral and oral sadism were linked and that the child's destructive fantasies (e.g., flooding, drowning) represented a sadistic reaction to breast feeding deprivation.

Fenichel (12) also linked firesetting to sadistic drives. Grinstein (13) later pointed out that control of fires in humans represents a highly complex ego function with many pregenital elements, with firesetting linked to unleashed aggression.

The current DSM-III-R criteria for pyromania includes purposeful firesetting on more than one occasion in which there is affective arousal prior to setting the fire followed by intense pleasure or relief once the fire is set. In addition, patients are drawn to fire and its situational context or associated features. The firesetting is not done to improve one's living conditions, for monetary gain, to conceal criminal activity or as an act of vengeance. The full criteria for pyromania is not necessarily seen in all children who set fires, thereby resulting in the term "firesetting."

Diagnosis

Suspected firesetters were initially assessed using such techniques as the Rorschach, the Wechsler Intelligence Test for Children, and the Bender-Gestalt Test (2). These did not reliably identify firesetters, however. More recently Lowenstein (3) compared 24 firesetting and non-firesetting children to establish criteria associated with fire-raising children. The subjects were administered the Eysenck Personality Questionnaire and the Lowenstein Fire Raising Diagnostic Test (LFRDT). Of the two, only the LFRDT identified subjects who were actually firesetters. The most common criteria included the following behaviors:

1. Excitation produced by fires.
2. Enjoyment caused by fires.
3. Frustration relief by firesetting.
4. Expression of anger through the process of firesetting.

Last et al. (4) also studied firesetting behavior in children. They showed slides and measured physiological parameters (skin resistance and heart rate) and reported on the various responses to each set of slides.

Jacobsen (5) investigated 4242 London children in the mid and late 1970's. Among 87 male and 17 female firesetters, distinct subgroups could be identified. Differing age groups tended to set fires in different locations with varying destructive potential. The various age groups also differed in the amount of antisocial behavior. Sample biases, retrospective examinations of subjects and Berkson's Biases have been cited as limitations to this study. Also, the authors failed to find relationships between firesetting and commonly associated variables such as poor peer relationships, emotional disorders, and enuresis.

Clinical Studies: Literature Review

Yarnell (14) presented the first major study of firesetting by children in 1940. Her sample consisted of 60 children and adolescents who were primarily referred for firesetting. She found a younger group (ages 6–8) of firesetters for whom fire represented a defense mechanism against rejection, and an older group (ages 11–14) who derived excitement from the act. No comparisons to other juvenile patients were reported.

Lewis and Yarnell in 1951 (15) reported on 238 firesetters ranging in age from 5 to 16 and found associated antisocial behavior in 139 of the cases. Stealing, burglary, truancy and sexual delinquency accounted for the majority of the antisocial behaviors. Most of the children set only a few fires while 46 children set more than five. Some children enjoyed the excitement of watching the fire or fire engines, some desired to be heroes, while others tried to avenge their parents or employers. When stratified according to age, the groups resembled Yarnell's (14).

In 1961 Kaufman et al. (16) found that 22 of 30 firesetters were diagnosed as psychotic or pre-psychotic. Additionally, the remainder had conduct disorders. Enuresis was common. Family histories depicted a predominance of broken homes, with alcoholic, abusive or psychotic heads of household. These authors challenged the view linking firesetting with abnormal personality development and promoted the concept of regression to a much earlier phase of development. The majority of this population had a long history of severe emotional disturbance thereby precluding the results from being generalized to other populations.

In 1964 Nurcombe (17) reported on 21 male firesetters ranging in age from two to eleven years. Although the statistical results generated by Nurcombe were not significant, he noted a predominance of enuretics. Also, two-thirds were severe underachievers manifesting rampant theft, truancy, and aggression. Twelve of the children set fires only while alone, three only in a group, and six in either setting. A majority (12) of the children set fires only in the home. Nurcombe viewed firesetting in this group as a non-specific response to frustration in their lives.

Vandersall and Weiner in 1970 reported on three groups of firesetters. An infantile group was viewed as impulsive and regressive (9 members); a controlled group, as constricted and compulsive (8 members); and an independent group, as assertive and pseudomature (3 members). All were between four and eleven years of age. Four of the 20 were enuretic. While most of the children studied had impulse control problems, firesetting activity within this group cut across diagnostic boundaries ranging from personality disorder to psychosis. None of the children exhibited adequate peer or family relationships. The father, if present, exerted little influence in all the families, while the mother had little nurturing influence. Again, a majority of these children set fires in their homes. In this study, the authors presented case histories followed by psychodynamic interpretations (i.e., commentaries) on the etiology and process of firesetting behavior. No statistical results or other empirical research data were given to support the interpretations. Their article did, however,

put forth various provocative etiological hypotheses upon which one could possibly base plans for intervention.

