

# **Analysis Issues Associated with Children Playing with Fire**

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## **Analysis Issues Associated with Children Playing with Fire**

Much of the research on children playing with fire is rooted in the psychology behind the behavior. Psychologists and public educators discuss the discrepancies between terms and typologies of child firesetters, which affects the findings in the research. These issues carry over to the research that addresses the actual behavior-where, when, and how these fires are set. Most of this information comes from fire incident reports that are completed by firefighters and there are several different approaches to how we analyze the issue of children playing with fire. This article seeks to identify some of the issues associated with the terminology and methodology associated with the problem of children playing with fire.

### **Fireplay vs. Firesetting**

Discussions about children playing with fire and juvenile firesetting are often made more complicated because of differences in terminology and definitions used. There is a distinction between the terms fireplay and firesetting which focuses on intent. Fireplay conveys a low level of intent to inflict harm and an absence of malice, while the term firesetting is used when the level of intent is decidedly higher.<sup>1</sup> The nuance between the two terms blends the line between behavior that is rooted in curiosity and behavior that is delinquent.

In the U.S. Fire Administration's National Fire Incident Reporting System (NFIRS), two codes in two different fields are used to capture data on fires that result from playing with heat source and intentional firesetting.

In 2003-2006, 4% of fires that municipal fire departments responded to involved an individual playing with heat source. That's an estimated annual average of 58,600 fires. These fires resulted in an estimated 180 civilian deaths, 980 civilian injuries, and \$287.5 million in direct property damage.

An intentional fire in NFIRS Version 5.0 includes deliberate misuse of heat source or a fire of an incendiary nature and is captured under cause of ignition. This is a separate code from playing with heat source. However, an incident can be coded as both intentional and involving playing with heat source.

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<sup>1</sup> Charles T. Putnam and John T. Kirkpatrick, *Juvenile Firesetting: A Research Overview*, The Office of Justice Programs, *Juvenile Justice Bulletin*, May 2005.

In 2003-2006, two of every ten fires (20% of fires) that municipal fire departments responded to were intentional. That's an estimated annual average of 316,610 intentional fires, which resulted in 440 civilian deaths, 1,400 civilian injuries, and \$1,707.5 million in direct property damage.

### **Comparing “playing with heat source” fires and “intentional” fires**

Dr. Robert Stadolnik discusses four motivational typologies in *Drawn to the Flame: Assessment and Treatment of Juvenile Firesetting Behavior*. The four motives include: curiosity, crisis, delinquent, and pathological.

