

Violence, Sensation Seeking, and Impulsivity in Schizophrenics Found Unfit to Stand Trial

Sean Z. Kaliski, MMed, FCPsych(SA) and Tuviah Zabow, DPM, FCPsych(SA)

Many studies have confirmed an association between violent behavior, impulsivity, and sensation seeking in nonpsychotic subjects. Schizophrenic patients (n = 49) who had been found unfit to stand trial were investigated for violence, according to index offenses and longitudinal histories (before and after admission) for violence. Those charged with violent offenses were significantly more often married with children, and were equally likely to direct their assaultiveness to strangers, acquaintances, and family members. The nature of the index offense seemed to be a good indicator of general violent propensity. No significant differences were found on Barratt's Impulsivity Scale and Zuckerman's Sensation Seeking Scale, except that schizophrenic patients with negative histories of violence scored higher on the thrill and adventure subscale. No pattern of substance abuse differentiated the groups. Patients charged with violent offenses more often presented with persecutory delusions, but this did not extend to those whose histories were positive for repetitive violence. Although impulsivity and sensation seeking do not seem to cause violent behavior in this group, psychopathology can also only be regarded as a necessary but not sufficient determinant.

Most schizophrenics are not violent. Yet community, hospital, and prison surveys have indicated a slight preponderance of patients with schizophrenia among samples of violent individuals.¹⁻⁶ This sug-

gests that a small number of schizophrenic patients are disproportionately violent. Characteristics that would clearly delineate this group from the general schizophrenic population continue to be elusive. Findings on the determinants of violence in schizophrenic patients have not been generally consistent. Factors consequent to or irrelevant to the illness, or specific manifestations of the psychosis itself, have been variously implicated.⁶⁻⁸ Most studies have compared schizophrenic patients with other diag-

Dr. Kaliski is consultant psychiatrist, Forensic Unit, Valkenberg Hospital, and lecturer, Department of Psychiatry, University of Cape Town; and Dr. Zabow is associate professor of psychiatry, University of Cape Town, South Africa. This research was supported by a grant from the Human Sciences Research Council. Address correspondence to: Sean Z. Kaliski, MMed, Department of Psychiatry, University of Cape Town, Groote Schuur Hospital, Observatory 7925, Cape Town, South Africa.

nostic categories or control subjects, or have merely listed the attributes of violent patients referred for treatment. Few have attempted to compare violent and nonviolent schizophrenic patients. Antisocial schizophrenic patients are a potentially useful group for such a comparison, because, although many have flouted the law, some are never violent, others are habitually so, and many have displayed only an occasional or single outburst of violence.

Impulsivity and sensation seeking have been associated with violent behavior in nonpsychotic individuals, presumably by being linked to a relatively decreased serotonergic neurotransmission.⁹⁻¹³ Whether these dimensions apply to schizophrenic patients as well has not been addressed adequately, although a recent study¹⁴ has suggested that low cerebrospinal fluid 5-hydroxy-indoleacetate (HIAA) concentrations predict suicide attempts (supposedly indicative of impulsivity), but not violent behavior, in these patients. Yet violent outbursts by schizophrenic patients often seem to be impulsive and reckless, and not simply a consequence of their psychopathology.

The aim of this study was to compare violent and nonviolent antisocial schizophrenic patients according to variables that relate directly to the disorder, as well as those that have been shown previously to be associated with violence such as impulsivity, sensation seeking, past convictions, and alcohol and substance abuse.^{4, 15}

In South Africa the Criminal Procedure Act (No. 51, 1977) provides for the referral of a defendant at any stage of proceedings for 30 days' observation at a psychi-

atric hospital to determine ability to stand trial and criminal responsibility (by reason of mental illness). If defendants fail these tests, the courts are obliged to certify and admit them to a forensic unit for an indefinite period for treatment, regardless of the nature of the original charge. The Forensic Unit at Valkenberg Hospital (and the Department of Psychiatry at the University of Cape Town, South Africa) provides such a service for the Cape Province, which has a population of about 10 million.¹⁶

Method

All subjects were in patients in the forensic psychiatry unit at Valkenberg Psychiatric Hospital. They had been certified and hospitalized after a 30-day observation in the unit, which had been ordered by a court (following a criminal charge). Informed consent was obtained from each subject.

