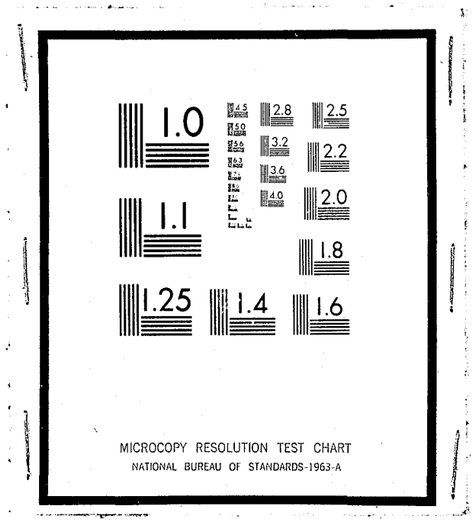

MULTIVARIATE ANALYSES OF CHARACTERISTICS RELATED TO POST-DISCHARGE ARREST, POST-DISCHARGE COMMITMENT AND NONGRADUATION

by
Irwin J. Goldman, Ph.D.

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ACKNOWLEDGMENTS

This study is indebted to Dr. Martin Kohn for his ideas and criticism, to Dr. Jacob Cohen who assisted in planning the statistical analyses and to Mrs. Robin Chard for the instruction necessary to use the computer programs relied upon for many of the analyses.

The willing cooperation of Dr. Robert R.J. Gallati, Dr. Edward DeFranco, Mr. James Moon and other staff members of the New York State Identification and Intelligence System (now part of the Division of Criminal Justice Services) was essential to this study and is gratefully acknowledged.

Mrs. Thelma Damsky and Mrs. Joyce Tannenbaum contributed their usual expert secretarial handling in the report's preparation.

The interpretations expressed in this report are those of the author and do not necessarily represent the opinions of others who contributed to the study, of the New York State Division of Criminal Justice Services or of the New York State Division for Youth.

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INTRODUCTION

The present study was one of a continuing series of studies designed to develop the means of predicting and understanding program outcome with respect to youths discharged from the treatment centers of the New York State Division for Youth. The primary directions of this study were twofold (a) to examine the value of youth background characteristics, known at time of referral or admission, in predicting selected outcomes (b) to examine differences among types of program and among individual programs in outcome rates, with differences among programs in youth background characteristics statistically controlled. The outcomes considered in this study were post-discharge arrest, post-discharge commitment and discharge status.

The present study extends the analyses of dischargees April, 1966 through December, 1968 previously reported.[1,2] It extends these analyses by addressing the following questions: (1) what is the extent to which one can predict to post-discharge arrest and commitment from the set of characteristics recorded at time of referral or admission, (2) what is the relationship to these outcomes of individual characteristics when they are examined jointly, i.e., when their intercorrelations are taken into account, (3) are there differences in outcome when youths from different types of programs, or different individual programs, are compared,

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[1]Irwin J. Goldman. Characteristics Associated with Recidivism: A Study of Youth Discharged from Treatment Centers of the New York State Division for Youth. New York State Division for Youth Research Department, September 1970.

[2]Irwin J. Goldman and Martin Kohn. Referral Characteristics Associated with Arrest and Commitment after Discharge. New York State Division for Youth Research Department, October 1971.

after statistically controlling for the effects of background characteristics, (4) are there differences in outcome for different subgroups of youths, as defined by the background characteristics, who are discharged from different types of programs, after statistically controlling for program differences in youth composition, (5) to what extent can the background characteristics predict to discharge status, i.e., graduation versus nongraduation, a third kind of outcome not considered in the previously-cited studies, (6) what is the interrelation of characteristics at referral, discharge status, and arrest or commitment?

In the previously-cited studies, characteristics of youths at referral or admission were examined with respect to their relation to post-discharge arrest. The first study focused on dischargees April 1966 through December 1967 and the second on dischargees January 1968 through December 1968. In the second study, characteristics differentiating dischargees with arrest and commitment records from dischargees with arrest but no commitment records were also examined.

Findings in the two studies indicated that certain background characteristics of youths, knowable at time of referral or admission, were predictive to post-discharge arrest. In both studies arrest was found dependent on the number of petitions and arrests a youth had prior to referral, whether he was recorded as having school problems, whether he had been previously institutionalized in a correctional setting, whether the principal source of income for his family was welfare or other external assistance, and

whether he came from New York City. Other referral characteristics also appeared related to post-discharge arrest in that a significant relation was found in one study and a non-significant trend in the same direction in the other; these findings suggested that post-discharge arrest was also related to whether a youth was in remand at time of referral and whether he was black, whether he had a present petition and whether the petition was that of Juvenile Delinquent. Findings regarding post-discharge commitment from the second study (i.e., dischargees of 1968) suggested that youths with arrest records had a higher probability of commitment if at time of referral they were older, had a petition of Youthful Offender, were in remand, had had previous correctional institutionalization, had a record of previous petitions and arrests, were referred by Criminal or Supreme Courts and were not enrolled in school.

These findings of relations between characteristics of youths and post-discharge arrest and commitment did not indicate which relations continued to exist when other characteristics in the set examined were controlled, and therefore which relations were the more, and which the less essential. It is possible, for example, that subjects from New York City (who tended to have higher arrest rates in both preceding analyses) would not be found to have higher arrest rates when other characteristics in the set were controlled, e.g., Number of Previous Petitions, or Source of Family Income; or conversely, that the relation would continue to exist or even become greater when these characteristics were controlled. For purposes of prediction and understanding, it was

considered important to determine which relationships (of those examined) were derivative and ceased to exist when other variables were controlled, and which were primary and continued to exist under this condition.

Findings in the preceding studies also indicated that types of programs (Home, Camp, START, STAY) differed with respect to the characteristics of their dischargees at admission. There was also some indication that program types might differ in dischargee arrest rates when these differences in youth composition were not taken into account. The findings did not answer the question of whether types of programs (or individual programs) varied in dischargee arrest rates taking into account differences in youth composition. Within the same analytical framework required for determining the more versus less essential relations of background characteristics to outcome, it was possible to examine the differences in outcome of dischargees from different types of programs, controlling for background characteristics of the youths. It was also possible to test whether there were differences among individual programs in outcome beyond that to be expected from differences in type, controlling for background characteristics of dischargees. The examination of program differences was therefore also included as an aim of the study.

A third innovation of the present study compared to the two preceding ones was consideration of the outcome, discharge status. The major comparison was between those subjects who had completed treatment and those subjects who had absconded, been removed by court action, been dismissed

by staff or returned to court (called nongraduation). The primary questions regarding nongraduation were the extent to which it was associated with higher arrest or commitment rates, controlling for background characteristics of the youth; and whether the predictors of arrest or commitment would also be predictors of nongraduation.

The analyses of this study therefore extend the preceding analyses by considering the predictive power of background information within a multivariate perspective, by considering the question of differences among programs in outcome, and by exploring another type of outcome, discharge status.

PROCEDURES

General Analytic Approach. An approach suggested by Jacob Cohen was followed wherein sets of variables are successively examined for their increment to the prediction of the dependent variable, as determined by multiple regression equations.[1] Sets of independent variables are introduced in sequence, and a multiple regression equation computed after the entry of each set, with independent variables consisting of the variables of the newly introduced set plus all variables in preceding sets. The coefficient of multiple determination (R^2) is computed after each newly introduced set and the increment in R^2 due to the newly introduced set is calculated. The increment in R^2 represents the addition in predictive power due to the newly introduced set, compared to that of the preceding sets of variables. (Specifically, it represents the increment in the proportion of variance of the dependent

[1] Jacob Cohen. Multiple Regression as a General Data-Analytic System. Psychological Bulletin, 1968, 70, pp. 426-443.

variable explained by adding the newly introduced set of variables to the preceding sets of variables.) In this manner the predictive power of sets of variables are examined, controlling for all preceding sets of variables. If a set of variables is found to add significantly to the prediction of the dependent variable, the variables within the set may be examined for their individual contributions, by observing their partial correlation coefficients, multiple regression coefficients or beta weights, and these statistics may be tested for statistical significance by t-tests.

In this study there were two main ordering of sets, called Format A and Format B, described below. Format A was used to examine the predictiveness of background characteristics, and to investigate differences among types of program and individual programs with respect to the dependent variable. Format B was used to investigate whether there were subgroups of youths, as defined by the background characteristics, who had different predicted outcomes if they were discharged from different types of programs. In Format B the critical variables were interaction terms, consisting of the interactions of variables representing Type of Program with background variables. The background variables in the first ten sets of Format A were all introduced into the first set of Format B (along with variables representing Type of Program), preliminary to the study of interaction effects from the succeeding sets of Format B. The same formats were used for each dependent variable to facilitate comparisons of results.

These multivariate analyses were augmented by other analyses described in the appropriate section.

Sources of Data. The independent variables and the dependent variable of discharge status were taken from items of standard intake and discharge forms.[1] The measures of arrest and commitment were based on information received from the New York State Identification and Intelligence System.[2]

The New York State Division for Youth maintains its intake and discharge information on computer with the New York State Office of General Services. The present study relied upon a computer-generated listing of the names of dischargees and upon computer-generated punched cards on which the intake and discharge information were recorded.

The degree of reliability or validity of the institutional records upon which the study is based should be considered largely undetermined. Preceding studies have indicated that meaningful relationships may be discerned through the use of these data. Thus, they appear to be sufficiently reliable and valid to justify their use in further investigation. In order to compensate for possible random measurement error, the present and previous studies have relied upon relatively large samples for the major analyses.

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[1] See Appendix A for copies of these forms.

[2] The New York State Identification and Intelligence System ceased to exist on September 1, 1972. Its functions are now performed by the New York State Division of Criminal Justice Services.

Independent Variables. The predictor or independent variables were divided into sets for the analyses. There were two main formats.

(A) The ordering and composition of sets for Format A were as follows:

Set 1: Age at Admission

Set 2: Number of Previous Petitions, School Behavior Problems, Source of Family Income

Set 3: Length of Previous Correctional Institutionalization

Set 4: Present Petition

Set 5: Current Remand

Set 6: Family Intactness, Previous Noncorrectional Institutionalization

Set 7: Last Grade Completed, School Status, Previous Employment

Set 8: Referral County

Set 9: Ethnicity

Set 10: Admission Status

Set 11: Type of Program

Set 12: Discharge Status

Set 13: Duration in Program

Set 14: Discharge Status x Duration in Program

A variation of Format A was used to test the effects of individual programs. Instead of Set 12 and Set 13, Set 11a was introduced (after Set 11) consisting of variables representing individual programs. The multiple regression equation with independent variables of Sets 1 through 11a was computed and compared with the equation from the preceding step

(Sets 1 through 11) to determine the increment in predictiveness due to Set 11a.

Format B consisted of the following sets:

Set 1: All variables listed in Format A Sets 1 through 11

Set 2: Type of Program x Age at Admission

Set 3: Type of Program x Number of Petitions

Type of Program x School Behavior Problems

Type of Program x Source of Family Income

Set 4: Type of Program x Present Petition

Set 5: Type of Program x Length of Previous Correctional Institutionalization

Type of Program x Current Remand

Set 6: Type of Program x Family Intactness

Type of Program x Previous Noncorrectional Institutionalization

Set 7: Type of Program x Last Grade Completed

Type of Program x School Status

Type of Program x Previous Employment

Set 8: Type of Program x Referral County

Set 9: Type of Program x Ethnicity

Set 10: Type of Program x Admission Status

Set 11: Discharge Status

Duration in Program

Set 12: Type of Program x Discharge Status

Set 13: Type of Program x Duration in Program

The manner in which these items were coded and the rationale for their selection and ordering is given in Appendix B.[1, 2]

Dependent Variables. The dependent variables were (a) a record of one or more arrests for a fingerprintable offense recorded at the New York State Identification and Intelligence System from one month prior through two years after discharge (hereafter referred to simply as arrest), (b) a record of commitment to a state or local correctional facility or to a narcotics rehabilitation facility under the jurisdiction of the Narcotics Addiction Control Commission during the period three years after discharge (if subject was discharged in 1966 or 1967) or during the period from discharge to June 1, 1971 (if subject was

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[1]Variables representing Family Income and Family Size were added on to Format A as Set 15 along with the variables Coded/Not Coded on Family Income and Coded/Not Coded on Family Size. The items on the intake form referring to Family Income and Family Size were considered defective measures because of the large amount of missing information or not-applicable responses, and were added on at the end of Format A analyses for exploratory purposes. In no analysis did this set significantly add to the predictiveness of the dependent variable; nor did they add useful information regarding the role of Family Income or Family Size in the prediction of the dependent variables, because of the extent of missing information. To simplify the presentation of results, reference to this set of items is not included in the presentation of findings.

[2]Variables dependent on program involvement, i.e., Age at Admission, Admission Status, Type of Program, Discharge Status, and Duration in Program refer to the program in which subject last participated. All other variables refer to the status of subjects at time of referral. In most instances subjects participated in only one program without interruption. In the Format A analysis of nongraduation these comprised 89% of subjects; in the Format A analyses of arrest and commitment, 88%. Other subjects were either youths who transferred from one program to another (7%-8%), or youths who were readmitted to a program after an interval of time intervened between their prior discharge and their readmission (4%).

discharged in 1968, i.e., approximately two and one-half to three and one-half years after discharge) hereafter referred to as commitment,[1] (c) subject's discharge status as either having completed treatment (called graduation) or having been discharged because of absconding, removal by court action, dismissal by staff or return to court (called nongraduation).

Subjects. Subjects in the study were all male youths with final discharges from the Camp, Home, START or STAY programs of the New York State Division for Youth from April 1966 through December 1968 with certain exceptions. These were (1) youths with missing data on any independent variable were excluded (N=166);[2] (2) youths discharged from two of the programs were excluded (N=36); (3) youths with an admission date and final discharge date falling in the same month and year were excluded (N=43); (4) on the other hand, youths transferred from a Camp, Home, START or STAY to a Halfway House, from which they received final discharges April 1966 through December 1968 were included (N=27). Youths with missing data were excluded because of requirements of the computer programs used for the multivariate analyses. Dischargees from two programs were excluded because of their small number. Youths transferred to Halfway Houses before final discharge were included because the period after discharge from the Halfway House was considered an appropriate period to measure the effect of the program (i.e., Camp, Home, START, STAY) from which they were transferred. Dischargees with admission and final discharge date in the same month were excluded due to a programming error in generating the names of dischargees.[3]

[1]The present study relied upon information already collected for two preceding studies, which used somewhat different time intervals for measuring commitment.

[2]The percentage of youths with missing data for any specific independent variable did not exceed 5%.

[3]Based on a listing of names generated after the study was completed and after certain improvements had been made in the OGS computerized information system, it was found that fourteen other youths had been omitted from the original listing for undetermined reasons, and twenty because of contradictory admission and discharge dates, or missing information on sex classification. It may also be noted that there were fifty-three youths (excluded from the analyses) with a discharge in the designated period who were readmitted after December, 1968; and twenty-one youths (also excluded) with a discharge from a Halfway House who had not been transferred from a Camp, Home, START or STAY.

In the analyses of arrest and commitment, subjects were also excluded if they were discharged prior to the age of 16 (N=260).[1] The reason for this exclusion is that arrest or commitment records for offenses prior to the age of 16 are not kept by the New York State Identification and Intelligence System.

