

Recidivism and Concomitant Criminality in Pathological Firesetters

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ABSTRACT: The purpose of this study was to explore dangerousness and fire setting recidivism of mentally disordered firesetters in comparison with mentally healthy arsonists. In Germany, all trials are registered centrally by the Federal Central Register. The records of this Register for the three year period from 1983 until 1985 were used in this follow-up study of arsonists to identify three samples of subjects: (1) All persons convicted of arson who have been found not guilty by reasons of insanity ($n = 186$), (2) all person convicted of arson who have been found guilty of diminished responsibility ($n = 97$), and (3) a random selection from all persons convicted of arson who have had no psychiatric examination in their trial ($n = 187$). The follow-up ended in 1994, providing a period of, on average, ten years. Mentally disordered arsonists differed from non-mentally disordered arsonists in the following ways: They were more likely, first, to have a history of arson before 1983, and secondly, to be convicted of arson again (11% relapse compared to 4%). Mentally disordered arsonists had fewer registrations of common offenses, such as theft as well as traffic violations and alcohol-related offenses. Based on the present sample, mentally disordered firesetters have a higher rate of recurrence of firesetting than non-mentally disordered firesetters and commit fewer common offenses other than firesetting.

KEYWORDS: forensic science, arson, firesetting, pyromania, forensic psychiatry

The continuous global increase in fire setting criminal behavior justifies to put arson committed by psychiatric patients under increasing criminological and psychiatric scrutiny (1,2). The task of forming an expert prognosis on fire setting behavior is difficult, given the lack of sound empirical data regarding fire setting recidivism, the severity and danger of the act, and its current classificatory status. Both diagnostic manuals currently in use, the ICD-10 (3) and DSM-IV (4) contain the category of pyromania, but there is no information on the course of the disorder with regard to recidivism and concomitant delinquency.

The scarce empirical data base on recidivism in fire setting indicates that there may be a higher risk that mentally ill delinquents will relapse. Hobe and Stoerzer (5) conducted a seven year follow-up of all subjects between the age of 14 and 27 years who had appeared in front of a court in the German state of Baden-Wuerttemberg and who were convicted of deliberate fire setting or sentenced to a psychiatric hospital between 1960 and 1962. Of the

59 perpetrators only one, who suffered from mental retardation, had relapsed during this period.

A 20 year follow-up study of all 82 convicts of fire setting in England and Wales in 1952 found that only three had relapsed, one of whom was diagnosed as having "schizophrenia", the other "pyromania" (6). A five year follow-up study of 130 convicted firesetters found a higher relapse rate (20%) for those who had been in prison for 18 months to 5 years in comparison with those who had been imprisoned for less than 18 months (2%). In the former group, the diagnosis of "psychopathy" was far more common (7). From samples of firesetters who had undergone a psychiatric expertise report, 17% (8), 14% (9), and 20% (10,11), respectively, had previously set fires. In samples of forensic-psychiatric hospitalized firesetters, 10 out of 26 (12) and 23 out of 50 (13) relapsed.

To quantify the risk of relapse is of particular interest to the forensic-psychiatric examiner of such delinquents. We report a follow-up study of initial offending and recidivism in mentally disordered and mentally healthy firesetters, based upon Federal Central Register delinquency records.

According to the concept of pyromania with its essential feature of deliberate and purposeful fire setting without obvious criminal motivation, we expect mentally disordered arsonists to commit more fire setting offenses and fewer other crimes in comparison to mentally healthy arsonists.

Method

According to German law, a defendant should be found not responsible if he had either lost the power to distinguish between right and wrong, or had lost the capacity to avoid doing the act. Diminished responsibility means that his power to distinguish between right and wrong or his capacity to avoid doing the act was gravely reduced. The concept of diminished responsibility represents an attempt to integrate the continuous variability of mental disorder and the discontinuous categories of criminal law.

