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THE RELATIONSHIP BETWEEN PREDICTIONS OF DANGEROUS BEHAVIOUR AT BRIEF ASSESSMENT AND ACTUAL INCIDENTS DURING EXTENDED INPATIENT EVALUATIONS

D.S. Sepejak and C.D. Webster

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METFORS
999 Queen Street West
TORONTO, Ontario
M6J 1H4

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One of the current research projects underway at the Metropolitan Toronto Forensic Service (METFORS) concerns the prediction of dangerous behaviour. Within a four month period, 242 patients were observed during the course of routine brief psychiatric assessments requested by the Court. Members of the clinical assessment team independently completed a series of personality ratings on each subject, including judgments about several different kinds of dangerous behaviour (see Slomen, et al., 1979, unpublished, for a detailed description of the project). The final stage of the project will involve a follow-up of these subjects in order to examine the relationship between prediction of dangerousness and actual behaviour at a future time. A two-year period has been designated as the minimum time interval between original prediction and the eventual follow-up observation.

Of the total brief assessment sample, fifty-four patients were remanded for further inpatient analysis at METFORS and remained here anywhere from four to fifty-two days. Since the behaviour of inpatients is recorded each eight-hour shift in log format for assessment purposes, the possibility of carrying out some preliminary testing of dangerousness predictions presented itself. Of course it is recognized that the results of such a study would be somewhat tenuous. A follow-up observation recorded barely a full month(1) after the prediction is hardly a fair test of the prediction. In addition, the

(1) Over 75% of the remanded subjects were assessed as inpatients for a period of 29 days or fewer.

METFORS inpatient experience may itself inhibit the expression of dangerous behaviour, depending upon the subject's degree of awareness as to the importance of the assessment for trial results or sentence decisions. Nonetheless, it was thought that an examination of inpatient files for any incidents of dangerous behaviour would result in some estimation of prediction validity. This study is, therefore, not to be construed as a follow-up study per se, but only as a preliminary inquiry into the immediate post-prediction behaviour of a highly selected sample of patients involved in the Dangerousness Project.

METHOD

Medical files for each of fifty-two(2) inpatient subjects were examined for any incidents of dangerousness as reported in the "Patient Care Notes" (a descriptive log of a patient's behaviour, mood, medication intake, etc.).(3) An incident of dangerousness was defined as any aggressive act which included physical contact with another person who may or may not have been injured as a result (e.g., grabbing, pushing, choking, hitting). In addition, threatening gestures without physical contact and verbal threats directed to a specific person were subsumed under the definition of an incident. Swearing, insults and general verbal aggression were not recorded as incidents since an implication of dangerousness in these instances appeared to be absent (i.e., no harm threatened or attempted).

Once recorded, the presence or absence of any incident on the part of each subject was compared with the prediction of dangerousness made in

(2) At the time of investigation, the medical files for two patients were on external loan.

(3) The authors wish to thank Ms Lynn Loftus for her assistance in the collection of data.

the course of the previous brief psychiatric assessment. During this previous assessment, dangerousness was predicted using a seven-point scale ranging from "extremely low" to "extremely high". Although as many as six clinicians routinely rated each subject, only the predictions made by the main psychiatrist and two external non- clinical coders were used in the present investigation as sources of comparison. Furthermore, the specific prediction selected for the purposes of the present study deals only with the global category 'dangerousness to others at present'.

RESULTS

In the following tables, predictions of dangerousness made by the two external non-clinical coders are compared with actual observations of incidents.

Table 1 - Prediction of Dangerousness[1] x Presence of Incidents for Coder 1 Data.

		Incident		
		Yes	No	Total
Prediction of Dangerousness	Yes	14	14	28
	No	3	10	13
	Total	17	24	41[2]

1. On a scale of 1 to 7, 4 to 7 is defined as a "yes" prediction, while 1 to 3 is defined as a "no" prediction.

2. Predictions missing in 11 cases.

Table 2 - Prediction of Dangerousness x Presence of Incidents for Coder 2 Data.

		Incident		
		Yes	No	Total
Prediction of Dangerousness	Yes	14	13	27
	No	4	13	17
	Total	18	26	44[1]

1. Predictions missing in 8 cases.

Of the fifty-two patients in the sample, twenty-three were responsible for some kind of dangerous incident, while twenty-nine remained on the inpatient unit without incident. Both coders successfully predicted the occurrence of an incident in about 80 percent of the cases. Upon further examination of the tables, however, as many incorrect "yes" predictions (i.e., where an incident was predicted to occur but did not) as correct "yes" predictions were made on the part of the two coders.

Looking at the cases where dangerous behaviour was not predicted to occur, it appears that the coders' expectations were founded over 75 percent of the time. Once again, however, the impact of these results are weakened since a good number of patients who should have been included in the nondangerous category were incorrectly assumed to be dangerous. Indeed, of the patients whose stay on the inpatient unit remained free of any incident, 58 percent and 50 percent (Coder 1 and Coder 2, respectively) were predicted to exhibit some kind of dangerous behaviour.

