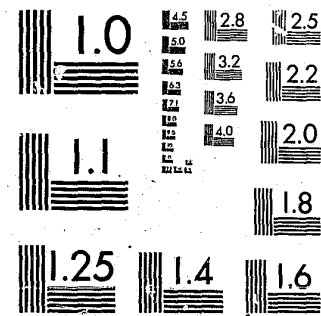


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CONTENTS Vol. 131, No. 9 September 1974

- 957 From Rationalization to Reason
Seymour S. Kety
- 964 Utilization of Care for Mental Disorders Under the Blue Cross and Blue Shield Plan for Federal Employees, 1972
Louis S. Reed
- 976 Community Service by Eclectic Private Psychiatry
James W. Jolliff
- 981 Rape Trauma Syndrome
Ann Wolbert Burgess and Lynda Lytle Holmstrom
- 987 Prognostic Factors in Attempted Suicide
Ari Kiev
- 991 Attitudes and Behaviors of Acute and Chronic Schizophrenic Patients Regarding Ambulatory Treatment
George Serban and Alexander Thomas
- 996 Use of Videotape To Induce Attitude Change in Delinquent Adolescents
Robert C. Marvit, Judy Lind, and Dennis G. McLaughlin
- 1000 Gilles de la Tourette's Disease A Review
Kenneth M. Woodrow
- 1004 Cannabis Indica in 19th-Century Psychiatry
Eric T. Carlson

TOPICAL PAPERS: Some Aspects of Violent Behavior

- 1008 A Survey of Psychiatrists in Boston and Their Work with Violent Patients
Kenneth J. Tardiff
- 1012 Some Refinements in the Measurement and Prediction of Dangerous Behavior
Joseph J. Cocozza and Henry J. Steadman
- 1015 Habitual Violence: A Profile of 62 Men
George Bach-y-Rita and Arthur Veno
- 1018 Habitual Violence and Self-Mutilation
George Bach-y-Rita

BRIEF COMMUNICATIONS

- 1021 A Perspective on Confidentiality
Eric A. Plaut
- 1025 The Tranlycypromine Isomers: A Controlled Clinical Trial
Javier I. Escobar, Burtrum C. Schiele, and Robert Zimmermann
- 1027 Doxepin: Is a Single Daily Dose Enough?
Harold L. Goldberg, Richard J. Finnerty, and Jonathan O. Cole
- 1030 A Practical Therapeutic Use of the Telephone
John A. Chiles
- 1031 Chemotherapy of Delirium Tremens: A Survey of Physicians' Preferences
Armando R. Favazza and Patricia Martin
- 1033 Erotomania
David E. Raskin and Kathleen E. Sullivan
- 1036 A Historical Approach to Understanding Drug Abuse Among Nurses
David G. Levine, Phyllis A. Preston, and Sally G. Lipscomb

IN MEMORIAM

1038. Peter G.S. Beckett, 1922-1974
Howard P. Rome

1039 LETTERS TO THE EDITOR

1048 BOOK REVIEWS

OFFICIAL ACTIONS

- 1072 Position Statement on Public Law 92-603 (PSRO)

A77 Index to Advertisers

Some Refinements in the Measurement and Prediction of Dangerous Behavior

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Recent analyses of data on the Baxstrom patients¹ resulted in some refinements in the authors' measurement of dangerous behavior and the finding that two factors, particularly in combination, were highly related to subsequent arrest and dangerous behavior. The authors discuss the implications of this finding for the prediction of dangerous behavior and the need for additional research.

SOME OF THE PREVIOUS STUDIES of Baxstrom patients (2-5) have focused on criminal activity and community adjustment after the release of these patients from civil mental hospitals. In one of these studies (3) an analysis of the relationship between subsequent community behavior and prior criminal activity demonstrated that the variables examined were only slightly related to community behavior. Recent reanalyses of our data in the context of current work on dangerous incapacitated felony defendants in New York State have proved valuable in several ways. First, we found two variables to be highly related to subsequent criminal activity, particularly when seen in combination. Second, our perceptions of the inadequacy of crime statistics as indicators of dangerous behavior were reinforced; this resulted in a refinement in our measurement of dangerous behavior. Third, the same two variables that were highly related to criminal activity were also found to quite accurately identify those patients who displayed dangerous behavior.

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¹In February 1966 the Supreme Court held (1) that Johnnie K. Baxstrom had been denied equal protection of the laws by the statutory procedure under which he was held at Dannemora State Hospital for prisoners declared mentally ill while serving a criminal sentence. When his maximum sentence expired in 1961, Baxstrom was civilly committed to Dannemora under the provisions of Section 384 of the Correction Law, which gave procedures for retaining persons found to be still mentally ill on expiration of their sentences. The Supreme Court in effect held Section 384 to be in violation of the equal protection clause of the Fourteenth Amendment. The nearly 1,000 patients affected by the decision were transferred from New York State's two hospitals for the criminally insane to civil mental hospitals.