In Germany, all trials are registered centrally by the Federal Central Register. In this register, all crimes that are put to trial in Germany are recorded. For every offense, it is recorded who committed the offense and whether the offender was fully or partly or not responsible for psychiatric reasons. Moreover, it is recorded whether or not any sanctions, and if so, what sanctions, have been imposed, or if the prosecution was withdrawn because of irresponsibility for psychiatric reasons. Because these files contain personal data on crimes and sanctions, they are used by the legal system only. In a complex legal procedure, disclosure of these data was obtained for research purposes. In August 1994, the Federal Central Register office of the Attorney General in the Federal Court of Berlin allowed us access to the following material.

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All Federal Central Register reports of individuals convicted of arson between the years 1983 and 1985, who were found not responsible because of psychiatric reasons (186 subjects). All Federal Central Register reports of individuals convicted of arson during the same period, in whom a diminished responsibility for the act because of psychiatric reasons was found to apply (97 subjects). A random sample (every third person) from all Federal Central Register reports of individuals convicted between 1983 and 1985 of arson, who were found fully responsible for the act (187 subjects). These Federal Central Register records contain all crimes committed by the individuals of our samples up to the end of the observation period in August 1994 as classified by the legal system.

Following the concept of pyromania, our main hypothesis assumes that mentally disordered firesetters differ from non-mentally disordered arsonists with respect to the average rate of firesetting and concomitant criminality. In particular, we expect a higher rate of fire setting incidents and a lower rate of other crimes committed by mentally disordered firesetters compared to mentally healthy arsonists. In case of two independent groups the hypothesis was tested by WILCOXON's U-tests, in case of three independent groups by H-tests (KRUSKAL-WALLIS) because we don't expect normally distributed data.

Results

Sample

Subjects who were convicted at the time of the index fire setting act and who were considered not responsible comprise one group of mentally disordered firesetters, henceforth referred to as *narrowly defined* mentally disordered firesetters ($n = 186$). A second more *widely defined* group of psychiatric firesetters was formed, given the assumption that at the time of the index offense an unknown number of perpetrators suffered from a yet unrecognized psychiatric condition. This group of widely defined mentally disordered firesetters ($n = 228$) consists of all narrowly defined and of all subjects who were regarded as partly responsible at the time of conviction and who were later detained in a psychiatric forensic hospital (28 out of 97). It further contains those subjects who were found guilty and fully responsible at the index time and who were later detained in a forensic psychiatric unit (14 out of 187).

The age and sex distribution of narrowly ($n = 186$) and widely defined mentally disordered firesetters ($n = 228$) are reported in Tables 1 and 2.

Mentally healthy delinquents were found significantly younger, possibly because the psychiatric group contains subjects suffering from dementia. The oldest perpetrator in the healthy group was

64 years old whereas in the mentally disordered group, the oldest was 80 years old.

Among the mentally disordered offenders, there were more females (20% in the narrowly defined group; 17% in the widely defined group) compared to the group of mentally healthy offenders (7% and 8%, respectively).

Federal Central Register Offenses

In the entire study sample of 470 records from the Federal Central Register, all offenses were divided into 30 types regarding the nature of the offense according to German law. For each type of offense, H-test (KRUSKA-WALLIS) was computed with a group factor and with the number of offenses per subject as dependent variable. Table 3 shows types of offense with significantly different frequencies in the three groups.

Narrowly defined mentally disordered (non-responsible at the time of the index fire setting) delinquents had significantly less entries in the Federal Central Register than non-mentally disordered delinquents. In contrast, partly responsible offenders had the most entries in the Federal Central Register ($p < .05$, H-test).

With respect to most types of crimes, mentally disordered offenders showed fewer Federal Central Register entries. Accordingly, total criminality in this group was lowest (operationalized as the total number of Federal Central Register entries), and the mentally disordered (non-responsible at the time of the index fire setting) offenders have less Federal Central Register entries in most individual offense types than the partly and fully responsible offenders.