In the analysis of the dependent variable discharge status, subjects who had neither completed treatment nor had absconded, been removed by court action, been dismissed by staff or returned to court were excluded (N=205).[2] These comprised youths who had withdrawn from the programs, or had left the programs for other reasons. The reason for this exclusion was to better focus on those discharge categories that were expected to be most related to post-discharge arrest and commitment.

The analyses in Format B were limited to subjects discharged from Homes, Camps and STARTs; the subjects in the STAY facility were not included. The reasons for this were (1) this type of facility is no longer in operation, (2) there was only one program of this type during the period of this analysis, (3) its inclusion would have added a large number of interaction variables to the analyses, thereby detracting from the comparison of Homes, Camps and STARTs, (by reducing the power of significance tests) as well as substantially increasing the cost of analysis.

[1]This number does not include subjects with missing data on independent variables. Four subjects were also excluded because of missing or ambiguous arrest or commitment information.

[2]This number does not include subjects with missing data on independent variables.

The numbers of subjects in the various analyses were 1,187 for the analyses of arrest and commitment using Format A and 1,099 using Format B; 1,240 for the analyses of nongraduation using Format A and 1,156 using Format B. An analysis of commitment restricted to subjects with post-discharge arrest records, and using Format A, had 487 subjects. To distinguish between the two groups of subjects in the analyses of commitments, one is referred to as the total study group and the other as subjects with post-discharge arrest records.

FINDINGS

Results from the cumulative addition of sets of variables of Format A with respect to the prediction of (a) arrest, (b) commitment among subjects with post-discharge arrest records, (c) commitment among the total study group, and (d) nongraduation are summarized in Tables 1 through 4.

Predictive Power of Background Variables

The background variables indicating characteristics of youths at referral or admission were represented in Sets 1 through 10. In all four analyses these variables as a totality were significantly related to the dependent variables at the .01 level. The multiple correlation coefficient was .27 for arrest, .29 for commitment among arrested youth, .26 for commitment among the total study population, and .19 for graduation-nongraduation. Corrected for shrinkage, the multiple correlation coefficients were .24, .21, .23 and .15 respectively. The results indicate that within the totality of variables there are individual variables or sets of variables which are related to arrest, commitment, and graduation

in a non-random manner and justify the attempts below to identify these variables. However, the amount of predictive power due to the background variables is small in terms of the ideal aim of completely predicting the dependent variables.

Background Characteristics and their Relation to Arrest[1]

The following conclusions may be drawn from Table 1 with respect to relations of individual sets of background variables to post-discharge arrest.

(1) Set 1, consisting of the single variable Age at Admission, was not significantly related to arrest.[2,3]

(2) The variables in Set 2, Number of Previous Petitions, School Behavior Problems, and Source of Family Income, significantly added to Set 1 in the prediction of arrest.

All three of these variables contributed significantly to the prediction of arrest. The directions of the relationships were such that subjects with more petitions (versus less), with school behavior problems (versus none) and from families whose principal source of income was public or private assistance had higher predicted arrest rates.

(3) Set 3, consisting of the single variable Length of Previous Correctional Institutionalization, did not add significantly to Sets 1 and 2 in the prediction of arrest.

(4) Set 4, representing Present Petition, significantly added to preceding sets in the prediction of arrest. The variable in Set 4

[1]The rationale for the sequential ordering of variables in this and succeeding analyses is given in Appendix B.

[2]Findings concerning Age at Admission should be cautiously interpreted since 15-year-olds who were discharged prior to their 16th birthday were excluded from the analysis.

[3]In the statistical tests of this report a relationship was considered statistically significant if it were at or below the .05 significance level (two-tailed test).

TABLE 1

CUMULATIVE CONTRIBUTION OF SETS OF VARIABLES TO THE PREDICTION OF ARREST
(N=1,187)

Set	Variables	Multiple R	Multiple R-Square	Increment in R-Square	F Ratio of Increment	Probability of F Ratio	t[a]
1	Age at Admission	.0386	.0015	.0015	1.76	N.S.	
2	Number of Previous Petitions School Behavior Problems Source of Family Income	.2104	.0443	.0428	17.64	<.01	4.91** 3.59** 3.39**
3	Previous Corr. Inst.	.2115	.0447	.0004	0.49	N.S.	
4	Present Petition A " " B " " C	.2354	.0554	.0107	4.45	<.01	-3.24** -1.81 -0.18
5	Current Remand	.2483	.0616	.0062	7.78	<.01	2.79**
6	Family Intactness Previous Noncorr. Inst.	.2515	.0633	.0017	1.07	N.S.	
7	Last Grade Completed School Status Employment	.2540	.0645	.0012	0.50	N.S.	
8	Referral County	.2591	.0671	.0026	3.26	N.S.	
9	Ethnicity A " B	.2601	.0677	.0006	0.38	N.S.	

(Continued on following page.)

TABLE 1

CUMULATIVE CONTRIBUTION OF SETS OF VARIABLES TO THE PREDICTION OF ARREST

(Continued from previous page.)

Set	Variables	Multiple R	Multiple R-Square	Increment in R-Square	F Ratio of Increment	Probability of F Ratio	t[a]
10	Admission Status A " " B	.2672	.0714	.0037	2.32	N.S.	
11	Type of Program A " " B " " C	.2774	.0770	.0056	2.36	N.S.	
12	Discharge Status A " " B	.3050	.0930	.0160	10.24	<.01	4.51** 1.28
13	Duration in Program	.3063	.0938	.0008	1.02	N.S.	
14	Duration x Dis. Stat A Duration x Dis. Stat B	.3066	.0940	.0002	0.13	N.S.	

**p<.01

[a]t-values are given for individual variables within sets showing a significant increment in R-Square.

TABLE 2

CUMULATIVE CONTRIBUTION OF SETS OF VARIABLES TO THE PREDICTION OF COMMITMENT
AMONG SUBJECTS WITH POST-DISCHARGE ARRESTS
(N=487)

Set	Variables	Multiple R	Multiple R-Square	Increment in R-Square	F Ratio of Increment	Probability of F Ratio	t[a]
1	Age at Admission	.0417	.0017	.0017	0.84	N.S.	
2	Number of Previous Petitions	.1647	.0271	.0254	4.20	<.01	3.34**
	School Behavior Problems						0.07
	Source of Family Income						-1.03
3	Previous Corr. Inst.	.2220	.0493	.0222	11.23	<.01	3.35**
4	Present Petition A	.2499	.0624	.0131	2.23	N.S.	
	" " B						
	" " C						
5	Current Remand	.2531	.0641	.0017	0.87	N.S.	
6	Family Intactness	.2535	.0643	.0002	0.05	N.S.	
	Previous Noncorr. Inst.						
7	Last Grade Completed	.2825	.0798	.0155	2.65	<.05	0.91
	School Status						-2.76**
	Employment						-0.56
8	Referral County	.2826	.0798	.0000	0.00	N.S.	
9	Ethnicity A	.2870	.0824	.0026	0.66	N.S.	
	" B						

(Continued on following page.)

TABLE 2

CUMULATIVE CONTRIBUTION OF SETS OF VARIABLES TO THE PREDICTIVENESS OF COMMITMENT
AMONG SUBJECTS WITH POST-DISCHARGE ARRESTS

(Continued from previous page.)

Set	Variables	Multiple R	Multiple R-Square	Increment in R-Square	F Ratio of Increment	Probability of F Ratio	t[a]
10	Admission Status A	.2880	.0829	.0005	0.13	N.S.	
	" " B						
11	Type of Program A	.2928	.0857	.0028	0.47	N.S.	
	" " B						
	" " C						
12	Discharge Status A	.3130	.0980	.0123	3.15	<.05	2.28*
	" " B						-0.54
13	Duration in Program	.3304	.1092	.0112	5.80	<.05	2.41*
14	Duration x Dis. Stat A	.3420	.1169	.0077	2.00	N.S.	
	Duration x Dis. Stat B						

*p<.05

**p<.01

[a]t-values are for individual variables within sets showing a significant increment in R-Square.

TABLE 3

CUMULATIVE CONTRIBUTION OF SETS OF VARIABLES TO THE PREDICTION OF COMMITMENT
(N=1,187)

Set	Variables	Multiple R	Multiple R-Square	Increment in R-Square	F Ratio of Increment	Probability of F Ratio	t[a]
1	Age at Admission	.0000	.0000	.0000	0.03	N.S.	
2	Number Previous Petitions	.1851	.0343	.0343	13.99	<.01	5.87**
	School Behavior Problems						1.84
	Source of Family Income						1.06
3	Previous Corr. Inst.	.2027	.0411	.0068	8.37	<.01	2.90**
4	Present Petition A	.2328	.0542	.0131	5.44	<.01	-2.45*
	" " B						-2.73**
	" " C						1.78
5	Current Remand	.2435	.0593	.0051	6.38	<.05	2.53*
6	Family Intactness	.2462	.0606	.0013	0.81	N.S.	
	Previous Noncorr. Inst.						
7	Last Grade Completed	.2534	.0642	.0036	1.50	N.S.	
	School Status						
	Employment						
8	Referral County	.2566	.0658	.0016	2.00	N.S.	
9	Ethnicity A	.2588	.0670	.0012	0.75	N.S.	
	" B						

(Continued on following page.)

TABLE 3

CUMULATIVE CONTRIBUTION OF SETS OF VARIABLES TO THE PREDICTION OF COMMITMENT

(Continued from previous page.)

Set	Variables	Multiple R	Multiple R-Square	Increment in R-Square	F Ratio of Increment	Probability of F Ratio	t[a]
10	Admission Status A	.2636	.0695	.0025	1.57	N.S.	
	" " B						
11	Type of Program A	.2665	.0710	.0015	0.63	N.S.	
	" " B						
	" " C						
12	Discharge Status A	.3017	.0910	.0200	12.79	<.01	4.89**
	" " B						-0.35
13	Duration in Program	.3042	.0925	.0015	1.92	N.S.	
14	Duration x Dis. Stat A	.3066	.0940	.0015	0.96	N.S.	
	Duration x Dis. Stat B						

*p<.05
**p<.01
[a]T-values are given for individual variables within sets showing a significant increment in R-Square.

TABLE 4

CUMULATIVE CONTRIBUTION OF SETS OF VARIABLES TO THE PREDICTION OF NONGRADUATION
(First Analysis)
(N=1,240)

Set	Variables	Multiple R	Multiple R-Square	Increment in R-Square	F Ratio of Increment	Probability of F Ratio	t[a]
1	Age at Admission	.0511	.0026	.0026	3.24	N.S.	
2	Number of Previous Petitions School Behavior Problems Source of Family Income	.0981	.0096	.0070	2.91	<.05	2.15* -0.92 1.88
3	Previous Corr. Inst.	.1080	.0117	.0021	2.62	N.S.	
4	Present Petition A " " B " " C	.1162	.0135	.0018	0.75	N.S.	
5	Current Remand	.1197	.0143	.0008	1.00	N.S.	
6	Family Intactness Previous Noncorr. Inst.	.1537	.0236	.0090	5.62	<.01	-3.41** -0.32
7	Last Grade Completed School Status Employment	.1645	.0271	.0035	1.48	N.S.	
8	Referral County	.1872	.0351	.0080	10.13	<.01	3.18**
9	Ethnicity A " B	.1925	.0371	.0020	1.27	N.S.	

(Continued on following page.)

TABLE 4

CUMULATIVE CONTRIBUTION OF SETS OF VARIABLES TO THE PREDICTION OF NONGRADUATION
(First Analysis)

(Continued from previous page.)

Set	Variables	Multiple R	Multiple R-Square	Increment in R-Square	F Ratio of Increment	Probability of F Ratio	t[a]
10	Admission Status A " " B	.1931	.0373	.0002	0.13	N.S.	
11	Type of Program A " " B " " C	.2225	.0495	.0122	5.22	<.01	1.96* -2.66** -2.24*

*p<.05
**p<.01
[a]t-values are given for individual variables within sets showing a significant increment in R-Square.

TABLE 5

CUMULATIVE CONTRIBUTION OF SETS OF VARIABLES TO THE PREDICTION OF NONGRADUATION
(Second Analysis)
(N=1,240)

Set	Variables	Multiple R	Multiple R-Square	Increment in R-Square	F Ratio of Increment	Probability of F Ratio	t[a]
1	Age at Admission	.0511	.0026	.0026	3.24	N.S.	
2	Referral County	.1267	.0160	.0134	16.75	<.01	4.11**
3	Family Intactness Previous Noncorr. Inst.	.1591	.0253	.0093	5.89	<.01	-3.25** 0.39
4	School Status Last Grade Completed Employment	.1726	.0298	.0045	1.90	N.S.	
5	Ethnicity A " B	.1785	.0318	.0020	1.27	N.S.	
6	School Behavior Problems Source of Family Income Number Previous Petitions	.1838	.0338	.0020	0.85	N.S.	
7	Previous Corr. Inst.	.1846	.0341	.0003	0.38	N.S.	
8	Present Petition A " " B " " C	.1908	.0364	.0023	0.97	N.S.	
9	Current Remand	.1925	.0371	.0007	0.89	N.S.	

** p<.01
[a] t-values are given for individual variables within sets showing a significant increment in R-Square.

TABLE 6

t-VALUES INDICATING THE RELATION OF BACKGROUND VARIABLE TO OUTCOME VARIABLE PRIOR TO SET 1 AND AFTER SET 10

	Arrest		Commitment (Among Arrested)		Commitment (Total Group)		Nongraduation	
Variables	Prior to Set 1	After Set 10	Prior to Set 1	After Set 10	Prior to Set 1	After Set 10	Prior to Set 1	After Set 10
Age at Admission	-1.33	-1.27	0.92	-1.27	0.18	-1.82	-1.80	-0.66
Number Previous Petition	5.24**	3.12**	3.47**	1.54	6.11**	2.95**	1.97*	1.55
School Behavior Problems	4.24**	3.05**	0.26	-0.52	2.37*	1.01	-0.35	-0.86
Source of Family Income	3.42**	2.54*	-1.20	-0.82	1.08	0.44	1.99*	0.19
Previous Corr. Inst.	3.07**	-0.76	4.16**	2.79**	5.17**	1.39	2.37*	0.27
Present Petition A	-4.30**	-3.28**	-0.60	-0.57	-3.31**	-2.51*	0.21	1.09
" " B	-3.78**	-1.18	-3.01**	-1.59	-4.99**	-2.12*	-0.27	0.93
" " C	-0.89	0.22	1.99*	1.45	1.65	1.78	-2.20*	-1.26
Current Remand	3.77**	2.76**	2.76**	0.87	4.53**	2.47*	1.52	0.90
Family Intactness	-1.84	-1.05	-0.11	0.14	-1.18	-0.75	4.10**	-2.94**
Previous Noncorr. Inst.	-0.56	0.64	0.24	0.20	-0.26	0.82	0.48	0.02

(Continued on following page.)

TABLE 6

t.-VALUES INDICATING THE RELATION OF BACKGROUND VARIABLE TO OUTCOME VARIABLE PRIOR TO SET 1 AND AFTER SET 10

(Continued from previous page.)

