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Different types of offenders with schizophrenia: The antisocial and the non-antisocial

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Abstract

Individuals with schizophrenia are at an increased risk to commit non-violent and violent crimes, compared to persons with no mental illness. The present study examined 27 male offenders with schizophrenia, 17 with persistent antisocial behaviour since childhood and 10 with no history of antisocial behaviour prior to the onset of schizophrenia. Comparisons of the men with and without a stable pattern of antisocial behaviour revealed no differences in the course or symtomology of schizophrenia. However, men with antisocial behaviour since childhood were younger at first conviction, were convicted of the first crime prior to the first psychiatric admission, had accumulated more convictions, and committed more non-violent offences. The non-antisocial men, however, committed proportionately more violent offences. The findings have implications for treatment and intervention programs.

Key words: Schizophrenia, antisocial behaviour, violence, criminality.

Sommaire

Les personnes atteintes de schizophrénie ont un risque élevé de commettre des crimes non violents et violents comparativement aux personnes sans troubles mentaux. De plus, ceux qui présentent le trouble de la personnalité antisociale ont un risque encore plus élevé de commettre des crimes. La présente étude examine 27 hommes atteints de schizophrénie ayant commis des crimes, dont 17 présentent des comportements antisociaux depuis l'enfance, et 10 qui n'ont pas eu de comportements antisociaux avant le début de la schizophrénie. Les comparaisons entre les hommes ayant eu ou non des comportements antisociaux depuis l'enfance ne montrent pas de différence quant au développement de leur maladie (schizophrénie). Par contre, les 17 hommes présentant des comportements antisociaux depuis l'enfance, comparativement aux 10 autres, étaient plus jeunes lors de leur première condamnation; étaient trouvés coupables d'une première offense avant d'être admis dans une unité psychiatrique; et avaient commis plus de crimes non violents. Pour leur part, les 10 hommes n'ayant pas eu de comportement antisocial avant le début de la schizophrénie avaient commis proportionnellement plus de crimes violents. Les conclusions de cette étude pourront avoir des impacts sur les programmes d'intervention.

Mot clés : Schizophrénie, comportements antisociaux, violence, criminalité

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It was once believed that individuals with schizophrenia were no more likely to commit violent acts than the general population (Walsh, Buchanan, & Fahy, 2001). Beginning in 1965, however, results of investigations indicated that persons with schizophrenia, as compared to persons with no mental disorders, are at an increased risk to commit non-violent and violent crimes (Belfrage, 1998; Hodgins, Côté, & Toupin, 1998; Hodgins, 1993; Lindqvist & Allebeck, 1990). Three types of investigations have addressed this question: studies of schizophrenia and crime among members of a birth or population cohort; studies of discharged psychiatric patients living in the community; and studies of mental disorders among criminal offenders.

Birth cohort studies. A recent population cohort study examined the relationship between criminal offending and the introduction of community care in Victoria, Australia. The patterns of offending were evaluated for two groups of individuals with schizophrenia. One group was first admitted to hospital in 1975, before a policy of deinstitutionalisation was implemented, and another group was first admitted in 1985, after the introduction of community care. Each patient was matched to a control subject who had no record of psychiatric care for age, sex, and place of residence. When both the 1975 and 1985 groups were combined, 24% of men with schizophrenia had been convicted at least once, compared to 7.4% of matched controls. Sixty-three percent of the men with schizophrenia with a history of criminal behavior received their first conviction before their first psychiatric admission (Mullen, Burgess, Wallace, Palmer, & Ruschena, 2000). Men from the 1975 group spent a mean of 200 days a year out of hospital, compared to a mean of 274 days for the 1985 group. Although individuals with schizophrenia were convicted more frequently than controls, only 5.1 % of men with schizophrenia had convictions in the decade after their first psychiatric admission (Mullen et al., 2000). The researchers

propose that the introduction of community care did not significantly influence the risk for criminal offending among men with schizophrenia.

Brennan, Mednick, and Hodgins (2000) examined the association between each of the major mental disorders and criminal violence in a Danish birth cohort composed of more than 358,000 individuals followed into their mid-forties. Results demonstrated that men with schizophrenia were 4.6 times (95% confidence interval [CI], 3.8-5.6) more likely to be convicted of a violent crime than men with no history of psychiatric hospitalization. Furthermore, schizophrenia was the only major mental disorder associated with higher arrest rates and increased risks of violent offending for both men and women (Brennan et al., 2000).

