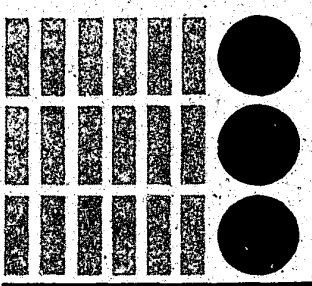
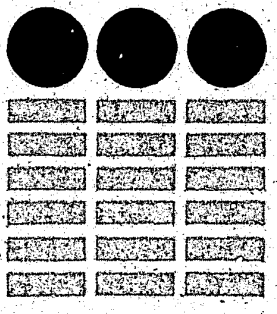


A TECHNICAL REPORT

THE POST-PRISON ANALYSIS OF CRIMINAL BEHAVIOR AND LONGITUDINAL FOLLOW-UP EVALUATION OF INSTITUTIONAL TREATMENT

EXPERIMENTAL
MANPOWER
LABORATORY FOR
CORRECTIONS

February, 1974



REHABILITATION RESEARCH FOUNDATION

This report on the Experimental Manpower Laboratory for Corrections was prepared under Grant No. 21-01-73-38 with Manpower Administration, U. S. Department of Labor. Organizations undertaking such projects under Federal Government sponsorship are encouraged to express their own judgement freely. Therefore, points of view or opinions stated in this document do not necessarily represent the official position or policy of the Department of Labor or other federal agencies mentioned herein.

Submitted to Seymour Brandwein, Associate Director of the Office of Research and Development, and to William Throckmorton, Project Officer, by John M. McKee, Director, Experimental Manpower Laboratory for Corrections, Rehabilitation Research Foundation, P. O. Box 3587, Montgomery, Alabama, 36109.

FC

THE POST-PRISON ANALYSIS OF CRIMINAL BEHAVIOR AND LONGITUDINAL FOLLOW-UP EVALUATION OF INSTITUTIONAL TREATMENT

W. O. Jenkins, A. D. Witherspoon, M. D. DeVine, E. K. deValera,
J. B. Muller, M. C. Barton, and J. M. McKee

Experimental Manpower Laboratory for Corrections
Rehabilitation Research Foundation

RRF-910-2-74

CONTENTS

Page

Preface

This report focuses on the overall methodology and outcomes of the 1971 Follow-up Study. It is one of a series of eight reports stemming from this longitudinal study. The other seven deal with the following topics:

- The development of the Law Encounter Severity Scale (LESS), the criterion for law-violating and criminal behavior and recidivism.
- The further validation of the Environmental Deprivation Scale (EDS), a measure of environmental input and support for adaptive behavior.
- The validation of the Maladaptive Behavior Record (MBR), a measure of behaviors leading to law encounters and violations.
- The development and validation of the Weekly Activity Record (WAR), a measure of time allocation of behavior.
- The psychometric details of analysis of the data from these predictive instruments, including reliability intercorrelations, etc.
- The development of a behavioral interview guide.
- A number of *hypothesis generating studies* that developed from the comprehensive follow-up data and that suggest new research dimensions.

THE POST-PRISON ANALYSIS OF CRIMINAL BEHAVIOR AND LONGITUDINAL FOLLOW-UP EVALUATION OF INSTITUTIONAL TREATMENT

W. O. Jenkins, A. D. Witherspoon, M. D. DeVine, E. K. deValera,
J. B. Muller, M. C. Barton, and J. M. McKee

Experimental Manpower Laboratory for Corrections
Rehabilitation Research Foundation, University of Alabama
P. O. Box AG, University, Alabama 35486

ABSTRACT

This report describes an 18-month postrelease follow-up of 142 young male offenders released from Draper Correctional Center in Elmore, Alabama. The study was conducted by the Experimental Manpower Laboratory for Corrections (EMLC), which is operated by the Rehabilitation Research Foundation, and expanded the research design of an earlier EMLC study (the 1969 Follow-up Study). The two basic objectives of the present (1971) study were: the analysis of criminal behavior and the evaluation of institutional treatment programs.

Whereas the earlier study had compared MDT trainees with a control group, the 1971 study compared MDT trainees with State Trade School trainees, men who participated in the EMLC's token economy study, men who had received both MDT training and token economy treatment, and a control group who had received no institutional treatment. *S*s received a series of behavioral interviews: one prior to release, one at 3-6 months postrelease, and another at 12-15 months postrelease. The interviews focused on specific behaviors and environmental events in the areas of societal adjustment (which included law encounters), social and interpersonal behavior, occupation and employment, money matters and financial status, housing, and public acceptance. Environmental input was specifically assessed by the Environmental Deprivation Scale (EDS); behavior patterns, by the Maladaptive Behavior Record (MBR) and the Weekly Activity Record (WAR). An Interview Guide (IG) structured the collection of additional information.

A criterion for criminal behavior was developed, the Law Encounter Severity Scale (LESS). The 38 items on the LESS form a continuum ranging from no law encounters to a maximum prison sentence and were divided into five groups for this study. The LESS served as the yardstick for validating the capacity of the follow-up instruments to

predict law encounters and recidivism. The predictive accuracy of the EDS was 90%; of the MBR, 85%; and of the WAR, 80%.

No large, highly significant, or consistent differences emerged among the effects of the several institutional treatment procedures. Detailed analysis did yield some significant differences, e.g., MDT trainees worked longer and earned more money in the first six months after release than did *S*s in the other groups.