	Arrest		Commitment (Among Arrested)		Commitment (Total Group)		Nongraduation	
Variables	Prior to Set 1	After Set 10	Prior to Set 1	After Set 10	Prior to Set 1	After Set 10	Prior to Set 1	After Set 10
Last Grade Completed	-1.20	0.46	0.39	0.85	-0.47	0.57	-1.05	-0.31
School Status	-0.85	-1.30	-2.62**	-2.76**	-2.74**	-2.55*	-0.37	-2.24*
Employment	1.53	1.15	0.44	-0.52	1.14	0.27	0.83	1.09
Referral County	3.29**	1.79	0.01	-0.32	2.33*	0.97	4.36**	3.07**
Ethnicity A	2.71**	-0.01	1.04	0.92	2.55*	0.94	2.95**	-0.17
Ethnicity B	-0.31	-0.78	-0.16	-0.19	-0.54	-0.28	-0.17	-1.46
Admission Status A	-0.94	-2.11*	0.03	-0.52	-0.58	-1.72	0.82	0.46
Admission Status B	-0.01	-1.09	-0.19	-0.06	-0.12	-0.94	0.58	0.38

*p<.05
**p<.01

(Present Petition A) which contrasted Person In Need of Supervision and Neglected Child with Juvenile Delinquent significantly added to the prediction of arrest. A petition of Juvenile Delinquent was associated with higher predicted arrest rates.

(5) Set 5, consisting of the single variable Current Remand, added significantly to Sets 1 through 4 in the prediction of arrest. Subjects in remand had higher predicted arrest rates.

(6) The variables in Set 6, consisting of Family Intactness and Previous Noncorrectional Institutionalization, the variables in Set 7, consisting of Last Grade Completed, School Status, and Employment, Set 8, consisting of the variable Referral County, the variables in Set 9, representing Ethnicity, and the variables in Set 10, representing Admission Status, did not add significantly to preceding variables in the prediction of arrest.[1]

Thus, the variables that emerged in this analysis as predictive of arrest, with selected variables controlled, were Number of Previous Petitions, School Behavior Problems, Source of Family Income, Present Petition (Person in Need of Supervision and Neglected Child versus Juvenile Delinquent) and Current Remand.

The t-values for regression weights of the multiple regression equation after the variables of Sets 1 through 10 have entered the equation are given in Table 6. These indicate that all of the single

[1] It should be mentioned that one of the two variables (Admission Status B) in Admission Status exhibited a significant t-score (t=-2.11), that number of readmissions was small and that the chief difference in predicted arrest rates was between readmissions and others. In future analyses of this kind, where the number of readmissions and transfers are small, it might be more fruitful to dichotomize Admission Status into the single variable Readmissions versus Others.

variables that were found in the Set-by-Set cumulative analysis to be significant contributors to the prediction of arrest remain so when all the variables of Set 1 through 10 are considered jointly in one equation. That is, these variables remain predictive when all the others are controlled.

To indicate the extent of predicted differences in arrest rate the multiple regression equation including Sets 1 through 10 was used. With all other variables held constant except the one(s) being examined, the predicted rates differ as follows:

Number of Previous Petitions (compared to None): 5% higher for One Petition; 11% higher for Two Petitions; 16% higher for three or more petitions;

School Behavior Problems (compared to None): 11% higher for the presence of a School Behavior Problem;

Source of Family Income (compared to all others): 9% higher for public or private assistance;

Current Remand (compared to None): 10% higher for Current Remand;

Present Petition (compared to Person in Need of Supervision and Neglected Child): 2% higher for No Petition; 8% higher for Youthful Offender and other adjudications for youths over 16; 13% higher for Juvenile Delinquent.

Table 6 also presents the t-values for the relation of each variable to arrest without controlling for any other variable. The variables Length of Previous Correctional Institutionalization, Referral County and Ethnicity A (which dichotomized Blacks versus others) were significantly

related to arrest when no other variables were controlled, but ceased to be significantly related after all the other variables were controlled.

The directions of the relationships were such that subjects with longer durations in correctional institutions, subjects who came from New York City and subjects who were black had significantly higher arrest rates. However, when the other background variables were controlled, these relationships ceased to be significant.

In summary, when the background characteristics at referral or admission were considered jointly, the variables found uniquely related to arrest include Number of Previous Petitions, School Behavior Problems, Source of Family Income, Present Petition and Current Remand. Although the variables Ethnicity, Referral County and Length of Previous Correctional Institutionalization were related to arrest with no other variables controlled, they ceased to be significantly related when other variables were controlled. Within the context of the total set of variables examined, the former relationships may be considered unique and primary, and the latter derivative.

Background Characteristics and their Relation to Commitment Among Subjects with Post-Discharge Arrest Records. It was assumed that in the group under study post-discharge commitment generally occurs subsequent to one or more post-discharge arrests. Therefore, the characteristics related to commitment among the total study population should in large part be some combination of (a) the characteristics related to arrest, and (b) the characteristics related to commitment among subjects

with arrest records. In the preceding analysis the characteristics related to post-discharge arrest were sought. In the present analysis the characteristics relating to post-discharge commitment among subjects with an arrest record in the post-discharge period are analyzed.

From Table 2 the following conclusions may be drawn:

(1) Set 1, consisting of the single variable, Age at Admission, was not significantly related to commitment among arrested youth.

(2) The variables in Set 2, Number of Previous Petitions, School Behavior Problems, and Source of Family Income significantly added to Set 1 in the prediction of commitment among arrested youth.

The variable Number of Previous Petitions was the sole variable in the set showing a significant t-score. This contrasts with the findings for arrest, where all three variables were found uniquely and significantly predictive.

The direction of differences was such that subjects with more petitions (versus less) have higher predicted commitment rates among arrested youth.

(3) Set 3, consisting of the single variable Length of Previous Correctional Institutionalization, added significantly to the variables of Sets 1 and 2 in the prediction of commitment among arrested youth. Subjects with higher values on this variable had higher predicted commitment rates.

(4) The variables in Set 4, representing Present Petition, the single variable in Set 5, Current Remand, and the variables in Set 6,

Family Intactness and Previous Noncorrectional Institutionalization, did not add significantly to the prediction of commitment among arrested youth.

(5) The variables in Set 7, consisting of Last Grade Completed, School Status, and Employment added significantly to the prediction of commitment among arrested youth.

Of the three variables in the set, one was significantly predictive of commitment: School Status. Subjects who were not enrolled in school at time of referral to the Division for Youth had higher predicted commitment rates among arrested youth than subjects enrolled at school.

(6) The single variable in Set 8, Referral County, the variables in Set 9, representing Ethnicity, and the variables in Set 10, representing Admission Status, did not add significantly to preceding sets in the prediction of commitment among arrested youth.

The variables that emerged in this analysis as significantly predictive of commitment among arrested youth were Number of Previous Petitions, Length of Previous Correctional Institutionalization and School Status.

These findings contrast with findings in the analysis of arrest. Only Number of Previous Petitions was found significantly predictive at its entry for both post-discharge arrest and post-discharge commitment among arrested subjects. Otherwise the variables related to arrest and to commitment (among arrested youth) appear to differ.

The t-values for the regression weights when all variables in Sets 1 through 10 have entered the multiple regression equation are given in

Table 6. It may be seen that at this point there are only two single variables significantly predictive of commitment among arrested youth-- Length of Previous Correctional Institutionalization and School Status. At this stage in the analysis, with all background variables in Sets 1 through 10 statistically controlled, Number of Previous Petitions has ceased to be significantly predictive.

Examination of the equations after each set indicated that the t-score for Number of Previous Petitions dropped sharply (from 3.34 to 2.21) with the addition of Length of Previous Correctional Institutionalization and become nonsignificant (t=1.35) after the addition of Present Petition. It would appear that the predictive value of Number of Previous Petitions was in large part due to its relation to Length of Previous Correctional Institutionalization and Present Petition.

Table 6 also indicates the relation of each variable to commitment (among arrested subjects) without controlling for any other variables. In addition to variables found predictive in the Set-by-Set cumulative analysis, Current Remand and two of the three variables in Present Petition exhibited significant t-values. Subjects who had been in remand and subjects with petitions (as opposed to no petition) had higher rates of commitment when no variables were controlled.[1] These relationships ceased to be significant when the other background characteristics entered the equation.

[1]The other significant variable in Present Petition (Present Petition C) was not dichotomous and therefore not easily interpretable. Based on findings in a preceding study its relation to commitment is probably due to the higher commitment rates among arrested youth for the Youthful Offender category.

These findings suggest that when considering all background variables jointly, Length of Previous Correctional Institutionalization and School Status are important variables in the prediction of commitment (among arrested youth); and that Number of Previous Petitions is also predictive under more limited conditions, specifically if the variables representing Present Petition are excluded from the equation.

The extent of predicted differences in commitment rate due to the cited background variables may be estimated by the multiple regression equation including all variables in Sets 1 through 10. Holding all other variables constant but the one(s) being examined, differences were as follows:

Number of Previous Petitions (compared to None): 4% higher for One Petition; 8% for Two Petitions; 12% for Three or more Petitions.

Length of Previous Correctional Institutionalization (compared to None): 8% higher for Less than one month; 15% higher for one-six months.

School Status (compared with Enrolled): 14% higher for Not Enrolled.

The findings in this analysis also serve to clarify certain questions raised in a preceding study where background characteristics were examined in relation to commitment among arrested youth.[1] This examination was limited to 1968 dischargees, did not exclude dischargees under 16 years old, and was not within a multivariate framework. The questions concerned which of intercorrelating variables found significantly related to commitment were responsible for the set of results.

[1]Irwin J. Goldman and Martin Kohn, Op.Cit.

In that analysis Age at Admission and Age at Discharge was found significantly and positively related to commitment (among arrested youth) and the hypothesis was proposed that age during the post-discharge period was a major factor in the commitment of youths and accounted for the relations of other variables (such as School Status) to commitment. The present findings indicated (1) that Age at Admission was not significantly related to commitment (among arrested youth) when the study population included 1966-1967 dischargees and excluded dischargees under 16 years old and (2) that when other variables were controlled the relationship of Age at Admission to commitment (among arrested youth) was not statistically significant and, in fact, ceased to be positive. (After Set 10, its t-value was -1.27.) The result is clear that the relation between Age at Admission and commitment (among arrested youth) does not account for the relationship of other variables such as School Status to commitment (among arrested youth).

In summary, the variables Length of Previous Correctional Institutionalization and School Status were uniquely predictive of commitment among arrested youth when the background variables were considered jointly. Number of Previous Petitions also appears to be a predictive variable, overlapping in its predictiveness with the variable Present Petition. The variable Current Remand and the set of variables Present Petition which were initially related to commitment (among arrested youth) ceased to be so as a result of controlling for the other background variables. The expectation that Age at Admission would be a consequential factor in

predicting commitment among arrested youth with the other variables controlled and would be positively associated with commitment among arrested youth (with the other variables controlled) was not supported by the findings.

Background Characteristics and their Relation to Commitment among the Total Study Group.[1] In the two preceding analyses the background variables related to arrest and the background variables related to commitment among arrested youth were studied. The present analysis considers the prediction of commitment among the total study group, i.e., youths with and without post-discharge arrest records. Table 3 indicates the results of the Set-by-Set cumulative analysis. From Table 3 these conclusions may be drawn:

(1) Initially, there was no significant relationship between Age at Admission and commitment.

(2) The variables in Set 2, Number of Previous Petitions, School Behavior Problems and Source of Family Income, added significantly to Set 1 in the prediction of commitment. Within the set, the variable Number of Previous Petitions was significantly predictive of commitment. Subjects with more (versus less) petitions had higher predicted commitment rates.

(3) The single variable of Set 3, Length of Previous Correctional Institutionalization, added significantly to the variables in Sets 1 and 2 in the prediction of commitment. Subjects with higher values on this variable had higher predicted commitment rates.

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[1] Whereas the preceding analysis was limited to youths with post-discharge arrest records, the present analysis includes youths with and without post-discharge arrest records. These represent the total study group in the study of commitment.

(4) The variables in Set 4, representing Present Petition, added significantly to the variables in Sets 1 through 3 in the prediction of commitment.

Within the set the t-values for two variables were significant and the t-value for the third variable approached significance. The significant variables represented these distinctions (a) No Petition versus Having a Petition, and (b) Juvenile Delinquent Petition versus Person In Need of Supervision and Neglected Child Petition; the third variable represented (c) adjudications for offenses after age 16 (e.g., Youthful Offender) versus adjudications for acts or situations prior to age 16 (e.g., Juvenile Delinquent, Person in Need of Supervision). Subjects with a petition (as opposed to none), with a Juvenile Delinquent petition (as opposed to a Person In Need of Supervision or Neglected Child Petition) and with adjudication for offenses over age 16 (as opposed to adjudication for acts or situations prior to age 16) had higher predicted commitment rates.

(5) Set 5, Current Remand, added significantly to the preceding sets in the predictiveness of commitment. Subjects in remand at referral had higher predicted commitment rates.

(6) None of the sets of variables in Sets 6 through 10 added significantly to preceding sets in the prediction of commitment.

(7) Although as a set, the variables in Set 7 did not show a significant increment to prediction, the single variable School Status had a significant t-score ($t=-2.76$, $p<.01$). The negligible contribution

of the other variables in the set (Last Grade Completed, Employment) rendered the total set non-significant.

The variables that emerged in this analysis as significantly predictive of commitment among the total study group included Number of Previous Petitions, Length of Previous Correctional Institutionalization, Present Petition, Current Remand and School Status. (In general, if the contribution of a total set was not significant, no variable within the set would be considered predictive. However, the variable School Status is included in the above list, despite the non-significance of the contribution of its set, because the total set had previously been found significantly predictive of commitment among arrested youth due to this variable. Unless School Status were negatively related to arrest, its positive relation to commitment among arrested youth would logically render it a predictor of commitment among the total group.)

The t-values for the regression weights of the variables in Sets 1 through 10 for the equation including them all are given in Table 6. The variables which have been cited above as significantly predictive in the Set-by-Set cumulative analysis remained so when all the variables were considered simultaneously with one exception: Length of Previous Correctional Institutionalization.

Examination of the t-values after the entry of each set indicated that the influence of Length of Correctional Institutionalization was

reduced to nonsignificance by the entry of Current Remand. Examination of the t-values with respect to the analyses of arrest also indicated that the relation to arrest of Length of Correctional Institutionalization changed from positive to negative by entry of Current Remand. This indicates that the relation of this variable to commitment among the total group is somewhat problematic since it may be related to arrest in a direction opposite to its relation to commitment among arrested youth, when the other background variables are controlled.

Table 6 also indicates that the following variables were initially significantly related to commitment among the total study group but ceased to be so with the control of other variables: School Behavior Problems, Length of Previous Correctional Institutionalization, Referral County and one variable in the set Ethnicity (which dichotomized Black versus Others). Subjects with school behavior problems, who had longer durations in correctional institutions, who were black, and who were referred from New York City tended to have post-discharge commitment records. However, these relationships were not unique and ceased to be significant after other background variables were controlled.

A variable that appeared to increase in importance as variables were added into the equation is Age at Admission. The t-value for this variable was .18 initially, rose with the entry of Present Petition (to -.85), School Status (to -1.24) and Admission Type (to -1.82). It actually reached the significance level when Discharge Type entered

the equation (discussed below). With other variables controlled, the relation is negative, i.e., younger subjects were more likely to have commitment records than older subjects.

