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Song Refinements in the Measurement and Prediction of Dangerous Behavior

BY JOSEPH J. COOCHANA, M.A., AND RENY J. STEADMAN, PH.D.

Recent analyses of data on the Baxstrom patients revealed 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.

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. 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-
bital 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 (7) is 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 was 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 meaningless.

Therefore, we decided to focus on the actual behavior leading to arrest rather than on whether the patient was arrested. Our next question was: which acts of 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 a recent examination 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 violent behavior that did not result in an arrest should be. Specifically, we noted that some patients were rehospitalized for behavior very similar to that which had resulted in their arrest when they were arrested for violent crimes. Since we were interested in subsequent dangerous behavior, we excluded these patients and did 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 patients who were rehospitalized 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 consequences of the behavior, i.e., arrest or reprehensibility; 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 constitutes an approximate 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 hospitalization. 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 arrest and given our redefinition of which patients displayed dangerous behavior, our next question was: was the behavior indicated by actual assaultive behavior would prove to be highly significant 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 indicates 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 other examined, clearly distinguished patients who did or did not display dangerous behavior when released to the community.

As in other attempts to explain and predict dangerous behavior, we encountered 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 arrested. The 11 patients who were of this age group and had an LDS score of 5 or more and who were dangerous, there were at least 3 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 the early attempts in which we 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 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 rate. 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 30 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 55 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, medium, or high behavior (10, 12). Yet dangerous behavior, however infrequent, remains important. Statistically, our best strategy is to assume that all patients are not dangerous but those factors that make them are. Because of this, society as a whole would probably find such a strategy acceptable. The data just presented would seem to indicate that many of the patients who later displayed dangerous behavior could have been identified, if they had been identified or detained the result would have been an 80 percent reduction in violent behavior. Such a result, it is true, could only have occurred at the expense of many more patients. If, however, similar in age and criminal background, would not have been possible to reclassify the data presented elsewhere (13) it is important to say that in the importance of the prediction of dangerousness as a basis for hospitalization and discharge the same treatment decision groups, does the need for these issues to be addressed?

Another difficulty with our findings is related to the particular category among which the study was conducted. The Baxstrom patients are a group of middle-aged patients 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 far more accurate of long-term patients in older, tradi-