Vocational training and adult education appear essential to rehabilitation of the criminal offender, but must be coupled with supplemental training in interpersonal (social) skills and money management to be maximally effective. The foundation for the development of such treatment programs, both in the institution and the community, is provided by the approach and instruments used in this study.

BACKGROUND AND PROBLEM

Effective psychological and behavioral treatment must be anchored at the one end in a systematic analysis and diagnosis and at the other in orderly longitudinal follow-up evaluation. Without initial analysis of the basic problem area, treatment programs are based on judgment without firm data. Without long-term evaluation, the generalized, persisting effects of intervention are unknown, and thus the effectiveness of treatment is indeterminate.

In 1969 the Experimental Manpower Laboratory for Corrections (EMLC) instituted a systematic program focusing on the analysis and evaluation of criminal behavior. Two major investigations were conducted, the 1969 and 1971 Follow-up Studies. In both, prison releasees and parolees were tracked postrelease and detailed studies made of their environmental and behavioral patterns. The outcomes of the 1969 study have been previously reported (Jenkins, Barton, deValera, DeVine, Witherspoon, Muller, & McKee, 1973). The present report focuses on the findings of the 1971 Follow-up Study.

Most studies concerned with the postrelease behavior of ex-offenders have been carried out specifically for evaluation of some institutional training program. This objective was one of the initial purposes of the earlier 1969 Study. As information was gathered, however, it became obvious that the systematic follow-up study could be a means of obtaining much needed information relevant to the ex-felon's behavioral demography. Therefore, instruments were developed, adapted, and validated during the course of the 1969 Study. These instruments were refined during the 1971 Study and have tremendous diagnostic value for those concerned with developing institutional or postrelease treatment for deviant behavior.

Follow-up studies have in the past been very susceptible to misinterpretations, perhaps due to overlooking numerous variables or extracting premature generalizations from limited findings. Glaser (1964) and Conrad (1965) both have stressed the need for postrelease follow-up. Glaser has stated that postrelease information could be easily obtained when one is dealing with parolees by committing the state parole staffs to the task. This point is well taken, but one cannot limit himself to parolees if he is to evaluate a representative sample of inmates after they leave the prison setting. Postrelease information must be obtained concerning expirees as well as parolees. The importance of expirees is magnified by the tendency for them to be a high risk group and therefore more likely to recidivate

than parolees. Many expirees were refused parole based on their institutional behavior, such as disciplinary problems. Perhaps the need for data concerning expirees can best be emphasized by a study completed in Washington, D. C. (District of Columbia Correctional Department, 1969), which found that expirees had two to three times the number of postrelease law violations that parolees had.

The Gluecks (1937) have stressed the need for follow-up studies that utilize actual direct contact, such as interviewing the client, rather than merely mailing questionnaires. The MDTA projects have generally used the mailed questionnaire method to acquire postrelease information on trainees. A number of such surveys have been carried out by training projects (Nichols & Brodsky, 1970). However, even when using an incentive, it would appear that mailed questionnaires obtain biased data. Abt Associates (1971) reports that "...those who have achieved some measure of success in the postrelease period are more inclined to discuss it, than are those who have had little or no success [Vol. II, p.291]." Although some researchers have tried to compensate for the biased returns by obtaining information from other sources, such as girl friends, relatives, and parole officers, the bias remains unmeasurable.

Another point often stressed is the need for follow-up efforts that extend for more than a brief period. However, extended periods create a basic time and financial problem for the many projects that are only funded for one or two years. And, generally, state personnel are not research oriented or trained to successfully carry out "rigorous research."

Although some studies have accumulated data for periods of 10 years or more, their procedures accumulated only minimal data and were restricted to checking basic records and files, procedures which have proven to be somewhat deficient. This deficiency has been noted by the Gluecks (1937), "the incompleteness and accuracy of official records of both criminal data and social information are deplorable [p.7]," as well as Glaser (1964, 1972).

In their evaluation report concerning national MDTA projects, Abt Associates (1971) reported that although some programs were only moderately successful in terms of positively affecting their trainees, they could still have been extremely valuable in terms of information contributed. This point is relative to the one aspect of this investigation which cannot be overly stressed: its commitment to an objective, systematic scientific procedure.

A successful research follow-up project includes rigorous procedures that are systematically carried out and carefully spelled out. The criterion for determining successful

treatment programs appears to be somewhat different from that which determines successful research. The effect of a treatment program is generally measured by positive or negative results, but if the research were done in a scientific manner, either result would be indicative of a successful research effort.

The methodology of longitudinal follow-up has focused on treatment program evaluation, but this is only one function of follow-up. Of possibly greater significance is the fact that long-term follow-up allows the identification of environmental and behavioral variables that contribute to "success" or "failure"–in this case staying out of or returning to prison. The diagnostic information provided by longitudinal follow-up thus provides a broad base for the development of effective treatment in the institution or the community. The core of the treatment problem lies in the specification of the primary variables associated with law violations, for only by treating these aspects of the problem will effective intervention be developed. Effective treatment awaits valid diagnosis.

This report deals with a longitudinal follow-up study of released offenders. The study focused on applying methodology to measure individual behavioral demography in a variety of areas, particularly vocational, criminal, social and interpersonal, familial, and financial. The specific questions being asked were: What environmental influences are operative, and what behavior patterns are exhibited? And how do these relate to postrelease success or failure?