The inclusion criteria were a diagnosis of schizophrenia (according to DSM-III-R criteria), fluency in English or Afrikaans, sufficient collateral information available about behavior exhibited before the current admission, and a stable clinical condition as evidenced by no medication changes during the previous month.

The exclusion criteria were a history of an organic brain syndrome (or any medical or neurological condition that possibly could contribute to an altered mental state), an inability to communicate, other concurrent major psychiatric disorders (on Axis I) excluding alcohol and substance abuse disorders, and female sex (too few women had been admitted to the

Schizophrenics Found Unfit to Stand Trial

unit, which precluded meaningful comparisons).

Initially 55 subjects were identified for entry; however, three withdrew consent during testing, two did not appear to understand the questions during testing, and one absconded from the hospital before testing was completed. Therefore, 49 patients completed the study.

The following data were recorded:

1. Demographics: age, marital status, number of children, occupation before admission, urban or rural background, educational level.

2. The alleged offense that resulted in the admission and the relationship of the victim to the offender (index offense). Collateral evidence of violent behavior was obtained from social reports compiled during the initial observation period and from ward notes made during the subsequent hospitalization. A history of at least one previous conviction for a violent offense, a social report that described a pattern of violent behavior or more than two reports of assaultive behavior during the present admission constituted a positive history of violence. The index offense was excluded from this consideration.

3. Psychiatric history, including the duration of disorder (from when first diagnosed to date of admission), number of previous admissions, the duration of the present admission, and the presence of a family history of psychiatric disorder.

4. Past criminal convictions, which were obtained from the Department of Justice.

5. Alcohol and substance abuse. In the Cape Province, South Africa, alcohol, cannabis, and methaqualone-cannabis (smoked

together as a 'white pipe') are almost exclusively abused.

6. The positive psychotic symptoms elicited during the initial 30-day observation period by the multidisciplinary team were listed.

A true-false version of Barratt's Impulsivity Scale (BIS), which yields a possible maximum score of 44 points, was used.¹⁷ This version was chosen to enhance compliance. Zuckerman's Sensation Seeking Scale (SSS)¹⁸ was administered. The SSS consists of the thrill and adventure, experience seeking, disinhibition, and boredom susceptibility subscales, each with a possible maximum of 10 points (that is, yielding a maximum of 40 points overall on the SSS). The reliability and validity of both scales have been previously documented.^{9, 10} Although both are usually administered as self-report questionnaires, a psychiatric nurse was posted nearby to enable the subject to clarify items and as a means of assessing the subject's motivation and understanding of the questionnaires.

The questionnaires were translated into Afrikaans by a translator who has training in the social sciences in the Human Sciences Research Council. Occasional phrases and words were translated into the local idiom.

Statistical analysis was effected by the chi-square test for analysis of categorical data. (Fisher's Exact Test was employed when expected cell numbers were less than five, and continuous data were analyzed by Student's *t* test.) A significance value of $p = .05$ (one-tailed) was used. The Ethics Committee of the University of Cape Town Medical School approved the study.

Results

The average age of the sample was 31.49 years ($SD = \pm 8.14$, range = 19 to 53 years). On average, each patient had 1.04 children, although 27 had none and one subject had eight children. Most were from urban areas ($n = 31$), single ($n = 34$), and unemployed at admission ($n = 30$). Those who were employed had worked as laborers ($n = 11$) in semi-skilled ($n = 7$) and skilled ($n = 1$) jobs. Five patients had acquired trades, 27 had at least a secondary education, 15 a primary schooling and only two were illiterate. Most (31 subjects) were of urban origin.