The Dunedin Study followed a birth cohort of young adults born in Dunedin, New Zealand, in order to assess the relationship between mental disorders and violent offending. Fifteen percent of cohort members with schizophrenia spectrum disorders committed at least one criminal offence in the 12 months before their 21st birthday, and 9.6% of the cohort's risk of becoming a violent offender was attributed to the diagnosis of a schizophrenia-spectrum disorder (Arseneault, Moffitt, Caspi, Taylor, & Silva, 2000).

The Camberwell Study (Wessely, 1998) examined all reported cases of schizophrenia in the London borough of Camberwell between 1964 and 1984. Men with schizophrenia were 2.1 times (95% CI, 1.5- 2.9) more likely to be convicted of violent offences than were control subjects matched for age and gender (Wessely, 1998).

The Northern Finland Birth Cohort study of 1966 followed all individuals born in two provinces of Northern Finland in 1966, until 1992. Results revealed that the men who developed schizophrenia, as compared to those who did not, were 3.1 times

(95% CI, 1.5-6.2) more likely to commit any criminal offence, and 7.0 times (95% CI, 3.1-15.9) more likely to commit a violent offence (Tiihonen, Isohanni, Räsänen, Koiranen, & Moring, 1997).

Data pooled from three sites of the Epidemiologic Catchment Area (ECA) study conducted in the US in the early 1980's revealed that 8.4% of individuals suffering from schizophrenia or schizoaffective disorder reported violent behavior compared to 2% of individuals without mental illness (Swanson, Holzer, Ganju, & Jono, 1990).

In summary, results of investigations of large birth and population cohorts have consistently shown that greater proportions of men and women who have, or who will develop schizophrenia, commit criminal offences. Furthermore, the association between schizophrenia and criminality is stronger for violent, than for non-violent crimes.

Community follow-up studies. Lindqvist and Allebeck (1990) followed a population-based cohort of individuals with schizophrenia discharged from hospital in 1971 until 1986, in Stockholm, Sweden. The overall crime rate among the men with schizophrenia was similar to that of the general male population. Individuals with schizophrenia, however, committed four times (95% CI, 3.0-5.1) more violent offences than the general population (Lindqvist & Allebeck, 1990).

The MacArthur Violence Risk Assessment Study evaluated the prevalence of violent behavior in individuals discharged from general psychiatric wards in three US cities. Violence was assessed every 10 weeks over the course of one year (Appelbaum, Robbins, & Monahan, 2000). Seventeen percent of the individuals studied received a diagnosis of schizophrenia or schizoaffective disorder, and of this

group, 9% reported violence in the first 20 weeks after discharge (Appelbaum et al., 2000).

Research has documented increased criminality among persons discharged from psychiatric wards, as compared to non-disordered individuals living in the community (see for example, Link, Andrews, & Cullen, 1992; Hodgins, 1993; Belfrage, 1998; and Steadman et al., 1998). Studies of this nature have all typically demonstrated that men suffering from a major mental disorder, specifically schizophrenia, are at a greater risk for delinquency and crime than the general population. Men with schizophrenia have a greater propensity towards violent crimes than non-violent crimes (Hodgins, 1993).

Studies of schizophrenia among criminal offenders. Diagnostic studies of convicted offenders in Australia, Canada, Denmark, Finland, Germany, Israel, the United States of America, the United Kingdom, Sweden, and Switzerland, have all documented higher rates of major mental disorders, including schizophrenia, among convicted offenders, than in sex and age matched samples of the general population (Hodgins et al., 1998). The results of three investigations (Hyde & Seiter, 1987; Neighbors et al., 1987; and Collins & Schlenger, 1983) have identified the prevalence rate of schizophrenia among U.S. prison inmates to be 1.2- 2.8%, whereas the prevalence rate for schizophrenia in the general male population is 0.5-1.2% (Hodgins & Côté, 1990). More recently, Hodgins and Côté (1990) assessed the prevalence of mental disorders among a representative sample of Québec penitentiary inmates, and found that seven percent met criteria for schizophrenia-spectrum disorder (Hodgins & Côté, 1990).