If offenders are grouped according to the *wide definition* of mental disorder, the differences between mentally disordered and non-mentally disordered offenders largely disappear, e.g., there is no difference in the mean total number of Federal Central Register entries between the mentally disordered (3.73 offenses) and the mentally healthy (4.25 offenses) (U-test not significant). This result follows from grouping algorithm: Subjects with diminished responsibility at the time of the index arson episode form approximately one third of the widely defined mentally disordered offenders. However, with regard to different types of crimes committed, widely defined mentally disordered arsonists demonstrate significantly less of the most common offenses found among the general population, i.e., traffic violations and alcohol-related offenses as well as theft. Similarly, less criminality was found with regard to aiding and abetting and robbery (see Table 4). Differences between the two groups were found in only 6 out of 30 different subtypes of criminal behavior.

Previous Fire Setting—Based upon the narrow definition of

TABLE 1—Sex and age at the time of index firesetting for narrow definition mentally disordered firesetters, subjects partly-responsible and those held completely responsible.

Group	Sex			Age		
	Male	Female	%Female	\bar{x}	SD	Range
Non-responsible ($n = 186$)	149	37	20	34.9	13.8	14–80
Partly responsible ($n = 97$)	87	10	10	31.2	8.9	17–57
Completely responsible ($n = 187$)	174	13	7	29.6	10.3	16–64
Total $n = 470$	$\chi^2 = 14.7$	$df = 2$	$p = 0.001$	$F = 10.1$	$df = 2467$	$p = 0.0001$

TABLE 2—Sex and age at the time of index firesetting for wide definition mentally disordered firesetters and mentally healthy delinquents.

Group	Sex			Age		
	Male	Female	%Female	\bar{x}	SD	Range
Mentally disordered (n = 228)	189	39	17	34.0	13.2	14–80
Mentally healthy (n = 173)	160	13	8	29.5	10.2	16–64
Total n = 401	$\chi^2 = 8.0$	df = 1	p = 0.005	F = 1.67	df = 227,172	p = 0.0004

mental disorder, 16 (9%) of the subjects who were judged irresponsible at the index fire setting episode were found to have previously set a fire. In the group of partly responsible firesetters, 13 (13%) had previously set fire, in contrast to only 8 (4%) of the fully responsible group (p = .023; chi-square test).

When subjects were grouped according to the wide definition of mental disorder, 11% of the psychiatric group and 3% of the mentally healthy group had previously set fire (p = .005; chi-square test). Hence, regardless of the definition of mental disorder,

firesetters with a psychiatric illness/condition were found to have significantly more often set fire in the past.

Re-Offending—During the period of 9 to 11 years (average: 10 years) after the index fire setting episode between 1983 and 1985, re-offenses were calculated in August 1994 according to the Federal Central Register reports. They occurred in 16 (9%) of the non-responsible subjects (narrow definition of mental disorder), 10 (10%) of the partly responsible subjects, and 7 (4%) of the fully

TABLE 3—Number of non-firesetting offenses (Mean and Distribution Parameters) during the period between the time of the index fire setting and end of catamnesis (on average 10 years after the index-fire setting episode) by narrow definition mentally disordered (i.e., non-responsible at the time of the index fire setting episode), partly and fully responsible subjects for total criminality (i.e., number of all offenses except of arson) and different types of offenses.

