The targets of violence committed by young offenders with alcohol dependence, marijuana dependence and schizophrenia-spectrum disorders: findings from a birth cohort

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ABSTRACT

Background: *Estimates of who is most at risk from violence by people with mental illness rest mainly on identified patient samples. This study, without such selection bias, examined the targets of violence committed by young adults with as-yet untreated alcohol dependence, marijuana dependence, or schizophrenia-spectrum disorders, to determine the extent to which their victims were co-residents or non-household members.*

Methods: *In a total birth cohort of 21-year-olds* (n = 956), *past-year prevalence of alcohol dependence, marijuana dependence and schizophrenia-spectrum disorders were diagnosed using standardized DSM-III-R interviews. None of the people with schizophrenia-spectrum disorder has been hospitalized in the past year. Past-year violence and victim targets were measured using self-reports.*

Results: *Compared with controls, cohort members with substance dependence or schizophrenia-spectrum disorders had higher* prevalence *and* frequency *rates of assault against co-residents, against non-household members, and also robbery and gang fights. Out of 39, five individuals with schizophrenia-spectrum disorder committed violent street crimes. Persons with substance dependence had similar* proportions *of violence against co-resident and non-household members, but persons with schizophrenia-spectrum disorders tended to victimize co-residents more than others.*

Conclusions: *At the age when they are most likely to contribute to the community's violence burden, young untreated offenders with alcohol or marijuana dependence or with schizophrenia-spectrum disorders assault not only co-residents, but others as well, and commit violent street crimes. Families, schoolteachers and primary care physicians have an important potentially preventive role in early identification and treatment of the disorders.*

Introduction

Research on the violent behaviour of psychiatric patients generally shows that their violence poses more of a risk to people they know than to random members of the general public (Binder and McNeil, 1986; Straznickas et al., 1993; Estroff et al., 1998; Steadman et al., 1998; Taylor and Gunn, 1999). Such findings have been taken to suggest that mentally disordered individuals in general do not contribute much to the random violence in the street that is feared by the general public (Link and Stueve, 1998). However, most research on victim choice has been done on discharged patients. The patients most often included in studies of violence and psychiatric disorder are an older group compared with the young untreated offenders who account for most of the burden of violence in the general population at its peak ages, between 15 and 24 years (Elliott, 1994; Perkins et al., 1996; Dobrin et al., 1996). Such young offenders tend to commit more crimes outside than inside the home (Clarke, 1995).

Offenders' ages may determine their victim choice via opportunities they have to interact with people they live with and others. Criminologists have shown that a strong determinant of violence is the routine activities of offenders (Meier and Miethe, 1993). The routine activities of young people involve spending evenings and weekends in public places, the peak times and places for violence (Zawitz et al., 1993). Thus, despite important findings about who is most likely to be victimized by psychiatric patients, it remains unclear how much non-household members are at risk of being assaulted by young mentally disordered adults living in the community, who have not yet become hospital patients. The present study examined the targets of violence committed by young offenders in a birth cohort, regardless of their contact with the hospital system, at the age period when they contribute most heavily to the community's violence burden.

In a previous report using this total birth cohort, we showed that young adults who met diagnostic criteria for psychiatric disorders account for a considerable amount of violence in the community (Arseneault et al., 2000). Among the Axis I disorders, measured using standardized DSM-III-R interviews, three were uniquely associated with violence: alcohol dependence, marijuana dependence and schizophrenia-spectrum disorder. These disorders were the only disorders significantly associated with violence even after controlling for gender, socioeconomic status and psychiatric comorbidity, and these associations replicated whether we measured violence using self-reports of offending or official conviction records. Persons with at least one of these three disorders constituted one-fifth of the sample, but they accounted for half of the sample's violent crimes (10% of the sample's violent offenders were uniquely attributable to schizophrenia-spectrum disorder). Although the cases met full diagnostic criteria and evidenced significant impairment (Newman et al., 1996), only 3% of the cases had been hospitalized. In contrast with studies of discharged hospital patients, these findings suggest that a significant proportion of the burden of violence that troubles the general public may be attributable to young untreated adults who are

dependent on alcohol or drugs, or prone to schizophrenia-spectrum disorder.

