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PREDICTING PAROLE SUCCESS

BY HORNELL HART¹

That the percentage of violations of paroles among men paroled from the Massachusetts Reformatory could be reduced one-half through scientific utilization of data already being collected by the authorities of that institution, is the conclusion which should have been reached by analysis of statistical data presented by Professor Sam B. Warner in a recent study.² This conclusion, however, is quite at variance with those found by Professor Warner. At the request of the Massachusetts Department of Correction, he made a very painstaking and valuable analysis of all of the systematic data available about 680 prisoners, of whom 300 had broken their paroles, 300 had completed their paroles successfully and 80 had served their sentences without being paroled. Among his conclusions are the following:

Poor as the criteria now used by the Board are, the Board would not improve matters by considering any of the sixty-odd pieces of information placed at its disposal, which it now ignores, except the alienist's report. . . . No considerable improvement is possible without a complete change both in the methods of obtaining information for the Board and in the nature of the information obtained.³

The purpose of the present article is to show that both of these conclusions are in error, and that the Board could greatly improve its parole results by proper utilization of the information already at its disposal.

The reason for the discrepancy between Professor Warner's conclusions and those of the present writer is that, while the former's study is a most admirable, careful and valuable piece of work up to the point where he draws his conclusions from his tables, his failure to apply accurate statistical tests to determine which of the factors involved showed significant contrasts, and which did not, resulted in his overlooking certain highly important differences between the men who violated their paroles and men who succeeded. The statistical method applicable to this purpose is technical and has not yet come into general use except among professional statisticians, but unfortu-

¹Iowa Child Welfare Research Station.

²Warner, Sam B., Factors Determining Parole from the Massachusetts Reformatory. *Journal of Criminal Law and Criminology*, 14: 172-207, August, 1923.

³Op. cit., p. 196.

nately no common-sense rule of thumb can take its place, and failure to apply it almost inevitably leads to erroneous results.

To illustrate the problem, take the contrast in the percentage of parole violators and of non-violators who reported that their mothers had been arrested or sent to jail. This is one of the items of information dismissed by Professor Warner as valueless. His data under question 14 indicate that of the 300 non-violators none reported his mother as having been arrested or sent to jail, while among the violators four per cent reported that their mothers had been. Is this difference significant, or is it due to chance? By applying the formulæ and tables given by Yule⁴ and Davenport⁵ it may be determined that there is not one chance in 1,000 that, if a large enough number of cases had been collected by the methods used in this study, the parole violators would have shown a larger proportion of mothers reported as having been arrested than the non-violators showed. Obviously, therefore, the sensible conclusion is that the contrast between the two groups in this respect is significant, and that reporting one's mother as having been arrested tends to be prognostic of parole violation.

Applying these rigid statistical tests to Professor Warner's data, one finds, in addition to the contrasts which he regards as significant, at least 15 items in his tables with respect to which the contrast between the violators and non-violators is greater than would be exceeded by chance once in one hundred times. Some of these differences would be exceeded by chance only once in millions of times. Besides these there are about 20 other contrasts which, while not as clearly established as the above items, are very probably significant, making a total of some 35 items of value in the data which Professor Warner discarded. For purposes of discussion, these factors may be grouped into classes according to their apparent significance.

First may be presented a series of contrasts relating to the home environment of the men paroled. Men who subsequently violated their paroles reported much more frequently than men who succeeded on parole that their fathers were sentenced to jail, or were intemperate and were sent to jail; that their mothers were arrested or were sent to jail; that their mothers drank; that their associates were of bad character; that their homes were of bad character; and that the marital relations of their parents were "fair," "questionable," or "unpleasant." The contrast between the two groups of men in respect to each of the above items taken by itself was larger than would be exceeded by

⁴Yule, G. Udney, *Theory of Statistics*, London, 1919, p. 269.

⁵Davenport, C. B., *Statistical Methods*, N. Y., 3rd edition, pp. 118ff.

chance once in 100 times. In addition to these items a markedly smaller proportion of the parole violators than of the non-violators reported their mothers' characters as good, and a markedly larger proportion reported their fathers' characters as bad, reported that their brothers had served jail sentences, or reported that one parent was Catholic while the other was Protestant (a condition possibly conducive to family discord). These items are all consistent with each other, and are decidedly in accord with the findings of other studies in criminology. Statistically and logically, therefore, it is evident that the admission that one's immediate relatives and associates were of bad character is, under the conditions under which these data were obtained, prognostic of a tendency to violate parole.

