

Characteristics and circumstances of homicidal acts committed by offenders with schizophrenia

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ABSTRACT

Background. While men with schizophrenia are at higher risk of displaying homicidal behaviours compared with the general population, very little is known about the circumstances related to the triggering of such violent acts among offenders with schizophrenia. The main goal of the present investigation was to describe the surrounding context, psychotic symptoms, target characteristics and other circumstantial factors associated with homicidal acts committed by men with schizophrenia, with or without an additional antisocial personality disorder (APD).

Method. Comprehensive clinical and research interviews, as well as multiple sources of information including reports from social workers and police officers, criminal records, witness statements and questionnaires completed by friends, acquaintances and family members were used to determine specific characteristics surrounding the homicidal acts.

Results. Overall, a significant majority of homicides were considered as the consequence of psychotic symptoms; they mostly involved someone who knew the offender; and they usually occurred in a private residence. However, the subgroup of offenders with both schizophrenia and APD were less likely to be judged as responding to psychotic symptoms; they assaulted a non-relative more frequently, and they were more likely to have used alcohol and to be involved in an altercation with the victim prior to the incident than offenders without APD.

Conclusion. Even for such extreme acts as homicides, the circumstances affecting the occurrence of violence among offenders with schizophrenia may differ when an additional APD diagnosis is present, which would have important implications for prevention and treatment programmes.

INTRODUCTION

Although most violence in the community is not attributable to schizophrenia and the vast majority of individuals with schizophrenia do not pose a risk of violence (e.g. Taylor & Gunn, 1999; Walsh *et al.* 2001), the odd ratios for homicide are remarkably elevated among subgroups of patients with schizophrenia (Eronen *et al.* 1996; Wallace *et al.* 1998; Mullen *et al.* 2000; Erb *et al.* 2001). The nature of the triggering elements and circumstances that lead a

person with schizophrenia to commit such extreme violent acts remain controversial however (e.g. Link & Stueve, 1998), as they are difficult to establish and may depend on specific subgroups (Hodgins, 2000). In approximately 45% of cases (Taylor, 1985; Humphreys *et al.* 1992; Junginger *et al.* 1998), the psychotic symptoms *per se* are judged to have directly elicited violent drives (Martell & Dietz, 1992; Junginger, 1996; Taylor *et al.* 1998). Thus, some violent offenders with a major mental disorder (MMD) may not have been symptomatically driven (Swanson *et al.* 1999), or even openly psychotic at the time of index crime. In fact, it seems that a significant proportion of those violent offenders also meet the criteria of an

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underlying personality disorder (Taylor *et al.* 1998; Brennan *et al.* 2000), especially of the antisocial or dissocial type (Tengström *et al.* 2001; Moran *et al.* 2003), which itself is associated with criminality. Although men with schizophrenia are more likely than healthy men to meet the criteria of an antisocial personality disorder (APD) (e.g. Robins *et al.* 1991), very few data are available concerning the circumstances associated with the homicidal acts and the clinical characteristics of offenders with both schizophrenia and an APD. It is plausible in these cases that some aspects of the disordered personality would be more closely associated with violent behaviours than psychosis-related factors. Among the characteristics that may discriminate subgroups of homicide offenders with schizophrenia are the type of relationship they had with the victim, the location and circumstances leading to assault, as well as the presence, the nature and the influence of psychotic symptoms at the time of index crime.

The victims

Violent acts committed by offenders with a major mental disorder usually occur in a residence instead of a public place (Steadman *et al.* 1998) and, accordingly, between 50% and 60% of the victims are family members (Virkkunen, 1974; Planansky & Johnston, 1977; Tardiff, 1984; Binder & McNeil, 1986; Lindqvist, 1986; Gondolf *et al.* 1990; Humphreys *et al.* 1992; Straznickas *et al.* 1993; Estroff *et al.* 1998; Erb *et al.* 2001). Victims who are totally unknown to psychotic assaulters generally accounted for only 12% to 16% of the cases (Virkkunen, 1974; Straznickas *et al.* 1993; Estroff *et al.* 1998; Steadman *et al.* 1998; Taylor & Gunn, 1999; Erb *et al.* 2001). However, the risks for assault of a non-relative increase when the mentally ill offender is male, abuses substance and lives outside his family household (Binder & McNeil, 1986; Gondolf *et al.* 1990; Swanson *et al.* 1999). Because these characteristics are likely to be found among patients with a dual diagnosis of APD and schizophrenia, the nature of their relationship with the victim and the location of their assault may discriminate this subgroup of offenders.