The average duration of hospitalization was 2.82 years ($SD = 3.05$, range = 0 to 11 years), the mean duration of illness was 6.77 years ($SD = 7.4$, range = 0 to 31.5 years), and the number of previous hospitalizations was 3.2 ($SD = 2.62$). The mean for previous convictions was 1.78 ($SD = 2.00$, range = 0 to 7); 17 subjects had no previous convictions, and 11 had one conviction.

The index offenses (Table 1) were wide ranging. Of the 22 violent offenses, most

Table 1
The Index Offenses

Murder	7
Assault	9
Rape	4
Attempted rape	2
Theft	7
Attempted theft	2
Damage to property	8
Housebreaking	5
Possession of cannabis	4
<i>Crimen injuria</i>	1
Total	49

Table 2
Index Offense Compared to
History of Violence

	History Positive	History Negative	Total
Violent offense	17	5	22
Nonviolent offense	7	20	27
Total	24	25	49

were assaults and murders ($n = 16$); the remainder were sexual offenses ($n = 6$). None of the violent offenses was for material gain. The nonviolent offenses were predominantly against property; however, four patients (of which none had a history of violent behavior) had been caught in possession of cannabis and one was charged with *crimen injuria* (for swearing at a family member).

Comparison of the nature of the index offense to the past and subsequent history of violence indicated that most of those hospitalized following a violent offense had a history of violence, and likewise most charged with nonviolent offenses had no such history (Table 2). For five patients the index offense was the only violent outburst documented in their histories; one assaulted a stranger, one murdered a friend, one murdered a stranger, one raped his own child, and one attempted to rape a stranger (child).

The groups did not differ significantly with respect to demographics, except that significantly more of those admitted following violent charges were married ($p = .005$, chi-square = 10.43, $df = 2$) and had more children ($p = .03$). No significant differences emerged with respect to the duration of their illness and present admission, number of previous admissions, or criminal histories.

Schizophrenics Found Unfit to Stand Trial

Table 3
Comparisons: Sensation Seeking and Barratt's Impulsivity Scale Scores
According to Index Offense

Scale	Violent Charge, Mean (SD)	Non-violent Charge, Mean (SD)	Charge, <i>p</i>
SSS	16.14 (5.69)	17.82 (3.85)	.22
TA	5.14 (2.44)	6.30 (1.94)	.07
ES	4.50 (2.04)	4.22 (1.67)	.61
Dis	3.86 (1.96)	4.11 (2.08)	.68
BS	2.63 (1.39)	3.19 (1.78)	.24
BIS	22.14 (5.05)	23.26 (5.11)	.55

Note.—TA = thrill and adventure; ES = experience seeking; Dis = disinhibition; BS = boredom susceptibility.

In this sample the victims of the index offenses were as likely to be strangers as people known or related to the perpetrator. No statistical differences were found between the victims of violent and non-violent offenses (chi-square = 0.46, *df* = 5, *p* = .14). There was, however, a slight tendency for strangers more often to be victims of the nonviolent offenses.

The Sensation Seeking Scale and Barratt's Impulsivity Scale scores did not differentiate between the groups, except that those with negative histories of violence scored significantly higher on the thrill and adventure subscale of the SSS (Tables 3 and 4).

The patients abused only alcohol, cannabis, and cannabis-methaqualone mixtures, either alone or in combinations. No

pattern of abuse was significantly associated with either those hospitalized after violent offenses (chi-square = 7.81, *df* = 5, *p* = .17) or those who had displayed a longitudinal pattern of violent behavior (chi-square = 8.02, *df* = 5, *p* = .16).

Paranoid delusions were present significantly more often in those charged with violent offenses (chi-square = 4.36, *p* = .03), but not in those with positive histories of violence. No other positive psychotic symptom elicited during the initial assessment period differentiated between the groups.

