Axis I and Axis II Diagnostic Parameters of Homicide

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A series of 100 murderers was examined to discern overall patterns of psychopathology. In addition, demographic and other discriminating factors were used to test the hypothesis that murderers do not constitute a homogenous population and that subgroups will differ diagnostically. DSM-III diagnostic criteria were used to make each diagnosis. The sample was found to be representative of the universe from which it was drawn at least as could be determined by available comparative criteria. Four Axis I (psychoses, substance abuse, dysthymia, no Axis I) and three Axis II (antisocial, borderline, no Axis II) diagnostic categories accounted for more than 80 percent of the study population. The murderers were found to be a heterogenous population, and subgroups based on a combination of assailant's crime pattern, sex, prior criminal history, and relationship to victim manifested different prevailing diagnostic patterns.

A young man using an automatic weapon murders five children and wounds 30 others in a California schoolyard. Media attention is intense. The public reacts with outrage. Some lives have been lost, others damaged irretrievably. This is an extreme example, and most homicides occur on a more modest scale, yet their impact on victims and their loved ones is just as great. Tragedies like the one in Stockton, California, invariably lead to calls for explanation and prevention. For this and other reasons, homicidal acts are particularly propitious subjects for psychiatric inquiry.

Clearly, any complete explanation of homicide requires consideration of many potentially relevant etiological dimensions—social, environmental, eco-

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nomic, cultural, physiological, and psychiatric among them. The author believes, however, that a psychiatric focus is central because homicide is the behavioral end product of mental processes. Other etiological factors mentioned either tax or support current mental functions and certainly contribute to their developmental evolution, but such factors remain one step removed from the behavioral end product. The psychiatric dimension mediates between all other factors and behavior. In looking at this dimension, we must consider both the adequacy of the set of mental functions upon which a person's baseline mental functioning depends and on those specific identifiable abnormalities that constitute mental illness. Mental illness superimposes additional impairment upon the baseline functions whatever their adequacy or inadequacy.

The diagnostic labels associated with

mental illness both identify individuals as functioning psychologically in some substandard way, and define the dimensions of that substandard performance. They also facilitate the categorization and clustering of individuals on the basis of specific malfunctions. However, the assignment of a psychiatric diagnosis must not be confused with that more global examination of personality functioning, which seeks to explain all of the dynamics of a given individual's behavior patterns. Both the status of general mental functioning and the presence and impact of mental disorders must be taken into account to fully understand a behavioral event like homicide. Moreover, beyond these psychiatric considerations, situational factors in the form of stressors, inhibitors, and precipitants play a role and must be examined as well. The present communication will focus only on associations between mental illness and homicide, leaving discussions of the impact of general mental functions and situational factors for future consideration.

This article will address three questions:

First, what diagnostic pattern or patterns emerge in a population of murderers? From a diagnostic perspective, are murderers a homogenous or a heterogenous group? Do the diagnoses, for example, vary as a function of age, sex, prior criminal history, violence pattern, and so on?

Second, from a demographic perspective, are murderers a homogenous or heterogenous group? Do the diagnoses, for example, vary as a function of age, sex, prior criminal history, violence pattern, and so on?

Third, if murderers are a heterogenous group, can relevant distinguishing factors be used to divide them into useful clusters based on common demographic and other factors and common diagnostic patterns?

Obviously, the present study is not the first of its kind, and it is disquieting that its predecessors have presented a range of findings that are discordant and contradictory. For example, rates of schizophrenia among murderers studied have ranged from four to 83 percent, substance abuse diagnoses from three to more than 40 percent, antisocial personality disorders from eight to 28 percent, dissociative reactions from less than one to almost 70 percent, and an absence of any psychiatric disorder from zero to almost 90 percent.[1-18]

The reasons for the observed discordance become more obvious when the psychiatric literature relating to homicide is examined in some detail. Some of the studies that report rates represent little more than anecdotal single or multicase reports and as such cannot accurately quantify patterns of psychiatric disorder.

Among the more structured studies a number of methodological impediments are noted that can account for the variation cited above. Many of the studies use unspecified diagnostic criteria, making results impossible to compare. Some of the studies do not report direct clinical observations but rather constitute record reviews of other clinicians findings. Such studies have no basis for assessing the

accuracy of the diagnoses reported or the diagnostic criteria used. Both the nature and sources of the study populations appear to differ significantly from study to study, but data is not usually provided to demonstrate the representativeness of study populations relative to the universes of murderers from which they were drawn.

Hence, the psychiatric literature relating to homicide consists largely of a range of studies of noncomparable and not necessarily representative samples that were investigated without standardized diagnostic criteria by a broad range of clinicians. Moreover, the studies were conducted over a long period during which diagnostic concepts changed. Indeed, it would be surprising if the results garnered from such procedures were not contradictory and inconsistent.

The present study attempted to address these methodological issues. It used one experienced clinician's direct in-depth psychiatric observations. All diagnoses were based explicitly on DSM-III criteria. The study, although it could not use a random sample selection design, used available measures to compare its subjects with the universe of murderers from which they were drawn.

Methodology

The study focused diagnostic attention on 100 men and women charged with homicide who were referred to the author for psychiatric evaluation by judges or attorneys between January 1, 1980, and December 31, 1988. These 100 subjects constitute one subset of a larger study population of 219 subjects

so referred during the same time period who were charged with one or more major violent offenses (homicide, aggravated assault, rape, or armed robbery). Excluded from the study were two persons for whom the issue of culpability remained at all in doubt.