But a question remains: do young adults with either substance dependence or schizophrenia-spectrum disorders living in the community tend to victimize mainly people they live with, or others too? The present study aimed to determine who, co-residents or non-household members, were the victims of assaults by individuals with either alcohol dependence, marijuana dependence or schizophrenia-spectrum disorder.

Subjects and methods

Sample

Participants were members of the Dunedin Multidisciplinary Health and Development Study, a longitudinal investigation of the health, development and behaviour of a complete cohort born between 1 April 1972 and 31 March 1973, in Dunedin, a city on New Zealand's South Island (Silva and Stanton, 1996). When the birth cohort was first traced for follow-up at age three years, 91% of the eligible births participated in the assessment, providing a base sample of 1037 (52% boys). The cohort was reassessed at ages five, seven, nine, 11, 13, 15, 18 and 21 years. We report data from the age-21assessment in 1993–94. Of the 1020 cohort members still alive, 956 (94%) had complete data for this report about mental disorder and self-reported violence. Analyses showing nil attrition effects for these measures have been published elsewhere (Moffitt et al., 1994; Krueger et al., 1998). Published cross-national comparisons lend confidence about generalizing findings about violence from the Dunedin study to other industrialized nations. New Zealand and other western countries show very comparable prevalence rates of assault, rape, robbery, burglary and auto theft in national victimization surveys (Van Dijk and Mayhew, 1992), and comparable prevalence rates of assault among people of similar ages from surveys of self-reported violence (Junger-Tas et al., 1994).
The Dunedin study should be considered a study of the contribution to violence at its peak age by disordered young adults who are as yet mostly untreated; only 8% of the 389 disordered cohort members were taking psychiatric medications and only 3% had been hospitalized in the past year. In addition, cohort members were free to offend in the community. In the year prior to the interview, only 1.6% of study members spent on average 25 days in a psychiatric hospital, and 4.7% spent on average one or more nights in jail during three months of the year. In any case, the self-report measure captured assaults in institutions as well as in the community.

Mental disorders at age 21

Diagnoses were determined using the Diagnostic Interview Schedule (Robins et al., 1989) for DSM-III-R (APA, 1987). The reporting period was 12 months prior to the interview. Diagnostic procedures, reliability, validity and prevalence of the

diagnoses in the Dunedin study at age 21 have been reported in detail elsewhere (Newman et al., 1996). The 12-month prevalence closely matches the one found by the National Comorbidity Survey for 15- to 24 year-olds (Kessler et al., 1994).

Each disorder group comprised study members who met diagnostic criteria for each of the three mental disorders examined in this study, independently of psychiatric comorbidity. Nearly 10% of individuals in the cohort were diagnosed with either alcohol dependence (9.7%), or marijuana dependence (9.6%), and 4% with schizophrenia-spectrum disorder (4.2%). In the latter category were individuals who responded 'yes, definitely' to interview questions about the positive symptoms of schizophrenia, including bizarre beliefs such as 'someone was plotting against them or spying on them', and 'they were sent special messages through television or radio' and sensory perceptions such as 'hearing voices other people could not hear', and 'unusual feelings inside or on their body'. The interview ruled out symptoms with plausible explanations and symptoms occurring solely under the influence of alcohol or drugs or during a major depressive episode. Structured psychiatric interviews are known to identify such subjects who endorse psychotic-type experiences and beliefs, some of whom are clinically psychotic, but many of whom are not (Kendler et al., 1996), and whose symptoms lie on a continuous spectrum from schizotypal personality disorder to schizophrenia (Raine et al., 1995; Van Os et al., 1999). Based on epidemiological studies (Hodgins, 1992; Kessler et al., 1994; Hodgins et al., 1996), we expect only one-quarter of these 39 Dunedin study members to emerge with schizophrenia. However, the group was far from in good mental health in the year prior to the interview; 85% had comorbid diagnoses, 77% said their symptoms interfered with their lives, 54% had their symptoms corroborated by an informant, 39% had some contact with treatment, and 10% were taking psychiatric medication, though none was hospitalized that year (Newman et al., 1996).

