PAROLE DECISION-MAKING: A SALIENT FACTOR SCORE

by

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Introduction

An actuarial device (experience table) termed a "salient factor" score is presently being used by the members and hearing examiners of the United States Board of Parole in actual case decision-making as an aid in the assessment of an applicant's parole prognosis. This instrument was developed with data collected as part of a larger project entitled "The Utilization of Experience in Parole Decision-Making," a collaborative effort of the Research Center of the National Council on Crime and Delinquency, the United States Board of Parole, and a number of advisory groups[1] under a grant from the National Institute of Law Enforcement and Criminal Justice, Law Enforcement Assistance Administration.[2] This paper describes the construction and validation of this instrument.

Sampling and Data Collection Procedure

Three samples were utilized in this research. Sample A ($N=902$), used as a construction sample, consists of a 25% sample of all persons released from federal prisons by parole, mandatory release, or expiration of sentence during the first six months of 1970.[3] Sample B ($N=919$), used as a validation sample, consists of an additional 25% sample of persons released during the same period. Sample C ($N=662$), used as an additional validation sample, consists of a similar 20% sample of persons released during the second six months of 1970. All three samples were drawn by including all cases whose prison identification numbers ended in selected digits.[4] This method is assumed to reasonably represent random allocation.

A staff of research clerks completed a code sheet[5] containing over sixty items of background data for each individual in the sample from the prison-parole file. These items included information about present offense, prior criminal record, age, education, employment record, past and projected living arrangements, and prison conduct. In addition, information about performance after release was coded.[6] A two year followup period from date of release was utilized for each individual. If the subject was released with parole (or mandatory release) supervision, followup information was obtained from the prison-parole file. If the subject was released without supervision or if supervision was terminated prior to the end of the followup period, followup information was obtained from the subject's "rap sheet", provided through the cooperation of the Federal Bureau of Investigation.

Criterion Measure

A primary outcome criterion measure agreed upon by project and parole board staff is defined below.

	Within Two (2) Years From Date of Release[7]
Favorable Outcome	No new conviction resulting in a sentence of sixty days or more; No return to prison for technical violation; and No outstanding absconder warrant
Unfavorable Outcome	A new conviction resulting in a sentence of sixty days or more; A return to prison for technical violation; or An outstanding absconder warrant

The utilization of this criterion measure enabled the evaluation of outcome for all cases, whether released with or without parole (or mandatory release) supervision, with a uniform two year followup period for each individual.[8]

Selection of the Predictive Method

A recent and rather comprehensive study by Simon[9] which compared the predictive power of a number of mathematical methods for combining predictive items, indicates that the method commonly known among criminological researchers in the United States as the "Burgess" method,[10] using a number of equally weighted dichotomous items, tends to predict as well on validation samples as the newer and more mathematically sophisticated methods (such as multiple regression or configural analysis). A smaller but similar study by Wilbanks and Hindelang[11] produced a similar conclusion. That is, while the more sophisticated methods produce a higher correlation on the construction sample, there tends to be considerably greater shrinkage[12] when applied to a validation sample. As the purpose of a predictive device, by definition, is to predict to future samples, it is the validation results that are important. Given this equality in predictive power, the "Burgess" method was chosen because of its simplicity and ease of calculation in "field" usage. As Mannheim and Wilkins[13] have pointed out, errors resulting from inaccurate coding or incorrect mathematical tabulation in the application of an actuarial device produce the same effect as error inherent in the instrument, itself. As the "Burgess" method requires only dichotomous

(or in this case, trichotomous) coding and simple addition, the probability of coding or tabulation error is reduced.

Selection of the Predictive Items

The nine items or "salient factors" included in this instrument were selected from sixty-six (66) variables taken from items or combinations of items included on the coding sheet. Each of the sixty-six variables was crosstabulated with the criterion measure. Those items that predicted favorable (or unfavorable) outcome after release (chi-square at .05 level) were singled out for possible inclusion in the instrument. From this pool of items, the final nine were chosen by a process of elimination. Items were excluded, even though predictive, if they were judged to pose ethical problems for use in individual parole selection decisions (e.g. prior arrests not leading to conviction), if they did not appear frequently enough to be useful (e.g. escape history), or if they appeared to overlap substantially with items already included (e.g. longest job held and employment during last two years are highly related). Thus, the nine items selected combine both statistical findings and the judgment of the researchers. Table I displays the nine items selected.