Each study subject was examined directly by the author. The minimum number of hours spent with any defendant was four and the maximum in excess of 100. Other relevant persons including family members, friends, employers, teachers, therapists, and relevant crime scene witnesses were also interviewed by the author whenever available. Data gathered from such persons were used to enhance the author's understanding of the crime and the defendant and also to corroborate or refute statements made by defendants.

All relevant records were also examined. These included military and educational records, medical records, the records of prior psychiatric evaluations and treatments, police reports relating to the crime, transcripts and audio and videotapes of police interrogations of the defendant, records relating to the defendant's prior criminal activities, and any other relevant materials that defense or prosecution attorneys could provide.

No information obtained from defendants was used in subsequent analyses unless validated by independent sources. This is especially important in evaluations of criminal defendants where one or another party might have a vested interest in a particular evaluative outcome. For example, a study subject's own report of clinical symptoma-

tology unsupported by some appropriate form of corroboration was not considered sufficient for diagnostic purposes. Corroboration of clinical symptoms or signs could come from antecedent psychiatric records or a prior therapist's recollections or from observations made by some reliable, objective, and appropriately skilled observer.

All of the findings were initially recorded as case notes. These notes were subsequently used as the data source for completion of a 229-item precoded questionnaire that provided a uniform record of relevant demographic, psychiatric, substance abuse, developmental, educational, marital, criminal, and military service information for each defendant. The data from these questionnaires was then stored in computer files from which it could be accessed for statistical analyses.

For the purpose of assigning psychiatric diagnoses to study subjects, the author strictly adhered to the diagnostic criteria contained in DSM-III. No diagnosis was made that could not meet all of the criteria specified by DSM-III. Although DSM-III-R was published during the study period, it was not used for reasons of continuity of diagnoses.

Study subjects were assigned no more than one Axis I and one Axis II diagnosis. Where more than one diagnosis could be entertained, the diagnosis judged to be causing the greater degree of functional impairment was chosen. The author chose this approach because the use of more than one Axis I or Axis II diagnosis could have led to insurmountable data analysis problems.

Moreover, because the data collection protocol allowed for all symptomatology and all drug and alcohol abuse patterns to be recorded, no relevant psychiatric information need be lost as a consequence of adopting this policy. Axis I and Axis II diagnoses were made independently, keeping in mind any Axis I diagnosis that would preclude a particular Axis II diagnosis.

During the data analysis phase of the investigation, some diagnoses were aggregated into broader diagnostic categories. This was done to enhance the overall clarity of the data and to create data cells large enough for chi-square analyses. All substance abuse diagnoses were categorized together as were all forms of schizophrenia. All affective psychoses were categorized together as were organic brain syndromes, mental retardation/developmental diagnoses, and neurotic diagnoses other than dysthymia.

Among Axis II diagnoses, the paranoid, schizoid, and schizotypal personality disorders were aggregated together. Hystrionic and narcissistic personality disorders were aggregated together as were the avoidant, dependent, compulsive, and passive-aggressive personality disorders. These clusters are similar but not identical to those outlined in DSM-III-R.

Unfortunately, it was not feasible for the author to invite other clinicians to make independent diagnostic ratings of each subject to examine the issue of interrater reliablity. Such an approach would have been desirable but was impractical given economic constraints,

time constraints, and the constraints imposed by the confidential nature of forensic evaluations. However, other clinicians were sometimes used in a complementary capacity. Psychological testing was available and was used in all cases where unresolved clinical diagnostic questions were raised, and in all cases where the possibility of organic impairments presented itself. Medical evaluations were obtained whenever there were indications that a medical illness might be contributing to the diagnostic picture. Neurological evaluations including diagnostic tests such as EEGs, CAT scans, and MRIs were used as necessary.

The Sample

Ideally, subjects for this kind of investigation would be selected using a random or stratified random study design from the total universe of murderers in some defined geographic area during a specified time period. The term "universe" in this context refers to all persons convicted of homicide in California between January 1, 1980, and December 31, 1988. Unfortunately, there was no opportunity to conduct such a study. Because cases were referred for study on a nonrandom basis, it became imperative to compare the study subjects with the larger universe of murderers from which they were drawn to determine any biases present in the sample. Data reflecting the age, sex, racial, and ethnic status of murderers as well as data reflecting the relationship between assailants and victims was available for the universe of murderers. Such data from two years, one early and one late in the

study period (1982 and 1987), were used for purposes of comparison.[19,20] This comparison data was averaged and is presented in Table 1 below.

In most respects, the demographic profile of the county from which many of the study subjects came did not differ significantly from that of the state of California, and in such instances no adjustments to state data were required. With respect to the Hispanic population, however, this was not the case. The county contributing many study subjects had a much smaller proportion of Hispanic residents than the state population as a whole. As a consequence, this county would be expected to produce proportionately fewer Hispanic murderers than would the total state population of murderers. Hence, there was a need to adjust the statewide comparative homicide data to reflect this population difference. The adjusted comparative data for Hispanics in Table 1 estimates the number of Hispanic murderers who would be expected in the state universe if the state population had the same proportion of Hispanic residents as the county from which many of the study subjects came. The data in Table 1 indicate that at least in terms of the measures available for comparison, the study subjects are quite representative of the total universe of murderers from which they came.