Triggering factors

Although individuals with psychosis rarely act aggressively on their delusions, certain types of

psychotic symptoms are more closely associated with violent behaviours than others, such as delusions of persecution (e.g. Bartels *et al.* 1991; Link *et al.* 1992; Swanson *et al.* 1996; Arsenault *et al.* 2000) and command hallucinations (McNeil, 1994; Junginger, 1995). Thus, determining the phenomenology of symptoms related to assaults would be helpful in assessing the risks for violence by psychiatric patients (Buchanan, 1997). However, information of this type is scarcely available, especially among individuals who have been extremely violent and received a primary diagnosis of schizophrenia. Furthermore, the hypothesis that a history of antisocial behaviours such as conduct disorders, substance misuse, and a proclivity to fight might be more closely related than psychotic symptoms to violence in subgroups of persons with schizophrenia remains largely untested (Hodgins, 2000), particularly among homicide offenders. A precursory, file-based study of 1740 high-security hospital residents from Taylor and colleagues (1998) suggested that 81% of offenders with psychosis (including schizophrenia) and no personality disorder were driven by delusions and/or hallucinations to commit their crime (including violent crimes), compared with 44% of the offenders with both a psychosis and a personality disorder (including an APD). It remains to be seen if comparable ratios apply to homicide offenders with schizophrenia. However, linking psychotic symptoms to a crime in a causal relationship is a challenging task (Taylor, 1985; Junginger, 1995), as their presence at the time of index crime does not necessarily imply a direct triggering effect on violence (Taylor *et al.* 1998). Access to different sources of information, especially informants, and in-depth, direct interviews with the offender are required in order to estimate the influence of psychosis manifestation upon violence (Wessely *et al.* 1993). As for individuals with both a major mental disorder and an APD, it might be even more difficult, if not impossible (e.g. Hodgins, 1994), to determine the exact aetiology of a given violent act. In their cases, the triggering elements for assault might be multidimensional, involving a range of combined risk factors, including the psychotic pathology, but also antisocial characteristics such as past criminality, a propensity to fight, and a history of substance abuse (Swanson *et al.* 1999; Hodgins, 2000).

Still, data concerning the surrounding context of homicide committed by offenders with schizophrenia and an APD are not currently available, and while these data might not allow to precisely determine the nature of the motive to assault, they would be invaluable for prevention and treatment programmes.

The main goal of this study was to evaluate to what extent psychotic symptoms influenced the perpetration of homicidal acts committed by male offenders with schizophrenia, and whether distinct circumstantial and clinical factors would be associated with homicides committed by offenders with an additional diagnosis of APD.

METHOD

Participants

Since 1980, the annual clearance rate for homicides in Finland is generally higher than 90% (*Statistical Yearbook of Finland*, 2000); almost all homicide offenders were examined by at least one psychiatrist; and in approximately 70% of these cases, a forensic psychiatric evaluation was required, which implies a thorough inpatient examination that lasts 5 weeks on average (Eronen *et al.* 2000). Between 1984 and 1991, 6.4% ($N=58$) of all male homicide offenders arrested in Finland received a diagnosis of schizophrenia or schizophreniform psychosis (Eronen *et al.* 1996). In order to obtain data from a representative sample of Finnish male homicide offenders with schizophrenia, the cases of the last 58 men with schizophrenia or schizoaffective psychosis ($N=4$) who were convicted in Finland of either murder, attempted murder, manslaughter, or attempted manslaughter and committed to treatment in a forensic mental hospital before January 1998 were studied. These men, all Finnish Caucasians, represent a subsample of a larger, descriptive study (Putkonen *et al.* 2003).

