

# Co-Occurring Mental Disorders Among Criminal Offenders

Gilles Côté, PhD; and Sheilagh Hodgins, PhD

**Many convicted offenders suffer from major mental disorders. These offenders commit crimes with great frequency. They do not receive mental health care and are often found in isolation cells of correctional facilities. The present investigation examined lifetime multiple disorders, measured by the DIS, among a representative sample of male penitentiary inmates. Pure forms of the major mental disorders were rare. All possible combinations of the major disorders were found to exist. No patterns of groupings of disorders were evident.**

It has long been suggested that the prevalence rates of the severe mental disorders (schizophrenia, schizophreniform disorder, major affective disorders, bipolar disorder, atypical bipolar disorder, organic brain syndrome) are higher among incarcerated offenders than among the general population.<sup>1,2</sup> In a review of the relevant literature Monahan and Steadman<sup>3</sup> concluded that the prevalence of psychoses among incarcerated offenders varied from 1 to 7 percent. However, this conclusion was based on data from methodologically flawed investigations. Six recent studies have employed a reliable, valid, standardized diagnostic instrument, the Diagnostic Interview Schedule (DIS)<sup>4-6</sup> to evaluate representative samples of prisoners.<sup>7-12</sup> All have used the DIS and found lifetime prevalence rates for the major medical disorders exceeding those

estimated for males and for females in the general population. In at least one study it has been demonstrated that the disorders appear in most cases before the first sentence to a penitentiary.<sup>12</sup>

It is essential to begin to understand these mentally disordered offenders. They commit crimes at a high rate and appear to be particularly prone to violence, at least in some cases<sup>13-15</sup> (G. Côté, S. Hodgins, unpublished data, November 1989; S. Hodgins, G. Côté, unpublished data, November 1989). They are not receiving mental health care<sup>12,16,17</sup> and are often held in isolation cells<sup>18</sup> (S. Hodgins, G. Côté, unpublished data, June 1989). These individuals may well differ from other mentally disordered persons in that they suffer simultaneously from a multiplicity of disorders. Mirsky,<sup>10</sup> using the DIS, evaluated a representative sample of inmates of the Cook County Jail. Almost all of those who suffered from a severe disorder also met the DSM-III criteria for at least one other disorder: in fact 78% of the schizo-

Drs. Côté and Hodgins are affiliated with the Centre de Recherche Philippe Pinel, Université de Montréal. Address reprint requests to Dr. Gilles Côté, Centre de Recherche Philippe Pinel, 10905, Boul. Henri-Bourassa Est, Montréal, Québec, Canada, H1C 1H1.

phrenics, 82% of those who met the criteria for bipolar disorder and 78% of those with a major depression received three or more additional diagnoses. In an evaluation of men accused of criminal offenses, it was found that over half received a diagnosis other than sociopathic personality.<sup>19</sup> Similarly, in conclusion to an investigation of 50 pretrial psychiatric evaluations, it was noted that diagnoses of schizophrenia or bipolar disorder, uncomplicated by substance abuse or APD, were infrequent.<sup>20</sup> Among men accused of a criminal offense, it was found that nearly half of those with a diagnosis of schizophrenia manifested, as well, a depression, substance abuse, or head injury.<sup>21</sup> Multiple disorders are not limited to offenders, they have been identified among the general, adult and child, population<sup>22-24</sup> and among substance abusers.<sup>25-27</sup>

It has been proposed that individuals with multiple disorders are oriented to prison rather than treatment settings simply because they do not present as pure types.<sup>28</sup> In Great Britain, Taylor and Gunn<sup>29</sup> demonstrated that, among men accused of a criminal offense, schizophrenics with substance abuse or an additional disorder were six times less likely than pure schizophrenics to be sent for treatment to a hospital. This finding suggests that Klassen and O'Connor's<sup>30</sup> conclusion, that substance abusers are more likely to enter the criminal justice system whereas the schizophrenics enter the mental health system, is too simplistic.