Investigations from different time periods, countries, and justice and health systems have reported that men with schizophrenia have an increased risk for

committing homicide than the general male population. A recent study compared individuals with schizophrenia who had attempted or committed homicide in the state of Hessen, Germany from 1992 to 1996, and the Federal Republic of Germany from 1955 to 1964 (Erb, Hodgins, Freese, Müller-Isberner, & Jöckel, 2001). While the lifetime prevalence of schizophrenia was approximately 0.7%, 10.45% of all the homicide offenders in the state from 1992 to 1996 were suffering from schizophrenia (Erb et al., 2001).

Côté and Hodgins (1992) evaluated the lifetime prevalence of major mental disorders in a random sample of male penitentiary inmates convicted of homicide in Québec. Twelve percent of male homicide offenders were diagnosed with schizophrenia, compared to 5.4% of non-homicide offenders. Furthermore, 82% of male homicide offenders presented the mental illness prior to the homicide (Côté & Hodgins, 1992).

Conclusion. Decades of studies that include unselected birth and population cohorts, follow-up studies of persons with schizophrenia living in the community, studies of homicide and other convicted offenders, all concur in demonstrating that schizophrenia is associated with an increase in the risk for non-violent crime, for violent crime and for homicide.

Early and late-start offenders

Among offenders with schizophrenia, there are at least two sub-types: the early-start and the late-start offender. Early-start offenders display a stable pattern of antisocial behavior from a young age into adulthood, while the late-start offender begins his or her criminal activity in adulthood, with the emergence of schizophrenia (Hodgins et al., 1998). These two groups differ in their patterns of criminal offending; the early-starters are convicted of more violent and non-violent crimes compared to

the late-starters, and one study found that their criminal records were not distinguishable from those of offenders with antisocial personality disorder with no major mental disorder (Hodgins, 2000).

Tengström, Hodgins, and Kullgren (2001) examined a group of men suffering from schizophrenia who had committed at least one violent offence. Results demonstrated that the early-start offenders began committing criminal offences at an earlier age (average of 10 years earlier), and were convicted of more crimes, both violent and non-violent. In addition, 76% of the early-starters had a secondary diagnosis of a substance use disorder, compared to 42% of the late-starters. These results concur with previous studies (see for example Hodgins & Janson, 2002; Hodgins et al., 1998; Hodgins, Toupin, & Côté, 1996) that indicated that early-start offenders with schizophrenia are convicted of more crimes and more often present a concurrent substance use disorder than late-start offenders with schizophrenia.

Hodgins, Côté, & Toupin (1998) examined men with schizophrenia, 20 with a diagnosis of antisocial personality disorder (APD), and 54 without APD. While these two groups did not differ as to age, socio-economic status, or level of education, the APD group presented an earlier age at first conviction, and more convictions for non-violent offenses. The early and late-start offenders did not differ as to various aspects of schizophrenia.

Alcohol and drug use

Individuals suffering from schizophrenia, and who have a secondary diagnosis of an alcohol or drug use disorder, are at an increased risk for criminal and violent behavior, compared to mentally ill individuals without this secondary diagnosis (Hodgins, 2000). As previously mentioned, the early-start offenders begin to display antisocial behavior in childhood or adolescence, and are exposed to both alcohol and

drugs at an earlier age, which may lead to both substance abuse and criminal activity (Hodgins et al., 1998).

Data from the Epidemiologic Catchment Area study were used to assess the association between mental illness and violence (Swanson et al., 1990). Eight percent of individuals with schizophrenia or schizophreniform disorder alone reported violence. However, the number of respondents who reported violent behavior increased to 30.3% when a dual diagnosis of schizophrenia and substance abuse was considered.

Results from the Dunedin Study (Arseneault et al., 2000) indicated that individuals with a schizophrenia-spectrum disorder were 5.1 times (95% CI, 2.0-13.1) more likely to be convicted of a violent crime than non-disordered persons. Furthermore, the likelihood of being convicted of a violent offence increased to 8.3 times (95% CI, 3.2-21.5) when an individual was diagnosed with a schizophrenia-spectrum disorder and alcohol dependence, and to 18.4 times (95% CI, 7.5-45.3) when a dual diagnosis of marijuana dependence and a schizophrenia-spectrum disorder was given.

Conclusion. These results suggest that among individuals suffering from schizophrenia, a substance use disorder increases the risk of violence.