Measures

This study is based upon both direct interviews with each participant and on multiple sources of information. First, all participants were assessed for DSM-IV Axis I and II disorders with the research version of the Structured Clinical Interview Disorders (SCID I and II, First *et al.* 1996*a, b*) by two senior psychiatrists who had known most of the participants for at least

several months. The SCID II was chosen on the basis that APD diagnosis has the best validity and reliability of PD assessed with structured interviews (Westen, 1997). Each interview lasted from 2 to 8 hours and 15% of the patients were interviewed by both clinicians. The inter-rater agreement was 1.0 for the major mental disorder, 1.0 for the antisocial personality disorder and 0.89 for the substance use disorder. The thorough forensic examination for all participants was also consulted, it includes the psychiatric evaluation ordered by the court, standardized psychological tests, physical examinations, constant observation by the hospital staff and multi-professional interviews (Eronen *et al.* 2000). Moreover, police reports, criminal registers and social worker accounts were analysed, as were custom-made questionnaires completed by family, friends, neighbours and co-workers of the offenders.

Clinical and circumstantial factors surrounding the index crime

Because the exact reason to commit a crime is often difficult to establish among offenders with a MMD, especially with the additional presence of a co-morbid personality disorder, the main purpose of the following procedure was to evaluate whether the homicides were a consequence of psychotic or non-psychotic factors. The determinant factors preceding the index crime were divided in three broad and exclusive categories: (1) psychosis manifestations; (2) argument and/or a fight with the victim not related to psychotic symptoms; (3) neither a psychotic symptom nor an altercation prompted the assault. Since reliance on self-reports has been suggested to result in mislabelling as delusions other factors associated with violence (Appelbaum *et al.* 2000), information about the context surrounding the homicide was ascertained using the multiple sources, including previous statements of the offender and witnesses, replies from friends, family, and other collateral informants, reports from social workers and police officers, as well as both the research and forensic interviews. To determine the impact of psychotic symptoms on the homicidal act, a combined approach based on previous studies was adopted (Taylor, 1985; Junginger, 1995; Appelbaum *et al.* 2000). An offence was coded as psychotically influenced

if only two independent raters, who did not interview the offenders and were blind to the SCID results and to each other's classification, considered the assault as a consequence of at least one psychotic manifestation (five cases were excluded from the psychosis-related category because of this criteria, three with and two without an APD; the inter-rater alpha coefficient of intraclass correlation was 0.899). Few cases were included even if the offender did not actually recognize his beliefs as delusional or was unable to describe his motivation. Delusions were further rated as persecutory, grandiose, religious, reference, or thought insertion, and auditory hallucinations were subtyped as command hallucinations or others. Intra-class correlation coefficient for inter-rater reliability in the determination of delusion subtypes was excellent (0.94).

For the homicidal acts not judged to be related to a psychotic symptom, the raters independently determined whether it was the consequence of a fight and/or an argument not associated with the psychosis. This category included all cases in which the offender had a serious altercation (verbal and/or physical) with the victim prior and leading to the offence, that was not caused by psychotic symptoms, or for which a direct influence of any psychotic symptom could not be ascertained. Cases in which the patient used alcohol before the altercation were included. Alcohol intoxication of the offenders at the time of the homicide was determined from various sources, including self-reports, statements of witnesses and blood samples taken by the police (given the arrest occurred shortly after the index crime). An offender was considered as not intoxicated at the moment of the crime only if it was specifically indicated in the files. When no sufficient data were available to ascertain that an offender was either definitely intoxicated or definitely not intoxicated before assaulting, the case was classified as not specified.

Finally, a third category of contextual factors associated with the homicide comprised situations that were not clearly related to either a psychotic manifestation or a fight. This 'other reason' category includes two patients who claimed that they could absolutely not explain the motive of their acts, one patient who attempted a homicide in order to be admitted to

a state mental hospital, two cases in which the homicide followed a rape, two cases in which the assault occurred during robberies and two cases in which the participants were floridly psychotic, totally disoriented and too confused to be properly interviewed.

Statistical analyses

This study was designed to compare offenders with schizophrenia on dichotomic measures in association with an APD, as opposed to an attempt to determine the relative impact or predictive value of any single factor of a multi-dimensional relationship. Therefore, statistical analyses were bivariate, with proportions compared within and between the subgroups using chi-squares, and normally distributed continuous variables compared with analyses of variance.