From these findings it appears that the major predictors of commitment among the total study group were Number of Previous Petitions, Present Petition, Current Remand, and School Status. Using the regression equation which included all background variables (after Set 10) to indicate the extent of differences in commitment rate connected with these variables, the following differences in predicted commitment rate were found, holding all variables in Sets 1 through 10 constant except the one(s) being examined:

Number of Previous Petitions (compared to None): 4% higher for One Petition; 8% for Two Petitions; 12% for Three or More.

Current Remand (compared to None): 8% higher for Remand.

School Status (compared to Enrolled): 6% higher for Not Enrolled.

Present Petition (compared to Person In Need of Supervision and Neglected Child): the same rate for No Petition; 8% higher for Juvenile Delinquent; 8% higher for Youthful Offender and other adjudications for youths over 16.

In summary, when the background variables were considered jointly, Number of Previous Petitions, Present Petition, Current Remand and School Status were uniquely predictive of commitment among the total study group. The variables School Behavior Problems, Length of Previous Correctional Institutionalization, Referral County and one component of Ethnicity

(Black versus Others) which were significantly related to commitment without the control of other variables, ceased to be so as a result of controlling for these variables. The relation of Age at Admission to commitment increased with the addition of background variables into the regression equation, to the point of approaching statistical significance; and this variable may be considered as a possible additional predictor.

Background Characteristics and their Relation to Nongraduation

The outcome examined in this analysis was nongraduation as opposed to graduation. Nongraduation is here defined as these categories from the discharge form: (1) absconded; (2) removed by court action re: new offense; (3) dismissed by staff or returned to court. Graduation is the term applied to the category (4) completion of treatment. Subjects with other types of discharges (parental request, enlisted in Armed Forces, Removed to Mental Hospital, and Other) were excluded from this analysis. The purpose of this exclusion was to better focus on the distinction between (1) treatment completion and (2) noncompletion of treatment with "negative" connotations. It was expected that this dichotomy would be related to arrest and commitment. Unlike the three preceding analyses, subjects included dischargees prior to age 16 as well as those discharged after the age of 16.

The results from the Set-by-Set cumulative analysis are given in Table 4. These conclusions may be drawn from these results.

(1) Age at Admission (Set 1) was not significantly related to nongraduation.

(2) The variables in Set 2, Number of Previous Petitions, School Behavior Problems, and Source of Family Income added significantly to Set 1 in the prediction of nongraduation. Within the set Number of Previous Petitions significantly contributed to the prediction of nongraduation. Subjects with more petitions (versus less) had higher predicted nongraduation rates.

(3) The variables in Sets 3, 4 and 5 did not add significantly to preceding sets in the prediction of nongraduation.

(4) The variables in Set 6, Family Intactness and Previous Noncorrectional Institutionalization, added significantly to preceding sets in the prediction of nongraduation. Within the set Family Intactness showed a significant t-score. Youths from intact families (i.e., who in their normal living situation had been living with both parents) had lower predicted nongraduation rates than youths from nonintact families.

(5) The variables in Set 7 did not add significantly to preceding variables in the prediction of nongraduation.

(6) The single variable in Set 8, Referral County, added significantly to preceding variables in the prediction of nongraduation. Subjects from New York City had higher predicted nongraduation rates than subjects from outside New York City.

(7) The variables in Sets 9 and 10 did not add significantly to the preceding sets in the prediction of nongraduation.

Examination of the t-values for the equation after Set 10 (Table 6)

indicated that at this point Family Intactness, School Status and Referral County had significant t-values. Comparing the variables significantly related to nongraduation with no variables controlled, to those found related after Set 10, one finds many showed relationships that declined from significance to nonsignificance as other variables were controlled. These include Number of Previous Petitions, Source of Family Income, Length of Previous Correctional Institutionalization, one variable in the Set Ethnicity (Black versus Others) and one in the Set Present Petition. On the other hand, School Status, originally nonsignificantly related, was significantly related to nongraduation after Set 10. Examination of the t-values for the regression weights after each set indicated that School Status became a significant contributor only after Referral County entered the equation.

From these analyses it is clear that Family Intactness and Referral County were predictive of nongraduation when the background variables through Set 10 were considered jointly. This finding contrasts with those for arrest and commitment and indicates that different influences are involved in the determination of nongraduation than in the determination of arrest or commitment.

However, the effect of variables upon one another in changing their relation to nongraduation was difficult to discern, because (a) the introduction of Family Intactness and Referral County occurred late in the analysis and their influence in reducing the predictiveness of other variables was unclear, (b) the predictiveness of certain variables appeared

to be influenced by a number of other variables, the control of some increasing and others decreasing predictiveness, (c) the Set-by-Set analysis gave somewhat different results than the examination of variable contributions to predictiveness after Set 10.

In order to further clarify the interrelation of background variables with respect to the predictiveness of graduation-nongraduation, a second multiple regression analysis was undertaken with a different ordering of variables than that in Format A. In this new ordering, the variables representing offense history were placed after variables representing other background characteristics of the youths.

Results of this second analysis of graduation-nongraduation are summarized in Table 5. These observations may be obtained from the table:

(1) Referral County (Set 2) added significantly to Set 1 (Age) in the prediction of nongraduation.

(2) The variable Family Intactness added significantly to Sets 1 and 2 in the prediction of nongraduation. Its Set (Set 3) was significantly incremental.

(3) The variable School Status added significantly to variables in Sets 1 through 3 in the prediction of nongraduation ($t=-2.12$, $p<.05$).[1] However, its Set (Set 4) was not significantly incremental.

(4) Ethnicity did not add to preceding variables in prediction.

(5) The set containing the variables School Behavior Problems, Source of Family Income and Number of Previous Petitions did not add significantly to the prediction of nongraduation. Within the set no

[1] Not shown in Table 5 as the complete set (Set 4) was not significantly incremental.

variable exhibited a significant t-score. In particular, Number of Previous Petitions did not show a significant t-score (t=1.49). Examination of t-scores for the potential contribution of this variable if added to preceding variables, at earlier steps, indicated that its potential ceased to be significant after the addition of Referral County.

(6) Sets 7, 8 or 9 did not add significantly to preceding sets in the prediction of graduation-nongraduation. These represented other aspects of offense history: Length of Previous Correctional Institutionalization, Present Petition and Current Remand.

Examination after each set of the potential contribution of variables to the prediction of nongraduation had they been added to the multiple regression equation at that point indicated that no variable other than School Status would have had a significant t-value after Set 3. That is, the variables Referral County and Family Intactness were primarily responsible for reducing the relation to nongraduation of Number of Previous Petitions, Source of Family Income, Length of Previous Correctional Institutionalization, Current Remand, and Ethnicity (Black versus Others) to nonsignificance. The effect of these latter variables with respect to nongraduation is accounted for, at least in part, by their relation to Referral County and Family Intactness.

Differences in nongraduation rates expected as a result of differences in Referral County, Family Intactness and School Status were estimated from the regression equation after Set 10. Holding constant all other variables in Sets 1 through 10, predicted differences would be as follows:

Referral County (compared to subject referred from outside New York City): 11% higher if subject was referred from New York City.

Family Intactness (compared to subject not living with both parents): 9% lower if subject was living with both parents.

School Status (compared to subject not enrolled in school): 7% lower if subject was enrolled in school.

In summary, findings from the two analyses indicate that Referral County and Family Intactness were uniquely predictive of nongraduation, when the total set of background characteristics were examined together. School Status should be considered as a possible predictor in future analyses. While Number of Previous Petitions, Source of Family Income, Length of Previous Correctional Institutionalization, and Ethnicity appeared related to nongraduation, when no variables were controlled, these relations were not significant when other characteristics were controlled. In general, the variables representing offense history did not appear to be predictive of nongraduation when other non-offense background variables were controlled. It also appears that variables predictive of discharge status were generally different from those predictive of arrest.

Differences among Types of Program in Arrest, Commitment, Graduation

The four types of program, Home, Camp, START and STAY, were compared with respect to the arrest rate of dischargees from these types, controlling for the background variables in Sets 1 through 10.[1] Three variables representing the four types of program were introduced into the multiple

[1] A description of the four types is given in: New York State Division for Youth, Characteristics of Delinquent Youths at Various Stages of the Treatment Process, August, 1970.

regression equation as Set 11. Table 1 (Set 11) gives the result.

There was no significant increment in prediction due to this set of variables. Controlling for background variables, dischargees from the four types of program did not have significantly different arrest rates.

Results for Set 11 representing Type of Program are given in Tables 2 and 3 with respect to commitment rates among arrested youth and commitment rates among the total study group. There was no significant increment in prediction due to this set of variables in either case. Controlling for background variables, dischargees from the four types of program did not differ significantly in commitment rates.

Table 4 indicates, however, that Set 11 did add significantly to the prediction of graduation versus nongraduation. Unlike the findings for arrest and commitment, the probability of graduation versus nongraduation appeared to depend on the type of program from which a youth was discharged, after controlling for the effects of background variable differences among programs.

The predicted rates for nongraduation after the addition of Set 11 were as follows: holding all other variables in Sets 1 through 10 constant, and using the predicted rate for START as the reference point: STAY--15% higher, Homes--14% higher; Camps--1% higher. The major distinction in predicted rates of nongraduation versus graduation was that between Homes and STAY, on the one hand, and Camps and STARTs, on the other. Homes and STAY had higher predicted nongraduation rates than the other two types of program.

Differences among Individual Programs in Arrest

The question of whether the arrest rates of dischargees from different individual programs varied beyond that expected from random effects, differences in the background characteristics of dischargees, and differences due to type of program was examined by the introduction of Set 11a into a multiple regression equation which also included Sets 1 through 10. The thirteen individual programs were represented by Sets 11 and 11a and the increment in prediction of arrest due to Set 11a indicates the value of distinguishing between individual programs in predicting to arrest.

The increment in prediction of arrest (increment in R-Square due to Set 11a) was found to be .0147, which was significant at the .05 level ($F=2.08$, $df=9, 1155$). The result indicates that there was significant variation in arrest rate among individual programs within program types.

From the multiple regression equation, predicted arrest rates were computed for dischargees from different programs scoring at the mean on all background variables. These are given in Table 7.

Differences in predicted arrest rates among programs within types (Home, Camp and START) were probed using the Newman-Keuls method.[1] For Homes, no differences between two programs were significant. A similar result was found for Camps. Within STARTs, however, START A significantly differed from START C ($p<.05$); and START B differed from START C at a borderline level of significance.[2]

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[1] B.J. Winer. Statistical Principles in Experimental Design. New York: McGraw Hill, 1962, p. 101. Results from this method were considered adequate approximations of the probability of differences.

[2] The critical value for the difference between rates of STARTs B and C was between 17.30% and 17.49%. The actual difference was 17.14%.

TABLE 7

PREDICTED ARREST RATES FOR DISCHARGEES OF DIFFERENT PROGRAMS
(Mean Values on Background Variables)

	Homes		Camps		STARTs		STAY	
	%	(N)	%	(N)	%	(N)	%	(N)
A	27	(58)	37	(158)	33	(47)	54	(88)
B	29	(42)	39	(159)	39	(62)		
C	31	(56)	40	(158)	56	(69)		
D	42	(60)	47	(176)				
E	46	(54)						

Since predicted arrest rate did not significantly differ for type of program, the result of a significant increment for Set 11a implies that there are program-to-program variations in predicted arrest rate without regard to type. This may involve variations within types and variations between programs of different types. The total amount of variation attributable to differences between individual programs, ignoring type, is the increment in predictiveness due to both Set 11 and 11a. This increment, was tested and found significant. ($F=2.15$, $df=13, 1155$ $p<.05$.)

From this perspective (program-to-program variation without regard to type) the individual programs that differ from predicted rates for the total group are of interest. Values of "t" were computed comparing the predicted arrest rate of each individual program with the mean of the predicted rates for all other programs.[1] The results indicated t-values above 1.96 for these programs: STAY ($t=2.90$), START C ($t=2.88$), Home A ($t=-2.13$). For individual tests, the first two t-values would be significant at the .005 level and the latter at the .05 level. It seems reasonable to conclude, on the basis of the significant increment of Set 11a and of these t-values, that within the study population dischargees of the STAY program and START C program had higher probabilities of being arrested in the post-discharge period than other dischargees in general, with the background variables of Sets 1 through 10 controlled, and that

[1] The formula used was $t=\frac{\bar{X}_a - \bar{X}_b}{S\sqrt{\frac{1}{N_a} + \frac{1}{144}\sum\frac{1}{N_b}}}$ where $\bar{X}_a$ refers to the predicted rate for the individual program tested, $\bar{X}_b$ refers to the mean of the predicted rates of all remaining programs, N_a refers to the number in the individual program tested, $\sum\frac{1}{N_b}$ to the sum of the reciprocals of numbers in all other programs, and S to the standard deviation of residuals.

this was not due to random influences. The findings also suggest that dischargees of Home A had lower probabilities of post-discharge arrest, controlling for the background variables of Sets 1 through 10.

Differences among Individual Programs in Commitment

Set 11a, representing the effects of individual programs, was also introduced into the analysis of commitment among the total study group. The increment to Sets 1 through 11 in predictiveness was .0040 which was not significant (F=0.55, df=9, 1155). Thus, unlike the findings for arrest, individual programs did not appear to vary significantly among themselves with respect to commitment rates of dischargees, controlling for the background variables.

Differences among Individual Programs in Nongraduation

The set of variables referring to individual programs within types (Set 11a) was also tested with respect to the predictiveness of nongraduation. The increment in predictiveness was found to be significant at the .01 level (F=3.93, df=9, 1208). The results indicated that within program types there was significant variation among individual programs in the ratio of nongraduates to graduates.

From the multiple regression equation after the entry of Set 11a predicted nongraduation rates[1] were computed for subjects discharged from the different programs with mean values for all background variables. The rates are shown on Table 8. Differences in rates were examined using the Newman-Keuls method. Rates for Homes A, C and E, did not differ significantly (among themselves); and rates for Homes B and D did not differ significantly

[1]It should be noted that the predicted nongraduation rates refer solely to subjects in the analysis, which excludes withdrawals.

(among themselves). Rates for each of the Homes A, C and E, differed significantly from each of the Homes B and D. For Camps, rates of Camps B, C and D did not differ significantly (among themselves); while the rate of Camp A was significantly different from each of the Camps B, C and D. Within STARTs, there were no significant differences between programs.

It may be seen in Table 8 that the direction of differences is such that Homes A, C and E have higher nongraduation rates than Homes B and D; and that Camp A had a higher nongraduation rate than Camps B, C and D.

Earlier, it had been found that nongraduation rates were related to program types. Home and STAY had higher nongraduation rates than Camp and START. The present findings add to the earlier ones in specifying differences within the Home and Camp types. The higher rate for Homes was due to Homes A, C and E, and not to Homes B and D; the lower rate for camps was due to Camps B, C and D and not to Camp A. All three START programs have relatively low nongraduation rates.

Despite the findings presented below of an association between nongraduation and elevated post-discharge arrest rate, there appears no simple relation between the findings regarding individual program differences in arrest and nongraduation. Home A which had the lowest predicted arrest rate of all the programs has the highest predicted nongraduation rate; and START C with the highest predicted arrest rate had a relatively low nongraduation rate.