Multiple disorders may be associated with aggressive or violent behavior.

Lamb<sup>31</sup> observed that young, psychotic, substance abusing males were often assaultive, lacked internal controls, and showed self-destructive behavior. Concluding a review of the literature on the association between psychopathology and violence, Krakowski, Volavka and Brizer,<sup>32</sup> noted that a high percentage of assaultive schizophrenic patients have secondary diagnoses and that chronic depressive traits are prominent in certain categories of violent patients with personality disorders. Subjects with APD and alcohol dependence are more likely than those with a primary diagnosis of alcohol dependence to use weapons while drunk.<sup>33</sup>

Not only has the multiplicity of disorders been associated with antisocial behavior, it has been shown to effect the course of a disorder and the severity of the symptoms,<sup>24,34</sup> the efficacy of treatment,<sup>26</sup> the dynamic response to the disorder,<sup>35</sup> as well as clinician's response to the patient.<sup>36-38</sup> In addition, the chronology of onset appears to effect the symptomatology.<sup>33,39</sup>

As diagnostic criteria have become more objective, reliable, valid, and standardized, diagnostic instruments have become available to researchers; the evidence of the importance of identifying combinations of disorders has become overwhelming. The present investigation examined multiple diagnoses among a representative sample of penitentiary inmates (offenders who have received a sentence of two years or longer). This initial descriptive study was designed to provide hypotheses for future work on the mental health system's re-

jection of persons with multiple disorders, the efficacy of treatment with such cases, and the association between various disorders and violence.

### Method

**Subjects** A random sample, controlled for facility and age, of 650 inmates of the penitentiaries situated in Quebec was identified. The sample included 21.9 percent of the male penitentiary population in April 1988. Of the 650, 495 (76.2%) were interviewed. Those who accepted the interview are similar to those who refused with respect to the total length of sentences, number of terms in the penitentiary, the security level of the facility where they were housed, type of crime which lead to current admission, the most serious crime for which the subject was convicted, and marital status. However, those who refused the interview ( $M = 32.82$ ,  $SD = 8.72$ ) were slightly older than those who accepted ( $M = 31.09$ ,  $SD = 8.52$ ) ( $t(631) = 2.07$ ;  $p = .04$ ) and had been in the penitentiary longer during this current term ( $M = 171.4$  weeks,  $SD = 214.49$ ) than the others ( $M = 116.14$  weeks,  $SD = 162.42$ ) ( $t(631) = 2.81$ ;  $p = .005$ ).

The subjects interviewed were, on average, 31.09 years old; with ages ranging from 19 to 67 years. More than half (51.8%) were single. The mean number of penitentiary terms served is 1.83 ( $SD = 1.29$ ) with median total sentences of 1,980.00 days.

**Instrument** The present investigation employed a French translation of the DIS version III-A to establish diag-

noses. This instrument is designed to be used by lay interviewers and employs DSM-III criteria for diagnoses. Many studies concur on the validity of the DIS.<sup>4,40-44</sup> Successful use of the DIS in languages other than English has been reported.<sup>44-47</sup>

Sixty-nine subjects were reinterviewed after a mean delay of five weeks by a different interviewer; interrater agreement was good ( $kappa .78$ ).<sup>48</sup>

**Procedure** Once institution staff had been made aware of the study and the procedures to be followed, each inmate received an individually addressed letter explaining the proposed study and inviting him to participate. During the days which followed, each inmate was given a pass to meet an interviewer. The interviewer presented the project in detail, answered all questions, and asked the inmate to sign two consent forms. The first of these forms requested his participation in an interview which would deal with the extent of mental health problems within the penitentiaries; the second requested access to health and criminal justice files. The interviewers initially met each inmate in an effort to reduce to a minimum the number of refusals. If the inmate consented to the interview, it took place immediately. If he refused, a few weeks later he was asked again to reconsider his decision. After the interview each inmate received a letter thanking him for his participation in the study.