A second group of contrasts apparently has to do with the character of the man himself. Men who subsequently violated parole reported markedly less frequently than non-violators that they had been regularly occupied, reported more frequently having been intermittently occupied, much more frequently admitted the use of cigarettes and drugs, and much less frequently claimed to be contributing to the support of some unnamed person; and decidedly more of them were guilty of misconduct six times or more in the reformatory. In connection with these contrasts it must be observed that admitting the use of alcohol, admitting smoking a pipe or chewing tobacco, and admitting sexual indulgence have no apparent correlation with violation of parole, while admitting gambling has very little correlation. Good behavior in the reformatory, aside from the index above quoted, correlates a little, though not very conclusively, with success on parole, except that violators average a smaller number of marks lost for misconduct than non-violators. In general, the admission of having been irregularly occupied, addiction to drugs and to cigarettes and misbehavior in the reformatory tend to be prognostic of parole violation.

A third group of contrasts has to do with physical condition. Of the parole violators, significantly more had the questions on evidence of disease, serious illness, and surgical operations left "not answered," while of the non-violators decidedly more had these questions answered "none," and were reported as having "very good" physique. Parole violators are somewhat more likely to have been reported by the alienist as recidivists, psychopaths, alcoholic degenerates, morons, or feeble-minded than non-violators are. Some of these contrasts are greater than would be exceeded by chance once per 100 times and some are not. They are all consistent, however, and all correspond with other findings in criminology.

The fourth group, having to do with the nature of the crime, has been well covered by Professor Warner. Violators came decidedly more frequently than non-violators from among men sentenced for breaking and entering and somewhat more from among men sentenced for larceny, but decidedly less from men sentenced for assault and battery or for "other crimes." Violators came decidedly more often from among men who committed their crimes by fraud. Non-violators reported strikingly more often than violators that they had never committed crimes for which they were not arrested, and more often had no criminal record, while the violators emphatically more often had served jail sentences, or had had three or more criminal records. Prisoners sentenced for one or two years decidedly less often became parole violators. While this may be due in part to the shorter parole period for such cases, the excess percentage of successes among men sentenced for five years and paroled within 10 months or less is greater than would be exceeded by chance once in 100 times. Apparently, men whose criminality is a matter of the intellect are less likely to go straight than men whose crimes resulted from emotional strain. Apparently, also, imprisonment after the first few months decreases rather than increases the chance for reformation. Certainly men with previous criminal records are poorer parole risks than first offenders are.

The contrasts thus far noted are in harmony with other findings in criminology. Confirmed delinquency might be expected to be correlated with bad character of the family and associates, with irregular work habits, drug addiction and inferior physical condition. Recidivism has long been recognized as a quite reliable prognostic symptom of failure to reform. Having been in a penal institution increases, not decreases, a man's chance of being rearrested. With respect to certain other items, however, some contrasts which might be expected from current beliefs and theories do not appear.

In relation to early environment, it has been commonplace to assume that the "broken home" is a cause of criminality. In these tables the facts of the parents being "separated" or "widowed" and the fact of the convict having been separated early from one or both parents are not clearly significant. The probable interpretation of these facts is that the destructive factor in early environment is the demoralizing atmosphere of a quarreling, discordant home and the bad example of anti-social parents and brothers rather than the mere absence of one parent from the home.

Another common belief among students of crime is that delinquency is associated with poverty and ignorance. Professor Warner's

data do not confirm this idea. The man who claims that his parents own property is much more likely to violate his parole than the man who admits that they own none. The fact might be explained on the grounds that the criminologists were wrong, but the evidence in favor of a relationship between crime and poverty is very strong. The more plausible interpretation is that claims of having wealthy parents are more likely to be symptomatic of lying than of economic status. The same interpretation would probably be put on the fact that parole violators are somewhat less likely than non-violators to admit that their parents were illiterate. Still another possibility is that, while first offenders tend to come from homes of poverty, confirmed criminals are more likely to be sons of more prosperous and better educated parents.

The contrasts with respect to religion are not clearly significant, except that prisoners giving other religious preferences than Catholic, Protestant or Jewish are decidedly more likely to succeed on parole than prisoners professing one of these three creeds, and that prisoners claiming to have attended church regularly are distinctly more likely to violate parole than those admitting having neglected it. Here again the replies quite likely are symptomatic of lying rather than real religious attitudes, though certain types of emotionally unstable criminals are prone to excessive religiosity.

This tendency by violators to deny facts recognized as discreditable probably is largely responsible for the apparent lack of correlation between parole violation and admission of the use of liquor and sex indulgence. Failure to answer the sex question is more characteristic of the violators, while admitting having begun sex indulgence at the age of 18 or older is more characteristic of non-violators. Probably similar in interpretation is the fact that men admitting having had no occupation more often go straight on parole than men claiming intermittent occupation, or failing to answer the question. Frankness seems to be a hopeful sign.