Kolko and Kazdin in 1988 (19) examined the prevalence, characteristics, and continuity of firesetting among 164 outpatient and 136 inpatient children with psychiatric histories. A seven-item firesetting history was administered to both the children and their parents. Based on the combined reports from both sources, the prevalence rates of firesetting and match play, respectively, were high among outpatients (19.4%, 24.4%) and even higher among inpatients (34.7%, 52.0%). Both the parents and children in each sample reported comparable prevalence rates in fire and match play among firesetters and non-firesetters. Although the results in this study were highly significant, the use of prisoners as subjects limits the generalizability of these results to nonprison populations.

Firesetting and Crimes. Several authors have addressed the relationship between firesetting in children and serious aggressive crimes in adults. Hellman and Blackman (20) attempted to determine whether enuresis, firesetting, and/or cruelty to animals during childhood were predictive of aggressive adult crimes. They found that 74% of prisoners who had been charged with an aggressive crime had a history of either part or all of this symptom triad, while only 28% of the group charged with non-aggressive crimes had a similar history.

MacDonald (21) also addressed firesetting as a potential predictor of homicide. He studied hospital patients who had made homicidal threats, convicted offenders who had committed homicide, and a control group. In this study, however, statistical analysis did not support the utility of firesetting as a predictor of homicidal behavior.

Justice et al. (22) also identified early behaviors predictive of adult violence by reviewing the literature and interviewing mental health professionals. He found almost no references to firesetting (2/188) in the literature, and only four percent of the health professionals he interviewed mentioned firesetting as a predictor of violent behavior.

Steward and Culver (23) found that after inpatient psychiatric treatment, firesetting behavior persisted in only 7 of 30 subjects at follow-up five years later. Also, the firesetting behavior which did persist was less serious and was displayed by those individuals with more antisocial tendencies. They found that children were usually referred for symptoms other than firesetting (primarily fighting, disobedience and destructiveness); most set fires at home and on their own; there were more boys than girls; and many of the children came from disrupted homes. However, their results suffered from some of the same limitations as previously mentioned studies. In particular, their sample represented a restricted population. Also, the definition of firesetting used by Steward and Culver was very broad and resulted in the inclusion of children who engage in minor fire play, a group not included in the firesetting population in other studies.

Kolko et al. (24) compared hospitalized children identified as firesetters ($n = 31$) or nonfiresetters ($n = 32$). Across all dimensions of aggression and psychopathology, firesetters were found to engage in more delinquent and antisocial behaviors than were non-firesetters. Firesetters were also characterized by a broad range of social

skills deficits and aggressive behaviors beyond their primary symptom. Limitations of the study included severely dysfunctional parents, small sample size, and a confounding of the variable of aggression. In addition, large discrepancies between the parent and child reports of the firesetting behavior call into question the accuracy of these reports and any results based upon them.

Critique of the Literature

A critical look at the literature cited within this paper indicates several methodological problems. The first is the tendency of researchers to generate diagnostic and clinical interpretations based on anecdotal or case histories (24). Defining firesetting as a major problem seems to be relative, subjected to the individual interpretations by researchers of behavior. In no study cited was there a formal diagnostic tool for assessing the seriousness of fireplay, and most researchers pooled items from other diagnostic assessment tools such as the Child Behavior Checklist (24) or the K-SADS (19).

Also, the definition of "firesetting" as a clinical problem remains unclear. It seems that some researchers combine both arson and pyromania related activities into one study. Although these terms are related, there is a difference: arson, which is more of a legal term, is defined as "the crime of purposely setting fire to another's building or property or to one's own, as to collect insurance" (25), to sabotage, or for retaliation (26). Pyromania, which is more of a clinical or psychodiagnostic term, involves some internal gratification such as anxiety reduction or pleasure. It is not for monetary gain, to conceal criminal activity or to express anger or vengeance (26). Because the difference between arson and pyromania may serve as a confound to research, separate studies investigating the prevalence, antecedents, and consequences of these acts should be undertaken.

Another related concern is whether the criteria for firesetting in one study was comparable to other studies. For example, was Yarnell (14) more stringent in "diagnosing" firesetters than Jacobsen (5)? A complete diagnostic interview which incorporates such important features as taking into account the antecedents and consequences (e.g., the amount of damage done) of the behaviors and includes psychosocial factors would be extremely helpful.