TABLE I

SALIENT FACTOR SCORE ITEMS

	SCORE			x^2	SIGNIFICANCE LEVEL
	2	1	0		
% SUCCESS	88.5% N=113	72.5% N=222	60.1% N=567	38.561	.001

ITEM A - PRIOR CONVICTIONS
No prior convictions (adult or juvenile) = 2
One or two prior convictions = 1
Three or more prior convictions = 0

	SCORE			x^2	SIGNIFICANCE LEVEL
	2	1	0		
% SUCCESS	80.9% N=278	66.4% N=244	56.6% N=380	42.924	.001

ITEM B - PRIOR INCARCERATIONS
No prior incarcerations (adult or juvenile) = 2
One or two prior incarcerations = 1
Three or more prior incarcerations = 0

	SCORE		x^2	SIGNIFICANCE LEVEL
	1	0		
% SUCCESS	71.0% N=635	56.6% N=267	17.083	.001

ITEM C - AGE AT 1st COMMITMENT
Age at first commitment (adult or juvenile) 18
years or older = 1
Otherwise = 0

	1	0	x^2	SIGNIFICANCE LEVEL
% SUCCESS	72.9% N=630	52.6% N=272	34.304	.001

ITEM D - AUTO THEFT
. Commitment offense did not involve auto theft = 1
Otherwise = 0

SCORE

	1	0	x^2	SIGNIFICANCE LEVEL
% SUCCESS	73.4% N=617	52.3% N=285	38.299	.001

ITEM E - PAROLE REVOKED
Never had parole revoked = 1
Otherwise = 0

SCORE

	1	0	x^2	SIGNIFICANCE LEVEL
% SUCCESS	70.0% N=714	54.3% N=188	15.975	.001

ITEM F - DRUG HISTORY
No history of opiate or barbituate usage = 1
Otherwise = 0

SCORE

	1	0	x^2	SIGNIFICANCE LEVEL
% SUCCESS	72.8% N=265	64.2% N=637	5.886	.05

ITEM G - GRADE CLAIMED
Has completed 12th grade or received GED = 1
Otherwise = 0

SCORE

	1	0	x^2	SIGNIFICANCE LEVEL
% SUCCESS	72.2% N=467	60.9% N=435	12.324	.001

ITEM H - EMPLOYMENT
Verified employment (or full-time school
attendance) for a total of at least 6
months during last 2 years in the community = 1
Otherwise = 0

SCORE

	1	0	x^2	SIGNIFICANCE LEVEL
% SUCCESS	82.5% N=177	62.9% N=725	23.720	.001

ITEM I - LIVING ARRANGEMENT
Release plan to live with spouse and/or children = 1
Otherwise = 0

In a slight departure from the "Burgess" method, the first two
items were classified as trichotomous rather than dichotomous. Thus,
they are each scored 0, 1, or 2 (the classification with the highest
proportion of favorable outcomes is given the highest number). The
remaining items are each scored 0 or 1. This produces a scale with
a range of possible scores from zero to eleven (0-11). The higher
the score, the greater is the proportion of favorable outcomes pre-
dicted for that score.

Construction and Validation

This instrument was used to calculate a score for each case in
the construction sample (Sample A; N = 902). A point biserial correla-

7.

tion of .318 between scores and outcome resulted. For the first validation sample (Sample B; N= 919) a point biserial correlation of .283 was obtained. On the second validation sample (Sample II; N = 662), a point biserial correlation of .270 was found. Combining the two validation samples (N= 1581) produced a point biserial correlation of .277. (It is to be noted that the maximum possible point biserial is not $\pm$ 1.00 as in the case of Pearson's R, but rather it varies with the proportion of success/failures in the sample. For the three samples mentioned, the maximum point biserial correlation possible, assuming perfect prediction, would be approximately .75.) Table II displays the distribution of scores and outcomes for the construction and combined validation samples.