Findings

The distribution of diagnoses among the 100 murderers studied is presented in a series of tables below for both Axis I and Axis II diagnoses. In Table 2 the

Table 1
Demographic and Relationship Comparisons in Percentage Between Study Subjects and the
Larger Universe of Persons Committing Homicides from which the Study Population was Drawn

Demographic Categories	Study Subjects (%) (n = 100)	Demographic and Relationship Data for All Convicted Murderers in California, Two-Year Average, 1982 and 1987 (%)
Age <25 yrs.	33.0	40.0
Age <40 yrs.	85.0	85.9
Males	88.0	89.6
Females	12.0	10.4
Caucasians	68.0	58.3
Blacks	30.0	37.1
Hispanics	12.0	12.3*
Assailant/victim relationship		
Spouse	13.0	8.4
Neighbor, friend Acquaintance	40.0	50.8
Parent/child	7.0	5.8
Stranger	32.0	27.5
All others	8.0	7.8

* Adjusted to account for differences between Hispanic population of area from which most study subjects came and total California Hispanic population.

overall distribution of diagnoses for all 100 study subjects is presented. Percents, cumulative percents, and some comparative diagnostic data are presented in the table. Substance abuse and psychotic disorders were the most commonly observed Axis I diagnoses accounting for almost two-thirds of the subjects with prevalence rates considerably higher than those reported by community epidemiological studies.[21] Thirteen percent of all study subjects had no Axis I diagnosis, and almost nine percent had a diagnosis of dysthymic disorder. Together, these Axis I diagnoses accounted for almost 90 percent of all study subjects.

Almost 40 percent of all study subjects had Axis II diagnoses of antisocial personality disorder, a rate almost 20 times that reported by community epidemio-

logical studies.[22] Almost 20 percent of study subjects had Axis II diagnoses of borderline personality disorder. Approximately one-fourth of all subjects had no Axis II diagnosis. These three diagnoses account for more than 80 percent of all study subjects.

The above findings can be compared with those obtained from other psychiatric studies of murderers, although, for reasons already stated above, such an endeavor must be undertaken with great caution. The author did select 10 such studies for comparison[23-32] involving more than 1,400 defendants. The range of crude rates for psychoses in these studies was 5 to 64 percent. The study rate of 29 percent falls approximately midrange. The range of rates for antisocial personality disorders among the 1,400 defendants was 8 to 27 percent.

Table 2
The Distribution of Axis I and Axis II Diagnoses among 100 Homicide Defendants Compared
with Diagnostic Data from Epidemiological Studies

Diagnostic Category	Percent		Cumulative Percent	Community Sample Comparative Data (%)*
Substance abuse conditions	35.0		35.0	2.2–13.4
All psychoses	29.0		64.0	1.1–2.2
Schizophrenia		21.0		0.4–1.6
Affective psychoses		8.0		0.4–0.9
Dysthymic disorder	9.0		73.0	1.2–5.4
All other disorders	13.0		86.0	NA†
Organic brain syndrome		1.0		0.6–2.1
Other neurotic/adjustment disorder		3.0		NA†
Explosive/conduct disorder		4.0		NA†
Sexual sadism		3.0		NA†
Mental retardation/developmental disorder		2.0		NA†
No Axis I diagnosis	14.0		100.0	NA†
Antisocial disorder	38.0		38.0	0.6–2.1
Borderline disorder	18.0		56.0	NA†
All other disorders	18.0		74.0	NA†
Histrionic, narcissistic		2.0		NA†
Paranoid, schizoid, schizotypal		5.0		NA†
Avoidant/dependant, compulsive, passive/aggressive		10.0		NA†
Developmental disorder		1.0		NA†
No Axis II diagnosis	26.0		100.0	NA†

* Source: Six-month prevalence rates from NIMH Community Survey Data.
† NA = data not reported.

The study rate of 38 percent falls somewhat outside this range.

Next, the study subjects were assigned to subgroups on the basis of demographic and other relevant variables to determine whether diagnostic distributions would vary significantly. Variables relating to homicide pattern (the concomitant commission or lack thereof of another violent crime such as armed robbery or rape), number of victims, assailant's sex, victim's sex, assailant's age, assailant's educational status, relationship between assailant and victim, and assailant's past history of criminal behavior were examined.

Chi-square statistical techniques were used to establish the significance of any differences in diagnostic distributions observed. Two chi-square measures were computed. The Pearson chi-square measure is familiar to most readers (and has been included for that reason) whereas the less well-known maximum likelihood ratio chi-square measure is derived from log linear statistical methodology.[33,34] Both methods produce quite comparable overall results, but the maximum likelihood ratio measure provides an extra measure in the form of standardized residual scores. These scores provide an assessment of each cell's contribution to the overall chi-square measure in any cross tabulation and, hence,

provide a picture of which diagnostic differences observed are most and least important. Standardized residual scores can be either negative or positive values. When negative, they reflect an inverse relationship between the row diagnostic cluster and the column variable. When positive, they represent a direct relationship between the two. Higher positive or negative scores reflect a greater contribution by the cell than do lower scores.

Table 3 summarizes all of the variables that were screened in the search for variables associated with significant differences in Axis I and Axis II diagnostic profiles. Only four variables either approached or reached statistical significance for Axis I and also reached statistical significance for Axis II diagnostic profiles.

Detailed findings for each of these variables are presented in Tables 4 through 7. Table 4 presents diagnostic data for murderers subdivided on the basis of homicide pattern. Three identifiable crime patterns are presented—homicide only, homicide committed in association with an armed robbery, and homicide committed in association with a rape. Statistically significant differences are observed in the Axis I and Axis II diagnostic profiles of these three groups.