The interviewers were recruited among Correctional Service of Canada contractual employees. A minimum requirement was an undergraduate degree

in psychology, criminology, sociology, or social work. An initial screening of files was made; potential candidates were then seen in an interview. The initial selection criteria included work experience, pertinent university training, training in conducting interviews, dynamism, and good communication skills. Candidates selected after the interview were hired conditionally on successful completion of a week-long training program.

The first training program was conducted by a psychologist who had worked with the DIS for many years, the second by two psychologists, members of the research team. Eighteen potential interviewers participated in the training of whom 13 were hired for the project.

Several procedures were followed to ensure the validity and reliability of the data being collected. One, the first 50 interviews were each checked by an experienced DIS interviewer to ensure that the interviewers were correctly administering the instrument. Only minor problems were noted and these were immediately communicated to the interviewer concerned. Two, each DIS was checked by a psychologist who knew the instrument in order to identify contradictions and to verify that the interviewer's comments and the verbatim transcript of the interview corresponded to his/her official answers. If a problem was identified, the interviewer was immediately contacted; sometimes it was necessary to interview the inmate a second time in order to clarify answers or to complete sections of the DIS which were missing. The research team met with the

interviewers once a week during the first three weeks of the project and biweekly for the duration of the project. During these meetings, problems were discussed, an ex-inmate was interviewed, and difficulties were identified and corrected. All of the problems with the DIS were noted in a special bulletin which was circulated regularly among the interviewers.

The results are presented using lifetime disorders. In establishing diagnoses, as is the practice, DSM-III exclusion criteria were ignored. Subjects who met the criteria for organic brain syndrome were omitted as there were so few of them. In all analyses, schizophreniform disorder is included with schizophrenia. A major depression was not counted as a concurrent diagnosis for bipolar disorder or for atypical bipolar disorder.

## Results

The lifetime prevalence rates of mental disorders are presented in Table 1. The rates of the major mental disorders far exceed those for men in the general population: the lifetime prevalence of the schizophrenic disorders is seven times higher, the rate of bipolar disorder

**Table 1**  
Lifetime Prevalence Rates of Key Lifetime Disorders

Disorder	Frequency (%)
Schizophrenic disorder	32 (6.5)
Schizophreniform disorder	6 (1.2)
Bipolar disorder	17 (3.4)
Atypical bipolar disorder	16 (3.2)
Major depression	73 (14.8)
APD	303 (61.5)
Alcohol abuse/dependence	330 (66.9)
Drug abuse/dependence	241 (48.9)

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is six times higher, and that of major depression is twice as high (see Refs. 7, 49, and 50 as rates in the general population). Two thirds of the subjects fulfilled the criteria for alcohol abuse and/or dependence, and half for other drug abuse and/or dependence.

As shown in Table 2, the major disorders rarely occurred in a pure form; rather they occurred in combination with other major disorders or with APD, alcohol or drug abuse and/or dependence. Combinations of three or more of disorders were frequent: 55 percent of the schizophrenics, 65 percent of those who met the criteria for bipolar disorder, 44 percent of those with an atypical bipolar disorders, and 44 percent of those with a major depression received three or more additional diagnoses.

Table 3 presents the frequencies of multiple diagnoses within each diagnostic category. Schizophrenic disorders, major depression, and bipolar disorders are each associated, but to varying degrees, with all the other disorders examined. APD, alcohol and drug abuse and/or dependence are more often associated with each other than with a major dis-

order considering notably the odds ratios.

The odds ratios were calculated for each combination of disorders to indicate the odds of having both diagnoses. For example, a subject with schizophrenic disorder had 2.42 times the odds of receiving a diagnosis of drug abuse and/or dependence ( $26 \text{ schizophrenic disorder and drug abuse/dependence} \times 240 \text{ nonschizophrenic disorder and non-drug abuse/dependence} \div 12 \text{ schizophrenic disorder and nondrug abuse/dependence} \times 215 \text{ nonschizophrenic disorder and drug abuse/dependence}$ ) compared with a subject who did not receive a diagnosis of schizophrenia.