A second major purpose of this study was the postrelease assessment of institutional treatment programs, especially the EMLC's MDT project and token economy. The following paragraphs present the theoretical-methodological context of the study, and the subsequent section treats the objectives in detail.

Changing human behavior is a multidimensional matter. Regardless of the particular context or form of deviant behavior–crime, mental illness, alcoholism, or drug addiction, for instance–the experimental analysis process follows the same steps:

1. *Identification*. The first and primary step is identification and delineation of the problem area. It involves measurement of the behavioral events along with their environmental dimensions and covariants. Some of these are straightforward, e.g., educational deficits, but some are exceedingly complex, such as inability to relate to and interact with people. The immediately obvious behaviors are not always the key ones. Alcoholism, for example, is far more than a matter of alcoholic beverage consumption.

2. *Treatment*. Once preliminary specification of the pertinent behavioral and environmental events has been accomplished, intervention can be planned. In actual

practice, treatment is usually started on the obvious behavioral deficits and excesses while the process of identification is under way. Correcting educational and vocational deficiencies is an obvious first step in the rehabilitation of criminal offenders. Meanwhile, the process of uncovering other basic problem areas where retraining is required continues.

3. *Treatment Evaluation.* An essential ingredient in changing human behavior is the assessment of the effects of intervention treatment. This procedure is a three-stage one. The first stage consists of measurement of changes during the application of intervention. Illustrative of these in-treatment measures are unit tests in an educational or vocational training program. The second stage consists of a more comprehensive assessment of treatment effects after the completion of training. Here the focus falls not only on exhibition of the built-in behavior but on its transfer to other situations. Finally, long-range follow-up measures the generalized and persisting effects of intervention over and beyond the training situation. These longitudinal effects constitute the more ultimate criteria of treatment program effectiveness. In addition, they feed back into treatment procedures to refine and improve these procedures by identifying major behavioral and environmental events requiring corrective action.

4. *Prevention.* The four-step process culminates in a preventative program that, ideally, obviates the behavioral problem as its environmental source. Prevention presupposes thorough, systematic diagnosis and the development of effective treatment techniques. It is the ultimate goal of the process.

Given this systematic context, the immediate need is clear for an overall methodology that will generate data concerning the behavioral demography and chronology of the released offender. Such outcomes will not merely identify problem areas and generate treatment procedures, but will also serve as a yardstick to measure the effectiveness of intervention programs.

OBJECTIVES

In the 1969 Follow-up Study (Jenkins, Barton, deValera, DeVine, Witherspoon, Muller, & McKee, 1973), methodology for intensive follow-up was developed and validated, furnishing guidelines necessary to accomplish certain objectives. The present study continued research toward these objectives, employing established methods and developing new ones. The objectives follow.

1. *To establish a basic follow-up methodology.*
   a. To develop a behavioral interview procedure to obtain valid descriptions of environmental and behavioral events in the absence of the possibility of direct observation.
   b. To construct and validate instruments for systematizing these environmental and behavioral data and events.
   c. To effect procedures for sample selection, identification of the target population, and establishing behavioral rapport.
   d. To develop techniques for locating *S*s in the "free world" after release from the institution.
   e. To select and train behavioral interviewers and data collection specialists.
   f. To establish and develop statistical techniques and computer procedures for data processing and analysis.
   g. To institute a record-keeping system for behavioral, environmental, and law encounter events.
2. *To determine the behavioral demography of the released or paroled offender.*
   a. To fix the personal demographic characteristics of the target population and the samples under study.
   b. To assess the role of environmental input to behavior, both as a stimulus source or trigger and as post-response support or reinforcement.
   c. To measure the specific behavior patterns of the released offender in such areas as employment, social and interpersonal interactions, and law encounters.
   d. To conduct a preliminary investigation of the role of institutional factors in postrelease law violation.

e. To develop preliminary methods for assessing the influence of early history and developmental experiences on adult law-violating behavior.

f. To conduct a preliminary examination and analysis of the effects of criminal and law-violating history on current behavioral functioning.

3. *To establish a basis for the evaluation and validation of intervention and treatment programs, which include:*

   a. Educational, vocational, and other manpower development and training programs.

   b. Behavioral intervention systems, including behavior modification, behavioral counseling, and other behavioral change approaches.

   c. Various specialized programs, such as work release, study release, home furlough, and presentencing and diversionary techniques.

   d. Other intervention, treatment, and training programs, e.g., traditional counseling and transactional and interactive approaches.

4. *To feed information back into and refine treatment programs.*

   a. To identify environmental influences, both antecedent and consequent to the behavior.

   b. To specify behavioral parameters and problem areas requiring intervention treatment.

5. *To develop specific measures and instruments relating to law encounters, law-violating behavior, and the prediction of recidivism.*

   a. To determine, analyze, and systematize environmental circumstances as they relate to law-violating and criminal behavior and to recidivism.

   b. To establish, organize, and measure reaction patterns and behavior classes associated with the onset of law encounters.

   c. To examine and analyze in a preliminary way the role of developmental history, early experience, law-violating background, and institutional experience as contributors to adult criminal behavior and recidivism.

6. *To analyze the criterial continuum of law encounter and criminal behavior into its components.*

   a. To determine the role of frequency and severity of law encounters.

   b. To construct a functional scale of law encounters.