Self-reported violence

Self-reports of criminal offences committed during the past year were obtained in private standardized interviews at age 21 using the Self-Reported Delinquency Interview developed for the US National Youth Survey and National Institute of Justice multi-site surveys (Elliott and Huizinga, 1989). The interview assessed 48 different illegal offences including six violent offences. The questions discriminated between three types of violent offences: two questions assessed simple and aggravated assaults against co-residents (hit someone you lived with; attacked someone you lived with with a weapon or with the idea of seriously hurting or killing them); two other questions assessed simple and aggravated assaults against non-household members (hit someone else; attacked someone else with a weapon or with the idea of seriously hurting or killing them); two more questions assessed serious violent acts, often referred to as 'street crimes' (used a weapon, force or strong-arm methods to rob a person; were involved in a gang fight).

The Self-reported Delinquency Interview included a series of follow-up questions to obtain more details about the offender–victim relationship. If participants reported committing simple or aggravated assault, they were asked to 'Think of the most serious time you did this in the past year, where the most serious means the worst physical injury involved'. Then they were asked, in the case of assaults against co-residents, whether their victim was a spouse, a girl/boyfriend, a flatmate, a parent, a sibling or a child. In the case of assaults against non-household members, participants were asked whether their victim was a stranger, an acquaintance, a friend or a family member.

A self-report measure of violence was used in the present study, instead of official conviction records, because convictions capture only a small proportion of violent offences committed (Elliott et al., 1986; Elliott, 1994). For example, in the Dunedin cohort, 2403 violent offences were reported by study members in the last 12 months, compared with 107 violent court convictions, yielding a ratio of 22 undetected self-reported violent offences for every court conviction obtained in the year. In addition, conviction records seldom specify the offender–victim relationship.

Statistical analyses

We used logistic regression models to test whether, compared with other study members, individuals with either alcohol dependence, marijuana dependence or schizophrenia-spectrum disorder were more likely to commit each of the three different types of violent offences: violence against co-residents, against non-household members or street violence. These analyses compared each of the three disorder groups against study members who did not meet diagnostic criteria for these three disorders. Thus, the odds ratios and 95% confidence intervals in Table 1 provide an estimate of the risk of being a perpetrator (committing at least one violent offence in the last 12 months) in a disorder group compared with the general population comprising both healthy individuals and people having disorders other than substance dependence and schizophrenia-spectrum disorders.

We used negative binomial models to test whether, compared with other study members, individuals with either substance dependence or schizophrenia-spectrum disorders differed in their frequency rate (FR) of offending over the one-year measurement period (Table 2). Negative binomial models are appropriate when the dependent variable is a frequency count, and when there is heterogeneity among individuals or when there is dependence in an individual's count (Gardner et al., 1995; Long, 1997). Because the reporting period for violent offences was constant in this study (i.e. 12 months for all study members), we did not use an offset to adjust the parameter estimates for differing reporting periods (Gardner et al., 1995). The exponentiated parameter estimates for the negative binomial model are interpreted as the ratio of frequency rates of offending; for example, a frequency rate ratio (FRR) of 2 for the comparison of those with a disorder versus those without indicates that the disorder group

Table 1: Prevalence of study members who self-reported assaults against co-residents, assaults against non-household members, or violent street crimes among groups with substance dependence or schizophrenia-spectrum disorder

