

Lethal Violence and Psychosis: A Clinical Profile

Paul G. Nestor, Joel Haycock, Suzanne Doiron, Julianne Kelly, and Denise Kelly

To investigate the relationship between lethal violence and psychosis, the authors examined symptomatology, neuropsychological functioning, and the nature of perpetrator-victim relationships of patients with psychotic disorders who were committed to a forensic psychiatric hospital following violent, primarily criminal, behavior. A severely violent group, composed primarily of psychotic patients charged with murder, was compared with a less severely violent group that was composed primarily of psychotic patients involved with property crimes. As compared with the less violent group, the severely violent group was more likely to have delusional beliefs about specific personal targets and to have delusions about significant others being replaced by impostors. These beliefs were accompanied by higher scores on neuropsychological tests of intellectual and academic abilities. A high number of their blood relatives were victims of psychotic murder. These results indicated that a higher incidence of lethal or near lethal acts of violence may characterize intellectually intact but psychotic individuals with organized delusions involving personal, accessible targets.

Increasingly recognized as an emergency public health problem,¹ interpersonal violence is associated with a variety of circumstances, motives, and demographics. Perhaps no form of interpersonal violence has engendered more debate and controversy than that which occurs within the context of a mental illness. Central to this

debate is the question of whether the presence of a mental disorder increases the likelihood of violence. Historically empirical studies examining this question have been equivocal at best—either failing to demonstrate a relationship or containing positive findings confounded by sample selection biases.² More recent studies using epidemiological samples not confounded by selection biases have begun to indicate a modest relationship between interpersonal violence/illegal behavior and the presence of a mental disorder.^{3,4} More specifically, these newer findings suggest that an active psychotic disorder may represent a modest risk factor for violence.²

To understand how a mental disorder

Dr. Nestor, Dr. Haycock, S. Doiron, J. Kelly, and D. Kelly are affiliated with the Department of Psychology, Bridgewater State Hospital, Bridgewater, MA; Dr. Nestor is also affiliated with the Brockton VA Medical Center, Brockton, MA, and the Department of Psychiatry, Harvard Medical School, Boston, MA; and Dr. Haycock is also affiliated with the Department of Psychiatry, University of Massachusetts Medical Center, Worcester, MA. Preparation of this article was supported by an individual research grant from the American Suicide Foundation to J.H. and an award from the Healy Endowment to J.H. Address correspondence to: Paul G. Nestor, PhD, Bridgewater State Hospital, 20 Administration Road, Bridgewater, MA 02324.

may mediate interpersonal violence, the particular characteristics of both the illness and the violent act need to be addressed. With respect to the clinical dimension, there is evidence that particular psychotic symptoms, especially types of delusional beliefs, may be associated with interpersonal violence.⁵⁻⁸ These have included persecutory and paranoid delusions,⁷⁻⁹ delusional jealousy,¹⁰ and so-called Capgras misidentification delusions (i.e., the belief that significant others have been replaced by impostors).⁵ With regard to the latter, Fishbain presented data that suggested a higher incidence of Capgras delusions in individuals who had presented in an emergency room setting. These individuals directed their violence toward the believed impostor, typically a significant other. Similarly, Benezech *et al.*,¹¹ in a large survey of patients in a French forensic psychiatric hospital, reported a higher percentage of homicides among patients diagnosed with delusional disorders and paranoid schizophrenia. In a subsequent study, Addad *et al.*¹² demonstrated a clear association between criminal offense and psychoses in these types of patients, but not in those diagnosed with chronic undifferentiated psychoses, who were more likely to be charged with crimes against property rather than against persons.