Predictiveness of Background Characteristics with Programs Controlled

Since it was possible that the effects of programs may obscure or

TABLE 8

PREDICTED NONGRADUATION RATES FOR DISCHARGEES OF DIFFERENT PROGRAMS
(Mean Values on Background Variables)

	Homes		Camps		STARTs		STAY	
	%	(N)	%	(N)	%	(N)	%	(N)
A	59	(62)	41	(170)	27	(45)	40	(84)
B	25	(41)	26	(171)	30	(62)		
C	44	(62)	25	(176)	25	(69)		
D	22	(49)	24	(195)				
E	51	(54)						

explain the effects of the background characteristics on the outcome variables, the predictiveness of these characteristics was re-examined after Set 11a. At this point, all individual programs were represented in the analysis. The results of this examination indicated that all variables which had been previously found significantly predictive of arrest, commitment (among the total study group) and nongraduation (after Set 10) remained significantly predictive after Set 11a, with two exceptions. In the analysis of commitment, Present Petition B (No Petition versus Having a Petition) ceased to exhibit a significant t-score (t=1.55) while in the analysis of nongraduation the t-score for Number of Petitions emerged significant (t=2.23). One may conclude that the variables which were previously cited as predictive after Set 10 remained so, controlling for individual programs, with the one exception (i.e., Present Petition B) noted above. Also, Number of Previous Petitions which had exhibited ambiguous results in the previous attempts to assess its role as a predictor of nongraduation now appeared to be significantly predictive of nongraduation when individual programs are controlled.

Predictive Power after Set 11a

The multiple correlation coefficients after Set 11a provide an estimate of the predictive power obtained after knowing the individual programs from which subjects were discharged in addition to background characteristics. The multiple correlation coefficients (R) after Set 11a for arrest, commitment (total study group) and nongraduation were .30,

.27, and .28 respectively. Corrected for shrinkage these were .26, .25, and .24 respectively. The main difference between these figures and the coefficients after Set 10 (see page 13) is an increase in the ability to predict nongraduation. After Set 10, for nongraduation, R was .19 and corrected R was .15. As judged by corrected R^2 (the proportion of variance one expects to account for in another sample of similar youths) the predictive power more than doubled by taking into account the individual program from which a youth was discharged.[1] This result indicates the importance of taking into account the individual program to which a youth is admitted or discharged when predicting nongraduation.

Relation of Discharge Status to Arrest and Commitment

The relation of Discharge Status to arrest and commitment, controlling for the background variables in Sets 1 through 10 and the variables representing Type of Program (Set 11), was studied by adding variables representing Discharge Status into the multiple regression equation as Set 12. Discharge Status consisted of three categories: Graduates, Nongraduates, and all others (called Withdrawals). The two variables that represented Discharge Status were coded so as to compare (a) Graduates versus Nongraduates, and (b) Graduates versus Withdrawals. Results are given for Set 12 in Tables 1, 2 and 3.

[1] Corrected R^2 after Set 10: .022 after Set 11a: .056

As these tables show, Discharge Status significantly added to the preceding variables in Sets 1 through 11 in the prediction of arrest, commitment among arrested youth, and commitment among the total group. The t-values for the regression weights of the variable comparing Graduates and Nongraduates were significant in all three instances while the t-values for the variable comparing Graduates and Withdrawals were not significant in any of the analyses.

Differences in predicted arrest rates (holding constant all variables in Sets 1 through 11) were as follows: compared with Graduates, Nongraduates had a predicted arrest rate higher by a 15% percentage difference.

Differences in predicted commitment rate among arrested youth were: compared with Graduates, Nongraduates--12% higher. Differences in predicted commitment rate among the total group were: compared with Graduates, Nongraduates--14% higher.

The results indicate that Nongraduation was associated with higher arrest and commitment rates. For purposes of interpretation and comparison, it would be important to distinguish between (a) Nongraduates whose arrest and commitment arose as a result of actions that also led to discharge, (b) Nongraduates whose arrest and commitment occurred after they had returned to a normal living situation within their communities. For such a study more detailed information would be needed regarding the circumstances of a nongraduate's discharge, as well as a more detailed study of the records of arrest and commitment of the nongraduate after discharge.

Predictiveness of Background Variables with Discharge Status Controlled

The regression equations after Set 12 were examined to indicate the effect on the predictive value of the background variables in Sets 1 through 11 after Discharge Status entered the equation. In all but one instance individual variables with significant t-values prior to the entry of Discharge Status were significant after the entry of Discharge Status. In general, then, the predictive value of the background variables (with respect to arrest and commitment) was not achieved through the relation of the background variables to Discharge Status. The exception was School Status which ceased to be a significant predictor of commitment among the total group after the entry of Discharge Status. Its t-value at this point was -1.90, which however, is close to the significance level. From these findings one would conclude that the relation of School Status to commitment among the total population is partially due to its relation to graduation-nongraduation. However, because School Status was significantly predictive of commitment among arrested youth even after Discharge Status was controlled (t=-2.66) the variable may be considered as probably related to commitment (among the total group) independent of Discharge Status.

With Discharge Status and preceding sets controlled, Age at Admission contributed significantly to the predictiveness of commitment among the total study population (t=-1.99) and its contribution approached significance in the prediction of arrest (t=-1.76). Thus, Age at Admission appears to be a possible predictor of arrest and

commitment when youths are equated on the variables in Sets 1 through 13. The direction of the relation is negative; older subjects tend not to be committed or arrested.

Relation of Duration in Program to Arrest and Commitment

In the multiple regression equations used to analyze the relations of variables to arrest and commitment, Set 13 consisted of the single variable Duration in Program. (The program referred to is the program from which a youth obtained a final discharge.) After controlling for the background variables, Type of Program, and Discharge Status, there was no significant addition to the prediction of arrest or commitment among the total group as a result of adding Set 13; however, there was a significant increment to the prediction of commitment among arrested youth (see Tables 1, 2, 3). The direction of differences is such that those with longer program durations have higher predicted commitment rates (among subjects with arrest records).

The interaction of Discharge Status and Duration in Program on arrest and commitment was represented in the equations by Set 14. The results indicate whether the relation of Discharge Status to arrest or commitment was affected by Duration in Program or whether the relation of Duration in Program to arrest and commitment was affected by Discharge Status. In none of the analyses did this set contribute significantly to predictiveness.

These results suggest that duration in program may be positively related to commitment among arrested youth. Further findings on the interrelation of duration, commitment and type of program are given below.

Type of Program in Interaction with Background and Other Variables

Analyses using Format B (see page 9) were designed to study whether the relationship of Type of Program to arrest, commitment and nongraduation depended on the background characteristics of dischargees; and, in the case of arrest or commitment, on the discharge status or duration in program of these youths. This question was examined through the use of interaction terms in the multiple regression equations. The type of program STAY was eliminated from these analyses, which therefore pertained solely to the types Home, Camp and START.

Type of Program, Background Variables and Arrest

Table 9 provides a summary of results for the cumulative addition of sets of Format B in the prediction of arrest. Set 1 in this format contains the background variables at referral or admission. Thus, these variables were controlled in later analysis and differences among programs on these variables cannot account for results except through interaction effects.

These conclusions may be drawn from Table 9.

(1) The interactions of Type of Program with Age at Admission (Set 2) and of Type of Program with (a) Number of Previous Petitions, (b) School Behavior Problems, and (c) Source of Family Income (Set 3) did not add significantly to the prediction of arrest.

(2) There was a significant increment in the prediction of arrest due to the variables of Set 4. These represented the interaction of Type of Program and Present Petition.

TABLE 9

CUMULATIVE EFFECT OF INTERACTIONS OF PROGRAM TYPE WITH BACKGROUND AND OTHER CHARACTERISTICS ON ARREST
(N=1,099)

Set	Variables	Multiple R	Multiple R-Square	Increment in R-Square	F Ratio of Increment	Probability of F Ratio
1	*	.27	.07446	-	-	-
2	Type x Age at Admission	.27	.07482	.00036	0.21	N.S.
3	Type x Number Previous Petitions " x School Behavior Problems " x Source of Family Income	.28	.07994	.00512	0.99	N.S.
4	Type x Present Petition A " x Present Petition B " x Present Petition C	.30	.09099	.01106	2.16	p=.045
5	Type x Previous Corr. Inst. " x Current Remand	.31	.09359	.00260	0.76	N.S.
6	Type x Family Intactness " x Noncorr. Inst.	.32	.10106	.00747	2.19	p=.068
7	Type x Last Grade Completed " x School Status " x Employment	.33	.10609	.00502	0.98	N.S.
8	Type x Referral County	.33	.10610	.00002	0.01	N.S.
9	Type x Ethnicity A " x Ethnicity B	.34	,11671	.01060	3.13	.014

(Continued on following page.)

TABLE 9

CUMULATIVE EFFECT OF INTERACTIONS OF PROGRAM TYPE WITH BACKGROUND AND OTHER CHARACTERISTICS ON ARREST

(Continued from previous page.)

Set	Variables	Multiple R	Multiple R-Square	Increment in R-Square	F Ratio of Increment	Probability of F Ratio
10	Type x Admission Status A " x Admission Status B	.34	.11872	.00201	0.59	N.S.
11	Discharge Status A Discharge Status B Duration in Program	.36	.13139	.01267	5.04	.002
12	Type x Dicharge A	.37	.13630	.00491	1.47	N.S.
13	Type x Duration on Program	.37	.13866	.00236	1.41	N.S.

Note.--Set 1 consisted of the twenty-one variables comprising the components of the interaction terms in Sets 2 through 10. Type consisted of two variables representing the three program types Home, Camp, Start; there were thus two variables in Set 2, six variables in Set 3 etc.

Predicted arrest rates for a subject who had mean values on all the background variables but Present Petition and Program Type were computed from the multiple regression equation after Set 4.[1] They were as follows:

TABLE 10

PREDICTED ARREST RATES FROM EQUATION AFTER SET 4

	PINS[a]		JD		YO[b]		NONE	
	%	N	%	N	%	N	%	N
Home	21	77	38	42	45	40	40	111
Camp	40	176	51	201	38	172	36	102
START	57	22	44	43	49	110	*	3

[a]Includes Neglected Child.

[b]Includes adjudications for offenses after the age of 16 other than YO.

*Number is too small for a meaningful computation.

Table 10 indicates that the predicted arrest rates for subjects in different petition categories (but with average values on all other background variables) show different patterns for the different program types. Within Camps predicted rates were similar for Person in Need of Supervision (PINS), Youthful Offender (YO) and None, but higher for

[1]All preceding variables including the interactions represented by Sets 2 and 3 are controlled in this examination.

Juvenile Delinquent (JD).[1] Within Homes the PINS category shows a much lower rate than the other three petition categories (about one-half the rate) and the rates for the other three categories are roughly similar. Within the START type of program the PINS category shows a higher rate than the other two applicable categories, although in this type of program the number in the PINS category was very small (N=22). Examining the rates of each petition category across program types, the most striking differences are the rates in the PINS category: subjects of this category discharged from Homes have a predicted arrest rate about half that of Camps, and under half that of START.

The results given in Table 10, which are arrest rates corrected for differences among types of program in youth background characteristics (and for the two prior interaction effects) and pertain to hypothetical youths average on all background characteristics, may be compared to the actual arrest rates for the same youths in the same categories. These are given in Table 11. To the extent that program types differ in youth composition, and these differences obscure the interrelation of Type of Program, Present Petition and arrest, Table 11 should differ from Table 10. However, it is clear from Table 11 that (as in Table 10) PINS from Homes have a lower arrest rate compared to PINS from the other two program types (22% for Homes, 41% for the other two, combined).[2] Since these differences in the actual arrest rates correspond

[1] Although in the PINS and YO categories there are other adjudications (e.g., Neglected Child, Wayward Minor) the numbers of these are small and the categories may be taken to represent the PINS and YO adjudications.

[2] These differences are significant at the .003 level (X^2=9.00, df=1).

to the ones in Table 10, one may conclude that they are not attributable to differences among the types of program in the other youth background characteristics examined (i.e., in Set 1 of Format B). Also similar to Table 10, Table 11 shows that among Camp youths, JDs have the highest arrest rate. However, with respect to JDs versus other petition categories, there is less of an interaction effect in Table 11 (compared to Table 10) since in all three types of program the JDs have higher arrest rates than other petition categories, with the one exception of START JDs versus START PINS.

TABLE 11

ARREST RATES BY TYPE OF PROGRAM AND PRESENT PETITION

	PINS[a]		JD		YO[b]		NONE	
	%	N	%	N	%	N	%	N
Home	22	77	40	42	37	40	29	111
Camp	39	176	54	201	40	172	29	102
START	64	22	49	43	44	110	*	3

[a] Includes Neglected Child.

[b] Includes adjudications for offenses after the age of 16 other than YO.

* Number is too small for a meaningful computation.

(3) The interactions of Type of Program with (a) Length of Previous Correctional Institutionalization and (b) Current Remand, represented by Set 5 did not add significantly to the preceding sets in the predictiveness of arrest.

(4) The interactions of Type of Program with (a) Family Intactness, and (b) Previous Noncorrectional Institutionalization,represented by Set 6, did not add significantly to the preceding sets in the predictivieness of arrest. However, the increment approached significance (p=.07) and may be worth noting.[1]

Judging by the probability level of the regression weights, it was primarily the variables representing Previous Noncorrectional Institutionalization (NCI) that were responsible for the significant interaction effect.[2] Table 12 provides the predicted arrest rates by Type of Program and Noncorrectional Institutionalization computed from the equation after Set 6 with mean values for the other background variables.[3]

TABLE 12

PREDICTED ARREST RATES FROM EQUATION AFTER SET 6

	Noncorrectional Institutionalization - Yes		Noncorrectional Institutionalization - No	
	%	N	%	N
Home	30	122	38	148
Camp	50	138	41	513
START	60	45	53	133

[1]Findings for this set are of interest because the Home model is oriented to youths who need a substitute home setting.

[2]The probability was .05 and .15 for the two variables representing the interaction of Previous Noncorrectional Institutionalization with Type of Program; .38 and .21 for the two variables representing the interaction of Family Intactness and Type of Program.

[3]All preceding variables including interaction effects are controlled in this examination.

For subjects average on all background variables, the table indicates a lower predicted arrest rate for Home dischargees with previous noncorrectional institutionalization than for Home dischargees without previous noncorrectional institutionalization, whereas Camp and START subjects with previous NCI have higher predicted arrest rates than those without previous NCI.

These differences are similar to differences in the actual arrest rates of these subjects given in Table 13. In the table no variables are controlled. The results of Table 12 and 13 suggest that youths with previous NCI may be expected to have lower arrest rates if discharged from Homes than from the other types of program.[1]

TABLE 13

ARREST RATES BY TYPE OF PROGRAM AND PREVIOUS NONCORRECTIONAL INSTITUTIONALIZATION

	Noncorrectional Institutionalization - Yes		Noncorrectional Institutionalization - No	
	%	N	%	N
Home	25	122	34	148
Camp	49	138	41	513
START	53	45	50	133

[1]For subjects with previous NCI the difference in arrest rate between Homes and the other types of program combined is significant at the .001 level (X^2=19.32, df=1).