Type of Delinquency	Non-responsible (n = 186)		Partly responsible (n = 97)		Fully responsible (n = 187)	
	Mean	Moments of Distribution	Mean	Moments of Distribution	Mean	Moments of Distribution
Total	3.15 (A)	z(2) = 11.69 z(3) = 2.08 z(4) = 3.98	5.47 (B)	z(2) = 24.04 z(3) = 1.85 z(4) = 4.06	4.40 (B)	z(2) = 14.35 z(3) = 2.57 z(4) = 10.31
Drunkenness etc.	0.21 (A)	z(2) = 0.36 z(3) = 3.45 z(4) = 13.51	0.78 (B)	z(2) = 1.92 z(3) = 2.05 z(4) = 3.88	0.60 (B)	z(2) = 0.88 z(3) = 2.08 z(4) = 4.98
Traffic violations	0.23 (A)	z(2) = 0.50 z(3) = 4.19 z(4) = 20.18	0.77 (B)	z(2) = 1.28 z(3) = 1.69 z(4) = 2.65	0.77 (B)	z(2) = 1.93 z(3) = 2.58 z(4) = 7.68
Sexual offenses	0.06 (A)	z(2) = 0.11 z(3) = 6.49 z(4) = 46.01	0.15 (B)	z(2) = 0.22 z(3) = 3.73 z(4) = 16.57	0.06 (B)	z(2) = 0.09 z(3) = 4.61 z(4) = 22.55
Harassment etc.	0.09 (A)	z(2) = 0.12 z(3) = 3.85 z(4) = 15.22	0.22 (B)	z(2) = 0.32 z(3) = 3.81 z(4) = 20.12	0.09 (A)	z(2) = 0.10 z(3) = 3.28 z(4) = 10.67
Firearms	0.01 (A)	z(2) = 0.01 z(3) = 13.64 z(4) = 18.60	0.06 (B)	z(2) = 0.08 z(3) = 5.01 z(4) = 27.12	0.06 (B)	z(2) = 0.09 z(3) = 5.13 z(4) = 27.19
Vandalism	0.30 (A)	z(2) = 0.59 z(3) = 3.69 z(4) = 18.45	0.49 (B)	z(2) = 0.69 z(3) = 1.96 z(4) = 4.01	0.36 (B)	z(2) = 0.52 z(3) = 2.83 z(4) = 11.01
Robbery etc.	0.04 (A)	z(2) = 0.04 z(3) = 4.54 z(4) = 18.83	0.17 (B)	z(2) = 0.21 z(3) = 2.67 z(4) = 6.70	0.15 (B)	z(2) = 0.16 z(3) = 2.63 z(4) = 6.57
Theft etc.	0.56 (A)	z(2) = 2.24 z(3) = 4.78 z(4) = 30.28	1.40 (B)	z(2) = 4.14 z(3) = 2.21 z(4) = 6.19	1.28 (B)	z(2) = 3.12 z(3) = 1.69 z(4) = 2.64
Hoax emergency	0.01 (A)	z(2) = 0.01 z(3) = 9.56 z(4) = 90.46	0.07 (B)	z(2) = 0.07 z(3) = 3.36 z(4) = 9.48	0.03 (B)	z(2) = 0.04 z(3) = 7.10 z(4) = 55.28
Other	0.02 (A)	z(2) = 0.04 z(3) = 7.98 z(4) = 69.31	0.32 (B)	z(2) = 0.56 z(3) = 3.52 z(4) = 9.48	0.12 (C)	z(2) = 0.13 z(3) = 2.88 z(4) = 8.13
Undefined Psychiatric Irresponsibility	0.21 (A)	z(2) = 0.58 z(3) = 5.03 z(4) = 29.35	0.02 (B)	z(2) = 0.02 z(3) = 6.85 z(4) = 45.92	0.06 (B)	z(2) = 0.30 z(3) = 11.53 z(4) = 14.37

NOTE—If one compares the means line by line, then those significant differences (p < .05) (according to H-tests/U-tests) are marked with different letters (A,B,C). No differences were found in types of concomitant criminality which do not appear in the table.

z(2) = Variance; z(3) = Skewness; z(4) = Kurtosis.

TABLE 4—Number of non-firesetting offenses during the period between the index fire setting episode and end of catamnesis (on average 10 years after the index fire setting episode) by mentally disordered (wide definition) and healthy fire setters in different types of offenses.