Conduct disorder (CD), antisocial personality disorder (APD), and schizophrenia

Several factors may contribute to the increased risk of criminality among individuals with schizophrenia. As previously mentioned, alcohol and drug abuse have been implicated in increasing the risk for violent and non-violent crimes. Another factor that has been suggested is the presence of Antisocial Personality Disorder (APD). In order to be diagnosed with APD, an individual must have presented Conduct Disorder (CD) prior to age 15. Most early-start offenders, having

displayed a stable pattern of antisocial behavior beginning in childhood, and persisting throughout the lifetime, meet criteria for APD. The late-start offender displays no conduct problems before the age of 15, or before the onset of schizophrenia, and therefore does not meet criteria for APD (Hodgins, Lapalme, & Toupin, 1999). The prevalence of APD is four to five times greater among individuals suffering from schizophrenia than in the general population (Hodgins et al., 1996).

Individuals suffering from schizophrenia, who are also diagnosed with CD or APD, represent a subgroup at high-risk subgroup for aggression, violence, and substance abuse. These individuals disregard rules and norms, and present a wide-ranging pattern of antisocial behaviors, which escalate in severity as they grow older (Mueser et al., 1997). These behaviors include disobedience at home and school, lying, stealing, fighting, and manipulating others. Substance abuse would be one form of this diverse pattern of antisocial behaviors.

Moran and Hodgins (in press) examined a representative group of men recently discharged from forensic and general psychiatric hospitals from four countries (Canada, Finland, Germany, and Sweden). The goal of the study was to assess the relationship between schizophrenia and APD. The principal diagnosis was a schizophrenia-spectrum disorder, and 22% of the men were diagnosed with APD. Results demonstrated that individuals with a concurrent diagnosis of APD committed a greater number of crimes, both violent and non-violent, compared to those without concurrent APD. In addition, 75% of men with APD committed at least one crime before their first psychiatric admission, compared to 36% of their non-APD counterparts. Furthermore, 65% of the APD group versus 38% of non-APD men received a diagnosis of drug abuse or dependence, and 77% of the APD men versus

51% of non-APD group received a diagnosis of alcohol abuse or dependence (Moran & Hodgins, in press).

Hodgins and Côté (1993) assessed the association between major mental disorders and APD in a random sample of male penitentiary inmates in Québec. Compared to their non-APD counterparts, the APD sub-group began their criminal careers earlier, had a juvenile record, had accumulated more convictions, and had committed more non-violent crimes (Hodgins & Côté, 1993).

In a study of mentally ill outpatients, Fulwiler, Grossman, Forbes and Ruthazer (1997) explored the relationship between violence and substance abuse. Results suggested that the onset of alcohol or drug abuse prior to age 15 was the strongest risk factor for violence (Fulwiler et al., 1997). What was not considered at the time of this study was the role of conduct disorder.

Fulwiler and Ruthazer (1999) retrospectively re-examined their subjects from the above study in order to expand the list of premorbid risk factors. Their goal was to investigate the relationship between conduct disorder, a known risk factor for violence, and substance abuse. Their results demonstrated, once again, that violent mentally ill patients were more likely to have started abusing alcohol and/or drugs before the age of 15. Of greater interest, mentally ill offenders were more likely to have retrospectively met the diagnostic criteria for conduct disorder. They concluded the following: 1) that substance abuse beginning before the age of 15 and prior to the onset of mental illness contributed to violence; and 2) that conduct disorder in childhood was a significant predictor of later violence. Surprisingly though, only about half of the early-onset substance abusers presented conduct disorder (Fulwiler et al., 1999).

The present study

Research has shown that men with schizophrenia are at increased risk for non-violent offending and at even greater risk for violent offending and homicide, compared to the general population. As such, sub-groups of offenders have been identified, and studies have shown that conduct disorder, and antisocial behavior are more prevalent among individuals who develop schizophrenia than the general population. Furthermore, recent research (see for example Moran & Hodgins, in press; Mullen et al., 2000; and Müller-Isberner, 2001) has suggested that criminal offences committed before the first psychiatric admission further identifies the early-start offenders by frequency, diversity, and types of crimes that they commit. This sub-group is often further complicated by early drug and alcohol use.

The present study is part of a larger investigation examining the neurobiological correlates and antecedents of antisocial behavior in men with schizophrenia. Few studies have focused on schizophrenia-spectrum disorders in combination with APD among a group of men who have all committed at least one criminal offence. The study was designed to retrospectively evaluate two groups of men suffering with schizophrenia, who had been convicted of at least one crime. The first group presented a stable pattern of antisocial behavior beginning in childhood, before the emergence of schizophrenia. The second group had no history of antisocial behavior prior to the onset of schizophrenia.