The final issue involves the overuse of clinical populations (e.g., outpatient psychiatric populations) (18,27) or incarcerated individuals (28). Related to this issue is the lack of incorporation of control groups or normative samples which include minorities of varying cultures, races, and female populations. Consequently, the subjects used are from restricted samples which limit the generalizability of results found.

ETIOLOGY

Putative causes of firesetting are diverse. Various authors have proposed roles for abusive and abnormal family environments, painful childhood experiences,

negative environmental conditions, serious personality trait problems and minor neurological and medical disorders.

Larsen (29) consistently found three etiological features among firesetters: borderline psychosis, impulsive reasoning, and early frustration. All displayed serious family problems and poor parent relations. Enuresis was observed commonly (25%). The parents of these children had psychological problems and drifted toward lower socioeconomic status, and there were virtually no stable paternal figures.

A similar void in consistent parenting by either mother or father was observed by Ritvo et al. (30) and felt to result in impaired judgement and socialization skills. Ritvo et al.'s stringent definition of firesetting (extreme, covert behavior or actual fire-related convictions) may have erroneously omitted subjects from their population as have other studies. The role for disturbed family relationships was also advocated by Johnson (31) and Van Amerongen (32) who described acting out symptoms, including firesetting, among children whose parents had unresolved conflicts. Techniques for conflict resolution in a firesetter's family have been outlined by Minuchin (33). These parents reportedly regularly used fire to punish their children, perhaps assenting to the role of fire as an acceptable mode of retaliation. Children therefore learned to express themselves through setting fires.

Highly abusive home environments characterized juvenile firesetters in a study by Prentky et al (34). They assessed the collective predictive value of the triad of enuresis, firesetting and cruelty to animals, and found no evidence to support its prognostic value for adult criminal outcome. A study by Heath et al. (27) refined previous studies by showing that either enuresis or cruelty to animals was significantly associated with the firesetting. Firesetting, enuresis and cruelty to animals only rarely appeared together, all three interacting in only a small segment of the total firesetting population.

Kosky et al. (35) compared firesetters and non-firesetters at a psychiatric outpatient service in Australia over an 18 month period. In this study, background histories revealed more instances of conduct disorder, parental separation, and welfare agency exposure among firesetters. Firesetting was not associated with socioeconomic status but was associated with male gender. Both groups had similar high levels of emotional disorders at all ages with mixed clinical pictures.

Sakheim et al. (36) constructed a psychological profile of juvenile firesetters. Analysis of these children in a residential treatment center found that firesetters possessed poor ego and super-ego development, poor judgment in planning ahead, and less reflective and more reactive behavior. These children and adolescents had less capacity for internalization and bonded with people poorly. Their verbal skills were poor and they were often additionally diagnosed with conduct disorder.

Few authors have studied a biological basis for violent firesetting behaviors. An isolated study by Michaels (37) found that the relationship between firesetting and EEG abnormalities approached statistical significance. Conversely, there was no relationship between firesetting and enuresis in this study.

Treatment

Few mental health professionals have addressed the treatment of firesetters. Asked in an environmental health survey how they would deal with a child who set fires, about one-third of 300 urban adults suggested the expertise of mental health professions (38).

An approach used by Bumpass et al. (39) aided the patient in becoming aware of the cause leading to the effect and the relationship between feelings and behavior. In the family's presence, a line graph was utilized to demonstrate a sequence of events and feelings in relationship to the firesetting behavior. Usually, a triggering event sets in motion a sequence of sad feelings which are then replaced by intense, angry feelings; these in turn are partially controlled by a destructive urge or fantasy. The initial feeling was utilized as a signal that he or she was at risk to set fires. Consequently, this recognition prompted a substitutive, acceptable behavior. Bumpass' method yielded success in 27 of 29 5-14 year old patients who were so treated at follow-up six months to eight years later. This graph technique provided prognostic indicators useful in planning an overall treatment program. Although Bumpass et al. (39) failed to include a control group in this study and the parents of the child population did not fit the descriptions of parents cited in most firesetting literature (cold, distant, absent, or abusive), the technique described in their research seems to be a viable treatment for firesetting behavior.

Parents are often involved in the treatment process of their children. Kolko (40) described the case of a six year old developmentally disabled boy who was referred for the treatment of home firesetting behavior. The mother was asked to implement an intervention program consisting of negative practice with corrective consequences and token reinforcement. With this approach not only was the firesetting behavior eliminated, but another problem (fighting with sibling) was suppressed as well. Again at follow-up 15 months later, these behavioral improvements persisted. The authors closed by emphasizing the benefits of multi-dimensional therapy.