As identified by the standardized residual scores, the major contributions with respect to the crime pattern/Axis I comparisons come from the less-than-expected prevalences (-1.70, -1.62) of psychoses among the homicide/robbery

Table 3
A Summary of Findings Regarding which Variables Are and Are Not Associated with Significant Differences in Diagnostic Profiles*

Variable	Axis I Diagnostic Distribution	Axis II Diagnostic Distribution
Homicide only vs. homicide/ rape vs. homicide/robbery	Significant	Significant
Multiple vs. single homicide	Not significant	Not significant
Assailant's sex	Approaching significance (0.08)	Significant
Victim's sex	Not significant	Not significant
Assailant's age	Not significant	Not significant
Assailant's education	Not significant	Significant
Relationship of assailant and victim—family/acquain vs. stranger	Approaching significance (0.07)	Significant
Juvenile criminal history	Not significant	Significant
Adult criminal history	Significant	Significant
Parenting violence	Not significant	Not significant
Adult violence conviction	Not significant	Significant
Juvenile violence conviction	Not significant	Significant
Childhood home violence history	Not significant	Significant
School violence history	Not significant	Not significant
Marital violence history	Significant	Not significant

* Significance measured at the .05 level or greater using both Pearson and maximum likelihood chi-square techniques.

Table 4
Diagnostic Distributions in Percentage and Chi-Square Analyses for Assailants with Different
Homicide Patterns

Axis I Diagnostic Category	Homicide Only (n = 79)	Homicide/Robbery (n = 11)	Homicide/Rape (n = 10)
	% (Residual)	% (Residual)	% (Residual)
Substance abuse conditions	27.9 (−.98)	81.8 (2.30)	40.0 (.12)
All psychoses	36.7 (1.33)	0.0 (−1.70)	0.0 (−1.62)
Dysthymic disorder	11.4 (.55)	0.0 (−.71)	0.0 (−.65)
All other disorders	11.4 (−.45)	0.0 (−.98)	40.0* (2.17)
No Axis I diagnosis	12.7 (−.36)	18.2 (.40)	20.0 (.52)

Pearson chi-square = 21.18 (p = .007).
Maximum likelihood chi-square = 22.23 (p = .005).
* Three of the four defendants in this group were diagnosed to be sexual sadists.

Axis II Diagnostic Category	Homicide Only (n = 79)	Homicide/Robbery (n = 11)	Homicide/Rape (n = 10)
	% (Residual)	% (Residual)	% (Residual)
Antisocial personality	24.1 (−1.94)	90.0 (2.57)	90.0 (2.38)
Borderline personality	21.5 (.67)	9.1 (−.58)	0.0 (1.15)
All other disorders	21.6 (.67)	0.0 (−1.22)	10.0 (−.48)
No Axis II diagnosis	32.9 (1.20)	0.0 (−1.56)	0.0 (−1.48)

Pearson chi-square = 34.13 (p < .000).
Maximum likelihood chi-square = 35.62 (p < .000).

and homicide/rape murderers, the greater-than-expected prevalence (2.30) of substance abuse conditions among the homicide/robbery murderers, and the greater-than-expected prevalence (2.17) of other diagnoses (mostly sexual sadists) among the homicide/rape murderers.

In the crime pattern/Axis II comparisons, the major contributions come from the greater-than-expected prevalences (2.57, 2.38) of antisocial personality disorders among the homicide/robbery and homicide/rape murderers, the less-than-expected prevalence (−1.94) of antisocial personality disorders among the homicide only murderers, and the less-than-expected prevalence (−1.56) of the no Axis II diagnosis category among the homicide/robbery murderers. In es-

sence, multipattern murderers are more likely to exhibit Axis I disorders such as substance abuse or sexual sadism than psychoses and are very likely to be antisocial in terms of their Axis II profile.

Table 5 presents diagnostic data for murderers subdivided on the basis of the presence or absence of prior criminal behavior. As measured by the standardized residual scores, the greatest contribution to the differences observed with respect to Axis I diagnoses comes from the less-than-expected prevalence (−1.61) of substance abuse conditions in the no-prior-criminal-history group. With respect to the Axis II comparisons, the major contributions come from the greater-than-expected prevalence (2.52) of antisocial personality disorders and the less-than-expected prevalence (−2.72)

Table 5
Diagnostic Distributions in Percentage and Chi-Square Analyses for Assailants with Different
Prior Criminal Histories

Axis I Diagnostic Category	Prior Criminal Convictions (n = 56)	No Prior Criminal Convictions (n = 44)
	% (Residual)	% (Residual)
Substance abuse conditions	46.3 (1.44)	20.5 (−1.61)
All psychoses	21.5 (−1.03)	38.7 (1.16)
Dysthymic disorder	5.4 (−.88)	13.6 (.98)
All other disorders	9.0 (−.82)	18.2 (.92)
No Axis I diagnosis	17.9 (.74)	9.1 (−.83)

Pearson chi-square = 11.58 (p = .021).
Maximum likelihood chi-square = 11.85 (p = .019).

Axis II Diagnostic Category	Prior Criminal Convictions (n = 56)	No Prior Criminal Convictions (n = 44)
	% (Residual)	% (Residual)
Antisocial personality	58.9 (2.52)	11.4 (−2.83)
Borderline personality	23.2 (.89)	11.4 (−1.00)
All other disorders	10.7 (−1.26)	27.3 (1.41)
No Axis II diagnosis	7.1 (−2.72)	50.0 (3.06)

Pearson chi-square = 36.47 (p < .000).
Maximum likelihood chi-square = 39.45 (p < .000).

of the no-Axis II diagnosis category among prior-criminal-history murderers, and from reciprocal findings (−2.83 and 3.06) among no-prior-criminal-history murderers. In essence, murderers with prior criminal histories are much more likely to exhibit substance abuse disorders than are murderers without prior criminal histories. Additionally, and not surprisingly, there is a strong association between the presence of antisocial personality disorders and a history of prior criminal behavior.