Also of interest is that organized delusions, such as those frequently associated with paranoid schizophrenia or delusional disorders, may be accompanied by preserved intellectual functioning. For example, Nestor¹³ recently examined both psychotic symptomatology and neuropsychological test scores in forensic psychi-

atric inpatients charged with lethal or near lethal acts of violence. Two groups were formed on the basis of mean age at the time of the violent act that precipitated hospitalization. Results indicated that, in relation to younger patients (mean age at the time of the violent act, 19.3 years), older patients (mean age at the time of the violent act, 41.4 years) were more likely to be seen as psychotic at the time of the violent act and also tended to score higher on neuropsychological tests, particularly on academic tests of reading ability. However, Nestor¹³ did not examine the precise nature of these psychotic disorders, such as the types of delusional beliefs, delusional target, or degree of delusional organization, all of which may potentially distinguish psychotic patients who engage in lethal or near lethal acts of violence from other patients with psychosis. Similarly, neuropsychological data were limited primarily to tests of intelligence and academic abilities, and did not include extensive testing of functions that are thought to be highly dependent on dorsolateral-prefrontal and temporolimbic structures, brain regions which have been frequently implicated in neurological models of violence.¹⁴⁻¹⁶

From a slightly different perspective, Nestor¹³ also examined the nature of the perpetrator-victim relationship in his sample of forensic psychiatric patients charged with murder. Nestor reported that the victims of psychotic murderers were more often blood relatives of the perpetrators than strangers. This is consistent with other data that suggest that victims of psychotic violence are often family members and acquaintances.¹¹ By con-

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trast, the principal victims of murder-suicide are thought to be female sexual partners or young children.¹⁷

The aim of the present study was to examine how psychotic patients charged with extreme acts of violence may be distinguished from psychotic but less violent patients in terms of specific symptoms, neuropsychological characteristics, and their relationships with victims. We rated the types of delusional beliefs, including paranoid beliefs and impostor content, personal target of delusional beliefs, and degree of delusional organization in patients with psychosis who were involuntarily committed to a maximum security psychiatric facility. We also examined scores on a variety of neuropsychological tests, including those that measure intelligence, academic abilities, memory, attention, and executive abilities (e.g., problem-solving, planning, goal formulation). We included neuropsychological tests of memory and executive functions because these abilities are known to be highly dependent on brain structures, specifically temporolimbic and dorsolateral-prefrontal structures, which are often implicated in neurological models of violence.¹⁴⁻¹⁶ In addition, many of the neuropsychological tests examined in the present study, particularly the Wisconsin Card Sorting Test (WCST) and the Wechsler Memory Scale-Revised (WMS-R), are thought to be sensitive to psychosis.¹⁸⁻²⁰ Neuropsychological data were also included in order to provide a descriptive, quantitative assessment of the patients' cognitive abilities. In an effort to determine whether psychotic homicides are associated with a distinct pat-

tern of perpetrator-victim relationships, we also examined the nature of perpetrator-victim relationships in psychotic patients charged with murder. However, these data were viewed as preliminary because only limited information was available regarding the nature of the perpetrator-victim relationship in the remaining subjects who were not charged with murder.

Method

Overview The study used an archival design in which data were obtained by review of hospital records, which included forensic psychiatric evaluations, clinical notes, and police reports of the crimes. Rating scales were based on these sources of information collected within an average of six months following the crime or violent event precipitating admission.

Sample The sample consisted of 46 male patients who were hospitalized between the years of 1987 and 1991 at Bridgewater State Hospital, a maximum security, forensic psychiatric facility located in southeastern Massachusetts. All patients were involuntarily committed to Bridgewater State Hospital. All but two patients had criminal charges. These two patients without criminal charges had been transferred from local state hospitals due to unmanageable, violent behavior. The remaining patients were either referred from the courts for competency to stand trial and criminal responsibility evaluations or from local jails for mental health evaluations. The sample of 46 patients was selected from a hospital population of approximately 300 males, all of

whom were involuntarily committed to Bridgewater State Hospital, and the majority of whom had criminal charges. The 46 patients were selected from a sample of approximately 180 patients who had been referred for neuropsychological evaluations for the purpose of assessing current levels of cognitive functioning from the years 1987 to 1991. Records described all patients as showing signs and symptoms of an active psychosis at or around the time of the criminal charges, or at the time of the violent act precipitating admission. A psychotic disturbance was defined as a DSM-III-R²¹ diagnosis of schizophrenia, schizoaffective disorder, delusional disorder, major depressive disorder with psychotic features, or a bipolar disorder with psychotic features. The diagnosis was either documented in the patient's record or inferred on the basis of historical and clinical data contained in the patient's record. Patients were excluded from the study if records, including neuropsychological and neurological evaluation, indicated a specific organic etiology, as defined by a principal DSM-III-R diagnosis of organic mental disorder. Four patients, all of whom had documented histories of serious traumatic brain injury, were excluded.