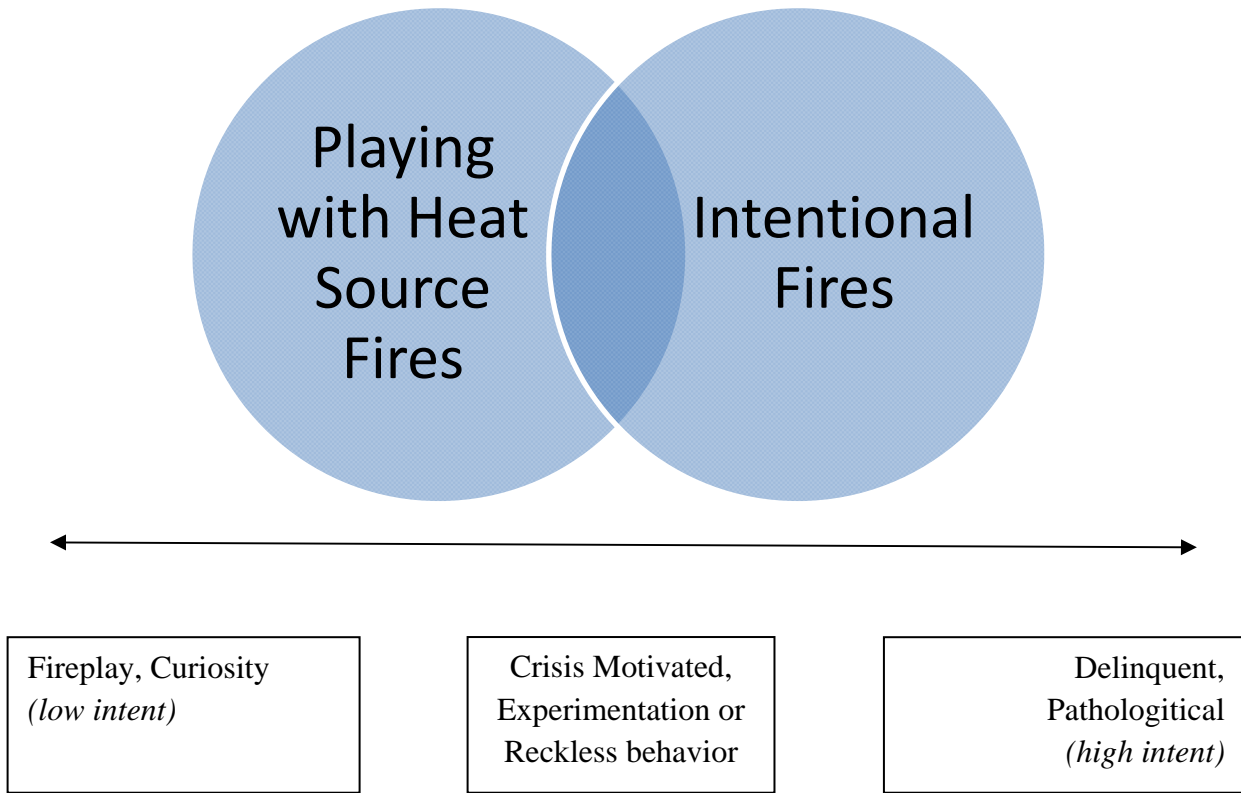
Curiosity motivated firesetting results from a desire to learn about or master fire through experimentation or play. Crisis motivated firesetting is the use of fire, either consciously or unconsciously, as a means of communicating distress, or as a cry for help. Delinquent motivated firesetting results from combinations of negative peer influence, poor decision-making abilities, wishes to impress or fit in, and tendencies to act in ways that violate social norms. The child setting delinquent motivated fires is using fire as a means of acting out against authority. Finally, pathologically motivated firesetting includes firesetters that are actively psychotic, acutely paranoid or delusional, or that have lived in chronically disturbing or bizarre environments. This is the rarest of the motivations, and evokes images of deviant arsonists or pyromaniacs.<sup>2</sup>

There are obvious issues in analyzing the problem of children “playing” with fire. When does fireplay turn into experimentation or reckless behavior—where the individual knows that a fire can turn uncontrolled and cause serious damage but does not intend that outcome? When does this behavior turn into delinquent behavior—where the individual knows there is a danger and intends for that outcome?

It is possible, though not specifically stated in the definition, that the NFIRS code “playing with heat source” is intended to capture fires that start as a result of curiosity and that have low levels of intent to inflict malice or harm. There isn't a clear definition in NFIRS about the levels of intent, but perhaps there is an unstated spectrum that explains the relationship of the code to intent?

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<sup>2</sup> Robert F. Stadolnik, *Drawn to the Flame: Assessment and Treatment of Juvenile Firesetting Behavior*, Practitioner's Resource Series 2000.



Unfortunately, this model is only speculative. In fact, the leading suspected motivation behind intentional fires was fireplay or curiosity, which confirms the shades of gray between definitions and coding practices.

There is no best way of isolating the overlap—the fires that are reported as both involving playing with heat source and intentional. Analysts can isolate the overlap from two different perspectives, by isolating playing with heat source fires that were also intentional or by isolating intentional fires that were also playing. Estimates differ depending on the methods used, due to scaling ratios and the allocation of unknowns.

### **Estimating the problem of children starting fires that turn uncontrolled**

NFPA uses all fires coded as “playing with heat source” to identify the number of fires that result from children playing with fire in the report *Children Playing with Fire*. However, there are other options in handling how to analyze the issue of children playing with fire.

The following list identifies several possibilities for analyzing the issue of children starting fires. This list is not exhaustive.

1. Playing with heat source, regardless of age of firesetter

2. Playing with heat source, firesetter under 18
3. Intentional fires, firesetter under 18
4. Age was a factor in the ignition of the fire, person involved under 18

Estimates between methodologies differ due to scaling ratios and allocations of unknowns. The following table shows the differences in estimates by methodology used. There is no best way to analyze the issue of children playing with fire, using the NFIRS database. NFPA uses the first method, playing with heat source-regardless of age of firesetter, when reporting on children playing with fire.