Discussion

The predominant findings were that schizophrenic patients referred after violent offenses were more likely to be mar-

Table 4
History of violence: Comparisons on Sensation Seeking and Barratt's Impulsivity Scales

Scale	History Positive, Mean (SD)	History Negative, Mean (SD)	<i>p</i>
SSS	16.25 (5.43)	17.84 (4.03)	.25
TA	5.08 (2.39)	6.44 (1.87)	.03*
ES	4.33 (2.06)	4.36 (1.63)	.96
Dis	4.21 (2.19)	3.80 (1.85)	.51
BS	2.62 (1.44)	3.24 (1.76)	.19
BIS	23.04 (5.86)	23.48 (4.26)	.70

Note.—TA = thrill and adventure; ES = experience seeking; Dis = disinhibition; BS = boredom susceptibility.
 *Statistically significant, *p* ≤ .05.

ried, to have children, and to present with persecutory delusions. However, when the index offense was excluded, no significant differences between those with a positive and negative history of violence were evident, except that a negative history of violence was associated with a higher score on the thrill and adventure subscale of the SSS.

The duration of illness, length of hospitalization, number of previous hospitalizations (a reasonable indicator of relapse rate), and criminal history did not discriminate between the groups. This is consistent with the contradictory findings of previous studies.^{6, 19, 20}

Comparison of the index offense to history of violence revealed that most of those charged with violent offenses (77.27%) had been violent before or after admission, and those charged with nonviolent offenses (74.07%) had mostly nonviolent histories. The forensic implication is that the nature of the charge that occasions psychiatric referral may be a reasonably good indicator of a schizophrenic patient's propensities. For five cases the index offense was an isolated violent event. It is possible that violent behavior has yet to recur in these patients, or that they constitute a special group that needs to be studied further.

The absence of robbery from the list of offenses tends to suggest that the violence generally proceeded from unpremeditated circumstances. The six cases of rape and attempted rape do not appear to fit this pattern. These occurred either as aggressive attacks on children (five cases), or as a result of poor social judgement (one victim was the patient's mother). Possibly

the unavailability of willing partners and the vulnerability of the victims contributed to the patients' disordered expression of sexuality. Psychotic sexual offenders have not been studied as extensively as their nonpsychotic counterparts and may display important dissimilarities.

The nonviolent offenses were predominantly for material gain or related to property damage (either after provocation or seemingly aimless). Four patients had been charged for smoking cannabis openly in public and one for swearing at his mother. The view that these offenses usually represent clumsy attempts to survive poverty, or are the manifestations of poor social skills and frustration tolerance, was probably confirmed.²¹⁻²³

A history of alcohol and substance abuse did not distinguish between the groups. Because this aspect of the study was conducted retrospectively (by inspecting clinical records), it was not possible to determine definitely whether the subjects were intoxicated at the time of the alleged offense. Previous studies have indicated that although schizophrenic patients abuse substances more frequently than the general population, only about 60 percent are intoxicated during a violent offense.¹⁵ Analysis of the SSS responses indicated that although most subjects answered truthfully with respect to their desire for substance/alcohol use, they nevertheless scored modestly on the disinhibition subscale. Perhaps they enjoy experimenting with substances without necessarily desiring loss of control. Although there is a hypothesis that schizophrenic patients abuse substances in order to self-medicate, it was not possible to de-

Schizophrenics Found Unfit to Stand Trial

duce this in this study.²⁴ Methaqualone-cannabis abuse by smoking does not seem to occur elsewhere in the world. Although this combination does seem to produce a degree of disinhibition, this study failed to demonstrate that its use contributed to violence in this sample of schizophrenic patients.