(INSERT TABLE II HERE)

For operational usage in conjunction with decision guidelines (described below) these scores were collapsed to form four categories as shown in Table III.

(INSERT TABLE III HERE)

An alternative measure of predictive efficiency, the Mean Cost rating, was calculated on the collapsed scores. Developed by Berkson,[14] the Mean Cost Rating is defined as a measure of "cost" versus "utility". "Utility" is defined as the proportion of unsuccessful candidates eliminated when a cut off score is used. "Cost" is the

TABLE II

SALIENT FACTOR SCORE/OUTCOME DISTRIBUTION

SCORE

	0	1	2	3	4	5	6	7	8	9	10	11	R	x^2	SIG LEVEL	
% FAVORABLE OUTCOME	—	44.1%	40.0%	57.5%	60.3%	61.5%	72.0%	83.1%	79.3%	90.6%	93.0%	100.0%	.318	97.506	.001	N= 902
CONSTRUCTION SAMPLE	N= 0	N= 34	N= 85	N= 134	N= 146	N= 122	N= 107	N= 77	N= 82	N= 53	N= 43	N= 19				
% FAVORABLE OUTCOME	25.0%	53.2%	50.0%	61.0%	66.3%	70.7%	76.3%	78.0%	84.0%	83.7%	94.7%	100.0%	.277	126.904	.001	N= 1581
COMBINED VALIDATION SAMPLE	N= 4	N= 62	N= 158	N= 200	N= 246	N= 225	N= 169	N= 159	N= 131	N= 92	N= 94	N= 41				

TABLE III

SALIENT FACTOR COLLAPSED SCORE/OUTCOME DISTRIBUTION

	POOR (0-3)	FAIR (4-5)	GOOD (6-8)	VERY GOOD (9-11)	MCR	
% FAVORABLE OUTCOME	49.8%	60.8%	77.4%	93.0%	.36	N= 902
CONSTRUCTION SAMPLE	N=253	N=268	N=266	N=115		
% FAVORABLE OUTCOME	55.4%	68.4%	79.1%	91.2%	.32	N=1581
VALIDATION SAMPLE	N=424	N=471	N=459	N=227		

10.

proportion of successful candidates rejected. The Mean Cost Rating for this instrument produced a coefficient of .36 on the construction sample, .33 on the first validation sample, .32 on the second validation sample, and .32 on the combined validation sample.

Operational Use

This instrument was presented first to the research committee of the Board of Parole and then to the full Board. It was adopted for operational usage with several minor modifications. As noted, the zero to eleven point scale was collapsed to form a four category scale. These four "risk" categories are combined with a six category offense scale to form explicit parole selection policy guidelines--a four by six (risk by severity) matrix which displays the customary range of time to be served before release for each matrix cell.[15] These guidelines are intended to structure discretion in order to provide more rational, consistent, and equitable parole selection decisions. If an examiner panel wishes to make a decision outside of the guidelines, it is required to explain its decision and obtain the approval of an additional examiner. Also included is a provision for clinical override of the Salient Factor Score. That is, if the examiner panel feels that the Salient Factor Score is substantially inaccurate, it may substitute its clinical judgment provided it gives a written explanation and justification.

Moreover, the definitions of two items were modified slightly for operational usage. Item E (parole revocation) as originally coded did not include a new commitment unless it resulted in formal revoca-

tion. However, it is known that parole violation warrants are often withdrawn if a parolee receives a substantial sentence on a new charge. Consequently, a definition of "parole revoked or new commitment while on parole" was deemed more appropriate. In Item F (drug use), subjects with previous opiate or barbituate usage did substantially poorer than persons with no drug use (54.4% versus 70.2% favorable outcome rate). Users of hallucigens or stimulants (including cocaine) also did somewhat poorer than non-drug users (63.6% versus 70.2% favorable outcome rate). A definition of heroin, cocaine, or barbituate dependence (in contrast to simple use) was adopted as a negative indicant.

This Salient Factor Score has been in use as an aid in Federal parole selection decisions throughout the United States since November 1, 1973, when it replaced an earlier version. Board members and hearing examiners have made over 3,000 decisions using this instrument to date and appear well satisfied with its performance. Operationally, the Salient Factor Score requires no special skills to compute and can be completed in a short time; thus, it does not impose an undue administrative burden.