Having found that the severe disorders are almost always associated with at least one other disorder, and that they are associated with all the other disorders examined, a search for patterns of disorders was undertaken. As can be observed in Table 4, all the possible combinations of disorders were found. Consequently, the number of subjects with each combination is low. The most frequently occurring combination of disorders was APD, alcohol abuse/depend-

**Table 2**  
**Frequency of Co-Occurring Disorders**

Disorder	N	Number of Additional Lifetime Disorders		
		None (%)	1-2 (%)	3 or More (%)
Schizophrenic disorders	38	3 (7.9)	14 (36.8)	21 (55.3)
Bipolar disorder	17	1 (5.9)	5 (29.4)	11 (64.7)
Atypical bipolar disorder	16	1 (6.3)	8 (40.0)	7 (43.8)
Major depression	73	4 (5.5)	37 (50.6)	32 (43.8)
APD	303	33 (10.9)	220 (72.6)	50 (16.5)
Alcohol abuse/dependence	330	49 (14.8)	227 (68.8)	54 (16.3)
Drug abuse/dependence	241	18 (7.5)	170 (70.5)	53 (22.0)

Only the following disorders were considered: schizophrenic disorders (schizophrenia and schizophreniform disorder), bipolar disorder, atypical bipolar disorder, major depression, APD, alcohol and drug abuse/dependence.

**Table 3**  
**Frequency of Co-Occurring Disorders Within Each Diagnostic Category**

Category and Co-Occurring Disorder	N and Frequency (%)	Odds Ratio	<i>p</i>
Schizophrenic disorders	N = 38		
Bipolar disorder	7 (18.4)	10.05	—
Atypical bipolar disorder	1 (2.6)	0.79	—
Major depression	9 (23.7)	1.90	0.17
APD	24 (63.2)	1.08	0.96
Alcohol abuse/dependence	28 (73.7)	1.42	0.46
Drug abuse/dependence	26 (68.4)	2.42	0.02
Bipolar disorder	N = 17		
Schizophrenic disorders	7 (41.2)	10.05	—
Atypical bipolar disorder	—	—	—
Major depression	—	—	—
APD	11 (64.7)	1.16	0.98
Alcohol abuse/dependence	11 (64.7)	0.90	1.00
Drug abuse/dependence	13 (76.5)	3.54	0.04
Atypical bipolar disorder	N = 16		
Schizophrenic disorders	1 (6.3)	0.79	—
Bipolar disorder	—	—	—
Major depressive episode	—	—	—
APD	13 (81.3)	2.79	0.16
Alcohol abuse/dependence	9 (56.3)	0.62	0.51
Drug abuse/dependence	13 (81.3)	4.73	0.02
Major depression	N = 73		
Schizophrenic disorders	9 (12.3)	1.90	0.17
Bipolar disorder	—	—	—
Atypical bipolar disorder	—	—	—
APD	52 (71.2)	1.67	0.08
Alcohol abuse/dependence	61 (83.6)	2.85†	0.002
Drug abuse/dependence	42 (57.5)	1.50	0.14
APD	N = 303		
Schizophrenic disorders	24 (7.9)	1.08	0.96
Bipolar disorder	11 (3.6)	1.16	—
Atypical bipolar disorder	13 (4.3)	2.79	0.16
Major depression	52 (17.2)	1.67	0.08
Alcohol abuse/dependence	225 (74.3)	2.34	0.000‡
Drug abuse/dependence	180 (59.4)	3.09	0.000‡
Alcohol abuse/dependence	N = 330		
Schizophrenic disorders	28 (8.5)	1.42	0.46
Bipolar disorder	11 (3.3)	0.90	1.00
Atypical bipolar disorder	9 (2.7)	0.62	0.51
Major depression	61 (18.5)	2.85	0.002†
APD	225 (68.2)	2.34	0.000‡
Drug abuse/dependence	180 (54.5)	2.01	0.001‡
Drug abuse/dependence	N = 241		
Schizophrenic disorders	26 (10.8)	2.42	0.02
Bipolar disorder	13 (5.4)	3.54	0.04
Atypical bipolar disorder	13 (5.4)	4.73	0.02
Major depression	42 (17.4)	1.50	0.14
APD	180 (74.7)	3.09	0.000‡
Alcohol abuse/dependence	180 (74.7)	2.01	0.001†