RESULTS

There were 85 victims of the 58 offenders who participated in the present study; 46 victims of the 35 patients with an APD (ratio = 1 : 1.3), and 39 victims of the 23 patients without an APD (ratio = 1 : 1.7; no significant difference between the groups). Overall, a significant majority (86%) of offenders had either a personal or a professional relationship with their victim(s) and, accordingly, the events were significantly more likely to occur in a private residence (78%) than in a public place (22%). Nearly half (47%) of the offenders assaulted someone from their own household, including parents and roommates, while a minority (14%) targeted a total stranger. (For one patient with APD and another without APD it was not possible to determine whether the victims were truly unknown to them. Also, in three cases, a second victim of the same incident was not included because he/she was on duty (officers and ambulance drivers) and was attacked while trying to control or help the patient after he assaulted a relative. In these cases, only the first target, the relative, was considered.) Although both subgroups of offenders characteristically assaulted someone they knew (88% of the cases for the patients with an APD and 82% of the cases for those without APD, no significant difference between the groups), those with schizophrenia and an APD tended more significantly to assault

Table 1. Clinical and circumstantial characteristics of offenders with schizophrenia (sz) as a function of an antisocial personality disorder (APD) at the moment of index crime

Variable	Sz and APD (N=35)		Sz no APD (N=23)		Total (N=58)		Between-group comparisons
	N	(%)	N	(%)	N	(%)	
Schizophrenia type							
Paranoid	26	(74) ⁺	19	(83) ⁺	45	(78) ⁺	NS
Others	9	(26) ⁺	4	(17) ⁺	13	(22) ⁺	
Presence of delusions	32	(91) ⁺	23	(100) ⁺	55	(95) ⁺	NS
	3	(9) ⁺	0	(0) ⁺	3	(5) ⁺	
Presence of hallucinations	23	(66)	18	(78) ⁺	41	(71) ⁺	NS
	12	(34)	5	(22) ⁺	17	(29) ⁺	
Triggering element [†]							
Psychotic symptom	16	(46)	19	(83)	35	(60)	$\chi^2(1)=7.90^{**}$
Delusions [‡]							
Persecution	11	(31)	13	(57)	24	(41)	NS
Grandiosity	4	(11)	2	(9)	6	(10)	NS
Religious	1	(3)	2	(9)	3	(5)	NS
Thought insertion	1	(3)	0	(0)	1	(2)	NS
Reference	1	(3)	1	(4)	2	(3)	NS
Hallucinations							
Command	3	(9)	5	(22)	8	(14)	NS
Other auditory	1	(3)	2	(9)	3	(5)	NS
Visual	0	(0)	0	(0)	0	(0)	NS
Fight/argument	12	(34)	2	(9)	14	(24)	$\chi^2(1)=5.31^*$
Other reasons	7	(20)	2	(9)	9	(16)	NS
Intoxicated [§]							
Yes	25	(71) ⁺	7	(30)	32	(55) ⁺	$\chi^2(2)=10.07^{***}$
No	6	(17) ⁺	7	(30)	13	(22) ⁺	
Not specified	4	(12)	9	(39)	13	(22)	

⁺ The within-group proportions differ from each other at $P < 0.05$.

[†] The Symptomatic, Fight/argument and Other reasons are exclusive categories, hence their percentage total equals 100. See the Method section for further details.

[‡] The percentages are based on the total number of reasons reported for committing homicide (41 for the sz and APD group and 29 for the sz group), including symptoms, fight/argument and others. The total exceeds 100% since four patients with APD and six without APD reported more than one symptom as a reason to commit the assault.

[§] With alcohol.

* $P < 0.05$; ** $P < 0.01$; NS, not significant.

non-members of their household (69%), and non-members of their family (77%). In contrast, only 43% of the victims of offenders with schizophrenia and without an APD were not relatives, and they generally lived with the offender (70%). The difference between the subgroups was significant, both for the proportion of relatives ($\chi^2(1)=6.81$; $P < 0.01$) and for the proportion of household members ($\chi^2(1)=8.13$; $P < 0.01$).