METHODOLOGY

Overview

In the 1971 Follow-up Study, the EMLC conducted a longitudinal postrelease follow-up of 142 male offenders. Seventy-four of these men had received institutional educational and vocational training under the MDTA 251 program, 20 had received institutional educational and vocational training at a state trade school, 29 had participated in an ecological living (token economy) unit in the institution (16 of these also had MDT training and were therefore included in the first group), and 35 men had received no training in the institution. The men had all been released (expirees) or paroled (parolees) from Draper Correctional Center in Elmore, Alabama. They were behaviorally interviewed prior to release and after release at intervals of 3-6 months and 12-15 months if they remained within the study area, a 50-mile radius of Montgomery and Birmingham, Alabama. The study area was later extended to a 100-mile radius of the two cities for the token economy *S*s. A total of 40 *S*s in the Montgomery area, which included members of four study groups, were interviewed on a regular monthly basis in order to obtain behavioral change information over time.

*S*s had been in the "free world" from 11 to 26 months (mean of 18.5 months) when the study was terminated on January 1, 1973. Regular checks were run on *S*s' encounters with law enforcement agencies, and each *S*'s encounter(s) were measured by the Law Encounter Severity Scale (LESS). The LESS, a scale developed by the EMLC in the course of this study and based on actual empirical experience in three years of follow-up, consists of 38 specific types of law encounters, grouped into 5 groups. These groups consist of: (1) no law encounters; (2) law encounters resulting in traffic tickets, searches, or pickups with no charges; (3) misdemeanor convictions; (4) awaiting trial for felony, awaiting parole hearing, fugitive, absconded, or returned to prison for technical parole violation; (5) returned to prison for felony(s) and sentenced to a year or more. The specifics of the methodology are presented in the following sections.

Definition of Study Groups

The 1971 study made a complex comparison of five separate groups. Whereas the earlier 1969 study compared the MDT trainees with controls, the 1971 study compared

the MDT trainees with state trade school trainees, men who participated in a token economy program, men who participated in both the token economy and the MDT training, and men in a control group who had received no institutional treatment. Each of these groups is described below.

Manpower Development and Training (MDT) Group

The subjects in this group participated in the MDTA 251 project between August, 1970, and August, 1971. There were 124 inmates accepted for training, but, for the various reasons shown in Table 1, not all were included in the 1971 study.

Table 1
Disposition, by Trade Area, of Trainees Accepted into the Initial MDTA Program

Trade	Total *N* in Trade Area	Disposition of Trainees at Time of Study			
		Dropped from Training	Paroled or Released out of Study Area	Not Paroled or Released by Study Cutoff Date	Became Subjects in 1971 Follow-up Study
Barbering	23	4	2	4	13
Butcher	36	4	8	3	21
Refrigeration Repair	22	5	2	3	12
Welding	43	4	4	7	28
Total	124	17	16	17	74

A total of 17 *S*s were dropped before they had completed training because of illness, transfer, or escape attempts. Of the 17 who had not been paroled or released by the study's cutoff date, several had disciplinaries resulting in loss of good time or parole rejection, 1 trainee had escaped, and others had not completed training. Another 16 trainees had been released from prison but had relocated outside the study area.

Each of the 107 trainees (124 minus the 17 dropped), depending upon his needs, went through some or all of the training phases. In each case, the trainee's program was specifically designed to overcome individual deficiencies which would handicap him in the employment market. The phases of training consisted of: (1) orientation, (2) prevocational basic and/or remedial education, (3) occupational training, and (4) job preparation. Job placement was not part of the training program, but was generally done by the MDT instructors.

The MDT trainees were given individualized training in educational and vocational areas. The vocational areas were butchering, barbering, welding, and refrigeration repair. Educational training consisted of basic education delivered by means of the Individually Prescribed Instructional (IPI) System, an educational method designed and developed by the EMLC. Contingency management procedures were used in both the educational and vocational training to generate sustained performance.

Table 2 indicates the mean number of hours each trainee spent in each phase. All trainees participated in the orientation and vocational phases. However, some did not require the basic education phase and several were paroled or released before the job preparation phase was available. Some trainees, depending on their initial educational level and their performance during the orientation phase and/or the basic education phase, continued basic education training for two hours each day while learning vocational skills for the remaining six. The refrigeration repair training was considered the most difficult and therefore required more time than the other three skill areas.

Table 2
Mean Number of Hours per Man Spent by MDTA Trainees in Each Training Phase
N = 107

Trade	Mean Number of Hours in Training Phase				Total Hours/Man
	Orientation	Basic Education	Vocational	Job Preparation	
Barber (*N* = 19)	69	21	872	53	1,015
Butcher (*N* = 32)	63	34	781	44	922
Refrigeration Repair (*N* = 17)	56	32	1,325	32	1,445
Welder (*N* = 39)	67	22	736	52	877

Table 3 summarizes the demographic characteristics of the five groups. It shows that the characteristics of the MDT trainees and controls were somewhat comparable. However, the MDT trainees were more likely to have had a previous felony conviction. This group also had a lower percentage of blacks and more *S*s with crimes against property. A more detailed analysis of *S*s is presented elsewhere in this report.