Type of Delinquency	Mentally Disordered (n = 283)		Mentally Healthy (n = 187)	
	Mean	Moments of Distribution	Mean	Moments of Distribution
Aiding etc.	0.02 (A)	z(2) = 0.02 z(3) = 6.15 z(4) = 36.11	0.08 (B)	z(2) = 0.11 z(3) = 4.21 z(4) = 18.30
Drunkenness etc.	0.35 (A)	z(2) = 0.97 z(3) = 3.10 z(4) = 10.73	0.52 (B)	z(2) = 0.88 z(3) = 2.08 z(4) = 4.98
Traffic violations	0.38 (A)	z(2) = 0.83 z(3) = 2.76 z(4) = 8.15	0.69 (B)	z(2) = 1.93 z(3) = 2.58 z(4) = 7.68
Robbery etc.	0.05 (A)	z(2) = 0.10 z(3) = 3.85 z(4) = 15.46	0.15 (B)	z(2) = 0.16 z(3) = 2.63 z(4) = 6.57
Theft etc.	0.74 (A)	z(2) = 3.03 z(3) = 3.37 z(4) = 14.94	1.19 (B)	z(2) = 3.12 z(3) = 1.69 z(4) = 2.57
Undefined Psychiatric Irresponsibility	0.21 (A)	z(2) = 0.40 z(3) = 6.14 z(4) = 44.66	0.01 (B)	z(2) = 0.30 z(3) = 11.53 z(4) = 14.37

NOTE—If one compares the means line by line, then those significant differences ($p < .05$) (according to U-tests) are marked with different letters (A,B). No differences were found in types of concomitant criminality which do not appear in the table.

z(2) = Variance; z(3) = Skewness; z(4) = Kurtosis.

responsible subjects. These rates were not significantly different ($p = .066$; chi-square test), but there was a trend towards more frequent re-offending of subjects with no or with diminished responsibility. If the *wide definition* of mental disorder is applied, 26 out of 202 (11% of the mentally disordered group) and 3 out of 170 (2% of the healthy group) reoffended ($p < .0001$; chi-square test).

Psychoactive Substance Abuse—In Germany, the courts can order therapy for criminal substance abusers in forensic psychiatric abuse units. The psychiatric literature finds that substance dependence is associated with higher rates of violence. This might also be true for arson. We therefore tabulated the number of offenders sent to a forensic psychiatric abuse unit in connection with the index fire setting episode. Eight out 186 in the non-responsible group, 2 out of 97 in the partly responsible group, and 3 out of 187 in the fully responsible group had to undergo substance abuse treatments ordered by the courts. These findings do not support a clear interrelation between alcohol or drug abuse and arson and are limited to abuse as a chronic condition. The influence of acute usage cannot be assessed on the basis of our data.

Discussion

In this retrospective study of arson by mentally disordered and non-mentally disordered criminals, a higher frequency of fire setting behavior before and after the index fire setting episode was found in mentally disordered compared to mentally healthy offenders. However, mentally disordered arsonists committed fewer common offenses, such as theft as well as traffic violations and alcohol-related crimes.

In order to further clarify the nature and severity of the mental disorder by means of the forensic information on which the study was based, two definitions of mental disorder were used to group the subjects. Narrowly defined mentally disordered arsonists (in legal terms: not responsible arsonists) were obviously those who

suffered from a severe mental disorder at the time of the index episode. In the widely defined group of mentally disordered arsonists, there may have been additional subjects with severe personality disorders who were judged to be partly responsible at the index fire setting episode and not responsible later on, to justify their further continuous hospitalization in a special forensic unit.

Whether mentally disordered subjects might have a predisposition for crimes is discussed controversially (14,15). The data of the narrow definition group from our sample suggest a trend towards lower crime rates among the mentally disordered. The same conclusion can be drawn on the basis of widely defined mentally disordered. The number of Federal Central Register entries does not differ between widely defined mentally disordered and healthy arsonists. However, most crimes were committed by partly responsible arsonists, followed by non-mentally disordered arsonists. The non-responsible arsonists of our sample committed the fewest number of offenses. In our sample, subjects who were judged partly responsible obviously are the most problematic group of arsonists with respect to any criminal behavior.