The goal was to further explore and identify the characteristics that define the early and late start offenders, and to understand how male offenders with schizophrenia differ from male offenders with schizophrenia and APD. It was hypothesized that the antisocial group will have been convicted of more crimes than the non-antisocial group. Furthermore, the antisocial group will have had their first

conviction at an earlier age than the non-antisocial group. And finally, the antisocial group will have committed more non-violent and violent crimes than the non-antisocial group.

Method

Participants

The sample is composed of 27 men. Inclusion criteria included: 1) age 18 to 45 years; 2) a diagnosis of schizophrenia or schizoaffective disorder confirmed by an independent clinician using the Structured Clinical Interview (SCID) for the Diagnostic and Statistical Manual fourth edition (DSM-IV) (American Psychiatric Association (APA), 1994) (Spitzer, Williams, Gibbon, & First, 1990); 3) a conviction for at least one crime; and 4) no history of head trauma.

Eight subjects were recruited from the Institute Philippe Pinel de Montréal, Montréal, Québec, Canada. Among these participants, seven were diagnosed with schizophrenia, and one with schizoaffective disorder. The remaining 19 subjects were recruited from Giessen, Germany, and all were diagnosed with schizophrenia.

Participants were assigned to the antisocial (AS) or the non-antisocial group (NAS). The AS group included 17 participants, for whom self-reports, collateral reports, and/or medico-legal files provided evidence of persistent disobedience and a failure to respect rules at home, at school, and/or in the community. This pattern of antisocial behavior was defined to include bullying, intimidation of others, fighting, physical cruelty to animals, stealing, and running away, and had to be present in childhood and/or adolescence before the onset of schizophrenia and the first criminal offence. The NAS group included 10 participants, for whom self-reports, collateral reports, and/or medico-legal files indicated the absence of antisocial behavior in

childhood and adolescence, and before the onset of schizophrenia, substance abuse, and the first criminal offence.

Instruments

Diagnoses. Trained clinicians used the SCID I and II (Spitzer et al., 1992) to diagnose each participant. The SCID is a structured interview protocol that requests information from the patient, and uses information from all other sources, in order to make axis I and axis II diagnoses according to DSM-IV criteria. Official French and German versions of the SCID were used.

Socio-demographic information. Information was extracted from school, social service, treatment, and judicial records to document date of birth and place of birth, relationship history and offspring, education and employment history.

Psychiatric history. Information was extracted from hospital records to document the number of admissions, reasons for admissions, legal status at each admission and discharge, and diagnoses at discharge. The reasons for each admission were classified into three categories: 1) symptoms; 2) aggressive behavior towards others, threats of violence towards others, and court ordered evaluations; and 3) other.

Criminal history. Criminal history information was extracted from official criminal records. Violent crimes were defined to include: administering a noxious substance, assault with a weapon, sexual assault, sexual assault with a weapon, carrying a concealed weapon, indecent assault, indecent assault of a man or woman, wounding, pointing a firearm, forcible confinement, kidnapping, stabbing with intent to wound, harassing phone calls, manslaughter, arson, incest, first degree murder, second degree murder, criminal negligence causing death, possession of a weapon while committing an indictable offence, possession of an imitation weapon while committing an indictable offence, possession of an explosive substance for other than

lawful purpose, possession of a dangerous weapon or of a prohibited weapon, utter threat to cause death or serious bodily harm, procuring, forcing a minor to act as a prostitute, sexual intercourse with someone under the age of 18, attempted murder, attempted kidnapping, attempted robbery, attempted rape, careless use of a weapon, criminal negligence in the use of a dangerous weapon, using a firearm, while committing an indictable offence, rape, assault, causing bodily harm, with intent to wound/ with intent to endanger life, aggravated assault, assault of a police officer, armed robbery, robbery with violent theft, and criminal harassment. All other criminal offences were defined as non-violent. For the purposes of this study, crimes were defined as all offences that led to judgments of guilty, guilty with diminished responsibility, or not guilty by reason of insanity or mental disorder.

Procedure

Treating psychiatrists at both sites were asked to identify patients that would potentially fulfill the inclusion and exclusion criteria, and who were able to provide informed consent to participate in the study. Participants consented to: 1) a diagnostic interview; 2) name a parent or sibling who could provide information about him when he was a child and adolescent, and about their family history of mental disorders and criminality; 3) authorize the research team to obtain school, social service, child, adolescent, and adult mental health records, and all criminal records; and 4) one or two interviews to complete neuropsychological tests. Once a participant consented to the study, a clinician trained to use the SCID (Spitzer et al., 1990) conducted a diagnostic interview. If a diagnosis of schizophrenia or schizoaffective disorder was confirmed, then the research team proceeded to collect all relevant file information.