Table 3

Comparison of Demographic Characteristics of 1971 Follow-up Study Groups

N = 142

Demographic Characteristics	Study Groups				
	MDT N = 58	TE N = 13	MDT&TE N = 16	STS N = 20	Control N = 35
Percent black	55	31	63	50	74
Percent married	17	31	19	20	14
Percent recidivist	50	31	56	40	34
Percent paroled	69	54	88	90	63
Percent convicted of crime(s) against property	66	62	38	50	49
Age:					
Mean	25	27	26	21	25
Median	23	23	25	23	23
Range	17-46	20-54	20-34	19-42	19-47
Reported educational level:					
Mean	9.3	7.1	9.8	9.6	10.3
Median	9.0	6.0	9.5	10.0	10.0
Range	5-12	1-12	6-12	2-14	6-13

Token Economy (TE) Group

A total of 64 men participated in the 1971 Ecological Study, which occupied one cellblock of the institution. However, only 29 of these *S*s were available for the 1971 study. Of the remaining men, 11 had spent less than 30 days in the unit, 6 were released outside the study area, and 18 had not been released by the study cutoff date (1 of these had escaped).

Treatment in the Ecological Unit was based on the token economy model. Selected adaptive behaviors were governed by points which were contingent upon these behaviors. The points could be traded for available reinforcers, such as television watching, time off from work, and store merchandise. A separate report has been issued on the Ecological Study (Milan, Wood, Williams, Rogers, Hampton, & McKee, 1973).

Table 3 indicates that the TE *S*s were less likely to have committed a previous crime, were generally white, were usually married, and reported lower educational levels.

Combined MDT and Token Economy (MDT-TE) Group

The MDT-TE group contained 16 *S*s who graduated from MDT training and had lived in the Ecological Unit in the prison for over 30 days. Since these *S*s participated in both projects, they represent a combination of the treatment described for each group earlier.

Table 3 indicates that these *S*s were likely to be black and to have been convicted of a previous crime. These men were also more often paroled rather than released.

State Trade School (STS) Group

The 20 *S*s in this group were selected by comparing the release and parole lists each month with the list of all graduates from the J. F. Ingram State Vocational Trade School for the period June 30, 1970, through June 30, 1971. The school is a special vocational school built solely for training prison inmates. It is located within five miles of Draper, and the inmates were bussed back and forth every day. The *S*s in this group were contacted prior to their release and given the prerelease interview.

Table 3 indicates that these men were more likely to be first offenders, were a little younger (mean age, 21 years), and were generally parolees rather than expirees. These characteristics reflect the criteria used in the selection of inmates for STS training. The men also had to meet minimum custody requirements before being eligible for training.

Control Group

This group contained 35 men who were released or paroled from Draper Correctional Center between October, 1970, and November, 1971. A variable which was expected to have significant influence in the comparison of the experimental groups and the control group was the fact that the MDT and STS *S*s had volunteered for their specific training. If the control group consisted of non-volunteers, this variable alone could account for any postrelease difference between the groups. Therefore, this group was selected from only those *S*s who had applied for training but had been rejected due to too little time left, too low an educational level, or a sex crime conviction.

However, the data in Table 3 indicate that this group's mean educational level was higher than that of any other group. This group also had a higher, but not significant, percentage of blacks and single men. The control group did not differ significantly from the other groups on the remaining variables.

In the final analyses, reported in detail in a later section, the treatment groups were reduced to four because of relatively small *N*s. The final four groups were: MDT, TE, STS, and Control.

Characteristics of MDT Trainees

When sampling a specific population (especially the prison population), the sample should have a proportionate representation of particular variables. For example, those variables which moderately relate to recidivism, such as age, number of offenses, or educational level, may alone account for differences between otherwise comparable groups. The several demographic and historic variables that made the Draper MDT trainees representative of the more recidivism-prone members of the prison population are discussed in the following paragraphs.

First offenses. A recent report (Abt Associates, 1971) indicates that the Draper MDT trainees were representative of the national MDT trainee population. For example, first-time offenders represented 45% of the Draper population, 49% of the Draper MDT trainee population (MDT and MDT-TE groups), and 45.6% of the national MDT population.

Marital status. Thirty-one percent of the Alabama prison inmates and 34% of those at Draper were married. Some 26.7% of the national MDT population were married, while only 18% of the Draper MDT trainees were married.

Race. The national prison population is 38.7% non-white, while the Alabama and Draper percentages (51% and 56%, respectively) were reported as percent black, since other races are minimally represented. The national MDT group was 38.4% non-white; the Draper MDT group, 57% black. The only race groups represented in the Draper MDT project were whites and blacks.

Age. The mean age of the Alabama prison population was 28.4 and that of the Draper population, 28.6, older than the Draper MDT trainees (25.1). The national MDT group reported that 63.7% of their trainees were between the ages of 20 and 29 years, while only 40.8% of the national prison population was in this age group. Thus the MDT trainees in the majority of the MDT projects, including the Draper project, were younger than the normal prison population.

Education. The educational levels were generally higher for both the national MDT trainees and the Draper MDT group. The national prison survey reports 54.7% of the inmates with 0-8 years of education, while the majority of the national MDT trainees

reported 9-11 years. The Draper prison population reported a mean educational level of 6.7 years, while the Draper MDT trainees reported a mean of 9.4 years. The higher educational level of the MDT trainees is a variable in their favor, since it associates negatively with recidivism.

