1970

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AN APPLICATION OF CONFIGURATIONAL ANALYSIS TO THE RECIDIVISM OF JUVENILE DELINQUENT BEHAVIOR

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This article presents the findings of a research report by Community Action for Youth, Inc., of recidivism predictions in 21 census tracts of Cleveland, Ohio. Juvenile Court records of 2,548 youthful offenders from 1956 to 1965 were examined for traits of recidivism and arranged in prediction tables by IBM machine to show paired attributes using the method of configurational analysis. Six variables of statistical significance were isolated in the prediction of recidivism of this sample of delinquents: age, sex, type of offense, religion and single or group action. Recidivists to age fifteen were predictively twice as numerous as recidivists of older teen ages. Comparably, male recidivism rates were 39 percent while the female rate was 18 percent. The general prediction rate for the whole sample was 32 percent.

A research report based on the application of configuration analysis of juvenile court statistics to recidivistic delinquents was prepared in 1965 in the Research Department of Community Action for Youth (CAY), Inc., Cleveland, Ohio, which was a Demonstration Project sponsored under the Juvenile Delinquency Act of 1961 for the control and prevention of juvenile delinquency. The report was written to assist in the evaluation of the CAY Courts and Corrections Program, which provided high-grade, intensive probation work from the neighborhood base of the Demonstration Project in the ten census tracts of the Hough area in Cleveland. The report, entitled "Configurational Approach to Program Evaluation," was prepared under a grant from the National Institute of Mental Health by Robert O. Garrett under the direction of Dr. Charles M. Unkovic, then Associate Professor, Cleveland State University.

The objective of the research by configurational analysis of juvenile delinquency data was, firstly, to collect records on recidivism over a ten-year period from Juvenile Court hearings from which to construct a base expectancy table for the prediction of probation success and failure. Secondly, the prediction table was to be applied to the evaluation of the treatment milieu of probationers in the Juvenile Court and the CAY Demonstration Project for the years 1964 to 1966. Thirdly, the objective was accepted of developing the usefulness of the base expectancy formula for the prediction of recidivism through a comparatively innovative research tool in configurational analysis.

The base expectancy table for the prediction of probation outcomes was constructed solely on the model of the configurational approach. Analysis by this method has been essayed by Robert P. Stuckert to predict success among college students with some superiority of results to regression techniques.[1] In his study of the state parole system of Illinois, Daniel Glaser also employed configurational tables for the presentation of factors in successful parole outcomes.[2] Wilkins and MacNaughton-Smith feel that predictive attribute study is likely to become a more dependable analytical research method than any other prediction means.[3]

[1] Stuckert, A Configurational Approach to Prediction, 21 SOCIOMETRY 225 (1958).

[2] GLAZER, THE EFFECTIVENESS OF A PRISON AND PAROLE SYSTEM (1964).

[3] Wilkins & Smith, New Prediction and Classification Methods in Criminology, Mimeographed Paper presented under the Auspices of the President's Committee on Juvenile Delinquency and Youth Crime.

Configurational analysis proceeds by a successive bifurcation of heterogeneous groups into smaller, homogeneous subgroups following lines of maximum failure and success at each step of the separation into factorial pairs. Each variable significant in characterizing the delinquent recidivists in the CAY study was dichotomized on a statistical basis of significance and the factors that maximized the predictive outcome criterion of recidivism were selected. When the number of individuals to be tested for potential pairs of factors fell below 132 members, or five percent of the total sample, no further pairing was made in the subgroup. Two reasons may be given for this limitation of the pairing process. First, the Juvenile Court records presented marginal information about the delinquents, some records were not current in their detail, and others lacked vital bits of information. Secondly, the dichotomy of factors was cut off at five percent of the total sample in subgroups because of the difficulty of defining significant traits after the major pairings had been assigned.

The number of delinquent careers of boys and girls below the age of eighteen years in 21 census tracts garnered from juvenile court statistical cards over the ten years from 1956 to 1965 was 2,548. The ten census tracts of the Hough Social Planning area, which has presently over ninety percent Negro residency, were the target of comparison to eleven other contiguous census tracts of predominantly Negro population in Cleveland serving as a control area.