In both subgroups of offenders, paranoid was the most common type of schizophrenia (Table 1) and, overall, 60% of the homicides followed delusions and/or hallucinations directly related to them. However, a significantly higher proportion of patients without an APD (83%), than those with an additional APD (46%; $\chi^2(1)=7.90$; $P < 0.01$) was found to be influenced

by psychotic symptoms to commit the index crime. Conversely, significantly more offenders with a dual diagnosis (34%) than offenders without an APD (9%; $\chi^2(1)=5.31$; $P < 0.05$) had an argument or a fight not related to psychotic symptoms prior to the homicidal act (Table 1). In each case of altercation, the offender had used alcohol, often with the victim (although reliable data concerning the alcohol consumption of the victims were not sufficient to conduct analyses), and significantly more offenders with schizophrenia and APD were intoxicated at the moment of the crime as compared to those without an APD (71% and 30%, respectively; $\chi^2(2)=10.07$; $P < 0.01$). Yet, when a homicide was judged to be the direct consequence of a psychotic manifestation, neither the number nor the nature of the determinant

symptoms differed between the groups. The most common type of symptomatic drive was delusional, mostly of persecution, in both groups (Table 1). Finally, no significant difference emerged between the groups as for the number of incidents that could not have been associated with either a psychotic symptom or a fight.

Neither the age of onset of the first psychotic symptoms (23.6 ± 7.4 v. 24.5 ± 8.5 , respectively), nor the mean age at the time of index crime (32.3 ± 8.1 and 32.2 ± 8.6 , respectively) statistically differed between offenders with schizophrenia and an APD and those without an APD. However, the first subgroup, with an additional APD, had on average more previous convictions for violent offences (2.2 ± 1.5 v. 6.0 ± 4.1 , respectively; $F(1,55) = 13.75$, $P < 0.01$); they were younger when first convicted for a violent offence (27.2 ± 10.1 v. 22.0 ± 8.3 , respectively; $F(1,55) = 3.62$, $P = 0.06$); they were more likely to meet the criteria for a diagnosis of alcohol abuse or dependence (27% v. 91%, respectively; $\chi^2(1) = 23.64$; $P < 0.001$); and they received fewer years of education (9.7 ± 2.7 v. 7.7 ± 1.5 ; respectively; $F(1,57) = 10.29$, $P < 0.01$) than the subgroup of offenders without an APD. Moreover, while offenders with schizophrenia and an APD were more frequently convicted of manslaughter or attempted manslaughter than murder or attempted murder (69% v. 31%, respectively; $P < 0.05$), this was not the case for offenders with schizophrenia and without an APD (52% v. 48%, no difference).

DISCUSSION

The main goal of this investigation was to consider clinical and circumstantial factors associated with homicidal acts committed by offenders with schizophrenia, and to determine to which extent they differ in relation with an additional APD diagnosis. Assessing the pre-morbid personality of persons with psychosis could be difficult, and an abnormal mental state might lead to overestimate the prevalence of personality disorders (Moran *et al.* 2003). However, the present study was concerned with APD, which is diagnosed on the base of verifiable and objective behavioural criteria, and for which the SCID-II has the best validity and reliability data (Westen, 1997, 2001). Although the prevalence of APD among homicide

offenders with schizophrenia has not previously been assessed (Putkonen *et al.* 2003), the present findings are in line with the proposal that among incarcerated male offenders with schizophrenia, the APD incidence might be similar to that of prisoners without a MMD (Côté & Hodgins, 1990), i.e. about 60% (e.g. Singleton *et al.* 1998).

APD is intimately associated with several risk factors for violence (e.g. substance abuse, low educational levels, behavioural impulsivity, poor familial and socio-economic background), so that origins of violence committed by persons with APD is multidimensional, based on intricate factors that are difficult to untangle. Determining the effect of each related factor on aggressive behaviour among persons with a PD is very difficult, all the more so when a severe mental illness is present (Hodgins, 1994). Although the present findings do not allow for evaluation of the relative impact of these anti-social factors, they suggest that for a significant portion of offenders with schizophrenia, violence is not necessarily the consequence of psychotic symptoms (see also Swanson *et al.* 1999), and might occur in closer association with circumstantial factors traditionally observed among persons with a personality disorder (Moran *et al.* 2003).