Type of offense. Another noteworthy variable for both the Draper and national MDT groups is that a large proportion of the trainees had committed crimes against property (economic) rather than against persons (non-economic). This higher proportion of crimes against property would appear to have been a desirable characteristic when selecting inmates for training at specific skills to increase their employability. Abt Associates (1971) had emphasized that successful rehabilitation through job training is closely related to steadiness and regularity of postrelease employment and that this training should be specifically directed toward the "economic" rather than the "non-economic" offenders.

The Criterion of Law Violations

In addition to comparing the postrelease records of trainees from various institutional treatment programs and developing and applying predictive instruments, a major thrust of the 1971 study was toward an analysis of law-violating and criminal behavior, the concomitant reaction patterns, and environmental circumstances antecedent to and surrounding law encounters. The law-violation criterion, a complex, multidimensional matter, can be operationally placed on a continuum of severity, which can be measured by various dimensions. More times than not, a researcher does not clarify the dimensions being used when he discusses the severity of different crimes. He may be relating severity to financial loss, inconvenience, physical harm to individuals, or, on a more complex scale, morality.

For the purposes of this study the seriousness of law-violating behavior is related to cost to society from the standpoint of arrests, detention, and trial. Those offenses receiving the longer sentences were rated higher on the continuum of crime severity. The Law Encounter Severity Scale (LESS), consisting of 38 items, was developed and used in data analysis. (The details of development and application of the LESS are reported by Witherspoon, deValera, and Jenkins, 1973.) The items on the LESS can be grouped in various ways, depending upon the questions being asked. At any point in time when a study is terminated there will always be *S*s who are left in what may be classed "process" classifications, such as absconder or fugitive. These classifications are also included in the LESS.

The continuum was separated at four points for the 1971 study, forming five LESS groups. The five groups are: (1) no law encounters (Item 1); (2) traffic violations, pickups, searches, questionings and/or charged but *released* (Items 2-6); (3) arrested and tried in court but *no* conviction, awaiting parole hearing, awaiting trial for misdemeanor, fugitive from misdemeanor warrant, and/or convicted for misdemeanor (Items 7-19); (4) fugitive from felony warrant, absconded from parole, awaiting trial for felony, parole violated, or killed during commission of an alleged felony (Items 20-34); and (5) convicted for felony(s) and sentenced to one year and a day or more (Items 35-38).

The significance of the LESS in criminal justice research lies in recognizing the continuous nature of law violating and criminal behavior. The traditional dichomotomization of "recidivist" and "non-recidivist" is clearly an oversimplification and fails to handle the many cases–over 50% in some studies–that do not fall clearly in either of the two classifications. Behavior is seldom dichotomous; in practically all instances, there is an underlying continuum that offers a far more sensitive and valid index of the behavioral dimensions involved. The LESS focuses on this criterial continuum and provides a major step toward coping with the problem.

The Behavioral Interview

The behavioral research interview has its roots in the methods and conceptualizations of Kinsey (1948) and Murray (1938). Growing out of these, the method developed by Pascal and Jenkins (1961) and used in this study concentrates on shaping *S*'s verbal reports into descriptions of his actual behaviors and the environmental circumstances surrounding them. It involves a specification of the behavior itself, the antecedent environmental conditions, and the post-response consequences of a positive (reinforcing) or negative (punishing or extinguishing) nature. The primary focus is on the specifics of *S*'s behavioral patterns in interaction with other people. The technique is applicable to the retrospective retrieval of information concerning significant events at any point in *S*'s life starting from about school age. Backup corroboration is obtained from collaterals, although the methodology generates data that in a very real sense are self-validating.

In this context, a central concept is that of the Behavioral Incident (BI), which is patterned after Flanagan's "Critical Incident (1954)" and relates to Murray's "Episode." It is a stimulus-response with a beginning and an end, directly showing the interaction of *S* with a defined portion of his environment, e.g., another person. An attempt is made in all interviews to obtain BIs.

The behavioral research interview (described in Witherspoon, deValera, Jenkins, & Sanford, 1973) is to be sharply distinguished from the clinical interview. In the behavioral case, *S* is steered away from statements of his feelings, opinions, and attitudes, and toward precise reports of his behavior in response to the environment. On many occasions, the focus is more on the environment's actions than on *S*'s. For instance, in studies of adult deviant behavior, the role of parental behavior toward *S* in his early life is emphasized and turns out to be highly predictive of deviancy. Data concerning the high validity and reliability of the method are available in the literature (Pascal & Jenkins, 1961).

The behavioral interview technique was employed for data collection throughout this study. Staff were trained in a series of seminars on the concept of behavior and the use of the behavioral technique. In addition, the "buddy" system was used for training, i.e., a participant trainee was assigned to an experienced interviewer. Ex-offenders were used whenever possible to locate and interview *S*s.

Research Design

The overall research design of the 1971 Follow-up Study is summarized in Figure 1, which shows the five basic dimensions of experimental variation along with the instruments and time sequence of interviews.