Table 6 presents diagnostic data for murderers subdivided on the basis of the assailant's sex. The differences observed between men who murder and women who murder approach statistical significance for the Axis I profiles and are statistically significant for the Axis II

profiles. As measured by the standardized residual scores, the major contributions to the differences observed with respect to Axis I diagnoses come from the greater-than-expected prevalence (2.14) of psychoses and less-than-expected prevalence (−1.56) of substance abuse diagnoses among female murderers. With respect to the Axis II profiles, the major contribution comes from the greater-than-expected prevalance (1.50) of the no-Axis II diagnosis category among female murderers. In essence, women murderers are more likely to suffer from a psychosis and less likely to have any Axis II diagnosis than are their male counterparts. Such findings corroborate earlier work by Gillies[35] and by Gottlieb,[36] both of whom demonstrated decidedly higher rates of psychosis

Table 6
Diagnostic Distributions in Percentage and Chi-Square Analyses for Assailants of Different Sex

Axis I Diagnostic Category	Male (n = 88)	Female (n = 12)
	% (Residual)	% (Residual)
Substance abuse conditions	38.6 (.62)	8.3 (−1.56)
All psychoses	23.9 (−.86)	66.7 (2.14)
Dysthymic disorder	9.1 (−.04)	8.3 (.10)
All other disorders	13.6 (−.12)	8.3 (.31)
No Axis I diagnosis	14.8 (.16)	8.3 (−.40)

Pearson chi-square = 8.44 (p = .077).
Maximum likelihood chi-square = 8.34 (p = .080).

Axis II Diagnostic Category	Male (n = 88)	Female (n = 12)
	% (Residual)	% (Residual)
Antisocial personality	40.9 (.47)	16.7 (−1.20)
Borderline personality	15.9 (−.48)	33.3 (1.21)
All other disorders	20.5 (.51)	0.0 (−1.29)
No Axis II diagnosis	22.7 (−.59)	50.0 (1.50)

Pearson chi-square = 7.89 (p = .048).
Maximum likelihood chi-square = 8.37 (p = .039).

among female murderers. Gottlieb's work also demonstrated a higher rate of substance abuse conditions among male murderers.

Table 7 presents diagnostic data for murderers subdivided on the basis of those who murdered persons known to them and those who murdered strangers. Two-thirds of the study subjects killed persons they knew; one-third killed strangers. The differences observed in the Axis I diagnostic profiles of these two groups approach statistical significance, and the differences in the Axis II profiles are statistically significant. As measured by standardized residual scores, the major contribution to the differences observed with respect to Axis I diagnoses comes from the greater-than-expected prevalence (1.81) of substance abuse disorders among those who murdered strangers. With respect to the Axis

II profiles, the major contributions come from the greater-than-expected prevalence (2.31) of antisocial disorders and the less-than-expected prevalence (−1.85) of the no-Axis II diagnosis category among those who murdered strangers and the less-than-expected prevalence (−1.65) of antisocial disorders among those who murdered persons they knew. In essence, murderers who knew their victims were less likely to suffer from substance abuse disorders than were those who murdered strangers. These findings are supported by the work of Gottlieb.[37] Additionally, those who murdered strangers were much more likely to be antisocial than those who murdered persons known to them.

Taking the next analytic step, the study subjects were assigned to groups created by combining all four variables

Table 7
Diagnostic Distributions in Percentage and Chi-Square Analyses for Assailants with Different
Relationships to Their Victims

Axis I Diagnostic Category	Family/Acquaintance (n = 67)	Stranger (n = 33)
	% (Residual)	% (Residual)
Substance abuse conditions	25.4 (−1.30)	54.6 (1.81)
All psychoses	34.3 (−.82)	18.2 (−1.14)
Dysthymic disorder	11.9 (−.73)	3.0 (−1.02)
All other disorders	13.4 (−.08)	12.2 (−.11)
No Axis I diagnosis	14.9 (.18)	12.2 (−.25)

Pearson chi-square = 8.64 (p = .071).
Maximum likelihood chi-square = 8.75 (p = .068).

Axis II Diagnostic Category	Family/Acquaintance (n = 67)	Stranger (n = 33)
	% (Residual)	% (Residual)
Antisocial personality	25.4 (−1.65)	63.6 (2.31)
Borderline personality	20.9 (.53)	12.1 (−.75)
All other disorders	19.4 (.25)	15.2 (−.35)
No Axis II diagnosis	34.3 (1.32)	9.1 (−1.85)

Pearson chi-square = 14.27 (p = .003).
Maximum likelihood chi-square = 14.71 (p = .002).

to produce the clusters presented in Table 8. Theoretically, 24 different clusters could have resulted from a division based on one trichotomized (homicide/robbery, homicide/rape, homicide only) and three dichotomized (male/female assailants, prior/no prior criminal history, stranger/acquaintance relationship) variables. In fact, there were no female assailants among the homicide/robbers or homicide/rapists, reducing to 16 the number of clusters with cases. Because there were also no male homicide/robbers without prior criminal histories who knew their victims and no female murderers with prior criminal histories who killed strangers, the number of clusters was further reduced to 14.