(5) The interactions of Type of Program with (a) Last Grade Completed, (b) School Status and (c) Employment, represented by Set 7, and Type of Program with Referral County (Set 8) did not add significantly to the prediction of arrest.

(6) The interactions of Type of Program and the two variables representing Ethnicity (Set 9) added significantly to all the preceding variables in the prediction of arrest.

Using the equation after Set 9 to derive predicted arrest rates, with mean values for all other background variables, Table 14 was derived.[1]

TABLE 14

PREDICTED ARREST RATES FROM EQUATION AFTER SET 9

	B		W		PR & OTHERS	
	%	N	%	N	%	N
Home	34	94	39	153	44	23
Camp	41	197	45	386	26	68
START	65	79	49	91	*	8

*Number is too small for a meaningful computation.

The table indicates that dischargees from Homes had slightly higher predicted arrest rates if they were in the Puerto Rican and Other

[1]All preceding variables including interaction effects are controlled in this examination.

category than if they were Black or White; whereas in Camps the predicted rate for this category was much lower than for the other ethnic categories. Also, whereas the predicted differences in arrest rate between Black and White show a higher rate for White than Black in Homes and Camps, they show a lower rate for White than Black in STARTs. Examining rates across program types, the predicted arrest rate for Blacks discharged from Homes appears much lower than for Blacks discharged from STARTs and somewhat lower than Blacks discharged from Camps.

The predicted arrest rates of Table 14 may be compared with the actual arrest rates for the same subject and categories, given in Table 15. Here no variables are controlled. In the actual rates, Blacks exceed Whites in each of the types of program but, as in Table 14, the difference obtained by subtracting the rate for Whites from the rate for Blacks is lowest for Homes and highest for STARTs. Also as in Table 14, the "PR and Others" category is the ethnic category with the highest arrest rate for Homes but with the lowest arrest rate in Camps. Since these actual differences appear also in Table 14, one cannot attribute them to differences among programs in the background characteristics controlled in the analysis of Table 14.

TABLE 15

ARREST RATES BY TYPE OF PROGRAM AND ETHNICITY

	B		W		PR & Others	
	%	N	%	N	%	N
Home	30	94	29	153	39	23
Camp	50	197	40	386	32	68
START	56	79	38	91	*	8

*Number is too small for a meaningful computation.

(7) The interaction of Type of Program with the two variables representing Admission Status (Set 10), with the two variables representing Discharge Status (Set 12) and with Duration in Program (Set 13) did not add significantly to the predictiveness of arrest.

The findings therefore suggest that the interactions of Type of Program with the variables representing Present Petition, Previous Noncorrectional Institutionalization and Ethnicity may add to the predictiveness of arrest. They should be cautiously interpreted, however, because in eleven significant tests, one would expect to have .55 of a significant result at the .05 level and 1.10 significant results at the .10 level simply as a chance result. Thus, it is not unlikely that one or two of these suggested interactions do not, in fact, represent systematic differences. On the other hand, it is likely that at least one of these results does represent a systematic difference

Type of Program, Background Variables and Commitment

A similar analysis was carried out with respect to commitment among the total study group. A summary of results is given in Table 16.

Interactions of background variables and Type of Program did not significantly add to the prediction of commitment. The only significant increment due to the addition of sets containing interaction terms was that for the last set, representing Duration in Program.

For a subject equated on all other variables, the commitment rate would be predicted to go down with longer program duration if he was discharged from a Home (by 0.2% for each month) and up if he was discharged

TABLE 16

CUMULATIVE EFFECT OF INTERACTIONS OF PROGRAM TYPE WITH BACKGROUND AND OTHER CHARACTERISTICS ON COMMITMENT

Set	Variables	Multiple R	Multiple R-Square	Increment in R-Square	F Ratio of Increment	Probability of F Ratio
1	*	.27	.07358	-	-	-
2	Type x Age at Admission	.27	.07387	.00030	0.17	N.S.
3	Type x Number Previous Petitions " x School Behavior Problems " x Source of Family Income	.27	.07507	.00120	0.23	N.S.
4	Type x Present Petition A " x Present Petition B " x Present Petition C	.28	.08095	.00588	1.13	N.S.
5	Type x Previous Corr. Inst. " x Current Remand	.29	.08476	.00381	1.10	N.S
6	Type x Family Intactness " x Noncorr. Inst.	.30	.08818	.00342	0.99	N.S.
7	Type x Last Grade Completed " x School Status " x Employment	.31	.09303	.00485	0.93	N.S.
8	Type x Referral County	.31	.09629	.00325	1.88	N.S.
9	Type x Ethnicity A " x Ethnicity B	.31	.09814	.00186	0.54	N.S.

(Continued on following page.)

TABLE 16

CUMULATIVE EFFECT OF INTERACTIONS OF PROGRAM TYPE WITH BACKGROUND AND OTHER CHARACTERISTICS ON COMMITMENT

(Continued from previous page.)

Set	Variables	Multiple R	Multiple R-Square	Increment in R-Square	F Ratio of Increment	Probability of F Ratio
10	Type x Admission Status A	.32	.09973	.00159	0.46	N.S.
	" x Admission Status B					
11	Discharge Status A	.34	.11888	.01915	7.51	p=.00006
	Discharge Status B					
	Duration in Program					
12	Type x Discharge Status A	.35	.12287	.00399	1.17	N.S.
13	Type x Duration in Program	.36	.12810	.00523	3.09	p=.046

Note.--Set 1 consisted of the twenty-one variables comprising the components of the interaction terms in Sets 2 through 10. Type consisted of two variables representing the three program types Home, Camp, Start; there were thus two variables in Set 2, six variables in Set 3 etc.

from a Camp (by 1.5% for each month) or START (by 1.9% for each month).[1] These results suggest that within Camps and STARTs, youths equated on the background variables and Discharge Status may tend to have higher commitment rates if they stay longer than shorter durations but that this tendency does not apply to Home dischargees.

Since this was the sole significant result in eleven tests of interaction sets, it would not be unlikely if the results represented chance effects rather than a systematic relation. However, earlier findings suggested that there might be some relation between program duration and commitment (see page 53), i.e., among subjects with post discharge arrests, those with longer duration were more likely to be committed, controlling for background and other variables. The set of findings suggests that program duration may be predictive of commitment for dischargees of Camps and STARTs.

Type of Program, Background Variables and Nongraduation

A similar analysis as the preceding ones was undertaken with respect to nongraduation. (In this analysis as in the preceding analysis of nongraduation, all subjects with the discharge status Withdrawal were excluded; while subjects discharged prior to 16 were included.) The sets of independent variables included all those in Format B with the exception of Sets 11-13. Results of the analysis are summarized in Table 17. There was no significant increment due to the addition of any of the sets.

[1]The regression weight for Duration in Program was .0105; the interaction terms indicated that .0127 x Duration was to be subtracted if a subject was discharged from a Home; .0043 x Duration was to be added if a subject was discharged from a Camp; and .0084 x Duration was to be added if a subject was discharged from a START.

TABLE 17

CUMULATIVE EFFECT OF INTERACTIONS OF PROGRAM TYPE WITH BACKGROUND CHARACTERISTICS ON NONGRADUATION
(N=1,156)

Set	Variables	Multiple R	Multiple R-Square	Increment in R-Square	F Ratio of Increment	Probability of F Ratio
1	*	.21	.04247	-	-	-
2	Type x Age at Admission	.21	.04364	.00116	0.69	N.S.
3	Type x Number Previous Petitions " x School Behavior Problems " x Source of Family Income	.22	.04882	.00518	1.02	N.S.
4	Type x Present Petition A " x Present Petition B " x Present Petition C	.24	.05931	.01049	2.08	N.S.
5	Type x Previous Corr. Inst. " x Current Remand	.25	.06328	.00397	1.18	N.S.
6	Type x Family Intactness " x Noncorr. Inst.	.26	.06784	.00457	1.36	N.S.
7	Type x Last Grade Completed " x School Status " x Employment	.27	.07228	.00444	0.88	N.S.
8	Type x Referral County	.27	.07409	.00181	1.08	N.S.

(Continued on following page.)

TABLE 17

CUMULATIVE EFFECT OF INTERACTIONS OF PROGRAM TYPE WITH BACKGROUND CHARACTERISTICS ON NONGRADUATION

(Continued from previous page.)

Set	Variables	Multiple R	Multiple R-Square	Increment in R-Square	F Ratio of Increment	Probability of F Ratio
9	Type x Ethnicity A " x Ethnicity B	.28	.07794	.00385	1.15	N.S.
10	Type x Admission Status A " x Admission Status B	.29	.08334	.00540	1.61	N.S.

Note.-- Set 1 consisted of the twenty-one variables comprising the components of the interaction terms in Sets 2 through 10. Type consisted of two variables representing the three program types Home, Camp, Start; there were thus two variables in Set 2, six variables in Set 3 etc.

DISCUSSION AND CONCLUSIONS

Certain of the limitations of the present study should be noted. First, dischargees with missing information on the analyzed items of the intake or discharge forms were excluded from all analyses; and dischargees who were discharged under the age of 16 were excluded from analyses of arrest and commitment. It is possible that inclusion of these youths could have altered some of the findings. Secondly, the independent variables used in the study represented simply categorized characteristics from the intake or discharge forms. It is possible that other ways of coding items could have enhanced prediction. For example, one would expect that coding subject's area of residence with respect to various indices of neighborhood "pathology" (e.g., delinquency rate of area) would have enhanced the prediction of arrest. Thirdly, the power of the statistical tests was not sufficient in some of the analyses to discern differences of interest, despite the size of the sample. That is, an even larger sample would have been required to have confidence that all differences of practical importance or of research interest would be detected by the analyses. Fourthly, in terms of developing stable prediction instruments the significant results of the study require validation and confirmation by studies of more recent cohorts of dischargees to determine whether they represent systematic relationships enduring over time.

Within the context of the limitations of the study, the answers to the questions of the study may be stated. The first question concerned the extent to which one can predict from the aggregate of background characteristics routinely recorded at time of referral or admission. For predictions of post-discharge arrest or commitment the corrected multiple correlation coefficients were in the range .21-.24 and this would represent an estimate of the predictive power of the aggregate of background characteristics of the intake form when simply coded. This may be taken as a point of comparison by which to judge the value of future revisions of the intake form (currently planned). The corrected multiple correlation coefficient in predicting nongraduation was lower than that for arrest or commitment (the coefficient was .15). Since nongraduation rates varied greatly from one individual program to another (controlling for background variables), the addition of variables representing subjects' individual programs considerably improved the ability to predict nongraduation. It is also possible that the relation of intake characteristics to nongraduation may depend largely on the individual program to which a youth is assigned.

A second question of the study concerned which background characteristics were related to outcome (arrest, commitment, nongraduation) when the others were controlled, and which were derivative and ceased to be related when other variables were controlled. Results of the analyses are summarized in Table 18. For the three types of outcome, different sets of background variables appeared uniquely predictive when other background variables were controlled. In the case of arrest, these were Number of Previous Petitions,

TABLE 18

SUMMARY OF BACKGROUND VARIABLES FOUND RELATED TO OUTCOME IN MULTIPLE REGRESSION ANALYSES

Arrest	Commitment (Among Arrested)	Commitment (Total Group)	Nongraduation
(A) Number of Previous Petitions	(A) Length of Previous Correctional Institutionalization	(A) Number of Previous Petitions	(A) Referral County
(A) School Behavior Problems	(A) School Status	(A) Present Petition	(A) Family Intactness
(A) Source of Family Income	(B) Number of Previous Petitions	(A) Current Remand	(C_2) School Status
(A) Present Petition		(C_1) School Status	(D) Number of Previous Petitions
(A) Current Remand		(E) Length of Previous Correctionalization	

Coding Classification -

A = Either (1) a single variable constituting a single-variable set, significant at entry and also significant after Set 10; (2) a single variable in a multiple-variable set, with the set significant at entry, and the variable significant after the set's entry as well as after Set 10; (3) a multiple variable set, referring to a single study variable (e.g., Present Petition) significant at entry, with at least one variable in the set also significant after Set 10.

B = This variable fell short of the criteria for "A" solely because it was not significant after Set 10; however, its drop in t-value was principally due to variables not meeting the criteria for "A".

C_1 = This variable fell short of the criteria for "A" solely because the set of which it was a member was not significant at entry. (Since it met the "A" criteria in the "Commitment /Among Arrested/" column and was not negatively related to Arrest, it is presumed to be a unique predictor of Commitment /Total Group/).

C_2 = This variable belongs in "C_1" for the second analysis of nongraduation; in the first analysis of nongraduation its set was not significant at entry, and the variable's t-value was not significant at entry although its t-value was significant after Set 10. The variable's importance as a predictor of Nongraduation depends on controlling for Referral County.

D = This variable was in a set significant at entry (first analysis), and the variable's t-value was significant at entry. Its t-value was not significant after Set 10 (due principally to variables classified as "A") but was significant again after Set 11a (i.e., with individual programs controlled).

E = This variable constituted a single-variable set, significant at entry, but not significant after Set 10 due to variables classified as "A".

School Behavior Problems, Source of Family Income, Present Petition and Current Remand. In the case of commitment among youths with post-discharge arrests, these were Length of Previous Correctional Institutionalization, School Status and, possibly, Number of Previous Petitions. In the case of commitment among youths with or without post-discharge arrest records they were Number of Previous Petitions, Present Petition, Current Remand and School Status. In the case of nongraduation they were Referral County, Family Intactness and, possibly, School Status and Number of Previous Petitions.

The variables related to post-discharge arrest appear to be indicators of previous rule-violating behavior of the youth (in the school, community or home) and of his family's economic need. Youths were more likely to be arrested if they had at time of referral a history of court adjudications (number of previous petitions), had an adjudication at time of referral that implied the commission of acts which if committed by an adult would be a crime (Juvenile Delinquent, Youthful Offender), had been in remand at time of referral (suggesting the court feared further misconduct) and had exhibited truancy or acting-out problems in their prior school participation. These characteristics appear to be indicators of both frequency and seriousness of rule-violating behavior within societal, school or home settings.[1] Generalizing from these findings, one would hypothesize that youths who exhibited marked rule-violating behavior in the programs would also have a higher likelihood of future arrest. The findings in this study indicating a positive relation between nongraduation and post-discharge arrest are in accord with

[1] The home setting may be involved since a Person in Need of Supervision petition may imply behavior in violation of parental rules, i.e., "ungovernable behavior."

this hypothesis but the relation might also be due to the fact that the same acts that led to discharge also led to arrest. In addition to the characteristics indicative of past rule-violation, youths from families whose principal source of income was public or private financial assistance were also more likely to have post-discharge arrests. One might postulate as an intervening variable to explain this relationship, (as well as those mentioned above), an absence of perceived incentive on the part of the youth to abide by societal rules, assuming that the psychological and material bases for the fostering of such incentive is more likely to be absent in homes with extreme financial deprivation than in more economically secure homes.[1]

The variables related to commitment among arrested youth differed from those related to arrest. Length of Previous Correctional Institutionalization and School Status were unique predictors of commitment but not arrest. Youths who were not enrolled in school at time of referral (i.e., who had been suspended, expelled or dropped out) were more likely to be committed if arrested. The variable Length of Previous Correctional Institutionalization was the sum of durations of all detentions and commitments prior to referral (excluding remand at time of referral).