Results

Socio-demographic characteristics

As presented in Table 1, the AS and the NAS participants did not differ as to age and number of years of successfully completed education. While only 47% of the AS participants had been employed at least once in their lives, this was true of 90% of the NAS participants. There was no significant difference in the proportions that had fathered a child.

Psychiatric history

The AS and the NAS participants did not differ as to psychiatric history. Neither the age of the first admission to a psychiatric ward, the total number of admissions, nor the total duration of inpatient care differed. There were no significant differences between the two groups as to reasons for admission or legal status at admission.

Criminal history

The AS participants were significantly younger than the NAS participants at the first conviction. The AS compared to the NAS participants had been convicted, on average, for more crimes. The AS and NAS participants did not differ as to the mean number of violent crimes, but did differ as to the number of non-violent crimes. A significant proportion of the AS participants were convicted of their first crime prior to their first psychiatric admission, compared to none of the NAS participants.

Table 1. Comparisons of antisocial and non-antisocial male offenders with schizophrenia

Variables	Antisocial	Non-antisocial	Statistics
Socio-demographic			
Mean age (in years)	M = 34.71 (SD = 8.55)	M = 36.40 (SD = 4.95)	t(25) = -0.07, p = 0.52
Mean number of years of education	M = 9.70 (SD = 1.06)	M = 9.63 (SD = 1.51)	t(16) = 0.12, p = 0.90
Percent of subjects with any previous employment	47.10%	90%	X^2 (1, N = 27) = 4.98, p = 0.03
Percent of subjects with any children	17.60%	10%	X^2 (1, N = 27) = 0.29, p = 0.59
Psychiatric history			
Mean age at first admission (in years)	M = 21.87 (SD = 4.35)	M = 22.32 (SD = 5.66)	t(25) = -0.23, p = 0.82
Mean total number of admissions	M = 8.59 (SD = 6.22)	M = 8.40 (SD = 8.22)	t(25) = 0.07, p = 0.95
Mean total time spent in a psychiatric facility (years)	M = 3.25 (SD = 2.94)	M = 3.83 (SD = 4.00)	t(25) = -0.43, p = 0.67
Percent of subjects by reason for admission			X^2 (1, N = 26) = 0.40, p = 0.53
Symptoms	57.90%	42.10%	
Aggression	71.40%	28.60%	
Percent of admission by legal status at admission			
Voluntary	59.0%	70.9%	X^2 (1, N = 230) = 3.32 , p = 0.19
Involuntary (civil)	18.8%	14.0%	
Involuntary (criminal)	22.2%	15.1%	

Criminal history

Mean age at first conviction (in years)	M = 19.59 (SD = 3.46)	M = 28.34 (SD = 4.84)	t(25) = -5.47, p = 0.00
Mean total number of crimes	M = 15.59 (SD = 12.11)	M = 3.00 (SD = 2.58)	t(18) = -4.13, p = 0.01
Mean total number of non-violent crimes	M = 11.18 (SD = 12.05)	M = 0.20 (SD = 0.63)	t(16) = -3.75, p = 0.02
Mean total number of violent crimes	M = 4.29 (SD = 2.54)	M = 2.70 (SD = 2.63)	t(25) = -1.55, p = 0.13
Percent of subjects with at least one conviction prior to the first psychiatric admission	75%	0%	X^2 (1, N = 25) 12.98, p = 0.00

Discussion

The present study examined 27 men with schizophrenia who were convicted of at least one criminal offence. The sample was divided into two groups, the antisocial group and the late-starters or the non-antisocial group. The antisocial group presented a stable pattern of antisocial behavior prior to the emergence of schizophrenia, while the non-antisocial group displayed no antisocial behavior prior to the onset of schizophrenia or criminality.

The two groups of offenders differed in their pattern, frequency, and type of offending. As hypothesized, the antisocial men were first convicted, on average, nine years earlier than the non-antisocial men. Almost all of the antisocial participants, and none of the non-antisocial participants were first convicted for a criminal offence prior to the first psychiatric admission. In addition, the antisocial group was convicted of significantly more non-violent offences than the non-antisocial group. Both groups, however, committed similar numbers of violent crimes.