Two groups were formed on the basis of the level of violence, as determined by criminal involvement. Twenty-four patients were assigned to a severely violent group and 22 patients to a less severely violent group. In the severely violent group, 19 patients were charged with murder and 5 with serious assaults, such as assault with intent to murder. The less severely violent group was composed of

psychotic patients charged with property crimes, including malicious destruction of property, trespassing, and other crimes, such as threats to commit a crime, annoying phone calls, and disorderly conduct. Two of these patients were also charged with assault and battery, but both of these charges occurred within the context of a disorderly conduct charge. Two other patients among the less severely violent group had no criminal charges, but were transferred from local state hospitals due to assaultive behavior.

The two groups did not differ significantly in age at the time of hospitalization, but did differ in terms of previous education. Mean ages were 32.5 years (SD = 9.7) for the severely violent group and 28.2 years (SD = 8.1) for the less severely violent group. Mean education was 13.2 years (SD = 2.8) for the severely violent group and 11.6 years (SD = 2.2) for the less severely violent group. All subjects had previous psychiatric hospitalizations. In addition, although not statistically significant, 67 percent of the severely violent group and 82 percent of the less severely violent group had previous criminal records. Both groups showed similarly high levels of histories of DSM-III-R-defined substance abuse, with 88 percent of the severely violent group and 83 percent of the less severely violent group having histories of substance abuse. None of the police reports of the less severely violent group indicated any significant injuries to victims.

Rating Scales All records were rated by trained technicians, who were blind to the purpose of the study. All ratings were

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based on clinical data (e.g., clinical notes and forensic evaluations) collected within an average of six months following the crime or violent event precipitating admission. The Brief Psychiatric Rating Scale (BPRS)²² was used to measure the overall severity of presenting symptoms. In addition, delusional beliefs were rated in terms of paranoid delusions, impostor beliefs, personal target, and organization. Each of these dimensions was rated separately on a 0 to 4 scale: 0 for no evidence; 1 for evidence of past history, defined as more than six months since the violent act precipitating admission; 2 for evidence of recent history, defined as within six months of the violent act, but not active at the time of the index admission; 3 for present in one source of information at the time of the index admission; and 4 present in more than one source of information (e.g., clinical notes and forensic evaluation) at the time of the index admission. Paranoid delusions were defined, as outlined in DSM-III-R, as those with persecutory themes, such as being conspired against, spied upon, poisoned, or drugged. Impostor delusions were defined as a belief that a significant other had been replaced by an impostor. A personal target of delusions was defined as a friend, acquaintance, significant other, or blood relative. Delusional organization was defined as delusional beliefs that were either described in the records as systematic, organized, or encapsulated or involved a network of related false beliefs that together constituted a unifying theme. In order to check interrater reliability, two trained technicians independently rated a subset of records. Kendall's

τ -b correlation, a nonparametric measure of degree of association for ordinal data, was used to assess reliability.²³ Interrater reliability, computed on the basis of 18 records, was .81 for paranoid delusions, 1.00 for impostor content, .72 for personal target, and .68 for organization. When ratings of the two judges were averaged over these four dimensions, interrater reliability was .96 for the composite index. Two technicians also independently performed BPRS ratings on 11 records. Interrater reliability was .77.

Neuropsychological Measures These included measures of intellectual abilities, as assessed by the Wechsler Adult Intelligence Scale-Revised²⁴; memory, as assessed by the WMS-R²⁵; attention, as assessed by Trails B²⁶; problem solving and executive functions, as assessed by the WCST²⁷; and reading and spelling, as assessed by the Wide Range Achievement Test-Revised.²⁸ The neuropsychological evaluations were conducted an average of two years after the violent event precipitating admission.