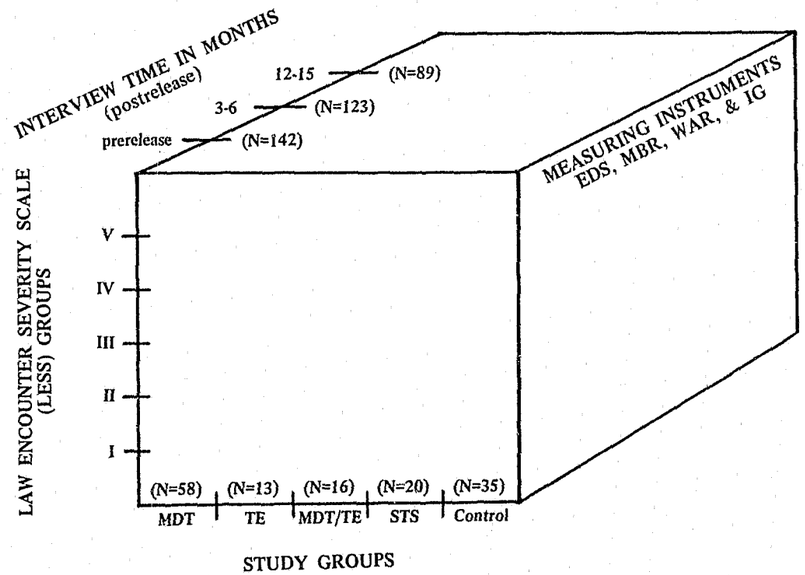


Fig. 1. 1971 Follow-up Study design.

Procedural Sequence

The chronological steps of the procedure in this study were as follows:

1. Application of *S*s for MDT or STS training. (TE *S*s were selected.)
2. Selection of *S*s for MDT and STS training and for TE treatment; identification of control *S*s. STS *S*s were selected by state personnel, and TE *S*s were selected by prison and research personnel.
3. Treatment of the experimental *S*s (MDT, TE, or STS).
4. Completion of treatment, such as graduation from MDT or STS training.
5. Prerelease interview for both experimental and control *S*s.
6. Release or parole of *S*s from prison.
7. Postrelease behavioral interviews at intervals of 3-6 months and 12-15 months if *S* did not commit a law violation and stayed in study area; or interviewed in jail or prison after committing a misdemeanor, felony, or parole violation.
8. Final check of LESS status at end of study period (approximately 18 months).

Measures

The success of any empirical study relies heavily upon how well the variables involved are defined and measured, a task which often receives less than its share of intensive time and effort. To adequately confront the objectives which were stated for the 1971 Follow-up Study, reliable and valid instruments had to be developed.

During the course of the EMLC's 1969 and 1971 Follow-up Studies, efforts were made to develop valid instruments for pinpointing which individuals needed intervention to prevent recidivism, identifying the postrelease behaviors leading to recidivism, and determining those environmental inputs and contingencies that influence successful societal adjustment. The instruments developed appear to hold tremendous potential for aiding those involved in rehabilitation programs by way of pinpointing specific behaviors associated with postrelease success and failure.

Three behavioral assessment instruments were employed in this study, along with a fourth experimental instrument. The first three were the Interview Guide (IG), the Environmental Deprivation Scale (EDS), and the Maladaptive Behavior Record (MBR). The experimental instrument was the Weekly Activity Record (WAR). When *S* was available data were collected on all instruments by trained interviewers at 3-6 and at 12-15 month

postrelease intervals in a behavioral interview lasting about 90 minutes. The individual instruments are described in the following paragraphs.

Interview Guide (IG)

The initial postrelease IG used in the earlier 1969 study (Jenkins, Barton, deValera, DeVine, Witherspoon, Muller, & McKee, 1973) presented a "shotgun" approach to follow-up data, with its 327 items being derived from previous experience and the limited literature. However, on the basis of experience and validation of the 1969 study, the IG was modified and condensed to 97 relevant items for the 1971 study. Areas covered include occupational record, social adjustment, criminal record, financial affairs, family matters, public acceptance, and housing. The interviewers' assignment was to obtain objective, detailed information in these areas and enter the data on the IG form.

A separate prerelease IG was used which concentrated on criminal, personal, social, and family history, with particular emphasis on events preceding incarceration. The prerelease interview was designed not only to gather data, but also to establish a behavioral relationship so that the interviewer acquired reinforcing properties for later postrelease follow-up.

It should be noted that the IG was not scored. Statistical comparisons were made on the data as they emerged. MDT and non-MDT, for instance, were compared in the total amount of money reported earned in the first three months following release or parole. In this connection, weekly wages were checked along with withholding taxes and the like. As another example, comparisons were made of various social behaviors of major and non-law violators, such as the behavioral characteristics of friends with whom they spent the most time and the nature of their activities together.

Environmental Deprivation Scale (EDS)

The EDS is a 16-item checklist of environmental input to the individual in terms of his deprivation or support in a variety of areas, such as occupation, organizations, and interpersonal relationships. In the interview, behavioral data are obtained concerning, say, the wife's reactions to *S*. If she responds to his needs and reinforces appropriate (socially acceptable) behaviors on his part, she is treated as supportive. If her behavior is at odds with his needs and is thus non-reinforcing, or if she is reinforcing his inappropriate behaviors, she is judged on the deprivation side. The items of the EDS are:

1. Employment
2. Income
3. Debts
4. Job participation
5. Job status
6. Hobbies and avocations
7. Education
8. Residence
9. Church
10. Other organizations
11. Friends
12. Relatives
13. Parents
14. Wife
15. Children
16. Fear

Each item is scored "0" (supportive), and a total score is accumulated with a maximum of 16.

Standards on the EDS indicate satisfactory adjustment for scores of 5-6 and below, marginal or borderline adjustment for 6-10, and maladjustment for 11 and above. It is highly likely that a person with scores of 11 and above will exhibit rather extreme public deviancy, including criminal behavior.