It is also important to note that the age of a person considered to be a “child” can differ according to law or according to different groups. Some define child as a human between the ages of birth and puberty. For the purposes of this analysis, anyone under the age of 18 is termed a “child.” The NFIRS database allows analysts to define the age range for analysis.

### **Estimates of Fires and Losses Related to Children Playing with Fire, Using Different Methodologies, 2003-2006 Annual Averages**

<b>Methods for Isolating Children Playing with Fire</b>	<b>Fires</b>	<b>Civilian Deaths</b>	<b>Civilian Injuries</b>	<b>Direct Property Damage (in Millions)</b>
1. Playing with heat source, regardless of age	58,600	180	980	\$287.5
2. Playing with heat source, firesetter under 18	9,500	60	390	\$101.3
3. Intentional fires, firesetter under 18	7,500	10	200	\$50.5
4. Age was a factor in the ignition of the fire, person involved under 18	15,200	80	610	\$134.7

#### **Method 1:** Playing with heat source, regardless of age of firesetter

This is the method used by NFPA in the report, *Children Playing with Fire*. The current code for playing with heat source in NFIRS Version 5.0 is code 19 captured under Factor Contributing to Ignition. The definition and the code do not include the term child; age does not have to be a factor for reporting these fires. This was not the case prior to Version 5.0, which was instituted in 1999. In earlier versions of NFIRS, a child or children playing with a heat source was captured by ignition factor code 36 while a child or children playing with the material ignited was captured by ignition factor code 48. Ignition factors in 10-29 range identified fires that were incendiary or suspicious. Only one of these codes could be used per fire. It is suspected that even though the words “child” and “children” have been removed from the code for playing with

heat source, firefighters are more likely to use this code for fires in which children are playing and are using the code for intentional fires to report fires in which adults are “playing” with or misusing fire.

For this method, fires in which factor contributing to ignition are unknown or not reported are allocated proportionally across known factors.

With this method, it is estimated that in 2003-2006, municipal fire departments responded to an estimated average of 58,600 fires, annually, that involved children playing with fire. These fires resulted in an estimated 180 civilian deaths, 980 civilian injuries, and \$287.5 million in direct property damage.

One of the benefits of continuing to use this method for analyzing the issue of children playing with fire is that the trends in these fires, with the new code phrasing, seem consistent with the trend of children playing with fire prior to NFIRS 5.0.

By isolating fires that involve playing in which age was a contributing factor and that age of the firesetter was under 18, we see great inconsistency in the trend line. This suggests that using this method would result in a significant under reporting of childplay fires.

## **Method 2: Playing with heat source, firesetter under 18**

Method 2 narrows down the focus of fires involving playing with heat source to only include those fires in which age was reported as a factor and the individual that set the fire was under the age of 18.

This method requires more steps than Method 1-finding the number of playing with heat source fires in which age was a factor contributing to ignition of the playing with heat source fire, and then finding the number of these fires that were started by a person under the age of 18.

Unknowns are allocated at each step of the process.

Code 7 captured under human factor contributing to ignition is reported when age is a contributing factor in the ignition of the fire. Multiple factors can be selected in the human factor variable if such factors are reported at all. This variable is not a required component of NFIRS Version 5.0. Therefore, a fire in which age contributed to the ignition of the fire, but was not reported, is not captured in the estimates of children playing with fire, using this methodology.

With this method, it is estimated that in 2003-2006, municipal fire departments responded to an estimated average of 9,500 fires, annually, that involved children playing with fire. These fires

resulted in an estimated 60 civilian deaths, 390 civilian injuries, and \$101.3 million in direct property damage.

One benefit from using this methodology is that these estimates are specifically related to fires that involve people under 18 playing with heat source. These estimates can be used for further breakdowns to identify where these fires are occurring, what equipment or heat source is being used, and what fire protection systems are in place, without worrying that data about adults playing with heat source are included.

However, by isolating fires that involve playing in which age was a contributing factor and that age of the firesetter was under 18, we see great inconsistency in the trend line for children playing with fire prior to Version 5.0. This suggests that using method 2 would result in a significant under reporting of childplay fires, which results from considerable under-use or under-coding of “age as a contributing factor” in fires where, in fact, age was a contributing factor.