The apparently contradictory facts that parole violators decidedly more often claimed contributing to the support of parents, while parole successes decidedly more often claimed contributing to the support of some "unnamed person" may perhaps be explained on the ground that it is considered useful to pose as the support of an aged mother, so that this claim often represents lying, while the claims to support an unnamed person, not having this sentimental value, actually reflect bonds of loyalty which help to keep a man straight.

Taking only the items where the probability that the observed con-

trast is due to chance is less than about one in 100, and arranging the items in the order of the percentages of successful paroles, the above facts may be summarized as in Table 1. This table indicates clearly the possibility of decreasing the percentage of parole violations. If, for instance, only the men falling in one or more of the first five groups in the table and not falling in any of the last five groups were paroled, the percentage of violations would almost certainly be less than 20 and the successes over 80 per cent. Such a rule, however, would permit the parole of less than 35 per cent of the prisoners, and would shut out from parole fully half of the men who would succeed if given a chance. Obviously the other significant factors should count.

TABLE 1

Classifications of Paroled Prisoners from the Massachusetts Reformatory, Showing the Percentages of Successful Paroles and of Parole Violations Falling Into Each Group, and Showing What Percentages of the Prisoners Paroled in Each Group Succeeded

Warner's No.*	Characteristics for Which Observed Contrasts are Quite Unlikely to be Due to Chance	Per Cent Distributions		Per Cent Successful
		Successful Paroles	Parole Violations	
	All paroles studied.....	100	100	49.75
38	Men guilty of "other" crimes.....	11	2	85
37	Partly support unnamed persons.....	14	2	88
38	Men guilty of assault and battery.....	10	3	77
34	Occupation "none"	6	2	75
49	No criminal record	19	7	73
58	Accidental offenders	26	10	72
12	Religion of prisoner "other answers"...	14	7	67
34	Extent of occupation "regular".....	22	14	61
58	"Responsible" and "normal" offenders..	30	22	58
41	Means of committing crime: fraud.....	46	59	44
22	Men using cigarettes.....	59	77	43
31	Character of associates "bad".....	43	56	43
38	Men guilty of larceny.....	28	37	43
49	Men with three or more criminal records	51	68	43
37	Claim to be contributing to parents....	40	55	42
66	Six or more times guilty misconduct in the reformatory	26	38	41
48	Served one or more jail sentences.....	43	65	40
10	Claim parents own property.....	22	35	39
38	Guilty of breaking and entering.....	24	37	39
33	Claim to attend church regularly.....	14	23	38
52	Evidence of disease "not answered"....	10	17	37
49	Men with reformatory records.....	12	21	36
7	Marital relations of parents "fair," "un- pleasant," or "questionable".....	7	15	32
53	Serious illness "not answered".....	6	15	29
54	Surgical operations "not answered"....	6	16	27
23	Uses drugs	2	7	22
29	Character of home "bad".....	2	8	20
6	Mother drank	1	4	20
14	Father served jail sentence.....	1	15	6
14	Mother arrested or jailed.....	0	4	0

*Numbers in this column refer to the numbers of the corresponding sections in Warner's tables.

In order to profit by past experience as summarized in Table 1 and as reinforced by other available data, so as in the future to parole as large a fraction as possible of the men who will succeed and as small a fraction as possible of the men who will violate their paroles, all of the information under the questions which have been proved to be significant should be combined into a prognostic score for each man coming up for parole. On the basis of such scores it would be possible to make reports to the Board in a form somewhat like the following:

Jim Jones has a prognostic score of 93 points. In the past experience of the Board among the men with prognostic scores in the neighborhood of 93 points, only 19 per cent have violated their paroles.

Will Smith has a prognostic score of 21 points. In the past experience of the Board among men with diagnostic scores close to 21 points, 80 per cent have violated their paroles.

With these reports in hand the Board would be able to decide the case on the basis of all the facts and with a fairly close forecast as to the probability that the man, if paroled, would violate his parole.

To devise such a scoring system, the intercorrelations between the various items tabulated by Professor Warner, as well as their correlations with parole violation, would have to be studied, so as to work out the best possible weighting system for scoring the pertinent facts. The process is entirely feasible, however, and the reliability of the total score, judging from the data included in Professor Warner's study, would be high. The Board would then be applying to its parole problems the same scientific procedure employed by insurance companies when they estimate the probable cost of insuring new applicants on the basis of their experience with the past death rates of insured persons of similar characteristics.