SUBSEQUENT CRIMINAL ACTIVITY.

Of the many issues raised concerning the Baxstrom patients, perhaps the most critical related to their dangerousness and to the more general question of the prediction of dangerousness. In our earlier analyses, by employing arrest and conviction data as indicators of dangerous behavior we found one factor to be significantly related to subsequent criminal activity. This was a summary measure we devised, referred to as the Legal Dangerousness Scale (LDS). This scale is composed of four aspects of previous criminal activity: presence of juvenile record, number of previous arrests, presence of convictions for violent crimes, and severity of the original Baxstrom offense (6). The scores ranged from 0 to 15, with a higher score indicating a more serious criminal background.

We began our recent reanalyses of the question of dangerousness by examining the possible importance of variables other than those having to do with prior criminal activity. Included were social and demographic factors such as age, race, and marital status as well as other factors related to history and type of psychiatric disorder, e.g., previous mental hospitalizations and diagnosis and psychiatric evaluation at time of transfer. Of these variables only one, age, was highly related to subsequent criminal activity. Upon further analysis it was found that both age and LDS score were independently related to community behavior and that the two in combination sharply distinguished between released patients who were and were not rearrested.

The largest difference in subsequent criminal activity by age was found between those under the age of 50 and those 50 and over. With regard to the LDS score, the empirical break occurred at 5, with those scoring less than 5 least likely to be arrested following release. Dividing the released patient group into those who were less than 50 years old and who had an LDS score of 5 or more and those who had a score of less than 5 and/or were 50 years of age or older, we arrived at the information provided in table 1. We found that of the 98 Baxstrom patients in our sample released to the community, 20 were rearrested. Eighty-five percent of them (17 of 20) were under the age of 50 and had a more serious history of criminal activity.

This finding represented a marked improvement over previous attempts to discover factors related to posthos-

TABLE 1
Subsequent Arrests of Released Patients by Combined Measure of Age and Legal Dangerousness Scale (LDS) Score (N = 98)*

Combined Measure	Arrested		Never Arrested	
	N	Percent	N	Percent
Less than 50 years old and LDS score of 5 or more	17	47.2	19	52.8
50 years or older and/or LDS score of less than 5	3	4.8	59	95.2

* $\chi^2 = 25.19, p < .001$.

pital behavior. Using these two variables we could correctly identify all but 3 of the 20 patients who were subsequently arrested.

MEASUREMENT OF DANGEROUS BEHAVIOR

Despite the significance of this finding we remained dissatisfied, particularly when we attempted to use the data to discuss dangerousness and its prediction. Conceptually, the meaning of dangerous behavior that appears to make the most sense and that is in agreement with the definition offered by others (7) refers to violent assaultive behavior against persons. In examining the behavior that led to arrest and conviction in our sample, we found that much of it could not be considered dangerous. For example, of the 20 patients arrested, 11 were convicted on 18 counts. Half of these convictions were for public intoxication, disorderly conduct, or vagrancy. The inclusion of such acts as dangerous behavior appears to render the concept almost meaningless.

Therefore, we decided to focus on the actual behavior leading to arrest rather than on whether the patient was arrested. Only behavior involving violence against persons (homicide, rape, robbery, manslaughter, and assault) was designated as dangerous behavior. All other behavior was classified as nondangerous even if it resulted in arrest.

In our reexamination of the community activity of these patients a second phenomenon became apparent. While much of the behavior leading to arrest could not be defined as dangerous, some of the behavior that did not result in an arrest should be. Specifically, we noted that some patients were rehospitalized for behavior very similar to that displayed by other patients who were arrested for violent crimes. Since we were interested in subsequent dangerous behavior in general and not just such behavior that led to an arrest, we decided to examine and code all incidents precipitating rehospitalization as well as incidents precipitating arrest. The critical incident leading to rehospitalization was designated as dangerous or nondangerous according to categories similar to those developed by Smith and associates (8) and by Hilles (9).

Our operationalization of dangerous behavior was refined in two ways: 1) it was expanded to include all behavior for which information was available regardless of the

TABLE 2
Dangerous Behavior of Released Patients by Combined Measure of Age and Legal Dangerousness Scale (LDS) Score (N = 98)*

Combined Measure	Dangerous Behavior		No Dangerous Behavior	
	N	Percent	N	Percent
Less than 50 years old and LDS score of 5 or more	11	30.6	25	69.4
50 years or older and/or LDS score of less than 5	3	4.8	59	95.2

* $\chi^2 = 12.30, p < .001$.

consequences of the behavior, i.e., arrest or rehospitalization; and 2) it was restricted to acts involving violent assaultiveness against persons, thus eliminating minor, nonassaultive behavior.