The results of the present study concur with those of previous investigations in finding that an early onset of antisocial behaviour is associated with elevated rates of non-violent offending among men with schizophrenia and without (Hodgins, 2000; Moffitt & Caspi, 2001). Some studies have also observed an elevated rate of violent offending among the antisocial men with schizophrenia. For example, Tengström et al. (2001) examined all men in Sweden who were convicted of a violent crime between 1988 and 1995, and who were diagnosed with schizophrenia. Early-start offenders were defined as those individuals who had been convicted of a crime before their 18th birthday, and those who were convicted after the age of 18 were defined as late-start offenders. Twenty-six percent of early-start offenders and 2% of late-start offenders were diagnosed with APD. The early-start offenders committed more

crimes, more violent crimes, and more serious violent crimes than the late-start offenders. The results of the present study are consistent with those from the above-mentioned Swedish study, in showing that early-start offenders were first convicted, on average, nine years earlier than the late-start offenders. However, the definition of early versus late-start offenders differed in the two studies. The late-start offenders in the present study demonstrated no history of conduct or antisocial behavior prior to the onset of the mental illness. Furthermore, the late-start offenders in the present study committed proportionately more violent crimes than non-violent crimes while the reverse was true for the early-starter offenders. This finding concurs with previous research that has shown that late-start offenders commit fewer crimes than early-starters and that most of their crimes are violent (Hodgins et al., 1999; Hodgins, 2000).

As in the present study, in the Swedish study described above, the early-start as compared to the late-start offenders presented less stable work histories, and had completed fewer years of education. However, the psychiatric histories of these two groups of men were similar. The results of the present study are consistent in demonstrating that the presentation of schizophrenia among early and late-start offenders is similar, but with the late-start offenders being admitted for the first time to a psychiatric ward, on average, a year later than the early-start offender.

Hodgins, Toupin, Fiset, and Moisan (1995) evaluated a group of men with schizophrenia discharged from one forensic, and two general psychiatric hospitals. Of the 74 men assessed, 20 received a concurrent diagnosis of APD indicative of early onset and stable antisocial behaviour. The men with APD were first convicted, on average, at a younger age than the non-APD men (20.9 years versus 25.7 years), committed more crimes than the non-APD group (mean 7.6 crimes versus 1.7 crimes),

and committed more non-violent crimes than the non-APD men (mean 7.4 crimes versus 1.5 crimes). In addition, 47% of men who reported antisocial behavior before the age of 15, versus 18% of men who reported little or no history of antisocial behavior in adolescence, had a juvenile criminal record. Both the APD and non-APD men with schizophrenia shared similar educational and employment histories. The results of the present study are consistent with several findings from the above study. Once again, early-start offenders began their criminal careers at an earlier age, however, the late-start offenders from the present study were, on average, three years older at first conviction than the late-start offenders in the Hodgins et al. (1995) study. Furthermore, in the above-mentioned study, the early and late-start offenders had accumulated the same number of convictions for violent offences, with each group having proportionately more convictions for non-violent offences. In the present study, although the numbers of convictions for violent offences did not differ for the two groups, the early-start offenders were convicted, on average, of two more violent offences than the late-start offenders.

Most recently, Moran and Hodgins (in press) examined a group of men with a diagnosis of a schizophrenia-spectrum disorder who were discharged from either a forensic or a general psychiatric hospital from four different countries. Twenty-two percent of the cohort received a concurrent diagnosis of APD, and 75% of the cohort was convicted of at least one crime. The men with APD, compared to those without, committed a greater mean total number of crimes (23.3 versus 6.1), were convicted of a greater mean number of non-violent crimes (17.7 versus 4.0), were first convicted of a criminal offence at a similar age, and presented similar psychiatric histories. Late-start offenders in the present study were first convicted, on average, 10 years later than the non-APD men in the above study.

Previous research has focused on the early-start male offender because he commits a greater number and greater variety of crimes. Results from the present study concur with those of previous studies in demonstrating that early-start offenders commit more non-violent crimes. Research has not focused as much attention on the late-start male offender because he begins to display antisocial behavior with the emergence of the mental illness. Since this sub-group presents little or no pattern of antisocial behavior prior to illness, it is difficult to establish clear and definitive characteristics that would allow prevention programs to be established. However, the present study demonstrated that late-start offenders commit fewer crimes, but proportionately more violent crimes. This result highlights the need for future research to examine this sub-group of men in greater depth. If replicated, these results suggest that men with schizophrenia, who commit at least one crime after the mental illness emerges, present a danger to both themselves and society.