It is surprising that the partly responsible subjects did not receive longer total sentences than the fully responsible group. If one takes the type of offense into account, it can be seen that the partly responsible group had the highest number of different offense categories (4.7 as opposed to 4.1 in the fully responsible group and 2.8 in the not responsible group). Therefore, they have the strongest tendency towards any kind of crime. We may therefore assume, that most of the persons with antisocial personality disorder can be found in this group; those for whom high relapse rates (16) and many different kinds of crimes (17) are typical.

If we consider only the fire setting offenses, both the narrowly and widely defined mentally disordered arsonists have more Federal Central Register reports of arson than the other group in the study. From Table 3 it can be seen that the narrow definition group had a statistically significantly higher number of Federal Central Register entries in which "prosecution was withdrawn because of

irresponsibility for psychiatric reasons". The types of the offenses remain unknown. It can be assumed that among these unknown offenses, a number of fire setting cases are hidden. This suggests a higher rate of relapse for the narrow definition psychiatric group than can be found in the data.

What are the reasons for the higher arson offense rate of the mentally disordered group in comparison with the healthy group in the Federal Central Register? In any attempt to identify an offender, it is important to take into account the quota of cases solved (the number of fire setting cases for which an offender was prosecuted) as well as the number of cases unsolved (the number of fire cases for which no offender was found). The quota of solved cases can be assumed to be higher for mentally disordered arsonists, as their psychiatric condition may be a handicap that makes it more difficult for them to plan the offense ahead and to avoid detection. If we accept such a higher rate of detection of mentally disordered arsonists, it is unclear why, according to the Federal Central Register, other offenses with similar numbers of unsolved cases (e.g., theft, traffic violations, and alcohol-related offenses) are less frequently attributed to mentally disordered offenders than healthy offenders.

One possible answer to this question takes into account the legal sanctions imposed on offenders at the time of the index fire setting: Of the 186 non-responsible offenders, 47 were sent to a forensic psychiatric unit, 58 were put on probation, and in the further 81 cases the prosecution was terminated without the imposition of any sanctions. From the 97 partly responsible delinquents, 63 received sentences of more than 2 years, and 32 were put on probation, 110 of the 187 fully responsible offenders received more than 2 years, whereas 3 were detained in a forensic substance abuse unit, 70 received suspended sentences, 2 received probation, and 2 were fined. Obviously, mentally disordered arsonists are given fewer incarceration sentences than non-mentally disordered arsonists. They are therefore free to carry out further fire setting offenses. At the same time, though they are free to carry out other crimes as well, they do not do so. Despite the restrictive methodological problems of a Federal Central Register follow-up study, these data do suggest that mentally disordered firesetters relapse at a much higher rate into arson whereas they commit fewer non-fire setting offenses compared to mentally healthy firesetters. Thus we conclude that mentally disordered arsonists in general do not engage in particularly intense criminal careers though they are prone to set fires. These circumstances may have caused the empirical background of developing the concept of pyromania in the 19th century by European psychiatrists. This diagnostic category has been incorporated in ICD and DSM and there is renewed interest in it since DMS III has been published.

A recent review (18) found that multiple fire setting offenses were an indication of psychiatric abnormality of the offender. For forensic psychiatric practice, it is therefore of interest whether

reoffending is related to psychiatric conditions or even diagnostic sub-groups. Our data do not clarify what personal characteristics might distinguish degrees of dangerousness among individual mentally disordered arsonists. However, we suggest that patients with treatable mental disorders, e.g., psychoses, are in less danger of reoffending than those who are difficult to treat, e.g., patients with personality disorders or (practically untreatable) mental retardation.

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