Discussion

The validity of the Salient Factor Score compares well with that of actuarial devices developed previously. In a California study using a similar criteria and follow-up period, Gottfredson reports a validation sample point biserial correlation of .26 between score and outcome and a Mean Cost Rating of .29 for an instrument using multiple

regression.[16] This is slightly less than the point biserial

correlation of .28 and Mean Cost Rating of .32 found for the com-

bined validation sample in this study. Studies by Ohlin (1951),[17]

Glaser (1954),[18] Gottfredson and Beverly (1962),[19] and Gottfredson

and Ballard (1965)[20] produced similar results. Considering the re-

sults above as well as the demonstrated effectiveness of actuarial

(as opposed to clinical) measures,[21] the predictive power of this

measure was deemed sufficient to recommend implementation as a risk

assessment aid in actual case decision-making.

However, several limitations common to actuarial devices are to

be noted at this point. All actuarial devices predict outcome for

groups and not for individuals. That is, an actuarial device may be

able to tell you quite accurately that two-thirds of all cases in a

particular risk category will fail, but it cannot tell which ones

will fail. When a particular inmate comes up for parole, the decision-

maker still will not know whether he will succeed or fail on parole.

All that he will know is the percentage of inmates with similar

characteristics who may be expected to succeed or fail on parole. In

this regard, using an actuarial parole aid is a little like using a

weather report that says there will be a 60% chance of rain. What the

weather report actually means is that on similar days it rained 60%

of the time. It does not tell whether or not it will actually rain

today. Nevertheless, such information can be useful in deciding

whether or not to carry an umbrella. A parole board making many hun-

dreds or thousands of decisions each year will make a certain number

of errors in relation to assessment of "risk". On a macroscopic level, the fairest policy is the one which makes the fewest errors overall. Thus, while utilization of a predictive device cannot prevent error in any particular case, utilization as opposed to non-utilization may reduce the overall number of errors made.

A second limitation is that actuarial devices may overlook other elements such as attitude or prison adjustment that may be relevant to parole success. As Gottfredson notes, actuarial devices can be invaluable tools if properly constructed but by their very nature they are limited in scope.[22] That is, there may be important elements in certain cases not covered by the actuarial device that the decision-maker must consider. This was the reason for the provision of "clinical override" built into the guidelines. With this provision for clinical override, the decision maker retains his discretion for those cases that do not "fit the pattern".

A third limitation is that actuarial devices are based primarily on information found in the inmates' institutional files. These files often have been found to contain inaccurate or even contradictory information.[23] However, this problem similarly hinders clinical judgments. As Wilkins has noted, improvement in accurate record keeping and more concise reporting will likely precede any substantial improvement in predictive power.[24]

Suggestions for Further Research

Overall, the Salient Factor Score appears to predict well enough to justify implementation and has proven administratively feasible in

14.

operation. Nevertheless, there may be more homogeneous subgroups within the total sample (e.g. Youth cases, NARA cases, females) for which separate salient factor scores might be developed as samples of sufficient size are generated, thus increasing overall predictive power. At present, the small sample sizes available for these subgroups are not adequate for this task.

Moreover, any actuarial device must be periodically tested to determine whether or not it retains validity for subsequent samples. To the extent that the population concerned changes over time or place, an actuarial device may become less useful. This means that a continuing program of research is necessary to monitor, revise, and update the actuarial device as conditions require.

FOOTNOTES

1. For an overall description of this project see: Gottfredson, D. M., Wilkins, L. T., Hoffman, P. B., and Singer, S. M., The Utilization of Experience in Parole Decision-Making: A Progress Report, Summary, Parole Decision-Making Project, Davis, California: National Council on Crime and Delinquency Research Center, June, 1973.

2. NI - 72 - 071 G

3. For a more detailed description of case selection procedures see: Singer, S. M. and Gottfredson, D. M., Development of a Data Base for Parole Decision-Making, Report Number One, Parole Decision-Making Project, Davis, California: National Council on Crime and Delinquency Research Center, June, 1973.