As a result, we found that of the 98 patients in our sample ever released to the community, 14 actually displayed dangerous behavior. This number represents approximately 15 percent of the released patients. In seven of the cases patients were arrested for their behavior and in the other seven the patient's behavior led to rehospitalization. Although we have refined conceptually and operationally the meaning of dangerous behavior, our previous and main conclusion remains few of the Baxstrom patients (about 15 percent) displayed dangerous behavior once released to the community.

PREDICTION OF DANGEROUS BEHAVIOR

Given the strong relationship between the two variables of age and LDS score and arrests and given our redesignation of which patients displayed dangerous behavior, our next question was whether dangerousness as indicated by actual assaultive behavior would also prove to be highly dependent on the patient's age and history of criminal activity. It was. Once again both factors were related to subsequent dangerous behavior, and the two combined provided the strongest relationship. Table 2 shows that of the 14 patients who displayed dangerous behavior, all but 3 fell into the expected group. Of the violent patients, almost 80 percent were under the age of 50 and had an LDS score of 5 or more. These two variables, more than any others examined, clearly distinguish patients who do or do not display dangerous behavior when released to the community.

As in other attempts to explain and predict dangerous behavior, we encounter here the problem of false-positives. That is, while most of the patients who displayed dangerous behavior were under the age of 50 and had an LDS score equal to or greater than 5, most of the patients who fell into this category were not assaultive. The 11 patients who were dangerous represent less than a third of all the patients in this category. For every one patient who was under 50 years old and who had an LDS score of 5 or more and who was dangerous, there were at least 2

who were not. Thus, using these variables, we get a false-positive ratio of 2 to 1. Nonetheless, this level represents a marked improvement over our early attempts (3) as well as those of others (10).

Despite the significant relationship between the two variables of age and LDS score and dangerous behavior, if we were to attempt to use this information for statistically predicting dangerous behavior our best strategy would still be to predict that none of the patients would be dangerous. (In this case we would be wrong in 14 cases because 14 of the 98 released patients did display dangerous behavior.) Any other method would increase our error. For example, if the younger patients with more serious criminal histories had been identified and detained or specially treated we could have reduced subsequent violent behavior by 80 percent. Instead of 14 errors, however, we would then be wrong 28 times out of 98; the 3 patients not expected to be violent who were and the 25 patients predicted to be violent who were not. If we attempt to distinguish the potentially dangerous patient, we double our error by identifying as dangerous all of a group of patients when only one-third of them will live up to this expectation.

DISCUSSION

To a large extent this problem of false-positives, encountered in any attempt to predict dangerousness, is due to the infrequency of incidents of violent behavior. This problem is common to all attempts at predicting low-base-rate events or behavior (10-12). Yet dangerous behavior, however infrequent, remains important. Statistically our best strategy is to assume that all such patients are not dangerous, but the fact remains that some are. Because of this, society as a whole would probably find such a strategy unacceptable. The data just presented would seem to indicate that many of the patients who later displayed dangerous behavior could have been identified and that if they had been treated or detained the result would have been an 80 percent reduction in violent behavior. Such a reduction, however, could only have occurred at the expense of many other patients who, while similar in age and criminal background, would not have been dangerous if released. The implications of this dilemma and the policy question of what (if any) level of false-positives is acceptable has been raised elsewhere (13-15). Suffice it here to say that as the importance of the prediction of dangerousness as a basis for hospitalization, differential treatment, and detention grows, so does the need for these issues to be addressed.

Another difficulty with our findings is related to the particular population among which the study was conducted. The Baxstrom patients are a group of middle-aged people who had been continuously institutionalized in hospitals for the criminally insane for an average of 14 years before they were transferred. As such they may be fairly representative of long-term patients in older, tradi-

tional state correctional/mental health hospitals. However, they are not typical of many of the patients now entering mental hospitals through criminal procedures.

The average age of our current research group of 541 male, incapacitated felony defendants in New York State (16, 17) is 31. This group is probably more representative of patients involved with current treatment and custody issues. One direct implication of this difference is that our finding on the relationship of age to subsequent community behavior requires further examination. With younger patients, distinguishing individuals over and under 50 years of age may have less clinical usefulness. Thus the next stage in our research on dangerousness will be to apply the techniques for measuring dangerous behavior discussed here to this new population and to determine whether, of all the factors to be examined, age and LDS score emerge once again as the two factors most highly related to dangerous behavior.

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