Additionally in Table 8, Axis I diagnoses have been classified as either symptomatic or behavioral, and Axis II disorders as high or low impact. The symptomatic-behavioral dichotomy was established for Axis I diagnoses to distinguish between those diagnoses whose primary presentations take the form of disruptive symptom formation and those diagnoses whose primary presentation take the form of maladaptive behavioral manifestations. The former diagnoses always produce some kind of psychic pain and tend only secondarily to impact on other people. The latter diagnoses often do not produce psychic pain and usually impact directly on others. Psychoses, neuroses, adjustment reactions, and organic brain syndromes were classified as symptomatic disorders whereas substance abuse disorders, conduct disorders, sexual sadism, and de-

Table 8
Distributions of Axis I and Axis II Diagnoses in Percentage for Each Cluster of Defendants
Based on Defendant's Sex, Prior Criminal History, and Relationship to Victim

A. Homicide/Robbery Cases

Assailant's sex	Male	Male	Male	Male
Relationship to victim	Stranger	Stranger	Family/ acquaintance	Family/ acquaintance
Criminal history	Prior (n = 5)	No prior (n = 1)	Prior (n = 5)	No prior (n = 0)
Axis I Diagnostic Category				
Symptomatic disorders				
Psychosis	0	0	0	—
Dysthymic disorder	0	0	0	—
Other neuroses and adjustment reactions	0	0	0	—
Organic brain syndrome	0	0	0	—
Behavioral disorders				
Substance abuse	100	0	80	—
Explosive or conduct disorder	0	0	0	—
Sexual sadism	0	0	0	—
Mental retardation/ developmental disorder	0	0	0	—
No Axis I diagnosis	0	100	20	—
Assailant's sex	Male	Male	Male	Male
Relationship to victim	Stranger	Stranger	Family/ acquaintance	Family/ acquaintance
Criminal history	Prior (n = 5)	No prior (n = 1)	Prior (n = 5)	No prior (n = 0)
Axis II Diagnostic Category				
High impact disorders				
Antisocial	100	100	80	—
Borderline	0	0	20	—
Paranoid, schizoid, and schizotypal	0	0	0	—
Narcissistic and histrionic	0	0	0	—
Low impact disorders				
Avoidant, dependant, compulsive, or passive-aggressive	0	0	0	—
Developmental	0	0	0	—
No Axis II diagnosis	0	0	0	—

B. Homicide/Rape Cases

Assailant's sex	Male	Male	Male	Male
Relationship to victim	Stranger	Stranger	Family/ acquaintance	Family/ acquaintance
Criminal history	Prior (n = 6)	No prior (n = 2)	Prior (n = 1)	No prior (n = 1)
Axis I Diagnostic Category				
Symptomatic disorders				
Psychosis	0	0	0	0
Dysthymic disorder	0	0	0	0
Other neuroses and adjustment reactions	0	0	0	0
Organic brain syndrome	0	0	0	0

Table 8—Continued
Distributions of Axis I and Axis II Diagnoses in Percentage for Each Cluster of Defendants
Based on Defendant's Sex, Prior Criminal History, and Relationship to Victim

Behavioral disorders				
Substance abuse	33	50	100	0
Explosive or conduct disorder	17	0	0	0
Sexual sadism	17	50	0	100
Mental retardation/ developmental disorder	0	0	0	0
No Axis I diagnosis	33	0	0	0
Assailant's sex	Male	Male	Male	Male
Relationship to victim	Stranger	Stranger	Family/ acquaintance	Family/ acquaintance
Criminal history	Prior (n = 6)	No prior (n = 2)	Prior (n = 1)	No prior (n = 1)
Axis II Diagnostic Category				
High impact disorders				
Antisocial	100	50	100	100
Borderline	0	0	0	0
Paranoid, schizoid, and schizotypal	0	50	0	0
Narcissistic and histrionic	0	0	0	0
Low impact disorders				
Avoidant, dependant, compulsive, or passive-aggressive	0	0	0	0
Developmental	0	0	0	0
No Axis II diagnosis	0	0	0	0
C. Homicide Only Cases				
Assailant's sex	Male	Male	Male	Male
Relationship to victim	Stranger	Stranger	Family/ac- quaintance	Family/ac- quaintance
Criminal history	Prior (n = 12)	No prior (n = 6)	Prior (n = 22)	No prior (n = 27)
Axis I Diagnostic Category				
Symptomatic disorders				
Psychosis	25	33	32	33
Dysthymic disorder	8	0	9	19
Other neuroses and adjust- ment reactions	0	17	5	4
Organic brain syndrome	0	0	0	0
Behavioral disorders				
Substance abuse	58	50	27	19
Explosive or conduct disor- der	0	0	0	11
Sexual sadism	0	0	0	0
Mental retardation/develop- mental disorder	0	0	5	4
No Axis I diagnosis	8	0	23	11
Assailant's sex	Male	Male	Male	Male
Relationship to victim	Stranger	Stranger	Family/ac- quaintance	Family/ac- quaintance

Table 8—Continued
Distributions of Axis I and Axis II Diagnoses in Percentage for Each Cluster of Defendants Based on Defendant's Sex, Prior Criminal History, and Relationship to Victim

Criminal history	Prior (n = 12)	No prior (n = 6)	Prior (n = 22)	No prior (n = 27)
Axis II Diagnostic Category				
High impact disorders				
Antisocial	58	17	36	4
Borderline	25	0	32	11
Paranoid, schizoid, and schizotypal	8	0	5	7
Narcissistic and histrionic	0	0	0	7
Low impact disorders				
Avoidant, dependant, compulsive, or passive-aggressive	8	33	14	15
Developmental	0	0	0	4
No Axis II diagnosis	0	50	14	52