4. For example, a 50% sample might be drawn by selecting all cases with register numbers ending in all even or all odd digits. Federal prison register numbers contain eight digits; however, the last three digits are not included in this selection procedure as they refer to the institution number.

5. Gottfredson, D. M. and Singer, S. M., Parole Decision-Making Coding Manual, Report Number Two, Parole Decision-Making Project, Davis, California: National Council on Crime and Delinquency Research Center, June, 1973.

6. Singer and Gottfredson, supra note 3.

7. For cases with arrests but no dispositions during the two year followup period, the arresting agency was contacted to obtain the missing dispositions. If a disposition was not obtained by November, 1973, the case was coded as having a favorable outcome.

8. It must be noted, however, that this criterion does not entirely remove the problem concerning the classification of persons returned to prison for technical parole violations (violations not resulting from conviction for a new offense). Since only persons released to parole (or mandatory release) supervision are liable for return to prison for technical violations, the classification of such cases as having unfavorable outcome means that those persons released under supervision are subject to greater risk of being included in the unfavorable outcome category than those released without supervision. On the other hand, if technical violators were classified as having favorable outcome, parolees would be subject to less risk of being classified as having unfavorable outcome than unsupervised releasees. In the opinion of the researchers, the first alternative appeared as the most desirable for the purpose at hand.

9. Simon, Francis H., _Prediction Methods in Criminology_, London: Her Majesty's Stationary Office, 1971.

10. Burgess, E. W., in Bruce, Burgess, and Harno, _The Working of the Indeterminate Sentence Law in the Parole System in Illinois_, Springfield, Illinois: Illinois Parole Board, 1928.

11. Wilbanks, W. and Hindelang, M., "The Comparative Efficiency of Three Predictive Methods", Appendix B, in Gottfredson, D. M., Wilkins, L. T., and Hoffman, P. B., _Summarizing Experience for Parole Decision-Making, Report Number Five_, Parole Decision-Making Project, Davis, California: National Council on Crime and Delinquency Research Center, February, 1972 (Draft).

12. Shrinkage refers to a loss in predictive power as evidenced by a lower correlation coefficient. For a discussion of this phenomenon see: Wilkins, L. T., _Inefficient Statistics, Report Number Six_, Parole Decision-Making Project, Davis, California: National Council on Crime and Delinquency Research Center, June, 1973.

13. Mannheim, H., and Wilkins, L. T., "The Requirements of Prediction", _Probation and Parole: Selected Readings_, edited by Carter, R. M., and Wilkins, L. T., New York: John Wiley & Sons, Inc., 1970, 573-579.

14. Berkson, J., "Cost-Utility as a Measure of Efficiency of a Test", _Journal of the American Statistical Association_, 1947, 42, 246-255. See also: Inciardi, J. A., Babst, D. V., and Koval, M., "Computing Mean Cost Ratings (MCR)", _Journal of Research in Crime and Delinquency_, 1973, 10, 22-28.

15. Hoffman, P. B., and Gottfredson, D. M., _Paroling Policy Guidelines: A Matter of Equity, Report Number Nine_, Parole Decision-Making Project, Davis, California: National Council on Crime and Delinquency Research Center, June, 1973. See also _Federal Register_, Part III, vol. 38, number 222, 82.52, November 19, 1973.

16. Gottfredson, D. M., "Efficiency of Two Methods of Prediction of Parole Success". Paper presented at the Western Psychological Association meeting, April, 1960, San Jose, California.

17. Ohlin, L. E., _Selection for Parole, A Manual of Parole Prediction_, New York: Russell Sage Foundation, 1951.

18. Glaser, D., "A Reconsideration of Some Parole Prediction Factors", _American Sociological Review_, 1954, 19, 335-341.

19. Gottfredson, D. M., and Beverly, R. F., "Development and Operational Use of Prediction Methods in Correctional Work", _Proceedings of the Social Statistics Section_, American Statistical Association, Washington, D.C., 1962.

20. Gottfredson, D. M., and Ballard, K. B., <u>The Validity of Two Parole Prediction Scales: An Eight Year Follow-Up Study</u>, Vacaville, California: Institute for the Study of Crime and Delinquency, 1965.