Twelve series of statistical figures were tested from the information provided on the court file cards of each delinquent child. The twelve attributes were then tested for significance in terms of the success or failure of the delinquents possessing the particular attribute in question. Thus six of the twelve attributes were discarded as falling below the .01 level of significance as measured by their chi-square values. The remaining six attributes ranked by highest to lowest chi-square values are listed in the table following:

TABLE I

CHI SQUARE VALUES FOR SIX VARIABLES TESTED FOR SIGNIFICANCE OF SUCCESS OR FAILURE

Sex	275.6	P. < .01
Age	152.6	P. < .01
Complaint (Type of Offense)	23.6	P. < .01
Race	17.7	P. < .01
Religion	9.5	P. < .01
Type Action (Alone or Group)	8.3	P. < .01

The typology of the recidivists in the CAY sample, as shown above, is summed up in the significant factors of sex, age, complaint by type of delinquent act, race, religion, and type of actions whether alone or in a group. Further details to the use of these factors is needed to observe the procedures followed in dichotomizing the variables by the configurational approach.

Age was divided into two groups, younger and older. The hope of separating the age lines at the median age was removed by the incomplete recording procedure on the juvenile court filing cards that frequently omitted the month of birth of the child. The younger age group ran through fifteen years, the older age group from sixteen years upward. The size of the chi-square value of 152.6 appears to justify the inclusion of the age variable in spite of its numerical shortcoming.

The variable of complaint by type of delinquent acts presented a grouping problem to the researchers. Some 41 kinds of offenses were listed in the court data. The procedure to dichotomize these offenses was to reduce them to three categories according to the classification of offenses by Sellin and Wolfgang[4] and, finally, to limit the three categories to two so that this variable may be analyzed in the framework of the configurational design.

The first category of the Sellin-Wolfgang classification is crime that injures persons directly either through harm to a victim bodily, as in assault, or harm to his property, as in theft. This is the class of offenses where there is a victim. The offenses in the victim situations in the CAY analysis covered: arson, assault, auto theft, burglary, deception, destruction of property, firearm code violation, fraud, larceny, possession of stolen property, robbery, trespassing, and worthless checks.

The second genus in Sellin and Wolfgang's table is conspiratorial or consensual crimes. These offenses involve no victim and the participants typically know the wrongdoers and try to conceal the fact of the action. Abortion, blackmails, gambling, sex offenses, and narcotics use belong in this category. The third class consists of offenses against public order and no direct effect is exercised upon any person. Examples are vagrancy, prostitution, and drunkenness.

Preliminary calculations of offenses in the CAY data revealed that about 57 percent of the offenses

[4] SELLIN & WOLFGANG, THE MEASURE OF DELINQUENCY (1964).

committed by the delinquents in the sample involved a victim, 11 percent were conspiratorial and consensual offenses, and about 30 percent were actions that disturb public order. To support a dichotomy of offenses in terms of victims and no-victims, the second and third categories of Sellin-Wolfgang were combined. A chi-square value of 23.6 P < .01 was computed that indicates a correlation between the type of offense committed by a delinquent and his tendency toward recidivism when compared among the types of offenders. The offenses lumped together under conspiratorial or consensual crimes and those against the public order were: disorderly conduct, drunk and disorderly, gambling, heterosexual act, incorrigible, indecent assault, liquor violation, narcotics use and possession, prostitution, public indecency, runaway from home, sex offenses, sodomy, homosexuality, and violation of library ordinances.

The sex and age factors were divided into four subgroups respectively of younger and older boys and girls. The race attribute was split into white and negro delinquents. Religion was paired between Protestant and non-Protestant categories. "Non-Protestant" refers basically to Catholics since the number of delinquents who listed themselves under other religious affiliations besides Protestant and Catholic were fewer than three percent (3%) of the sample, and no offenders were Jewish.

The sixth variable, "type action," denotes whether the individual committed his offense alone or in a group. The tendency shown was that the boys, more often than girls, were involved in group offenses. Table II summarizes the failure rate by the six variables as follows:

TABLE II

FAILURE RATES FOR EACH STATISTICALLY
SIGNIFICANT DICHOTOMIZED VARIABLE

		%	%	
Total Sample.	—	32		
Sex	Male	39	18	Female
Age	Younger	40	19	Older
Complaint	Victim	38	30	No victim
Race	Negro	34	25	White
Religion	Protestant	33	27	Non-Protestant
Type Action ...	Group	36	29	Single

The percentages above for each variable indicate the propensity of the delinquents fitting the

attributes to commit a recidivist act. It may be seen that forty percent of delinquents in the younger age group of fifteen years and below become recidivists whereas only 19 percent of the older age group of sixteen and seventeen years can be predicted recidivists while in the jurisdiction of the Juvenile Court. Males have a propensity to become recidivists in the ratio of 39 percent while females are much lower in this tendency at 18 percent. The changes of a recidivist action against a victim are 38 percent and the occurrence of a no-victim recidivist action is less frequent as shown by 30 percent. The possibility of a recidivist action to be committed in a group is 36 percent while the tendency to an action singly is 29 percent. The negro rate of recidivism is 34 percent and the white rate stands at 25 percent. The predictability of an act of recidivism by the members of the sample, taken together, is that 32 percent of them revert to a second delinquent act and face juvenile court hearing for it.