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[1] This assumption is reasonable if within economically deprived homes a youth (a) is less likely to have had experiences associating pro-social behavior with positive benefits, and/or (b) is less likely to have as family members models of identification who exemplify the relation between societal rule-adherence and personal success; both of which imply (c) the youth is less likely to expect future positive experiences to be conditional on his abiding by societal rules.

It is possible that these variables are related to seriousness of offenses for which youths were arrested. If not, it seems plausible that judicial decision were influenced by official records representing past institutional reactions to rule-violation and/or presumed to indicate a lack of competence on the part of youth in meeting societal requirements. However, the finding that Current Remand was a unique predictor of arrest, while Length of Previous Correctional Institutionalization was not, suggests that more recent detentions or commitments may be a more valid predictor of future misconduct than past ones. Similarly, the finding that School Behavior Problems predicted to arrest while School Status did not (even at the zero-order level, i.e., when no variables were controlled) suggests that while the assumption that past school behavior problems may be used to predict future misconduct is a correct one, a record of suspension, expulsion or dropping-out from school may not be a good indicator of those school problems related to recidivism.

The variables related to arrest and commitment (among arrested youth) suggest the very general proposition that the forms of behavior and reactions to behavior involved in these events are repetitive. In the case of delinquent acts, previous delinquent acts of the youth are predictive. In the case of institutional sanctions against delinquent acts, previous institutional sanctions are predictive. The extent to which these two forms of repetition are dependent, the nature of this dependence, and the extent to which they are independent comprise interesting questions.

As a research issue, one would want to know to what extent the variables related to commitment (and to different lengths of commitment) are related to seriousness of post-discharge offenses, to what extent they represent the bases of judge's predictions about the youth's future delinquency, or other considerations in deciding on commitment. The first part of this question could be answered within the approach of this study by determining the predictors of commitment (and of different lengths) with variables representing seriousness of past-discharge offenses included in the total set of predictor variables. The findings also raise the question of the extent to which the probability of these repetitive events tends to increase or decrease with each repetition (feedback effects). If the probability increases, one might expect to find a speeding-up process whereby the interval of time between arrests or commitments tends to increase, excluding time during which a youth is in custody.

The variables most strongly related to nongraduation were mainly non-offense variables. Youths from New York City, youths whose normal living situation did not include both parents, and youths not enrolled in school at time of referral were most likely not to graduate (i.e., abscond, be dismissed by staff, be removed by court action). When individual programs were taken into account, the number of previous petitions a youth had at referral also predicted to nongraduation. It would appear that a different process was involved in nongraduation than in arrest or commitment. The strongest of the relationships appeared to be that between referral from New York City and nongraduation. Either New York City youths are different from upstate youths in personality attitudes, or adaptability to the programs or their incentive to remain within a

program may be different. It has been suggested that the judicial system outside New York City (which has jurisdiction over probationary youths referred from outside New York City) is more likely to impose negative sanctions as a result of nongraduation than the judicial system of New York City (which has jurisdiction over probationary youths referred from New York City) and that youths from New York City are more likely to have peer group memberships in the city that attract them.[1] These differences could lead to higher nongraduation rates for referrals from New York City. The association of non-intact families and non-enrollment in school with higher nongraduation rates may involve the dimension in all three variables implying the presence of difficulties and deficiencies within adult-structured group settings, i.e., within the family, schoolroom and treatment program. That is, one might expect youths who previously had relatively satisfying experiences within adult-structured group settings (e.g., family and school) to be more likely to abide by the rules of, and remain within, the treatment program.

Many characteristics were significantly related to arrest, commitment and nongraduation with no variables controlled that ceased to be significantly related after others were controlled. The tendency of black youths to have heightened arrest rates completely ceased to exist when the other characteristics in the analysis were controlled. Thus, the differences between black youths and nonblack youths in post-discharge arrest was completely accounted for by differences on the other background

[1]We are indebted to Mr. Kamel Sukhon for these interpretations.

characteristics. The tendency of youths from New York City to have higher arrest rates ceased to be statistically significant when the other characteristics were controlled. In the analysis of nongraduation there were seven variables significantly related to nongraduation with no variables controlled, of which five ceased to be significantly related when the other variables were controlled; the tendency of youths with longer durations in previous correctionalizations, of youths from families relying on external financial assistance, and of youths who were black to have higher nongraduation rates almost completely vanished with other variables controlled. On the other hand, the association of enrollment in school at time of referral with lower probability of nongraduation was not apparent when other variables were not controlled. The ability to isolate out those relationships which are derivative of others from those that are not, and relationships which may not be apparent because of the uncontrolled presence of other variables, illustrates the power of the multivariate approach in this area of inquiry.

A further question of the study was whether differences among types of programs or individual programs would be found when background characteristics were controlled. In the case of arrest, an interesting finding was that differences among types of program were not significant while differences among individual programs were significant. In the analysis of nongraduation, both kinds of differences were significant; while in the analysis of commitment neither kind of difference was significant. The differences found may be due to youth characteristics

not controlled in the study, to differential effects of the programs, or, in the case of nongraduation, to differences in how discharge status is recorded. The findings suggest that differences among individual programs may be more important than differences among official types. They thereby point to the need for better ways of describing and classifying programs. If the differences in dischargee arrest rate among individual programs were due to differential program effects, the findings would imply that program characteristics are relevant to post-discharge outcome. (While this is the hope of any rehabilitation program, one has no right to assume it to be so without sufficient evidence.)

A problem arising in the analysis of individual program differences is that despite the relatively large number of subjects in the overall analysis (from a conventional research point of view) they were still too small for all noteworthy program differences to be established as statistically reliable. This is largely due to the fact that relatively small differences from the viewpoint of conventional research may be of great practical importance when the question is that of reducing the number of criminal offenders. If, for example, hypothetical Program X were 5% below the average for all programs in the two-year post-discharge arrest rate of dischargees, one would desire to establish this difference as statistically reliable since this would imply a 12% reduction in recidivism from that expected;[1] and this represents in the author's

[1] That is, 5% ÷ 40%=12%. (The approximate two-year post-discharge arrest rate for all programs combined was 40%)

opinion a noteworthy program difference. For statistical tests to have this power, larger samples of subjects would be required than in the present analysis. However, this would necessitate using as subjects dischargees over a very long time span and with it the dubious assumption that programs do not change over time. As an alternative strategy in evaluating these programs, a more efficacious approach in the long run would be the attempt to establish for the programs as a totality scaled dimensions on which each could be evaluated. Rather than attempting to test the effects of many individual programs, (with tests limited by the small numbers in each individual program) one would attempt to test the effects of program dimensions applicable to all programs. Besides ameliorating the problem of limitations in the power of statistical tests, the approach would be most suitable to the task of relating program aspects to outcome, i.e., explanation. In order to explain findings of program differences, however they are determined, it is necessary that measures of program characteristics be developed and applied. In the case of the programs in this study, the ability to infer the presence of program effects would be facilitated by developing these measures.

A fourth question of the study concerned whether different types of youth had different outcome probabilities if discharged from a Home versus Camp versus START. In general, there were few significant results in the many interaction tests. This was probably due, in part,

to the lessened power of the significance tests when multiple comparisons are simultaneously tested, i.e., noteworthy differences would not be significant unless there were a much larger number of subjects in the analysis or unless, for theoretical or other reasons, fewer comparisons were involved in the test. Thus, in studies of new cohorts, tests should be focused on those results significant (or almost significant) in the present study. On the basis of present findings, one would hypothesize these differences, controlling for the background variables of this study: (a) dischargees with Person In Need of Supervision petitions have lower post-discharge arrest rates if discharged from a Home, than a Camp or START, (b) dischargees from Camps with Juvenile Delinquent petitions have higher post-discharge arrest rates compared to other Camp dischargees, (c) youths with a history of noncorrectional institutionalization have a lower arrest rate if discharged from a Home than a Camp or START, (d) Puerto Rican youths have a lower arrest rate if discharged from a Camp than a Home, (e) black youths from STARTs have higher post-discharge arrest rates than white youths compared to black-white differences in Homes and Camps, (f) program duration is more strongly associated with commitment rates (in a positive direction) if a youth is discharged from a Camp or START than from a Home. Because of the few significant results compared to the many tests in this phase of the analysis, it is not unlikely that at least some of the relationships found in this phase of analysis were due to chance, and studies of other cohorts are required to confirm them.

Another possible reason for the absence of significant differences in this phase of the analysis has been mentioned above - there may be greater differences within than among types of program with respect to program features bearing on outcome. The question of which youths fare better when discharged from different types of program is not a meaningful question if the programs subsumed under the different "types" are not sufficiently homogeneous with respect to features bearing on outcome.

The last question of the study concerned the relation of discharge status to (post-discharge) arrest and commitment and to the predictors of arrest and commitment. The findings indicated that the predictive power of the background variables found uniquely related to arrest and commitment was not achieved through an intervening relation with discharge status. That is, with discharge status controlled, these variables appeared to remain predictive of arrest or commitment. The findings also indicated that nongraduation was associated with substantially higher arrest and commitment rates (controlling for background variables). They, therefore imply that efforts to reduce nongraduation might have an effect in reducing post-discharge arrest and commitment of dischargees. This would be the case if (a) acts which lead to nongraduation also lead to arrest or commitment (b) program treatment is efficacious and nongraduation means a premature termination of treatment (c) judges are more likely to commit youths with a record of nongraduation (d) the meaning of nongraduation to the youth, or the sanctions imposed as a consequence of nongraduation, are such as to raise the probability of his committing future offenses.

SUMMARY

The present study examined within a multivariate framework the utility of information collected on intake and discharge forms in the prediction of three selected outcomes: arrest and commitment after discharge, and nongraduation (absconding, dismissed by staff, removed by court action). The information from intake and discharge forms included background characteristics of youths at time of referral and admission, the program from which a youth received his final discharge, final discharge status and duration in last program. Subjects in the analyses were youths discharged from the Home, Camp, START or STAY treatment centers from April, 1966 through December, 1968. Youths with missing information on the analyzed characteristics were excluded from all analyses, and youths discharged prior to the age of 16 (for whom complete data on post-discharge arrest or commitment were not available) were excluded from the analyses of arrest and commitment. The sources of data were intake and discharge forms of the Division for Youth, and arrest and commitment information from the New York State Identification and Intelligence System.

The study sought to separate out unique predictors of arrest, commitment and nongraduation, "unique" in the sense that they remained predictive when other variables were controlled; to assess the extent of predictiveness of the aggregate of youth background characteristics examined; to study differences among types of program and individual programs in outcome, with youth background characteristics controlled;

to study whether different types of youth had different probabilities of outcome if discharged from different types of program; and to examine the interrelation of discharge status, background characteristics, arrest and commitment.

It was found that different sets of background characteristics were unique predictors of arrest, commitment and nongraduation. For arrest, unique predictors were the number of previous petitions a youth had, whether or not he had school behavior problems, whether he had been in remand at time of referral, his petition status at time of referral, and whether or not his family's principal source of income was public or private assistance. For commitment, unique predictors were the number of previous petitions a youth had, whether he had been in remand at time of referral, his petition status at time of referral and whether or not he had been enrolled in school at time of referral. When the analysis was limited to subjects with post-discharge arrest records only, the unique predictors of commitment were extent of duration of previous correctional institutionalizations, school enrollment at time of referral, and, possibly, the number of previous petitions. For nongraduation, unique predictors were whether or not a youth came from New York City, whether or not he was living with both parents and (with lesser confidence) whether or not he had been enrolled in school.

The extent of prediction due to the aggregate of background characteristics examined was indicated by the corrected multiple correlation coefficient. This was in the range of .15-.24 for the different outcomes.

Knowledge of the individual program from which a youth was discharged increased these coefficients to .24-.26.

In examining the question of differences among programs it was found that for arrest there were no significant differences among types of program (Home, Camp, START, STAY), controlling for youth background characteristics, but that there were significant variations among individual programs. For commitment, there were no significant differences among types of program or among individual programs. For nongraduation, there were significant differences both among types of program and among individual programs within types.

Tests of whether different types of youth had different probabilities of outcome if discharged from different programs suggested that there may be differences in arrest rate for youths of different ethnic groups, of different petition status, and of different noncorrectional institutionalization experience, which depended on the type of program from which they were discharged.

The examination of the interrelation of background characteristics, discharge status, arrest and commitment indicated that the predictors of arrest or commitment did not achieve their predictive power through their relation to discharge status; and that nongraduation was associated with higher probability of arrest and commitment, controlling for background characteristics.

The present study was part of an ongoing series of studies with the aim of developing instruments that will predict to outcomes such as non-

CONTINUED

1 OF 2

graduation, post-discharge arrest, and post-discharge commitment; of better understanding these outcomes; and of assessing the effects of programs on outcome. The findings provide encouragement to these efforts in that the relatively simple items of the intake form have been shown to have predictive value. In the information system currently in the process of design this type of information will be augmented by psychological items, e.g., personality and achievement characteristics, and the demographic and background items will be revised to have greater predictive power, e.g., by including census tract of residence. These revisions, along with efforts to obtain information on youths while in program and thereafter, and on program characteristics, should provide a good basis for prediction.

With respect to assessment of program effect, the findings of the study indicate individual program differences in the post-discharge arrest of dischargees, controlling for the background characteristics examined in the study. It is possible that these differences were due to differences in youth composition uncontrolled in the study (e.g., personality differences), to differential program effect, or to random factors. Efforts to increase the predictive power of intake information, to examine in-program variables in their relation to both intake characteristics and ultimate outcome, to develop and apply measures of program characteristics, to refine outcome criteria, and to maintain continued study of new cohorts of dischargees are needed to increase the power of detecting program effects and to establish the reasons for these effects.

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Appendix A
INTAKE BUREAU DATA FORM

YOUTH'S NAME _____ DATE ASSIGNED _____
LAST FIRST

INTAKE WORKER _____

1-5. Log Number _ _ _ _ _

6-9. Referral Date _ _ ( ) _ _
Month Day Year

10. Deck # 1

11-12. Referral County _ _

(_____)
(County)

13. Type of Referral Agency _
1. Family Court
2. Criminal Court
3. Supreme Court
4. Other Court
5. Police Department
6. School
7. Youth Board
8. Dept. of Welfare
9. Social Agency
0. Self-or parental referral

14. Type _
1. Voluntary
2. Probation

15. Sex _
1. Male
2. Female

16-21. Birthdate _ _/ _ _/ _ _
Month Day Year

22-23. Age at referral date _ _

24. Race or ethnic group _
1. White
2. Negro
3. Puerto Rican
4. Oriental
5. American Indian
6. Other

25. Religion _
1. Roman Catholic
2. Greek Orthodox
3. Protestant
4. Jewish
5. Other
6. None

26. Present Petition or status _
1. Person in Need of Supervision (PINS)
2. Juvenile Delinquent (J.D. or D.C.)
3. Wayward Minor (W.M.)
4. Youthful Offender (Y.O.)
5. Convicted of criminal charge
6. Neglected Child (N.C.)
0. None

27-28. Current Complaint _ _
00. None
11. Murder or Manslaughter
12. Forcible Rape
13. Other Sex Offense(s)
14. Robbery
15. Assault
16. Burglary-Breaking, Entering
17. Auto Theft
18. Other Larceny
19. Weapons-Carrying, Possessing
20. Violation of Drug Laws
21. Disorderly Conduct
22. Vandalism
23. Traffic Offense(s)
24. Other Felony or Misdemeanor
31. Running Away
32. Truancy
33. Ungovernable Behavior
34. Possession or Drinking of Liquor
41. Neglect

29. Current Legal Status _
1. Probation- no V.O.P.* Order
2. Probation- V.O.P. Order
3. Probation Intake
4. Referred prior to final disposition
0. None of the above
(*V.O.P.- " Violation of Probation" Order)

30. Current Remand _
0. No
1. Yes

31. # of Previous Petitions
0. None
1. One
2. Two
3. Three or more

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Note.--Items and codes from intake and discharge forms used in this study are as given in the forms of Appendix A, with the exception of codes designating facility, which correspond to the facilities in existence during the time of the study.