D. Homicide Only Cases				
Assailant's sex	Female	Female	Female	Female
Relationship to victim	Stranger	Stranger	Family/acquaintance	Family/acquaintance
Criminal history	Prior (n = 0)	No prior (n = 1)	Prior (n = 5)	No prior (n = 6)
Axis I Diagnostic Category				
Symptomatic disorders				
Psychosis	—	100	40	83
Dysthymic disorder	—	0	0	17
Other neuroses and adjustment reactions	—	0	0	0
Organic brain syndrome	—	0	20	0
Behavioral disorders				
Substance abuse	—	0	20	0
Explosive or conduct disorder	—	0	0	0
Sexual sadism	—	0	0	0
Mental retardation/developmental disorder	—	0	0	0
No Axis I diagnosis	—	0	20	0
Assailant's sex	Female	Female	Female	Female
Relationship to victim	Stranger	Stranger	Family/acquaintance	Family/acquaintance
Criminal history	Prior (n = 0)	No prior (n = 1)	Prior (n = 5)	No prior (n = 6)
Axis II Diagnostic Category				
High impact disorders				
Antisocial	—	0	40	0
Borderline	—	100	40	17
Paranoid, schizoid, and schizotypal	—	0	0	0
Narcissistic and histrionic	—	0	0	0
Low impact disorders				
Avoidant, dependant, compulsive, or passive-aggressive	—	0	0	0
Developmental	—	0	0	0
No Axis II diagnosis	—	0	20	83

velopmental disabilities were classified as behavioral disorders.

The high-low impact dichotomy was established for Axis II diagnoses to distinguish between those diagnoses that are likely to produce more major intrusive behavioral manifestations that impinge upon other persons and those diagnoses more likely to produce less intrusive behaviors. The high impact disorders generally produce hostile, eccentric, dramatic, emotional, or erratic behavior that *frequently provokes interpersonal conflict*, whereas the low impact disorders produce anxious, clinging, or withdrawn but largely nonconfrontational behavior.

The two dichotomies identify fundamentally different kinds of impact. The use of these dichotomies affords an opportunity to examine the relative prevalence of different types of mental disorder in each of the clusters based on the four variables discussed above.

On the basis of diagnostic similarities revealed in Table 8, it was felt that the 14 diagnostic profiles could be further compressed into seven final clusters without any loss of clarity. This was accomplished by combining all of the homicide/robbery and homicide/rape clusters into a single cluster. Finally, the cluster containing only one case, a female with no prior criminal history who had murdered a stranger, was combined with the cluster containing six females with no prior criminal history who murdered persons known to them. Diagnostic profiles for each of the remaining seven clusters are presented in Table 9.

In Table 9, homicide/robbers and homicide/rapists, all males, comprise Cluster I, which constitutes 21 percent of the study population. Its subjects are afflicted exclusively by behavioral Axis I disorders and high impact Axis II disorders. In the former, substance abuse disorders predominate as do antisocial personality disorders in the latter. Cluster I is the most behaviorally aberrant and characterologically antisocial of the seven clusters as might be expected given its multiple crime pattern.

Cluster II comprising males with prior criminal histories who killed strangers constitutes 12 percent of the study population. Its subjects suffer predominantly from behavioral Axis I disorders (58%), but a substantial number of its subjects did fall into the symptomatic category. More than 90 percent of the Axis II diagnoses fall into the high impact category, but only 58 percent represented antisocial personality disorders. Cluster II is less behaviorally aberrant and less antisocial than Cluster I, although still predominantly so.

Cluster III comprising males with no prior criminal histories who killed strangers constitutes only six percent of the study population. In this cluster Axis I diagnoses were just as likely to fall into the symptomatic category as into the behavioral one. Most of the symptomatic diagnoses were psychotic, and all of the behavioral ones were substance abuse diagnoses. Only one subject falls into the high impact Axis II category, whereas three subjects had no Axis II diagnosis and two others had low impact diagnoses. Cluster III is clearly more

Table 9
Axis I and Axis II Diagnostic Profiles for Each of Seven Defendant Clusters in Percentage

	Cluster I (All Homicide/ Robbery Homicide/ Rape, Male) (n = 21)	Cluster II (Homicide Only, Male, Stranger, Prior) (n = 12)	Cluster III (Homicide Only, Male, Stranger, No Prior) (n = 6)	Cluster IV (Homicide Only, Male, Family/ Acquaintance, Prior) (n = 22)	Cluster V (Homicide Only, Male, Family/ Acquaintance, No Prior (n = 27)	Cluster VI (Homicide Only, Female, Prior) (n = 5)	Cluster VII (Homicide Only, Female, No Prior) (n = 7)
Axis I Clusters							
Symptomatic disorders	0	33	50	46	56	60	100
Psychosis	0	25	33	32	33	40	86
Dysthymia	0	8	0	9	19	0	14
All others	0	0	17	5	4	20	0
Behavioral disorders	81	58	50	32	34	20	0
Substance abuse	62	58	17	27	19	20	0
All others	19	0	0	5	15	0	0
No Axis T diagnosis	19	8	0	23	11	20	0
Axis II Clusters							
High impact disorders	100	91	17	73	29	80	29
Antisocial	90	58	17	36	4	40	0
Borderline	5	25	0	32	11	40	29
All others	5	8	0	5	14	0	0
Low impact disorders	0	8	33	14	19	0	0
No Axis II diagnosis	0	0	50	14	52	20	71

symptomatic and less character disordered than either Clusters I or II.

Cluster IV comprising males with prior criminal histories who killed persons known to them constitutes 22 percent of the study population. In this cluster Axis I diagnoses were more likely to be symptomatic than behavioral. No Axis I diagnosis of any kind was found in almost one-fourth of the subjects. The symptomatic category diagnoses were most often psychoses or dysthymic disorders. Within the behavioral category the most common diagnosis was substance abuse. High impact Axis II disorders predominated with an admixture of antisocial and borderline personality disorders. Cluster IV presents a curious admixture of persons who may have either a symptomatic or no Axis I diagnosis coupled with a high impact Axis II disorder. It is clearly more symptomatic than Clusters I through III but at the same time reflects more antisocial behavior than does Cluster III.