Results

Table 1 presents the means for the total BPRS scores and for the ratings of the delusional beliefs. Univariate *t* test indicated no significant group difference on total BPRS scores. Mean BPRS was 45.458 (SD = 8.361) for the severely violent group and 43.682 (SD = 7.846) for the less severely violent group. The ratings on the nature of delusional beliefs (paranoid, impostor, target, and organization) were submitted to a Hotelling's *t* test. A significant multivariate group effect was obtained ($F = 2.73, df = 4,41,$

TABLE 1
Characteristics of Delusional Beliefs

	Severely Violent	Less Violent
BPRS (mean \pm SD)	45.5 \pm 8.4	43.7 \pm 7.8
Impostor delusions		
Number	6	0
Percent ^a	25	0*
Paranoid delusions		
Number	12	12
Percent	50	55
Personal target		
Number	22	15
Percent	92	72*
Delusional organization		
Number	16	9
Percent	67	45

^a Percents are based on number of subjects with ratings of three or higher.

* $p < .05$

$p < .05$). Follow-up univariate comparisons indicated that, in relation to the delusions of the less severely violent group, the delusional beliefs of the severely violent group involved personal targets ($t = 2.51$, $df = 44$, $p < .05$, 95% confidence interval (CI) = .197, 1.658) and impostor beliefs ($t = 2.61$, $df = 44$, $p < .05$, 95% CI = .200, 1.550). For example, 92 percent of the patients in the severely violent group had delusions that involved personal targets in comparison with 72 percent of patients in the less severely violent group ($\chi^2 = 10.3$, $df = 3$, $p < .05$). Likewise, 25 percent of the severely violent group had impostor delusions at the time of the violent criminal act, in contrast to none of the patients in the less severely violent group ($\chi^2 = 6.5$, $df = 3$, $p < .05$).

The neuropsychological test scores for the two groups are presented in Table 2.

The t tests indicated that the severely violent group scored higher on tests of overall intelligence ($t = 3.23$, $df = 42$, $p < .01$, 95% CI = 5.13, 22.2), verbal intelligence ($t = 3.50$, $df = 43$, $p < .001$, 95% CI = 6.79, 25.31), performance intelligence ($t = 2.45$, $df = 42$, $p < .05$, 95% CI = 1.75, 17.70), oral reading ($t = 2.64$, $df = 40$, $p < .05$, 95% CI = 3.10, 23.29), and spelling ($t = 2.71$, $df = 38$, 95% CI = 3.93, 27.28). The groups did not differ significantly on the WMS-R, Trails B, and WCST. However, neuropsychological scores were not available on all subjects, particularly for those in the less severely violent group. The overall group difference on the WMS-R, for example, may not have reached statistical significance, because WMS-R test scores were available for only 14 subjects of the less severely violent group, compared with 22 subjects of the severely violent group. Overall, the severely violent group scored in the average range on standardized tests of intelligence, memory, and academic abilities, whereas the less severely violent group scored in the low average range. Finally, the perpetrator/victim relationships of the 19 individuals charged with murder in the severely violent group were also examined. These 19 individuals were responsible for 23 homicides. In relation to the perpetrators, the victims were 12 parents, 3 spouses, 2 children, 2 grandparents, 1 sister, 1 in-law, and 2 without any apparent relationship.

Discussion

These results indicated that subtle but distinct differences in acute psychotic

TABLE 2
Neuropsychological Test Scores (mean ± SD) for Severely Violent and Less Severely Violent Groups

Test	Severely Violent	Less Violent
Weschler Adult Intelligence Scale-Revised ^a		
Full-scale IQ	98.3 ± 14.8	85.7 ± 13.7*
Verbal IQ	101.9 ± 16.1	87.3 ± 14.9*
Performance IQ	93.8 ± 11.8	85.8 ± 14.5
Wide-Range Achievement Test-Revised ^a		
Reading	101.2 ± 14.5	85.7 ± 17.9*
Spelling	99.2 ± 17.0	83.5 ± 19.1*
Weschler Memory Scale-Revised ^a		
General memory index	99.2 ± 13.6	88.9 ± 22.7
Verbal memory index	97.4 ± 12.5	90.1 ± 19.4
Visual memory index	103.4 ± 16.5	93.1 ± 15.8
Wisconsin Card Sorting Test ^b	4.2 ± 2.1	3.7 ± 2.2
Trail Making Test (Trails B) ^c	82.8 ± 35.5	109.7 ± 58.1

^aAverage scores range from 90 to 115.