	DSM-III-R Axis I disorders							
	No substance dependence nor schizophrenia-spectrum disorder (*n*=782, 82%)	Alcohol dependence (*n*=92, 9.7%)		Marijuana dependence (*n*=90, 9.6%)		Schizophrenia-spectrum disorder (*n*=39, 4.2%)	
Self reported violence	%	%	OR (CI) AOR[a] (CI)	%	OR (CI) AOR[a] (CI)	%	OR (CI) AOR[a] (CI)
Hit or attacked co-residents (N=183, 19.1%)	15.5	34.8	2.9 (1.8-4.7) 3.7 (2.3-6.1)	34.4	2.9 (1.8-4.6) 4.0 (2.4-6.7)	48.7	5.2 (2.7-10.0) 6.2 (3.1-12.3)
Hit or attacked non-household members (N=197, 20.6%)	15.7	42.4	3.9 (2.5-6.2) 3.2 (2.0-5.2)	46.7	4.7 (3.0-7.4) 3.7 (2.3-5.9)	38.5	3.4 (1.7-6.6) 3.1 (1.6-6.3)
Strongarm robbery or gang fights N=33, 3.5%)	15	10.9	7.8 (3.3-18.7) 5.6 (2.3-13.5)	16.7	12.8 (5.8-28.4) 8.4 (3.7-18.9)	12.8	9.4 (3.1-28.3) 8.3 (2.7-25.8)

[a] AOR are estimates of risk adjusted for sex with 95% confidence interval

offended twice as much as those without the disorder over a 12-month period. Alternatively, a FRR of 2 can also be interpreted as the difference in the expected number of offences over a 12-month period; for example, an FRR of 2 indicates that the expected number of offences is twice as high in the disorder group compared with the comparison group. To aid interpretation, in the results section we list the predicted rate of offending for each of the group in this study. In these frequency-rate analyses, we combined into a single variable the offence frequency of violence against non-household members (*n* of offences = 1002) with the offence frequency of street violence (*n* of offences = 106) because there were too few violent street crimes to analyse separately.

We ascertained whether each of the disorder groups committed a disproportionate number of their offences against co-residents rather than against victims from other settings. These analyses compared types of offences within each disorder group (Figure 3). For each disorder group, we divided the number of incidents of each type of violent offence (against co-residents or against non-household members, including violent street crimes) by the total number of all violent offences committed by the group, thus yielding offence proportions.

Results

Prevalence of violent perpetrators among individuals with substance dependence or schizophrenia-spectrum disorders

Relative to the comparison group, individuals who met diagnostic criteria for either alcohol dependence, marijuana dependence or schizophrenia-spectrum disorder were at greater risk of committing violence (see Table 1). These results were obtained across all three types of violent offences. The elevated risk for different types of violent offences held even when we controlled for gender. Results remained similar whether we looked at individuals with schizophrenia-spectrum disorder only (n = 21) and individuals with schizophrenia-spectrum disorder and comorbid substance dependence disorders (*n* = 18).

In light of these results, we then examined the relationship between offenders and their non-resident victims. We discovered that similarly to people without substance dependence or schizophrenia-spectrum disorder, individuals who met diagnostic criteria for at least one of these disorders were most likely to have committed their most serious non-resident assault against a stranger (Figure 1). When we examined the victim–offender relationship in cases of assaults against co-residents, we discovered that individuals who met diagnostic criteria for either substance dependence or schizophrenia-spectrum disorder were most likely to have committed their most serious co-resident assault against a partner (Figure 2).

Table 2: Frequency rates (FR) and frequency rate ratios (FRR) of cohort's self-reported violent offences committed by individuals with substance dependence or schizophrenia-spectrum disorder and by other study members in the past 12 months

	DSM-III-R Axis I disorders						
	No substance dependence nor schizophrenia-spectrum disorder	Alcohol dependence		Marijuana dependence		Schizophrenia-spectrum disorder	
	(*n*=782, 82%)	(*n*=92, 9.7%)		(*n*=90, 9.6%)		(*n*=39, 4.2%)	
Self-reported violence	*Frequency Rate of Offences (FR)*	FR	FFR[a] (CI)	FR	FFR[a] (CI)	FR	FFR[a] (CI)
Hit or attacked co-residents (N of offences=1295)	0.6	1.4	2.3 (1.1-4.9)	4.8	7.7 (3.5-16.9)	8.6	13.7 (4.3-43.2)
Hit or attacked non-household members and street violence (N of offences=1108)	0.8	2.1	2.7 (1.3-5.8)	3.9	5.17 (2.4-10.9)	3.9	5.0 (1.5-16.7)