In another article by Holland (41), it was presupposed that behavior is being reinforced and thus maintained. Beyond this, no attempt is made to discover the etiology of this behavior. In another behavioral approach, Holland instructed the parents of a seven year old boy to confiscate the child's baseball glove when firesetting behavior was observed. They were also instructed to reward the child when intentionally misplaced matches were left untouched. Within five weeks the firesetting behavior was eliminated and at follow-up eight months later the behavior had not recurred.

Alternatively, Welsh (42) had two seven year old firesetting boys light matches one at a time, during therapy sessions ranging from 40 minutes to one hour and 40 minutes. The undesirable behavior disappeared at home for one child after three of these stimulus satiation sessions, and after seven in the second child. At six-month follow-up the behavior had not recurred in either boy.

In several unpublished pieces of research, Lowenstein (3) confronted firesetting individuals with the harm they were doing. A considerable degree of improvement

occurred in severely to moderately maladjusted children and adolescents after they were made psychologically and emotionally aware. A therapeutic milieu with constant observation and group (as well as individual) therapy reduced not only firesetting but also other maladaptive behaviors.

In sum, the treatment of firesetters varies since the causes are complex and are often related to unresolved and traumatic childhood experiences in the context of negligent or abusive parenting. Accordingly, firesetters often lack socialization and are strongly opposed to treatment. Currently, a therapeutic residential setting with constant supervision, therapy and reinforcement procedures seems to be the favored approach for treatment. The usual alternative, incarceration without treatment, is clearly less desirable (43).

CONCLUSION AND FUTURE RESEARCH

Common features emerge from the psychiatric literature on firesetting. Children are usually referred to psychiatric clinics for symptoms other than firesetting, the great majority being involved in fighting, disobedience and other conduct disordered behavior. Most of the children set fires at home and on their own; boys greatly outnumber girls and a high proportion of the children come from disrupted homes. One major limitation of the studies cited is a lack of specificity and consistency in diagnosis.

Further exploration of the etiology of firesetting is necessary. A comprehensive evaluation of the youth is needed to formulate a pertinent treatment plan. The evaluation could utilize a structured interview; rating scales to identify anxiety, depression, anger, and antisocial traits; and, a complete evaluation of the parent(s).

Parental attitudes toward child firesetting are important. Some of the literature seems to suggest that many parents are less anxious about the nondamaging firesetting by their children as compared to damaging firesetting or other disruptive behaviors such as fighting or truancy. Many times, fireplay was not listed as a presenting problem (14,19). Often, child firesetters are identified by fire department personnel rather than mental health professionals (44). Parental attitudes (approval, nonchalance, anxiety, etc.) may affect their children's attitudes toward fireplay and, therefore, behaviors related to firesetting.

Another etiological area that needs investigation is peer attitudes. Research suggests that, particularly for adolescents, peer acceptance is important (45). Future research in this area should include the assessment of risk taking, peer relations (especially acceptance needs, pressure, deviant versus nondeviant peer groups), impulsivity, and the like. A peer acceptance questionnaire (e.g., the FNE—Fear of Negative Evaluation Scale) or a self concept measure (e.g., Piers-Harris) would be beneficial as well as an assessment of adolescents' perceptions of their invulnerability.

The question of whether child firesetting leads to adult crimes, particularly arson, is another issue for future research. The literature indicates that many childhood firesetters engage in aggressive or nonaggressive crimes (20). In order to find out the prevalence of childhood firesetting in arsonists, retrospective studies

which involve clinical interviews with arsonists or longitudinal studies involving the tracking of childhood firesetters into their adolescent years or adulthood would be useful.

The "triad" (enuresis, firesetting, and cruelty to animals) has been investigated, however, some researchers (e.g., 24) are finding that this triad is not sufficient. It seems that other problems such as fighting, truancy, parental abuse and neglect, and interpersonal difficulties (particularly peer interactions) may play an equal or greater role in firesetting and future violence (5,40,43). Also, it seems that firesetters rarely engage in all three of the triadic behaviors, but rather, it has been noted that most firesetters have engaged in only two (28). It would be interesting to know which pair of combinations (enuresis/firesetting, firesetting, cruelty, cruelty/enuresis) are the most prevalent.

Further assessment of the efficacy of treatment interventions should be done. Treatment interventions include satiation (42), community-based programs (46,47) and the graphing technique described by Bumpass et al. (39). These treatments could be used to assess efficacy with inpatient and outpatient child and adolescent psychiatric populations. Special (e.g., mentally retarded or psychotic children) and minority populations should also be included, and a control group consisting of children from the general population should be used in creating the norms.

More investigations are also needed to identify preventive measures and those children likely to repeat the act and those factors predictive of recidivism. Considering the danger and cost of fires, the education of children in regards to this matter should come from all available resources, including the community, school, home, and mental health professionals.

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