On first inspection, the prediction data collected from the two external coders appears to have a good deal of validity in terms of predicting who will and who will not act in a dangerous fashion. The presence of a large number of false positive predictions, however, detracts substantially from the accuracy of these predictions, in general. A chi square test on the data was not significant (X^2=1.66, $p > .05$ for Coder 1 data and $X^2 = 2.39$, $p > .05$ for Coder 2 data), indicating the lack of any significant relationship between the prediction of dangerous behaviour and actual occurrence.

Table 3 - Prediction of Dangerousness x Presence of Incidents for Combined Psychiatrist Data

		Incident		
		Yes	No	Total
Prediction of Dangerousness	Yes	9	14	23
	No	9	9	18
	Total	18	23	41[1]

1. Predictions missing in 11 cases.

In addition to the data collected from the external coders, the predictions made by the main interviewing psychiatrist were examined in comparison with the inpatient incident data. These data are presented in Table 3. It should be noted, however, that since the interviewing psychiatrist during assessments changed on a day-to-day basis, these data represent predictions pooled from several psychiatrists.

It is evident from the data in Table 3 that correct predictions of dangerousness are not any greater in number than the incorrect

predictions and, indeed, the false positive predictions outnumber all of the other cell totals. A chi square analysis confirms the observed insignificant relationship between psychiatrists' predictions and incidents of dangerousness ($X^2 = .14$, $p > .05$).

As was mentioned earlier, the length of stay as an inpatient may vary greatly depending upon when an assessment is fully completed. To determine whether or not number of days as an inpatient exerted any effect on the presence of dangerous incidents, a Mann-Whitney U test was carried out on the duration of assessment data for each patient divided according to presence or absence of an incident (see Appendix A for raw data). The test was significant ($z = 2.27$, $p < .02$) showing that, in general, the patients who remained longer as inpatients were more likely to have expressed some dangerous behaviour.

As a minor aside, observed inpatient incidents were compared to subjects' self-perceptions of dangerousness as expressed during the brief assessment. All of the five subjects who described themselves as dangerous were subsequently involved in an inpatient incident. Of the thirteen subjects who did not perceive themselves as dangerous, only four exhibited dangerous behaviour as inpatients. This relationship is statistically significant when submitted to a Fisher exact probability test ($p < .03$) and suggests that subjects' self-perception of dangerousness may be an important predictive factor to consider in the larger Dangerous Behaviour Project.

DISCUSSION

As in most previous investigations dealing with the prediction of dangerousness, the presence of high false positive rates in the study results acts to weaken the credibility of those predictions found to be correct. Putting this aside for the moment, however, it is evident that a relatively large number of "hits" and a relatively small number of "misses" are present, certainly with respect to the external coder data. This would tend to offer support to the accuracy of predictions made in the earlier psychiatric assessment in reference to subsequent inpatient behaviour.

The large number of high false positive predictions, while familiar to this area of research as a constant point of concern (see, for example, Ennis and Litwack, 1974 and Quinsey, Ambtman and Pruesse, 1977), may very well be anticipated in a study of this nature. As noted previously, the follow-up period was extremely short in that most patients were observed within one month of the original prediction. This would not allow for a fair test of the accuracy of a prediction in that the false positive number may be expected to reduce over time as the possbility increases of more patients exhibiting dangerous behaviour. In fact, it was shown that the group of twenty-three patients for whom an incident was recorded remained on the inpatient unit significantly longer than those patients who did not express any dangerous behaviour. In addition, the inhibiting nature of a forensic inpatient assessment, as described earlier, may account for the relatively high false positive rate, given that many patients may alter their behaviours in order to receive positive assessments.

With regard to the psychiatrist prediction data, the results are less clear and certainly appear to indicate much less accuracy with respect to predictions made. The results are somewhat more difficult to deal with, however, since the predictions made by several psychiatrists had to be combined and presented in a single table.

In general, the results of the present substudy are encouraging with respect to indicating some validity of dangerousness predictions made for fifty-two of the 242 patients involved in the Dangerous Behaviour Project. Of course, the final test of accuracy will include a follow-up observation made approximately two years after the patient's original assessment.

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APPENDIX A - NUMBER OF DAYS AS INPATIENT X PRESENCE OF INCIDENTS

YES	NO
52	51
50	40
45	40
43	29
43	28
42	28
42	28
33	28
33	27
31	27
29	26
29	26
27	25
27	24
27	24
26	23
25	22
23	22
22	22
18	22
13	21
12	21
09	20
—	19
23	17
	16
	13
	05
	04
	—
	29

Total # Inpatients = 23 + 29 + 2 (presence of incidents not determined as yet)

= 54

END