Cluster V comprising males with no prior criminal histories who killed persons they knew constitutes 27 percent of the study population. In this cluster Axis I disorders are much more likely to fall into the symptomatic category than the behavioral one, with psychoses and dysthymic disorders predominating. Substance abuse was still the most common behavioral diagnosis. More than one-half of the study subjects in this cluster had no Axis II diagnosis, but among those who did, some high impact disorder other than an antisocial personality disorder was likely. Cluster V is both more symptomatic and less antisocial

than Clusters I through IV but still does have a sizable proportion of high impact Axis II disorders other than antisocial personality disorders.

Cluster VI comprising females with prior criminal histories represents five percent of the study population. Symptomatic Axis I diagnoses, mostly psychoses, predominate. High impact Axis II diagnoses also predominate with an admixture of antisocial and borderline conditions. Cluster VI represents a pattern similar to that of Cluster IV but with even more symptomatic Axis I pathology.

Cluster VII comprising females with no prior criminal histories represents seven percent of the study population. All Axis I diagnoses fall into the symptomatic category, and all but one subject was diagnosed as psychotic. Most subjects have no Axis II diagnosis, and the two subjects who did have one were diagnosed as borderline. Cluster VII represents the polar opposite of Cluster I being comprised exclusively of symptomatic Axis I disorders and with little in the way of Axis II pathology.

Table 10 summarizes the most salient features of the cluster patterns. The table demonstrates a progressive shift from behavioral to symptomatic Axis I disorders as one moves from Cluster I to Cluster VII. The table also demonstrates more complexity in Axis II patterns, one in which a positive association can be demonstrated between antisocial personality disorders on the one hand and either prior criminality or a multiple crime pattern on the other.

Table 10
Summary of Axis I and Axis II Diagnostic Characteristics for Each of Seven Defendant Clusters

Cluster Characteristics	Axis I Category	Axis II Category
Cluster I		
Male, homicide/robbery-homi-cide/rape)	Exclusively behavioral	Exclusively high impact; mostly antisocial
Cluster II		
(Male, stranger, prior)	Predominantly behavioral	Mostly high impact, a mixture of antisocial and borderline
Cluster III		
(Male, stranger, no prior)	Equally symptomatic and behavioral	Predominantly none or low impact
Cluster IV		
(Male, family/acquaintance, prior)	Somewhat more symptomatic than behavioral but with a sizable proportion of no Axis I pathology	Predominantly high impact, a mixture of antisocial and borderline
Cluster V		
(Male, family/acquaintance, no prior)	Much more symptomatic than behavioral	Predominantly none but some borderline and paranoid high impact
Cluster VI		
(Female, prior)	Predominantly symptomatic	Predominantly high impact, a mixture of antisocial and borderline
Cluster VII		
(Female, no prior)	Exclusively symptomatic	Predominantly none, with several borderline high impact

Conclusions

The above findings obtained as they were from fairly representative study population, at least as determined from the available comparative data, demonstrate both the limited diagnostic repertoire of murderers and their diagnostic heterogeneity within those limits. Only four Axis I and three Axis II diagnostic categories were needed to account for 87 and 82 percent of all subjects, respectively. However, quite different and distinct distributions of these diagnoses were observed in the clusters of subjects that emerged from divisions based on crime pattern, assailant's sex, prior crim-

inal history, and relationship to the victim. This observed heterogeneity may help account for some of the diagnostic differences noted in the psychiatric literature as it relates to homicide.

The findings also suggest that when the interplay of demographic and other relevant variables is examined, clusters with complex but distinct diagnostic patterns emerge. These complex patterns, which are described in Tables 9 and 10, bear upon issues like prediction, therapeutics, and prevention. With respect to the first, the predictive utility of recognizing psychotic decompensation as a potential etiological factor will be great-

est for women without prior criminal histories and least great for homicide/robbers and rapists. Conversely, substance abuse disorders are most likely to play an etiological role in homicide/robbers and rapists and least likely in women without prior criminal histories. Tables 9 and 10 invite additional observations of this kind with potential predictive significance.

The findings also suggest that particular preventive efforts might reduce some homicide risks but not necessarily others. Hence, the early detection and treatment of psychosis might reduce the risk status of female murderers and men who kill persons known to them without any comparable impact on homicide/robbers or rapists or murderers who kill strangers. Conversely, more effective prevention efforts in the substance abuse arena may reduce the multipattern homicide risks and the risks of violence directed at strangers more substantially than the risks of violence to loved ones and associates.

It is also clear from the findings that therapeutic strategies must be flexible enough to account for the differing diagnostic patterns. Biological and some psychotherapeutic techniques may prove useful for murderers in clusters with high rates of symptomatic Axis I disorders coupled with no or low impact Axis II disorders, but they are not likely to prove useful for individuals with behavioral Axis I diagnoses and/or high impact Axis II disorders. For murderers in the latter group, behavior modification techniques coupled with close parole supervision and/or longer periods

of confinement may prove more useful. Complex diagnostic patterns like those found in Clusters IV and VI where symptomatic Axis I disorders are frequently coupled with antisocial personality disorders may require a biological/psychotherapeutic approach *as well as* behavior modification and close supervision and/or longer confinement.

This report has sought to introduce a few of many findings obtained from an intensively studied and reasonably representative population of murderers. It raises only a few of the diagnostic and etiological issues that the author hopes to raise in future communications and presents only a partial explanatory model. Its findings must be seen as tentative and replication is certainly needed and warranted given the preeminent interest that violence holds for our society.

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