After Bonferonni correction for type I error.<sup>67</sup>

\**p* = .05 = .01.

†*p* = .01 = .002.

‡*p* = .001 = .0002.

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Table 4  
Patterns of Co-Occurring Disorders

Pattern	Frequency (%)
Severe mental disorder alone*	9 (1.8)
Severe mental disorder + APD	4 (0.8)
Severe mental disorder + alcohol abuse/dependence	15 (3.0)
Severe mental disorder + drug abuse/dependence	2 (0.4)
Severe mental disorder + alcohol abuse/dependence + drug abuse/dependence	13 (2.6)
Severe mental disorder + APD + alcohol abuse/dependence	19 (3.9)
Severe mental disorder + APD + drug abuse/dependence	18 (3.7)
Severe mental disorder + APD + alcohol abuse/dependence + drug abuse/dependence	47 (9.5)
APD alone	33 (6.7)
APD + alcohol abuse/dependence	67 (13.6)
APD + drug abuse/dependence	23 (4.7)
APD + alcohol abuse/dependence + drug abuse/dependence	92 (18.7)
Alcohol abuse/dependence alone	49 (9.9)
Alcohol abuse/dependence + drug abuse/dependence	28 (5.7)
Drug abuse/dependence alone	18 (3.7)
None of the four disorders	56 (11.4)

\* Schizophrenic disorders, bipolar disorder, atypical bipolar disorder, and major depression.

ence and drug abuse dependence manifested by 19 percent of the sample. The second most frequently occurring combination was APD and alcohol abuse dependence detected in 14 percent of the subjects. Third in rank, came none of the four disorders. Fourth, was alcohol abuse/dependence, alone, presented by 10 percent of the subjects. The fifth most frequently occurring combination of disorders, presented by nine percent of the subjects, was one of the major disorder accompanied by APD, alcohol abuse/dependence, and drug abuse/dependence.

The chronology of the diagnoses is presented in Table 5. As can be observed, 15 of the 34 subjects with a lifetime diagnosis of a schizophrenic disorder manifested this disorder before other secondary pathologies. However, only one of the 16 who received a diagnosis of bipolar disorder showed this disorder

before another. Atypical bipolar disorder never appeared first. Of the 70 subjects who had suffered at least one major depression only 15 manifested this disorder before another. As would be expected, APD shows an early onset relative to the other disorders in 62 percent of the affected subjects.

### Discussion

Among a representative sample of male penitentiary inmates evaluated using the DIS, the lifetime prevalence of the severe mental disorders—schizophrenic disorders, bipolar disorder, atypical bipolar disorder, and major depression—was very high. However, few pure forms of these disorders were found. Rather, inmates suffering from the severe disorders almost all met the criteria for at least one other severe disorder or the APD or substance abuse/dependence. The present findings confirm those of Mirsky.<sup>10</sup>