At this point, we have analyzed the statistical import of each configurational variable as an isolate among the other variables. We will examine the significance of combinations of the six attributes arranged in eighteen groups of delinquents as shown in Table III pursuant.

The interpretation of groups one through eighteen, while not presenting every combination of attributes, comprises a prediction rate of recidivism for every group shown in Table III. Thus, the 547 male delinquents in the younger ages of fifteen and earlier, with an offense against a victim, negro, Protestant, and engaging in a group offense have a prediction rate of 55 percent for the commission of a second delinquent action. The prediction rate for the same group of delinquents, except for single action offense, falls to 46 percent. Group five, consisting of "male, young, no victim, negro, Protestant, single action," has the highest predictable recidivism at 73 percent. It may be noted also that the sexual counterpart of group five, group 13, has the highest risk of recidivism among female delinquents. Each of the eighteen groups of the CAY sample falls into its relative predictive bracket of recidivism.

We have observed that the factors selected for statistical significance from the file cards of juvenile court cases in the CAY study have yielded six attributes, namely, age, sex, complaint (type of offense), race, religion, and type action (alone or group). Noticeably lacking in this selective data series are the socio-economic and pyschosocial

series that conventionally attaches to juvenile delinquency. Moreover, the six attributes are somewhat anomalous as a typology, or a set of traits, of juvenile delinquents or delinquent recidivists. That the six attributes were derived by IBM machine processing and consistent sets of logically paired numbers may explain their typological simplicity.

We will attempt briefly to contrast the six attributes of the configurational analysis with a socio-economic schema as found in Bernard Lander's study of 8,464 cases of juvenile delinquency in Baltimore.[5] Lander's study consisted of cases of delinquency as reflected in juvenile court hearings over the years 1939 to 1942 inclusive. In computing his index of the delinquency rate, he excluded second offenders. "Each individual was counted only once, regardless of any recidivism during the four-year period."[6] In this respect, the Baltimore study differs from the CAY report, which has the aim of predicting recidivism to the extent of the second offense and its consequent court appearance.

Lander's finding of the highest rate of delinquency followed the Burgess concentric zone hypothesis. "The highest delinquency rates are found in the innermost zone and in the zones surrounding it."[7] Baltimore had the highest delinquency rate of 10.2 percent of the child population from six through seventeen years of age in Zone One, which was a one-mile radius from the central business district. While this datum in Baltimore sheds no light on the recidivism issue, it points up that the typology of the delinquent was not a focus of Lander's study. Nowhere does the Baltimore study describe the personal traits of the delinquents. Instead, the study works from a schedule of eight variables, which, when plotted on a graph, gave, "two correlated but distinct clusters of variables."[8]

These variables were the delinquency rate (of census tracts), percentage of non-white population, and percentage of owner-occupied homes in one cluster, and median school years of education completed, median rentals, percentage of overcrowding residentially, and percentage of substandard housing in the second cluster. Lander concludes that "the two clusters are apparently

[5] LANDER, TOWARDS AN UNDERSTANDING OF JUVENILE DELINQUENCY (1954).
[6] *Id.* at 15.
[7] *Id.* at 24.
[8] *Id.* at 54.

TABLE III

TOTAL SAMPLE OF OFFENDERS CLASSIFIED BY CONFIGURATIONAL ATTRIBUTES

Group	Number	Combinations of Attributes	% Failed
1	547	Male, young, victim, Negro, Protestant, group action	55
2	112	Male, young, victim, Negro, Protestant, single action	46
3	133	Male, young, victim, white	38
4	92	Male, young, no victim, Negro, Protestant, group action	28
5	125	Male, young, no victim, Negro, Protestant, single action	73
6	57	Male, young, no victim, white	32
7	468	Male, older, victim, Negro, Protestant	29
8	119	Male, older, victim, white	18
9	83	Male, older, no victim, Negro, Protestant, group action	18
10	57	Male, older, no victim, white	32
11	100	Female, young, victim	18
12	301	Female, young, no victim, Negro, Protestant, group action	25
13	207	Female, young, no victim, Negro, Protestant, single action	27
14	13	Female, young, no victim, white	23
15	49	Female, older, victim	16
16	118	Female, older, no victim, Negro, Protestant	18
17	56	Female, older, no victim, white	18
18	122	Male, younger, victim, Negro, non-Protestant, group action	21

not independent."[9] Variable eight, which was the percentage of foreign-born population, appeared to be clearly separate from the other variables. While socio-economic factors such as are outlined by Lander are important to the understanding of the background of delinquency, they do not lead directly to the delinquent. The clarity and assurance of a characterizing, predictive set of factors for recidivism, such as the CAY attributes present, would seem to furnish a needed and useful adjunct to the detection, understanding and treatment of delinquent behaviors.