Victim characteristics

In the present investigation, no significant difference emerged among the victims between the number of family and non-family members, or between the number of persons who lived with the offender and those who did not. However, the vast majority were known by their offender, either at a personal or professional level, and they were generally assaulted in a private home. These results confirm previous reports suggesting that strangers are less likely to be the target of psychotic violent offenders than known persons, such as friends, acquaintances, health care providers or relatives (Gottlieb *et al.* 1987; Straznickas *et al.* 1993; Estroff *et al.* 1998; Taylor & Gunn, 1999), and that offences usually take place in a residence (Steadman *et al.* 1998). Interestingly however, in this study important differences were found in relation with the additional presence of an APD diagnosis. Offenders with schizophrenia but without an APD were more likely to assault someone from their

own household than someone outside their household, and their victim was a family member in 57% of the cases, a proportion that is very similar to those observed among other samples of psychotic offenders (Tardiff, 1984; Binder & McNiel, 1986; Gondolf *et al.* 1990; Humphreys *et al.* 1992; Straznickas *et al.* 1993; Estroff *et al.* 1998). By contrast, offenders with a co-morbid APD were significantly more likely to assault a person who was not a member of their family, and who did not live with them. Thus, considering the additional presence of an APD diagnosis in violent offenders with schizophrenia seems to be crucial in the determination of the characteristics related to their acts.

For instance, Nestor (1992) reported that among extremely violent persons with MMD, a subgroup that presented a history of prior arrests received less education, attained lower occupational levels, they were less likely to assault a blood relative or a spouse, and they were less commonly judged as being psychotic within 40 days of the homicidal act. Moran and colleagues (2003) also recently found that anti-social and impulsive personality disorders were independently associated with an increased risk violence among psychotic persons.

These reports and the present results strongly suggest that with violent offenders who are diagnosed with a psychiatric illness, the presence of past conduct disorders and antisocial behaviours may greatly influence the nature of the context surrounding violence.

Contextual and clinical characteristics

A significant majority of the participants with schizophrenia in the present study were diagnosed with the paranoid subtype, extending previous results obtained among different samples of psychotic patients who showed various degrees of violence (e.g. Planansky & Johnston, 1977; Tardiff, 1984; Martell & Dietz, 1992; Taylor *et al.* 1998). Also in accordance with previous reports was the finding that homicidal behaviours judged to be influenced by psychotic symptoms were more commonly based on delusions than hallucinations (Taylor, 1985; Humphreys *et al.* 1992; McNeil, 1994; Nestor *et al.* 1995; Junginger *et al.* 1998) and the most frequent delusional drives were those related to persecution (Humphreys *et al.* 1992;

Link *et al.* 1992; Wessely *et al.* 1993; Krakowski & Czobor, 1994; Swanson *et al.* 1996; Taylor *et al.* 1998).

In the present investigation, a significantly higher proportion of patients with schizophrenia without an APD were judged to be driven by delusions and/or hallucinations to commit their homicidal act compared to patients with both disorders (83% and 46%, respectively). These figures are strikingly similar to those reported by Taylor and colleagues (1998, see their Table 5) among criminal offenders with psychosis, with or without an independent personality disorder (including APD). In that study, it was found that 81% of individuals with 'pure psychosis' were considered as having been symptomatically driven to commit their offence (including violence against someone) *versus* 44% of the persons with a dual diagnosis of psychosis and a personality disorder. These figures, as well as the present results, suggest that the triggering elements of violence, even when extreme, differ among offenders with a severe mental illness in association with additional diagnoses. In this study, the great majority of homicide offenders with schizophrenia and an APD also met the criteria of alcohol abuse/dependence disorder; they were more likely than offenders without an APD to have used alcohol and to have had a physical altercation with the victim just before the index crime; and their assaults were less likely to be judged as a consequence of psychotic symptoms. In their cases the aetiology of violence is undoubtedly multidimensional.