The tests which show what contrasts between violators and non-violators are significant also show what contrasts between paroled and unparoled men are significant, and hence suggest what factors have determined parole in the past. An outstanding contrast here is between long-term men and short-term men. Those with short sentences are decidedly less frequently paroled. Another significant contrast is the strikingly higher percentage of paroles granted to men whose conduct in the reformatory was good. A third influential factor, apparently, is the nature of the crime. These probably determining characteristics result in some striking contrasts in other respects between paroled and unparoled men, as indicated in Table 2.

TABLE 2

Percentages Paroled Among Selected Classes of Men in Professor Warner's Sample of 680 Cases, Showing Also the Percentages of Successes Among Men Paroled in These Classes

Warner's No.	Class	Per Cent Paroled	Per Cent Succeeding
	Whole sample of 680 men.....	88.2	50.0
14	Men whose fathers served jail sentences.....	100	6
37	Men partly supporting unnamed persons.....	99	88
62	Willingness to work in reformatory "fair".....	98	38
39	Men sentenced for five years.....	98	48
64	Conduct in reformatory school "good".....	97	53
62	Men willing to work in reformatory.....	95	53
60	Conduct in reformatory "good".....	95	49
38	Convicted of breaking and entering and larceny..	94	41
31	Character of associates "bad".....	93	43
41	Means of committing crime: fraud.....	93	44
49	Men with three or more criminal records.....	91	43
40	Men guilty, who so pleaded.....	90	50
14	No record of delinquency, dependency, defectiveness, etc., in family.....	84	52
62	Willingness to work in reformatory "not answered"	82	51
12	Religion of prisoner Protestant.....	80	50
38	Men guilty of assault and battery.....	77	77
49	Men with no criminal record.....	74	73
11	Religion of parents neither Catholic, Protestant nor Jewish.....	73	62
39	Men sentenced for one or two years.....	72	64

The facts presented in Table 2 show that past¹ methods of selecting men for parole were urgently in need of revision. Of the twelve classifications of prisoners for which the percentage of paroles was significantly more than normal, only four groups had as good a percentage of successes as the average for all paroled men. Of the seven groups for whom the percentage of paroles was significantly low, on the contrary, all the groups showed as good or better percentages of successes than the average. It appears, therefore, that past methods of selection have had a tendency to extend parole more freely to men likely to violate, and to refuse parole rather frequently to men likely to succeed.

The reason for this undesirable outcome apparently lies in the preference for long-term men in the granting of paroles. The men sentenced for five years are likely to be the men with previous records, men guilty of more serious offenses, and men whose characters appeared particularly hardened at the trial. The short-term men, on the contrary, are likely to include a large proportion of first offenders and of men who are more unfortunate than depraved. Recidivists who have been in prison before usually have learned that it pays to keep

¹"Past Methods" refers to methods in use during the period to which Professor Warner's data relate. The Parole Board has been recognized since that time.

the rules, and hence they often get fewer black marks for misconduct than green men who are laboring under a fresh sense of resentment and who have not yet learned that good conduct in prison is to their own advantage.

The Massachusetts authorities have laid a splendid foundation for increasingly successful parole work. While the record system now in use may doubtless be improved in many respects, the statistics classified by Professor Warner show that data have already been collected on which scores clearly predictive of the probable success of individual parole applicants may be based. It is to be hoped that the authorities will follow up the progressive steps of the past by making use of these data in future decisions.

The above article has been submitted to Mr. Sanford Bates, Commissioner of the Department of Correction of the Commonwealth of Massachusetts. Among his comments he makes two points which should be born in mind in interpreting Table 2.

There are a great many instances in our institutions of what is practically compulsory parole. In other words, while we have an indefinite 5-year maximum sentence, through promises made by courts and probation officers the Parole Board find themselves practically obliged to give paroles at the expiration of half that time. For example, so long as the court promises the prisoner that he will give him a reformatory sentence, but that he will not be held on it over 18 months, the Board has some justification for releasing the man at that time, whatever his prognostic score may be. As a matter of fact, with reference to the State Prison, in minimum and maximum sentences, our law *requires* that at the end of the minimum term the man must be paroled until the expiration of his maximum time, unless he has been punished or disobeyed a definite rule. . . .

The paroles which Professor Warner discussed were not granted by the present Board, but most of them were at least ten years old, when a Board differently constituted and with statistics not so accurate as now obtain was functioning.

The second of these facts should curb any tendency to take a censorious attitude toward the present Parole Board. The attitude of the Massachusetts authorities has certainly been a progressive one.

The first point made by Mr. Bates makes clear the importance of determining the prognostic score not merely at the time of parole, but also before the offender is originally sentenced. The necessary data are available, or can be made available, at the time of the trial. The principle of the prognostic score should be applied not only to the problem of parole, but also to the determination of whether a man should be put on probation, or if he is to be sentenced, to the problem of the length of the sentence which should be imposed.