21. Gottfredson, D. M., "Assessment and Prediction Methods in Crime and Delinquency",<u>Task Force Report: Juvenile Delinquency and Youth Crime</u>, The President's Commission on Law Enforcement and Administration of Justice, Washington, D.C.: United States Government Printing Office, 1967.

22. Gottfredson, supra note 21.

23. Singer and Gottfredson, supra note 3.

24. Wilkins, L. T., <u>The Problem of Overlap in Experience Table Construction</u>, Report Number Three, Parole Decision-Making Project, National Council on Crime and Delinquency Research Center, June, 1973.

APPENDIX A:

NOTICE OF ACTION - PART II - SALIENT FACTORS

Case Name _____ Register Number _____

Item A --- ☐

    No prior convictions (adult or juvenile) = 2
    One or two prior convictions = 1
    Three or more prior convictions = 0

Item B --- ☐

    No prior incarcerations (adult or juvenile) = 2
    One or two prior incarcerations = 1
    Three or more prior incarcerations = 0

Item C --- ☐

    Age at first commitment (adult or juvenile) 18 years or
    older = 1
    Otherwise = 0

Item D --- ☐

    Commitment offense did not involve auto theft = 1
    Otherwise = 0

Item E --- ☐

    Never had parole revoked or been committed for a new
    offense while on parole = 1
    Otherwise = 0

Item F --- ☐

    No history of heroin, cocaine, or barbiturate dependence = 1
    Otherwise = 0

Item G --- ☐

    Has completed 12th grade or received GED = 1
    Otherwise = 0

Item H --- ☐

    Verified employment (or full-time school attendance) for a
    total of at least 6 months during the last 2 years in the
    community = 1
    Otherwise = 0

Item I --- ☐

    Release plan to live with spouse and/or children = 1
    Otherwise = 0

Total Score --- ☐

INSTRUCTIONS TO HEARING EXAMINERS:
SALIENT FACTOR SCORE ITEMS
(4/1/74)

Item A

No prior convictions (adult or juvenile) = 2
One or two prior convictions = 1
Three or more prior convictions = 0

Note:
    a) Count all prior convictions.
    b) Count all convictions for offenses committed while on bail or probation for the present offense.
    c) Do not count the present conviction.
    d) Do not count convictions for minor traffic infractions.

Item B

No prior incarcerations (adult or juvenile) = 2
One or two prior incarcerations = 1
Three or more prior incarcerations = 0

Note:
    a) Count all periods of confinement resulting from court sentences (including sentences of time served).
    b) Count concurrent sentences as one period of incarceration.
    c) Do not count periods of incarceration resulting from minor traffic infractions.
    d) Do not count pre-trial detention unless it results in a sentence of confinement or time served.

Item C

Age at first commitment (adult or juvenile)
18 years or older = 1
Otherwise = 0

Note:
    a) Commitment includes sentence to incarceration, to a juvenile training school or similar facility, or to a residential treatment center prior to age 18.

b) Commitment <u>does</u> <u>not</u> include foster home place-
   ment.

Item D

Commitment offense did not involve auto theft = 1
Otherwise = 0

Item E

Never had parole revoked or been committed for a new
offense while on parole = 1
Otherwise = 0

Note:
     Count only if parole is revoked or if subject re-
     ceives a sentence of incarceration (or the equiva-
     lent) for an offense committed while on parole
     (whether or not parole is revoked).

Item F

No history of heroin, cocaine, or barbituate dependence = 1
Otherwise = 0

Note:
     Drug dependence means physical dependence, psycholo-
     gical dependence, or habitual usage of any of the
     following drugs (cocaine, barbituates, heroin,
     opiates, or opiate derivatives).

Item G

Has completed 12th grade or received GED = 1
Otherwise = 0

Item H

Verified employment (or full-time school attendance)
for a total of at least 6 months during last 2 years in
the community = 1
Otherwise = 0

Item I

Release plan to live with spouse and/or children = 1
Otherwise = 0

Note:
     Spouse includes common law spouse if a stable re-
     lationship is evident.

END