Surveys of violent schizophrenic patients have implicated virtually every positive psychotic symptom as contributory to violence.^{7, 8, 22} In this study only paranoid delusions were found to distinguish significantly those referred following violent offenses. There seems to be a difference between violence serious enough to warrant juridical intervention and that which commonly occurs in the community and hospital. Perhaps the former results from paranoid ideas and the latter more from a combination of psychosocial and disorder-related factors such as irritability and impaired judgement. However, not all serious assaults are reported to the police, and minor assaults often provoke prosecution after the victim has endured other more serious episodes. Despite the uncertain role of symptoms, the epidemiological evidence that the disorder itself is somehow associated with an increased risk of violent behavior in the community cannot be ignored. Therefore, psychopathology must be a necessary, albeit insufficient, cause.

Overall the sample scored a mean of 17.06 on the Sensation Seeking Scale, which indicates low sensation seeking generally.^{25, 26} There were high sensation seekers in the group, the highest score being 28. They scored lowest on boredom susceptibility (that is, they tolerated bore-

dom relatively easily), then disinhibition, followed by experience seeking. The subjects scored highest on the thrill and adventure subscale. Although outward loss of interest and volition are diagnostic of the disorder, there has been speculation that schizophrenic patients desire stimulation. It therefore seemed logical that these patients would at least fantasize or desire sensation-seeking activities. It was not possible to characterize the minority of patients who had very high scores, but possibly this may be a small group worthy of more intensive evaluation. The fact that boredom susceptibility scores were the lowest is congruent with clinical observations that schizophrenic patients, particularly those who have negative symptoms, seem content to do very little.

The thrill and adventure subscale measures socially acceptable sensation seeking and usually has an inverse relationship with the disinhibition subscale.⁹ This is probably because of differing appreciations of dangerous consequences. Possibly the nonviolent group desires or enjoys activities that demand at least a modicum of caution and an appreciation of consequences (i.e., better impulse control). Perhaps violent schizophrenic subjects are unable to discharge their impulses by socially acceptable means. Unfortunately the lack of significant differences on the disinhibition subscale does not entirely support this hypothesis. Sensation seeking generally appears not to explain violent behavior in persons with schizophrenia.

Although the group as a whole had a mean score of 22.76 on Barratt's Impulsivity Scale, the standard deviation of

5.06 indicates that a relatively high number of subjects were scored as impulsive. Analysis, however, failed to distinguish violent from nonviolent offenders on the Barratt's Impulsivity Scale. Although many schizophrenics may be generally impulsive, this does not appear to contribute meaningfully to their violence (unlike many personality-disordered violent offenders). This has been recently reinforced by a longitudinal study¹⁴ of schizophrenic patients that found an association between low cerebrospinal fluid concentrations of 5-HIAA (the major metabolite of 5-HT) and impulsive behavior (suicide attempts), but not violent behavior.

A possibly intriguing avenue for research would be the investigation of the effects of the new atypical neuroleptics, such as clozapine, which purport to decrease negative symptoms by antagonizing serotonin receptors.²⁷ These neuroleptics are possibly creating pharmacologically a biochemical state confirmed to be associated with impulsivity and violence. Our anecdotal experience suggests that some schizophrenic patients in our unit, when treated with clozapine, become more aggressive as their negative symptoms improve. This implies that the negative-positive symptom cluster dichotomy should possibly be included in future investigations into psychotic violence.