The age of onset of alcohol and drug use was not reliably assessed in the present study. Research has shown that substance use is more frequent among individuals with schizophrenia (Regier et al., 1990) and among those with an early onset and stable antisocial behaviour (Hodgins, 2000), and that substance use increases the risk for criminal behavior and violence (Hodgins et al., 1998). However, substance use may affect early and late-start offenders with schizophrenia in different ways. The early-start offender, who begins to use substances at a young age, often makes alcohol and drug use an integral part of their norm-breaking lifestyle. The late-start offender, who displays no antisocial behavior prior to the onset of schizophrenia, may use substances to reduce prodromal symptoms, and may further exacerbate the development of psychosis (Hodgins et al., 1998). The use of alcohol and drugs may have been a factor contributing to the violent offences committed by the late-start

offenders, but this requires further verification. Furthermore, the results of the present study also suggest that the developmental course and treatments that are likely to be effective in reducing substance abuse would differ for those with APD and those without.

In the present study, antisocial and non-antisocial groups did not differ in terms of socio-demographic variables. Both groups of men had completed similar levels of education, and had fathered similar numbers of children. The non-antisocial group did, however, differ from the antisocial group in employment history. Almost all of the non-antisocial participants had obtained employment at least once, compared to less than half of the antisocial group. Previous research has shown that the early and late-start offender display similar educational and employment histories. It is hypothesized that although the early and late-start offenders completed similar years of education, the criminal activity of the early-start offenders prevented them from maintaining a consistent work regimen. The late-start offenders, all of whom had no history of antisocial behavior, maintained a more consistent employment history.

There were few differences observed between the two groups in terms of psychiatric histories and treatment. Both groups of participants had similar ages at first psychiatric admission, numbers of psychiatric admissions, time spent in psychiatric wards, reasons for admissions, and legal status at admission. These results concur with previous findings (Moran & Hodgins, in press; Tengström et al., 2001; Hodgins et al., 1998; and Hodgins et al., 1996). Men with schizophrenia and antisocial personality disorder display antisocial behaviors many years before they develop schizophrenia. As such, it has been suggested that their criminality is related to the personality disorder more so than the schizophrenia (Hodgins & Côté, 1993).

For individuals with schizophrenia and no personality disorder, the criminality may be associated with the symptoms of schizophrenia.

These two sub-groups of male offenders with schizophrenia present different needs for intervention and treatment. The early-start offenders with schizophrenia may have benefited, in childhood, from intervention programs that have been shown to effectively reduce antisocial behaviour (Hodgins & Müller-Isberner, 2000). Among such boys, the goal would be to eliminate antisocial behaviour before abuse of alcohol and drugs began, and before the symptoms of schizophrenia onset. Only empirical studies will indicate if such early interventions could prevent criminality in this population and perhaps attenuate the course of schizophrenia. Much more research is required to understand why a small group of those who develop schizophrenia begin to behave violently as the symptoms onset. As these individuals commit primarily violent offences, attention to the early presentation of psychotic symptoms is essential.

The present study is characterized by several strengths and weaknesses. This is one of few studies that have investigated the differences between men with schizophrenia, and men with both APD and schizophrenia at two different sites, in two different countries. Furthermore, complete psychiatric and criminal records were obtained. The principal weakness of this method of gathering information is that the information was originally collected for other purposes, and was missing values and facts that would have been of great interest to this study. Furthermore, as the present study is part of a larger investigation, and involved participants from outside of Québec, not all file information was collected first hand by this study's principal investigator.

An important weakness of this study is the lack of available data regarding the age of onset of the alcohol and drug use among this population. It would be of great interest to further investigate and prospectively study the alcohol and drug consumption patterns of the early and late-start offender from childhood into adulthood, and it's effects on the mental illness and criminality. A complete evaluation of alcohol and drug consumption would have allowed for a further understanding of the characteristics that may define the early and late-start offender with and without APD.

The participants involved in this study are few in number, but are representative of criminal offenders with schizophrenia. Future research should include larger samples, as well as sub-groups of individuals with schizophrenia only, schizophrenia and substance abuse, and schizophrenia and APD. Separate groups that clearly distinguish between the top confounding variables may finally unlock the key to understanding the root of schizophrenia and criminality.

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