[a]FFR shows the frequency rate ratio and 95% confidence interval

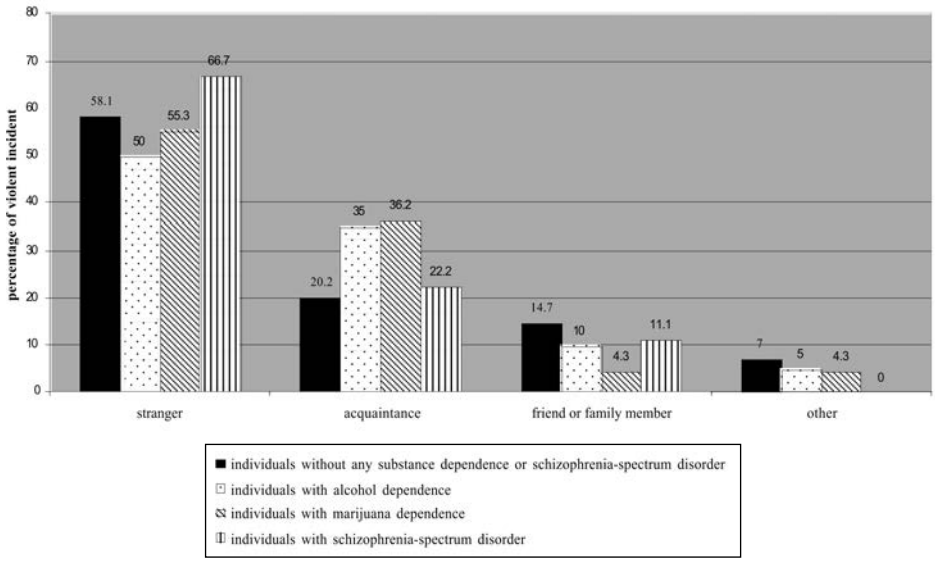

Figure 1. Victim identified in the worst violent incident against non-household members

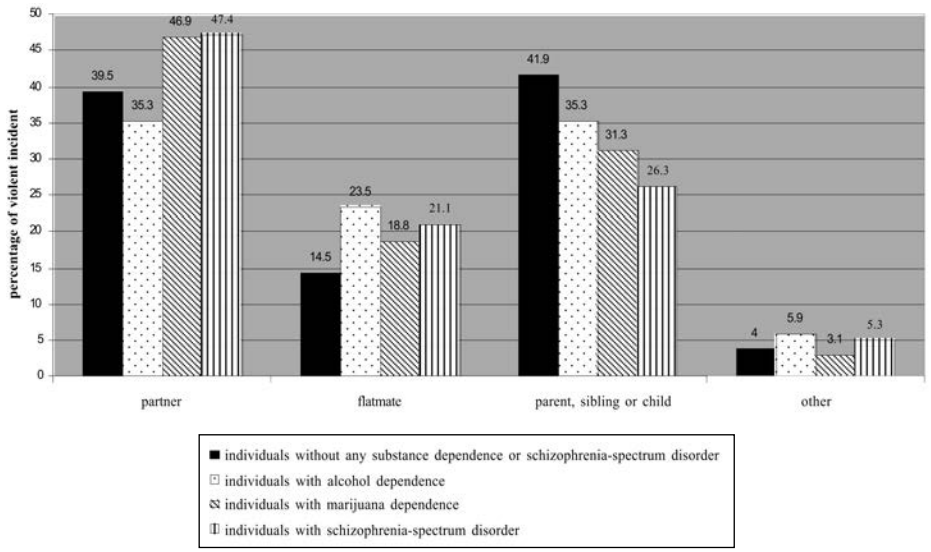

Figure 2. Victim identified in the worst violent incident against co-residents

Frequency of violent offences among individuals with substance dependence or schizophrenia-spectrum disorders

Relative to the comparison group, individuals who met diagnostic criteria for either alcohol dependence, marijuana dependence or schizophrenia-spectrum disorder had a greater frequency rate of violent offending in the past year.