^bMaximum score = 6 categories.

^cPerformance time in seconds.

**p* < .05

symptoms present at the time of the violent act may distinguish severely violent psychotic patients from less severely violent psychotic patients. When actively symptomatic at the time of the violent act, the severely violent psychotic patients were more likely to have delusional beliefs about significant others, such as family members. These personal targets coincided with the findings suggesting that the homicidal victims of the severely violent psychotic patients were often significant others, particularly blood relatives. For the severely violent group, 21 of the 23 homicides involved family members, 12 of whom were parents. In addition, in relation to the less violent group, the severely violent group had a higher incidence of delusional beliefs that significant others had been replaced by impostors. By contrast, both groups dem-

onstrated similarly high levels of paranoid delusions and delusional organization. The groups also did not differ in overall symptomatology, as assessed by the BPRS.

These findings demonstrated that actively psychotic patients who engage in lethal or near lethal acts of violence are characterized by paranoid delusions involving accessible, personal targets. Moreover, the results indicated that these delusions, in some instances, may include beliefs that significant others have been replaced by impostors. Although the current study focused on specific psychotic symptomatology present at the time of the violent act, as opposed to formal diagnoses, these symptoms seem to be consistent with several diagnostic pictures, including paranoid schizophrenia, delusional disorder, and bipolar disorder with

psychotic features. In this regard, these data are consistent with other studies that have suggested an association between violence and specific diagnoses, such as delusional disorder and paranoid schizophrenia.^{11, 12} However, there may very well be other clinical characteristics that distinguish among violent, psychotic patients.^{29, 30} For example, Kennedy *et al.*³⁰ examined both mood and delusional beliefs in 15 patients diagnosed with delusional disorders who were hospitalized following violent or threatening behavior. These investigators found that these patients with delusional disorders also demonstrated mood abnormalities characterized by fear and anger. These findings, in conjunction with the present results, suggest that affective state, along with delusional beliefs, may represent critical clinical features in assessing the violence potential of delusional patients.

In a similar vein, the question of how these acute psychotic symptoms may be influenced by such factors as substance abuse at the time of the violent act also needs to be addressed. In the present study, we found no group differences in substance abuse prior to the violent act, as assessed by DSM-III-R criteria. In fact, both groups demonstrated relatively high rates of previous substance abuse. This was consistent with our previous findings.¹³ However, the extent to which these relatively high rates of substance abuse would distinguish violent psychotic patients from nonviolent psychotic patients was not addressed in this study. This may be of particular importance, as previous epidemiological data have indicated that both substance abuse and psy-

chosis may increase the risk for violent behavior.⁴

On the other hand, the data did not provide any clear evidence that the psychotic symptoms of either group could be attributed to specific organic factors. In fact, subjects were excluded from the study if any of their hospital records indicated a DSM-III-R organic diagnosis. Moreover, the so-called Capgras or misidentification syndromes evident in some of the severely violent patients could not be related to a specific organic insult, but rather occurred against a backdrop of other significant paranoid delusions. From a phenomenological viewpoint, these delusions seemed akin to a psychotically based disturbance in the ability to maintain personal boundaries,³¹ and therefore seemed quite different from neurological misidentification syndromes such as prosopagnosia. Indeed, whereas the current data suggest that Capgras delusions in the severely violent patients were limited to a single, highly personal target, neurological misidentification syndromes generally include more than one person and may involve, for example, the inability to recognize familiar faces.³²

The symptoms at the time of the violent act may reflect differences in acute psychotic episodes among mentally ill, violent men. By contrast, significant group differences on selected neuropsychological tests may be related to more enduring, stable characteristics of these psychotic men. In this regard, the severely violent group generally scored higher on all the administered neuropsychological tests and significantly higher on tests of intelligence and academic skills of reading