Social data often associated with the family life of delinquents and regarded as contributing to their deviant behavior were screened out in the course of the CAY study when the testing for chi-square values of significant variables was carried

[9] *Id.* at 55.

on. The twelve attributes thus tested were condensed to six as chi-square values for the following social data fell below the level of significance of .01: marital status of parents 3.7 P > .01; care of delinquent pending disposition of the court case 4.4 P > .91; birthplace of father, .9 P > .01; birthplace of mother .4 P > .01; child living with his parents, including stepparents .96 P > .01; and source of complaint 3.3 P > .01. The low statistical significance of family factors, as shown above, would seem to disclose that recidivism is not necessarily associated with family backgrounds as a cause of the delinquent careers. The CAY report states:

"It should also be noted that there was no statistically significant difference, in terms of recidivism, between those offenders whose parents were married and those whose parents were not married. This finding tends to indicate a frequent over assessment of the importance of with whom a child lives and the marital status of his parents. It is readily acknowledged that when either parent is absent there is likely to be some affectional and economic loss to the entire family. However, other investigators have had similar findings in their studies." [10]

Although serving to describe recidivists in its six attributes, the CAY report does not convey a conceptualization of delinquents in the sample as to their psychosocial problems or appropriate treatment programs for them by type of delinquent behavior. Some linkage, if possible, of the eighteen groups of offenders in Table III with the general typology of delinquents as defined in work with delinquency would be helpful to reinforce the findings by the configurational predictions of recidivism. At the present stage of research in delinquency typology and treatment techniques, the profession does not distinguish the recidivist from the first offender. In fact, the "Summary of Recommendations Growing out of Typological Work," issued recently by the National Institute of Mental Health, has no mention of the typology and treatment of recidivism in its twenty points for applications and research needed in the field of work with delinquents.[11]

[10] WOLFGANG, SAVITZ & JOHNSTON (eds.), SOCIOLOGY OF CRIME AND PUNISHMENT 323 (1962).
[11] U.S. DEPT. OF HEALTH, EDUCATION & WELFARE, Pub. Health Serv. Publ. No. 1627, Rubenfeld, *Typological Approaches and Delinquency Control: A Status Report* 26 (1967).

The prevention of recidivism is a major problem in the field of work with juvenile delinquents. The various percentages of recidivism in the CAY study ranged from 14 percent for females to 46 percent for males in the whole sample with percentages of subgroups by age of 20 percent, 25 percent, 40 percent, and 42 percent. These findings are entirely consistent with rates of recidivism in the field of delinquency and reach upward into adult crime, which has a large base of recidivists. *Uniform Crime Reports*, for example, reported in 1965 that its histories of approximately 135,000 individual offenders showed that an average criminal career covered more than ten years and averaged five arrests.

SUMMARY AND CONCLUSION

This report has summarized the use of a configurational approach model in predicting juvenile recidivism from data of the Juvenile Court of Cuyahoga County, Cleveland, Ohio, over the years 1956 to 1965. The information on 2,548 delinquent careers was prepared on IBM punched cards to form a base expectancy table to evaluate the recidivism of the sample. Six statistically significant variables were isolated: sex, age, complaint (type of offense), race, religion, and type action (alone or group).

"Sex and age were found to be the two variables most strongly associated with recidivism" in the CAY sample. The failure rate for males was 46 percent, for females 14 percent; the sample failure rate was 32 percent. Younger offenders failed at a rate more than twice above that of older offenders.

Configurational analysis, it was felt, contributed to the objectivity of evaluating the probation success and failure for the three years of Demonstration Project work in the Hough area. The base expectancy table indicated no significant success in probation work outcomes of the CAY courts and corrections program from the predicted outcomes. The Juvenile Court had a failure rate of 32 percent in probation work in the control area while the CAY probation failure rate was 34 percent in the Demonstration Project Area. The finding of the study on this point was regarded as inconclusive of success or failure of the CAY probation service. Finally, the application of the configurational attributes to the general typology of delinquency was suggested as a potential research tool for classing delinquents and facilitating treatment approaches for subgroups of delinquents.