Importantly, each of the three disorder groups committed more assaults against someone they lived with but also more assaults against non-household members, including more robberies and gang fights (see Table 2). Differences in frequency rate ratios between the three disorder groups and across the two types of violent offences were not significant, as indicated by overlapping confidence intervals.

Proportion of violent offences against co-residents versus other victims by individuals with substance dependence or schizophrenia-spectrum disorders

Among the 1096 offences committed by study members who did not have any of the three disorders, 45% were assaults against co-residents (victims they lived with) while 55% were violent incidents against non-household members (assaults against victims they did not live with or street violence) (Figure 3). Likewise, among the offences committed by alcohol-dependent or marijuana-dependent individuals, similar proportions were committed against co-residents and against non-household members. However, a higher proportion of offences committed by individuals with schizophrenia-spectrum disorder were against co-residents (69%) than against non-household members (31%).

Comment

At the age when they are most likely to contribute to the community's violence burden, young untreated offenders with substance dependence or schizophrenia-spectrum disorder assault not only co-residents but other people as well. Study members with alcohol dependence, marijuana dependence or schizophrenia-spectrum disorder showed elevated risks and elevated rates of

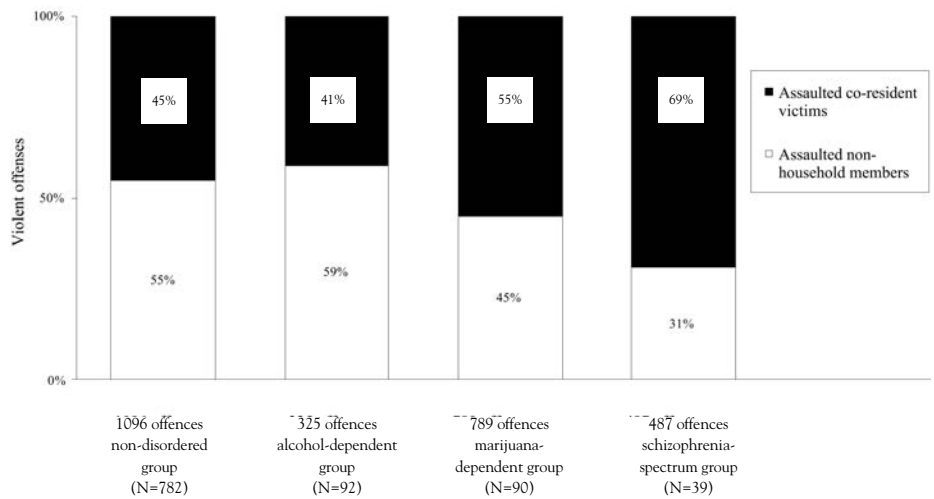

Figure 3: Proportions of violent offences against co-residents and against non-household members within disorder groups

violent offences against both people living with them and against others, including acts of street violence. While individuals with substance dependence were equally likely to assault co-residents and non-household members, individuals with schizophrenia-spectrum disorder were more likely to have assaulted victims they lived with. Most victims of the most serious domestic assaults were partners and most victims away from home were strangers.

Recent findings about the association between mental disorders and violence elucidate why young offenders with a mental disorder also victimize non-household members (Arseneault et al., 2000). In previous research, we showed that substance use prior to the offence accounted for most of the violence committed by individuals with alcohol dependence: when they are violent, people with alcohol dependence have usually been consuming alcohol or drugs beforehand. Young alcohol-dependent individuals possibly go to public places to access and consume alcohol. Because of the opportunity in public places to interact with people other than those with whom they live, alcohol-dependent individuals may be likely to assault non-household members. We also showed that a juvenile history of conduct disorder accounted for most of the violence committed by individuals with marijuana dependence: people with marijuana dependence and violent behaviour have a long-standing involvement in crime. Because of their involvement in the illegal economy of drug markets, young marijuana-dependent individuals may find themselves reliant on violence to solve awry transactions with dealers and other people involved in drug-related interactions. Finally, we showed that excessive threat perceptions account for part of violence among individuals with schizophrenia-spectrum disorder: violent people with schizophrenia-spectrum disorder perceive the world as a threatening place. This distorted information processing may influence young individuals with schizophrenia-spectrum disorder to use violence in response to interactions with strangers by whom they might wrongly feel threatened. However, because of this constant feeling of threat, they may constrain their social interactions to family members and people they live with, and thus victimize household members more often.