### **Method 3: Intentional fire, firesetter under 18**

The third method looks at children intentionally misusing fire. Intentional fires are captured in code 1 under cause of ignition. An intentional fire in NFIRS Version 5.0 includes deliberate misuse of heat source or a fire of an incendiary nature. Again, intentional fires in which age was a contributing factor and that age was under 18 must be isolated. Unknowns are allocated proportionally across knowns, for each step of the analysis. The same coding rules apply as they did for method 2-it is not required that human factor contributing to ignition be completed, and multiple human factors can be selected. The estimated age of the firesetter is also not required.

This approach only includes fires that were reported as intentional and therefore excludes playing fires that were not reported as intentional. According to the FBI’s Uniform Crime Reports, Juveniles have accounted for roughly half of all U.S. arson arrestees. This has been true since 1992.

With this method, it is estimated that in 2003-2006, municipal fire departments responded to an estimated average of 7,500 fires, annually, that involved children intentionally setting fire. These fires resulted in an estimated 10 civilian deaths, 200 civilian injuries, and \$50.5 million in direct property damage.

The benefits of using this approach are similar to those of using Method 3. Specific breakdowns of intentional fires started by individuals under the age of 18 can paint a clearer picture of the issue of children misusing fire. Again, there is a concern with misrepresenting the issue of children misusing fire by using this approach since age as a factor and the estimated age of the

firesetter or not required to be reported, meaning it is possible that method 3 would result in a significant under reporting of children misusing fire.

**Method 4:** Age was a factor in the ignition of the fire, person involved under 18

Method 4 isolates all fires in which age was reported as a contributing factor to the ignition of the fire and that person involved was under the age of 18, regardless of cause. The same issue with coding requirements applies to this method. It is not required that human factor, or that the estimated age of the person involved is reported. Unknown human factors and unknown ages are allocated proportionally across known human factors and ages. This approach includes all fires in which age was reported as a factor. However, if age was a factor in the ignition of the fire, but was not reported then this approach neglects that information.

With this method, it is estimated that in 2003-2006, municipal fire departments responded to an estimated average of 15,200 fires, annually, that involved children playing with fire. These fires resulted in an estimated 80 civilian deaths, 610 civilian injuries, and \$134.7 million in direct property damage.

Method 4 relies solely on those incidents in which firefighters reported that age was a factor and that the person involved was younger than 18. A benefit of this approach is that the estimates are specifically for fires started by a person under the age of 18, regardless of if the fire was intentional or playing. The drawback to this method is that any fire in which age was a contributing factor and age was younger than 18 but was not reported are not included in these statistics, resulting in underestimation of the actual fire problem. This approach could also capture incidents in which a child's cooking started the fire, in this case there was no intentional misuse or playing with fire.

**In Summary**

All of the approaches to analyzing the fire statistics on children misusing fire that have been discussed have limitations. There are pro's and con's and tradeoffs associated with each. For starters, there are issues with the definition of "child." Disagreements on what age makes a person a child can lead to disagreements in estimates of the problem. There are also issues with the categorization of intent associated with the NFIRS codes-intentional or playing. Fires may be coded as playing because they do not seem intentional, possibly because the child is too young to be legally capable of forming intent. Or a fire may be coded as intentional because the behavior is a cry for help and does not have the innocence suggested by the term playing. It is also possible that in either of these situations "age is a factor" was simply not coded, which seems to be the case in many reported incidents.

Perhaps this article can start the discussion about how NFIRS can best be utilized to identify the issue of children misusing fire. Future versions of NFIRS might be strengthened by an agreement on terms, like those laid out in the spectrum of typologies in this article. Rules for coding fires in each category, with guidance for how to decide where any fire goes in those categories, would create consistency in reporting.

As the NFIRS system stands now, there is no best way of isolating the fires that are reported as both involving playing with heat source and intentional. The approaches for calculating this number results in differing estimates, due to scaling ratios and the allocation of unknowns. Even if we reached an agreement on terms and rules for coding, there would still be issues with reporting valid and reliable estimates of fires that involved both playing and were intentional.

Further discussion and agreement is certainly needed so that we can ultimately strengthen the body of knowledge on the topic of children starting fires and perhaps build a bridge over the gap in research based in the psychology of the firesetter and the physical behavior of the firesetter.