Moreover, offenders with both schizophrenia and an APD had on average a significantly higher number of previous convictions for violent crimes and were significantly younger when first convicted for a violent act than offenders with schizophrenia without an APD (see also Moran *et al.* 2003), which is not particularly surprising given the increased risk for criminality associated with an APD (although criminality does not necessarily imply violence). Importantly however, the mean age of the subgroup with an APD at the time of their first conviction for a violent crime was lower than their mean age at the onset of psychotic symptoms, while the opposite was observed in the subgroup of offenders with schizophrenia only. This finding is in accordance with the early-*versus* late-starter hypothesis (Hodgins, 2000),

which proposes that a significant proportion of violent offenders with a MMD were violent well before the onset of the illness. In their cases, the MMD cannot necessarily be considered as the principal source of the violent behaviour. Accordingly, Mullen *et al.* (2000) found that an important proportion of male offenders with schizophrenia were convicted for a first crime, including violent offences, between 3 and 4 years before their first psychiatric contact, and Tengström *et al.* (2001) reported that a subgroup of violent male offenders with schizophrenia was convicted for either a first violent or a first severe violent crime on average 3 years before their first in-patient admission. In the latter study, patients who began early to commit violent offences were significantly more likely to be intoxicated at the time of the index crime than other violent offenders with schizophrenia, who were first convicted for either a violent or severe violent crime on average 4 years after their first admission for in-patient treatment. These results, as well as the present findings, may indicate that violence committed by some men with schizophrenia is more closely linked to antisocial lifestyle, including underlying personality traits and other associated factors, such as alcohol abuse (e.g. Soky, 2000), than to the MMD *per se*.

Although the mean age of the offenders at the time of the first conviction for a violent crime herein was significantly lower in the subgroup with a co-morbid APD than in the subgroup without an APD, it did not differ at the moment of the homicide. Thus, for such extreme violent acts, the presence or absence of an additional APD may not influence the moment of acting out among persons with a MMD, although this suggestion needs to be confirmed.

Altogether, the present results confirm that violence is a heterogeneous phenomenon among individuals with schizophrenia, even when extreme acts are considered. Differential characteristics and patterns seem to emerge when additional diagnoses are taken into consideration. Offenders with both schizophrenia and an APD were less likely to act in response to psychotic symptoms and to assault a member of their family, they achieved a lower level of education, and used alcohol before the assault more often than offenders with schizophrenia only.

Conclusion

Overall, the results of this study confirm that in the rare instances of violence and aggression displayed by individuals with schizophrenia, family members, acquaintances, friends, or health care providers are more likely to be targeted than strangers, even when homicide and APD are considered. However, as it was previously hypothesized (Hodgins, 2000), distinctive circumstances surrounding a violent crime may characterize some psychotic offenders who have an independent personality disorder (Taylor *et al.* 1998; Moran *et al.* 2003). The present findings suggest that for certain patients with schizophrenia and an APD, violence is in fact more likely to involve a friend than a family member; it is not necessarily the direct result of delusional thoughts; and it is strongly associated with antisocial-related factors such as substance abuse and a proclivity to fight. In these cases, treatments should undeniably address the complex interaction of risk factors. Substance misuse increases the likelihood of violence not only among the general population, but also among persons with schizophrenia (e.g. Tiihonen *et al.* 1997; Scott *et al.* 1998; Brennan *et al.* 2000; Soyka, 2000), which is also true for homicide (Eronen *et al.* 1996; Wallace *et al.* 1998; Erb *et al.* 2001). Importantly, risks for violence in relation to substance abuse among individuals with schizophrenia are especially higher in combination with medication non-compliance (Swartz *et al.* 1998), which is closely associated with a co-morbid diagnosis of APD (Tengström *et al.* 2001). In these dual- and triple-diagnoses instances, although the symptoms of the MMD should be regarded as possible risk factors for violence, especially if paranoid, other non-psychotic aspects must be considered. Treatment for violent offenders with both schizophrenia and an APD needs to be integrated, taking into account multiple, interactive elements such as personality traits, a past history of violent behaviours, and substance abuse. This approach necessitates especially intense, structured, multi-component long-term programs (Hodgins, 2000; Hodgins & Müller-Isberner, 2000). Hence, because almost half of the offenders with both schizophrenia and APD in the present study has been judged to have committed their violent offence in response to

psychotic symptoms, and because the most common type of triggering symptoms for extreme violence in both subgroups was delusions of persecution, cognitive therapy and medication that aim to reduce threat perceptions should be viewed as the core of therapeutic intervention and prevention with aggressive psychotic patients.

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