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and spelling. These data are consistent with our previous findings that demonstrated that forensic psychiatric patients charged with murder scored well within normal limits on tests of intelligence. The current findings also suggest that severely violent psychotic patients may have both preserved intellectual abilities and fairly well organized, systematized, paranoid delusions. Other studies have also demonstrated a relationship between systematized delusions and preserved neuropsychological function in nonforensic psychiatric patients diagnosed with paranoid schizophrenia.³³

In the current study, the neuropsychological data may suggest a general relationship between overall organizational abilities and lethality of violence. As we have suggested previously,¹³ relatively intact cognitive abilities may provide severely violent, psychotic patients with the resources and organizational skills to act on their delusional beliefs. In the current study, lethal acts of violence, for example, were often related to rather well organized, systematized delusions involving specific persons. This contrasted markedly from the primitive, disorganized, and often unprovoked acts of violence that are often associated with relatively pure neurological conditions, such as seizures.³⁴

Apart from this general relationship between neuropsychological test scores and violence, the current data provided no evidence of a specific relationship between cognitive deficits and violence. Some studies have suggested that violent patients tend to score lower on neuropsychological tests of frontal lobe func-

tions.^{35, 36} In the present study, both groups failed to reach performance criteria and thus scored in the abnormal range on the WCST, a measure of "executive" functions that are thought to be highly dependent on intact dorsolateral-prefrontal lobe structures. However, poor scores on tests of frontal lobe functions, particularly the WCST, are often associated with patients with psychotic disturbances, especially patients with schizophrenia who presumably have no history of violent behavior.²⁰ Moreover, in the present study, there was, on average, a considerable time interval between the neuropsychological evaluation and the violent act. The question of whether acts of psychotic violence can be specifically related to brain impairment, perhaps of a functional as opposed to a structural nature, may need to be addressed by more sensitive measures, such as functional magnetic resonance imaging performed close to the time of the violent act.

Thus, the current data underscore the importance of paying close attention to the particular characteristics of active psychoses in the assessment of potential for violence. Specific symptoms, such as well organized delusions with personal, accessible targets, and especially certain relatively infrequent delusions involving impostors, may be associated with lethal or near lethal acts of violence in some psychotic patients. These psychotic patients may also have preserved intellectual abilities that presumably provide the organizational abilities to act on their delusional beliefs. Additional clinical characteristics, such as a coexisting mood disorder, may also be important in assessing

violence potential in delusional patients. These considerations are of course best understood within the context of other compelling risk factors for interpersonal violence, such as availability of weapons³⁷ or prior arrest records for violence.³⁸

There are, however, several caveats to bear in mind while considering these current findings. First, the study is a retrospective analysis of selected hospital cases; the extent to which these findings can be generalized to other clinical samples is unknown. All patients were judged to be psychotic at the time of the violent act on the basis of forensic evaluations conducted around the time of the violent act. These judgements are obviously highly dependent on the quality of the evaluations. Second, the patients were divided into two groups on the basis of seriousness of criminal charges, which may not be the most precise method for assessing level of violence. For example, the less severely violent group included two patients who had no criminal charges but had been transferred from local state hospitals because of assaultive behavior. The degree of such assaultiveness was difficult to assess, and one could argue that these two subjects could have been included in the severely violent group. Finally, the relationship between delusional targets and criminal victims was not directly investigated. As such, for the severely violent group, the number of personal targets of the patients' delusional beliefs, who were actually victims of the patients' crimes, will need to be addressed by future studies.

In summary, the current findings are consistent with a variety of clinical re-

ports³⁹ linking violence with a certain type of delusion, namely those involving beliefs that significant others are impostors. Moreover, the present study goes beyond these clinical reports by providing empirical evidence for a higher incidence of lethal or near lethal acts of violence in intellectually intact but psychotic individuals with organized delusions involving personal, accessible targets. The emerging prototype is that of a psychotic individual with relatively intact self-organizational skills, which may not only mask highly personalized, organized delusional beliefs, but may also provide the resources to act on these distorted beliefs. Empirically driven taxonomic analyses are necessary to determine the extent to which this clinical prototype is representative of a genuine subgroup of psychotic patients who commit acts of severe violence.

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