32. Total # of Previous Arrests __
- 0. None
- 1. One
- 2. Two
- 3. Three
- 4. Four
- 5. Five or more

33. Previous Correction Institution __
- 0. None
- 1. Remand or Detention
- 2. City Reformatory
- 3. State Training School
- 4. State Reformatory
- 5. State Prison
- 6. State Hospital for Criminally Insane
- 7. Work House
- 8. Other Institution

34. Length of Correctional Institution __
- 0. None
- 1. Less than one month
- 2. One month to six months
- 3. Over six months to 1 year
- 4. Over 1 year to 2 years
- 5. Over 2 years to 5 years
- 6. Over 5 years

35. Previous other Institutionalization __
- 0. None
- 1. Child-caring Institution
- 2. Mental Hospital
- 3. Foster Home
- 4. Other Hospital
- 5. State School
- 6. Other Institution
- 7. Residential Treatment Center

36. Length of other Institutionalization __
- 0. None
- 1. Less than one month
- 2. One month to six months
- 3. Over six months to 1 year
- 4. Over 1 year to 2 years
- 5. Over 2 years to 5 years
- 6. Over five years

37. Number of Foster Placements __
- 0. None
- 1. One
- 2. Two
- 3. Three
- 4. Four
- 5. Five or more

38. I.Q. Range __
- 1. Very Superior (130+)
- 2. Superior (120-129)
- 3. Bright Normal (110-119)
- 4. Normal or Average (90-109)
- 5. Dull Normal (80-89)
- 6. Borderline (70-79)
- 7. Defective (69 and below)

39. Last Grade Completed __
- 1. Sixth Grade or less
- 2. Seventh Grade
- 3. Eighth Grade
- 4. Ninth Grade
- 5. Tenth Grade
- 6. Eleventh Grade or Higher
- 7. Ungraded "600" School
- 8. C.R.M.D.
- 9. Other Ungraded Class

40. School Behavior Problems __
- 0. None
- 1. Truancy Only
- 2. Acting-Out Behavior Only
- 3. Truancy and Acting-Out Behavior

41. Current School Status __
- 1. Enrolled Day School
- 2. Enrolled Night School
- 3. Drop-Out
- 4. Suspended
- 5. Expelled
- 6. Exempted for Medical Reasons

42. Current Employment Status __
- 0. Unemployed
- 1. Employed Part-Time
- 2. Employed Full-Time

43. Previous Employment __
- 0. Never Worked
- 1. Part-Time Only
- 2. At least one full time job

44. Number of Jobs Held __
- 0. None
- 1. One
- 2. Two
- 3. Three
- 4. Four
- 5. Five or more

45. Length of time longest job held __
- 0. Never Worked
- 1. One Month or less
- 2. Over 1 month to 3 months
- 3. Over 3 months to six months
- 4. Over 6 months to 1 year
- 5. Over 1 year to 2 years
- 6. Over 2 years

46. Currently Living With __
- 0. Alone
- 1. Both Natural Parents
- 2. One Natural Parent-other deceased
- 3. One Natural Parent-divorce, separated
- 4. Relative(s)
- 5. Foster Parent(s)/Guardian(s)
- 6. Shelter, Orphange, Group Residence, Special School
- 7. Institution
- 8. Spouse
- 9. "Y"

47. Mother-Figure in Home __
- 0. None
- 1. Natural Mother
- 2. Step-Mother
- 3. Adoptive Mother
- 4. Relative
- 5. Foster Mother (non-relative)

48. Father-Figure in Home __
- 0. None
- 1. Natural Father
- 2. Step-Father
- 3. Adoptive Father
- 4. Relative
- 5. Foster Father(non-relative)

49. Primary Source of Family Income __
- 0. Not Applicable(group residence, institution)
- 1. Father or Father-Figure
- 2. Mother or Mother-Figure
- 3. Both Parents (Parent Figures)
- 4. Relatives in Household
- 5. Relatives Outside of Household
- 6. Public Assistance
- 7. Private Assistance
- 8. Self-Supporting

50. Annual Family Income __
- 0. Not Applicable
- 1. Under $3,000 per annum
- 2. $3,000 to $3,999 per annum
- 3. $ 4,000 to $4,999 per annum
- 4. $5,000 to $5,999 per annum
- 5. $6,000 to $6,999 per annum
- 6. $7,000 to $7,999 per annum
- 7. $8,000 to $9,999 per annum
- 8. $10,000 and above per annum

51. Number of People Supported by Income ___
- 0. Not Applicable
- 1. One
- 2. Two
- 3. Three
- 4. Four
- 5. Five
- 6. Six
- 7. Seven
- 8. Eight
- 9. Nine or more

52-55. Date of Decision __ __ ( ) __ __
Month Day Year

56. Type of Decision __
- 1. Accepted
- 5. Withdrawn: no show for interview(s)
- 6. Withdrawn: requested additional information
- 7. Withdrawn: New Offense
- 8. Withdrawn: Other Reason(s)
- 9. Rejected

57. Reasons for Rejection __
- 0. Not Rejected
- 1. Mental Retardation
- 2. Physical Handicap
- 3. Improper Age
- 4. Homosexuality
- 5. Drug Addiction
- 6. Too Disturbed
- 7. Extensive Prior Institutionalization
- 8. Resistive to Placement
- 9. Other Reason(s)

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Name of youth

Log Number

Intake Worker

8-59. FACILITY IN WHICH PLACED __ __
11. Great Valley
12. Masonville (Camp Brace)
31. Buffalo Home
32. Syracuse Home (Ernie Davis)
33. Rochester Home
34. Nassau Home
41. Rensselaerville (Camp Cass)
42. Caroline Center (Camp MacCormick)
43. Camp Annsville
51. Middletown S.T.A.R.T. (Fitzgerald)
52. Auburn S.T.A.R.T. (Dugan)
61. New York City Home (Sheppard)
62. Bronx Home
82. Willowbrook S.T.A.R.T.
84. Brentwood S.T.A.R.T. (Lewisohn)
85. White Plains Home
86. Niagara S.T.A.R.T.

60-63. DATE OF FINAL DISPOSITION __ __ ( ) __ __
Month Day Year

64. FINAL DISPOSITION __
1. Admitted
2. Accepted-Withdrawn: new offense
3. Accepted-Withdrawn: other placement
4. Accepted-Withdrawn: other reason(s)

65. LENGTH OF TIME BETWEEN DECISION AND FINAL DISPOSITION __
(Accepted Cases only)
0. Two weeks or less
1. Over two weeks to one month
2. Over one month to two months
3. Over two months to three months
4. Over three months to four months
5. Over four months to five months
6. Over five months to six months
7. Over six months

66-70. FORMER LOG NUMBER # __ __ __ __ __
(For re-referrals only)

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NOTICE OF DISCHARGE

Date_____

NAME OF YOUTH_____ BIRTHDATE_____
Last First Month Day Year

ADDRESS RETURNING TO:_____ PHONE #_____

CITY & STATE_____ COUNTY_____

1-5. LOG NUMBER __ __ __ __ __

6-9. DATE OF ADMISSION __ __ ( ) __ __
Month Day Year

10. DECK NUMBER 2

11-12. AGE AT ADMISSION __ __

13. TYPE OF ADMISSION __
1. New Admission
2. Transfer
4. Readmission from discharge

14-15. FACILITY __ __
11. Great Valley
12. Masonville (Camp Brace)
31. Buffalo Home
32. Syracuse Home (Ernie Davis)
33. Rochester Home
34. Nassau Home
41. Rensselaerville (Camp Cass)
42. Caroline Center (Camp MacCormick)
43. Camp Annsville
51. Middletown S.T.A.R.T. (Fitzgerald)
52. Auburn S.T.A.R.T. (Dugan)
61. New York City Home (Sheppard)
62. Bronx Home
82. Willowbrook S.T.A.R.T.
84. Brentwood S.T.A.R.T. (Lewisohn)
85. White Plains Home
86. Niagara S.T.A.R.T.

16-19. DATE OF DISCHARGE __ __ ( ) __ __
Month Day Year

20-21. AGE AT DISCHARGE __ __

22-23. LENGTH OF STAY IN PROGRAM IN MONTHS __ __

24. TYPE OF DISCHARGE __
0 Absconded
1. Parental Request
2. Removed by court action re: new offense
3. Dismissed by staff or returned to court
4. Completion of treatment
5. Enlisted in Armed Forces
6. Transfer to another Division Facility
7. Removed to Mental Hospital
8. Other_____
(Specify)

25. SUPERVISION STATUS AT DISCHARGE __
0. None - other than DFY Aftercare
1. Social Agency
2. Probation
3. Mental Hospital
4. Correctional Institution
5. Placed in remand - final disposition not available
6. Moved to a new jurisdiction
7. Other_____
(Specify)
8. Transfer to another Division Facility

26. RETURNED TO LIVE WITH __
0. Alone or with peer(s)
1. Parent(s)
2. No Information
3. Transfer to another Division Facility
4. Relatives
5. Foster parent(s) guardian(s)
6. Shelter orphanage special school
7. Correctional Institution
8. Spouse
9. Armed Forces
X. Mental Hospital

27-28. COUNTY RETURNED TO __ __

(_____)
(County)

APPENDIX B: Coding and Rationale

CODING OF DISCRETE VARIABLES

In Format A discrete variables were coded as follows:

1. School Behavior Problems: (1) Yes (0) No

2. Primary Source of Family Income: (1) Public or Private Assistance
(0) All others

3. Present Petition A: (1) Person In Need of Supervision, Neglected Child
(-1) Juvenile Delinquent (0) All others

Present Petition B: (3) None (-1) All others

Present Petition C: (2) Youthful Offender, Wayward Minor, Convicted of Criminal Charge
(-1) Person in Need of Supervision, Neglected Child, Juvenile Delinquent
(0) None

4. Current Remand: (1) Yes (0) No

5. Family Intactness: (1) Currently living with both natural parents (main place of residence)
(0) All others

6. Previous Noncorrectional Institutionalization: (1) Some (0) None

7. School Status: (1) Currently enrolled in day or night school
(0) All others

8. Previous Employment: (1) Worked part-time or full-time (0) Never worked

9. Referral County: (1) New York, Kings, Queens, Bronx, Richmond
(0) All others

10. Ethnicity A: (1) Negro (0) All others

Ethnicity B: (1) Puerto Rican, Oriental, American Indian, Other
(0) White, Negro

11. Admission Status A: (2) New Admission (-1) Readmission, Transfer

Admission Status B: (1) Transfer (-1) Readmission (0) New Admission

12. Type of Program A: (1) Home (-1) STAY (0) All others

Type of Program B: (1) Camp (-1) STAY (0) All others

Type of Program C: (1) START (-1) STAY (0) All others

13. Discharge Status A: (1) Absconded, Removed by Court Action, Dismissed by Staff or Returned to Court
(0) All others

Discharge Status B: (1) Parental Request, Enlisted in Armed Forces, Removed to Mental Hospital, Other
(0) All others

The coding categories of Format B included all the above with these exceptions and additions:

Type of Program A: (1) Home (-1) START (0) Camp

Type of Program B: (1) Camp (-1) START (0) Home

An interaction variable in Format B was formed by multiplying Type of Program A with the given background variable as coded above; or Type of Program B with the given background variable as coded above.

The nine variables of Set 11a were coded as follows:

(1) Home D (-1) STAY (0) All others

(1) Home A (-1) STAY (0) All others

(1) Home E (-1) STAY (0) All others

(1) Home C (-1) STAY (0) All others

(1) Camp C (-1) STAY (0) All others

(1) Camp A (-1) STAY (0) All others

(1) Camp B (-1) STAY (0) All others

(1) START B (-1) STAY (0) All others

(1) START A (-1) STAY (0) All others

CODING OF CONTINUOUS VARIABLES

1. Age at Admission was coded in months by subtracting month and year of birth from month and year of admission.
2. Number of Previous Petitions, was coded as given on the intake form:
   (0) None (1) One (2) Two (3) Three or More
3. Length of Previous Correctional Institutionalization was coded as given on the intake form: (0) None (1) Less than One Month (2) One Month to Six Months (3) Over Six Months to One Year (4) Over One Year to Two Years (5) Over Two Years to Five Years (6) Over Five Years
4. Duration in Program was coded in months by subtracting month and year of admission from month and year of discharge.

RATIONALE FOR THE SEQUENCE OF VARIABLES

In the analysis of arrest, Format A, the first set consisted of Age at Admission in order to determine the effects of the remaining variables on arrest with age controlled. Sets 2 through 5 consisted of variables which previous study had suggested would be among the most predictive of arrest. It was considered desirable to control these variables before examining (a) the effects of variables which previous study had not indicated related to arrest in order to determine whether these variables would be found predictive when the major predictors of arrest were controlled, (b) the effects of Ethnicity and Referral County, which had been found related to arrest, in order to determine whether

their effects would vanish when the major predictors were controlled. Within Sets 2 through 5 the variables referring to previous offense history are in the order of past to present, i.e., Previous Number of Petitions, and Previous Correctional Institutionalization precede Present Petition and Current Remand. Sets 6 through 9 represent social background or personal history variables of the youth. Set 6, referring to the youth's family situation (or its absence), and 7, referring to the youth's school and work history, are considered to represent more specific types of influence than Sets 8 and 9 (Referral County, Ethnicity). Under the assumption that more global influences would have to be explained ultimately in terms of more specific types of influences, Sets 8 and 9 were placed after Sets 6 and 7. Set 10 represented a characteristic related to type of program involvement and different in nature from the preceding variables which do not refer to program involvement. It was therefore entered into the equation after the social background and personal history variables. Sets 11 through 14 also represent aspects of program involvement. Set 11 precedes Set 12 to accord with the time sequence represented by these variables (residing in a program preceding discharge) and Set 12 precedes Set 13 to test the effects of Duration in Program after controlling for Discharge Status.

In Format B's interaction terms a similar sequence was followed for similar reasons. An exception was the placing together of interactions of Program Type with (a) Current Remand and (b) Length of Previous Correctional Institutionalization. These variables were placed

together rather than each treated as a separate set in order to reduce the total number of tests made in this analysis and because both were considered to refer to a similar phenomenon, i.e., the youth's detention in a correctional facility.

In the analyses of commitment and nongraduation the same formats were used in order to facilitate comparison of results.

Characteristics from the intake form which were largely redundent to those in Format A were excluded. For example, Number of Arrests was excluded because of its high correlation with Number of Petitions; Referral Source was excluded because of its relation to Present Petition.

END