**Table 5**  
**Chronology of Diagnoses**

Disorder and Chronology	N and Frequency (%)
Schizophrenic disorders*	N = 34
Primary	15 (44.1)
Secondary	16 (47.1)
Concurrent onset	3 (8.8)
Bipolar disorder†	N = 16
Primary	1 (6.3)
Secondary	13 (81.3)
Concurrent onset	2 (12.5)
Atypical bipolar disorder	N = 16
Primary	0 (—)
Secondary	13 (81.3)
Concurrent onset	3 (18.8)
Major depressive episode‡	N = 70
Primary	15 (21.4)
Secondary	48 (68.6)
Concurrent onset	7 (10.0)
APD§	N = 294
Primary	182 (61.9)
Secondary	64 (21.8)
Concurrent onset	48 (16.3)
Drug abuse/dependence	N = 236
Primary	52 (22.0)
Secondary	158 (66.9)
Concurrent onset	26 (11.0)
Alcohol abuse/dependence¶	N = 320
Primary	97 (30.3)
Secondary	179 (55.9)
Concurrent onset	44 (13.8)

\* Relative onset not determinable in four cases.

† Relative onset not determinable in one case.

‡ Relative onset not determinable in three cases.

§ Relative onset not determinable in nine cases.

|| Relative onset not determinable in five cases.

¶ Relative onset not determinable in 10 cases.

Not only were the severe disorders almost always found in combination with at least one other disorder, every theoretically possible combination of disorders was identified. Given this multitude of combinations each association between any two disorders is necessarily weak. In fact, these associations were so weak that a principal component analysis could not be carried. The measures of sphericity were too low.

An association between schizophrenia

and antisocial behavior, if not a full blown APD, has often been suggested. In fact, in 1938 Kallman<sup>51</sup> noted the high rate of criminality among schizophrenics. Antisocial behavior defined as a diagnosis of psychopathy, sociopathy, APD, or convictions for criminal offenses has been found to be elevated, relative to the general population, in persons diagnosed schizophrenic and among their first degree relatives<sup>52-58</sup> (L. Silverton, unpublished data, 1985). For example, Ortmann<sup>59</sup> examined admissions to psychiatric wards and criminal records of a birth cohort composed of the 12,270 males born in Greater Copenhagen in 1953. The analyses were carried out on 11,540 men (94.1% of the birth cohort) who were identified in the national register in 1975. Hospital admission data were collected when the subjects were 25 years old, and criminal records when they were 23. The rate of criminality among those diagnosed as suffering from schizophrenia was twice that for the general population. Not only does the prevalence of criminality among male schizophrenics appear to exceed that for the general male population, but as well in hospital male schizophrenics more often behave aggressively than patients with other disorders.<sup>60</sup> One of the early characteristics of some boys at risk for schizophrenia who eventually develop the disorder is antisocial behavior.<sup>61</sup>

Bipolar disorder, atypical bipolar disorder, and major depression were found, only infrequently, as primary disorders; substance abuse and/or dependence are often associated with these disorders.



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This finding is unlikely to be an artifact. The DIS protocol requires the interviewer to ask the subject for each reported symptom if it could be due to drugs or alcohol. The verbatim transcript of these interviews suggest that the inmates were quite able to distinguish a symptom resulting from substance use from one associated with a functional disorder.

This result is important for, as recommended by Bukstein, Brest, and Kaminer,<sup>62</sup> the association between major depression and substance abuse has been established with a reliable diagnostic tool, rather than noting depressive symptoms among substance abusers. Further, it is consistent with the hypothesis of the existence of a depressive spectrum with the underlying genetic or familial risk manifested in disorders of depression and substance abuse. The role of long term drug consumption as a causal agent of these severe disorders warrants further investigation.

Although the association of APD and alcohol abuse and/or dependence has previously been noted,<sup>63,64</sup> evidence suggests that the two disorders are etiologically independent.<sup>65,66</sup>

The inmates who suffered from a severe mental disorder were more likely than other inmates to have committed a homicide (G. Côté, S. Hodgins, unpublished data, November 1989). Only an examination of multiple disorders allowed us to identify which disorders were associated with homicide. Are multiple disorders associated with violent behavior? This has been hypothesized with respect to inhospital aggressive be-

havior.<sup>32</sup> Future investigations are required to verify this association.

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