Our results about the targets of violent individuals with either substance dependence or schizophrenia-spectrum disorder may at first seem to contradict conclusions that the general public should not fear violence from discharged psychiatric patients (Steadman et al., 1998; Link and Stueve, 1998). However, comparing our results with studies on psychiatric patients could be misleading. Rather, our findings emphasize sampling differences between cohort studies and patient studies, with offenders' age being the most relevant difference between samples in relation to victim choice. The age distinction is relevant because the National Crime Victimization Surveys (NCVS) show that slightly more than half of all violent crimes are committed by strangers who are not family members or acquaintances, and these stranger or casual-acquaintance crimes are more likely to occur in young age groups (16–24), whereas crimes against relatives or friends are relatively more common after age 25 (Perkins

et al., 1996). Similarly, crime statistics show that whereas other crime types decrease with age, family violence shows a steady increase with age (Gottfredson and Hirschi, 1986). In the MacArthur study, which showed that discharged psychiatric patients victimized primarily intimates, 80% of the participants were between ages 25 and 40 when their violence was recorded (Steadman et al., 1998). Because the first hospital admission for most men and women with schizophrenia symptoms occurs after age 25 (Hafner et al., 1993), studies of discharged patients necessarily focus on an older age group than the Dunedin birth cohort. The possibility must be considered that findings from the Dunedin sample better represent the behaviour of the age group responsible for the bulk of violence that concerns the general public. Studies of discharged patients provide important information to hospitals trying to make discharge decisions. However, these findings may be potentially misleading as sources of information about preventing violence in the community. Based on the similarities found between the comparison group and individuals with a mental disorder in patterns of offending, our study tends to suggest that young violent offenders represent a risk to the general public, whether or not they have a mental disorder. As such, the public should be concerned primarily by the age of the occupants living in housing facilities in their community, as opposed to whether they suffer from a mental disorder.

The results from our study also indicate that intimate partners were the primary domestic victims of the young offenders with either substance dependence or schizophrenia-spectrum disorder in the Dunedin cohort. These results suggest that mental health clinicians should screen for partner violence and treat perpetrators before injury occurs (Danielson et al., 1998). Results also show that young offenders with either substance dependence or schizophrenia-spectrum disorder living in the community victimize people they do not know. Strangers were the frequent victims of the most serious offences committed by young violent offenders. However, we cannot accurately estimate the risk for the general public of being attacked by young adults with substance dependence or schizophrenia-spectrum disorder, because in our research the victim–offender relationship was specified only for the worst violent incident, not all violent incidents. Moreover, our study is limited by a lack of information on the potential role of the victims, some of whom may have provoked attack or participated in mutual assault.

We found that young untreated individuals with substance dependence and those with schizophrenia-spectrum disorder commit more violence than those without such disorders against both co-residents and against non-household members. Our findings do not, however, suggest that much violence outside the domestic environment, or to strangers, can be attributed to people with schizophrenia-spectrum disorder because they represent a small group in the cohort. Preventive strategies might be more effective with an increased focus on early detection and treatment of substance dependence and schizophrenia symptoms among youth. People involved in contact with individuals with substance dependence or schizophrenia-spectrum disorders, including families,

schoolteachers, primary care physicians and police, should be alert to early signs of mental-health problems among children and adolescents, and recommend immediate treatment rather than rely on punitive strategies.

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