References

1. Swanson JW, Holzer CE, Ganju VK, Jong RT: Violence and psychiatric disorder in the community: evidence from the Epidemiologic Catchment Area Surveys. *Hosp Community Psychiatry* 41:761-70, 1990
2. Taylor PJ, Gunn J: Violence and psychosis. I: risk of violence among psychotic men. *Br Med J* 288:1945-9, 1984
3. Lindqvist P, Allebeck P: Schizophrenia and crime: a longitudinal follow-up of 644 schizophrenics in Stockholm. *Br J Psychiatry* 157: 345-50, 1990
4. Stedman HJ, Vanderwyst D, Ribner S: Comparing arrest rates of mental patients and criminal offenders. *Am J Psychiatry* 135:1218-20, 1978
5. Tardiff K, Swellam A: Assaultive behavior among chronic inpatients. *Am J Psychiatry* 139:212-15, 1982
6. Volavka J, Krakowski M: Schizophrenia and violence. *Psychol Med* 19:559-62, 1989
7. Planansky K, Johnson R: Homicidal aggression in schizophrenic men. *Acta Psychiatr Scand* 55:65-73, 1977
8. Virkkunen M: Observations of violence in schizophrenia. *Acta Psychiatr Scand* 50:145-151, 1974
9. Zuckerman M: A biological theory of sensation seeking, in *Biological Bases of Sensation Seeking, Impulsivity and Anxiety*. Edited by Zuckerman M. Hillsdale, NJ: Lawrence Erlbaum Associates, 1983, pp 37-76
10. Zuckerman M: Sensation seeking: a comparative approach to a human trait. *Behav Brain Sci* 7:413-71, 1984
11. Roy A, Virkkunen M, Guthrie S, Linnoila M: Indices of serotonin and glucose metabolism in violent offenders, arsonists, and alcoholics. *Ann N Y Acad Sci* 48:202-20, 1986
12. Brown GL, Linnoila M: CSF serotonin metabolite (5-HIAA) studies in depression, impulsivity, and violence. *J Clin Psychiatry* 51:4(suppl):31-4113, 1990
13. Barratt E: Measuring and predicting aggression within the context of a personality theory. *J Neuropsychiatry* 3:S35-S39, 1991
14. Cooper SJ, Kelly CB, King DJ: 5-hydroxyindoleacetic acid in cerebrospinal fluid and prediction of suicidal behaviour in schizophrenia. *Lancet* 340:940-1, 1992
15. Lindqvist P, Allebeck P: Schizophrenia and assaultive behaviour: the role of alcohol and drug abuse. *Acta Psychiatr Scand* 82:191-5, 1989
16. Zabow T: Management of mentally ill offenders in South Africa: the assessment and rehabilitation program in Cape Town. *Int J Law Psychiatry* 4:449-55, 1981
17. Barratt E: Factor analysis of some psychometric measures of impulsiveness and anxiety. *Psychol Rep* 16:547-554, 1965

Schizophrenics Found Unfit to Stand Trial

18. Zuckerman M, Link K: Construct validity for the Sensation Seeking Scale. *J Consult Clin Psychol* 32:420–426, 1968
19. Kunjukrishnan R, Bradford J: Schizophrenia and major affective disorder: forensic psychiatric issues. *Can J Psychiatry* 33:723–33, 1988
20. Karson C, Bigelow LB: Violent behavior in schizophrenic inpatients. *J Nerv Ment Dis* 175:161–4, 1987
21. Schanda H, Topitz A, Fliedl R, Knecht G: Pre-morbid adjustment of schizophrenic offenders. *Acta Psychiatr Scand* 86:121–126, 1992
22. Tidmarsh D: Schizophrenia, in *Principles and Practice of Forensic Psychiatry*. Edited by Bluglass R, Bowden P. London: Churchill Livingstone, 1990 pp 321–43
23. Gunn J: Criminal behaviour and mental disorder. *Br J Psychiatry* 130:317–29, 1977
24. Newman R, Miller N: Substance abuse and psychosis. *Curr Opin Psychiatry* 5:25–8, 1992
25. Rogers TB: Evidence for sensation seeking behavior during assessment of the trait: a note on the construct validity of the measurement operation. *Pers Ind Differences* 8:957–9, 1987
26. Zuckerman M, Link K: Construct validity for the sensation seeking scale. *J Consult Clin Psychol* 32:420–6, 1968
27. Kane JM, Honigfeld G, Singer J: Clozapine for the treatment of the resistant schizophrenic. *Arch Gen Psychiatry* 45:789–96, 1988