In addition to the use of this instrument in postrelease interviews, data related to prison experience were collected in the prerelease interview by using the EDS to assess *S*'s environmental circumstances prior to incarceration and to estimate his adjustment to the prison situation. Finally, *S* was asked to describe his projected postrelease environment, and the EDS was scored accordingly.

Maladaptive Behavior Record (MBR)

The MBR is the counterpart of the EDS on the reaction side. The two measures cover environmental input (EDS) and maladaptive responses (MBR). The MBR is constructed along the same theoretical-methodological guidelines as the EDS. It also contains 16 items, each being scored "0" or "1", the former indicating reactions within socially accepted limits and the latter those outside the limits. The response items of the MBR are:

1. Income
2. Working conditions
3. Interaction with co-workers
4. Interaction with employer
5. Work attendance
6. Use of alcohol
7. Use of drugs
8. Gambling
9. Fighting
10. Verbal abusiveness
11. Maladaptive associations
12. Money management
13. Physical condition
14. Psychological adjustment
15. Legal processes
16. Other maladaptive responses

The EDS and MBR are both derivatives of a comprehensive set of measures, the Pascal-Jenkins (P-J) Scales (Pascal & Jenkins, 1961), which cover the environment and the behavior at any stage of the developmental sequence. The EDS and MBR as distillations of the P-J Scales offer the decided advantage that the data for their execution can be collected in an interview lasting no more than an hour.

Weekly Activity Record (WAR)

The WAR, developed toward the end of the 1969 study, is concerned with the durational dimension of behavior. It divides the hours of the week into the following areas:

1. Work
2. Sleep
3. Eating and drinking
4. Cleaning and grooming
5. Religious and other organizational behavior
6. Shopping
7. Physical activity and health
8. Hobbies
9. Intellectual activities
10. Watching, reading, and listening
11. Family activities
12. Social behavior
13. Sexual behavior
14. Antisocial behavior
15. Daydreaming
16. Maladaptive associates
17. Travel
18. Waiting

These categories were empirically derived from interviews and discussions with prison inmates, releasees, and college students. Although the WAR was only a preliminary instrument in the 1969 study, it showed promise for predicting law-violating behavior and recidivism; therefore, it was included in the instruments used in the 1971 study.

Data Processing

Data were collated and record keeping procedures instituted for computer processing and analysis. Individual logs were kept on each *S*, and whenever data had been gathered and verified (as in the case of law encounters), the information was punched for record keeping and processing by the University of Alabama's computer system. Special programs (Barker, 1972) were utilized to determine distribution statistics and to perform the computational analysis of the data. Forms for the basic measures (IG, EDS, MBR, and WAR) were set up for computer processing. This procedure not only facilitated calculation of analytical and distribution statistics but also expedited other psychometric steps, such as the determination of item validities and intercorrelations.

Statistical Analysis

Data emerging from the 1971 Follow-up Study were analyzed both manually and by computer. The data for the four measuring instruments (IG, EDS, MBR, and WAR) were analyzed to determine individual item contribution to overall predictive efficiency for the law encounter criterion via Multiple Discriminant Analysis (MDA). In addition, the individual item data were subjected to *factor analysis* to determine, on the basis of intercorrelation information, common elements and components among the items.

A large amount of data analysis was conducted on a programmed desk calculator, using certain recently developed shortcut techniques to expedite analysis. These include a quick analysis of variance procedure, the Jenkins Index of Covariation (JIC), which provides an almost immediate outcome of overall significance. It is based on the ratio of range in extreme group averages to the range in extreme individual *S* scores (Jenkins & Hatcher, 1974).

The other new technique is the Coefficient of Colligation, Q, which is a correlational index of the degree of covariation between experimental treatment and behavioral measurement (Jenkins & Hatcher, 1974). It is equally applicable to continuous and discrete measurements. The technique was originally reported by Kendall in 1937 and was adapted for the purposes of the present analyses. Q is applied to any twofold table whether the measurement data are truly dichotomous or are separated around some overall average figure. It accomplishes the same ends as Chi Square, but is much easier to compute and has the decided advantage of generating an estimate of the degree or intensity of covariation involved in the data. These and other refinements in analysis procedures will be treated in the context of their application in the findings sections of this report.

Record Keeping and Reporting Results

All of the eligible 142 *S*s were given a face-to-face interview after they had been released or paroled for 3-6 months and again after 12-15 months. The term "eligible" refers to those *S*s who had not moved out of the study area, who were not deceased, and who had not returned to prison. Table 4 shows the eligibility breakdown for prerelease, 3-6 month, and 12-15 month interviews. A total of 634 individual interviews were conducted, 142 prior to release and 518 postrelease. It should be noted that 100% accounting of *S*s was accomplished, i.e., data were obtained on all *S*s. Numerous investigations have reported high attrition rates or have labeled those *S*s unaccounted for as "disappeared," such as the 14% reported by a Minnesota Corrections Department study (1971).

Table 4

Number and Interval of Interviews Given to Each Study Group in the 1971 Follow-up Study

Interview Interval	Study Groups					
	MDT $N = 58$	TE $N = 13$	MDT&TE $N = 16$	STS $N = 20$	Control $N = 35$	Total $N = 142$
Prerelease	58	13	16	20	35	142
3-6 month postrelease	52	10	11	18	32	123
12-15 month postrelease	39	6	7	12	25	89
Monthly postrelease	113	0	28	51	88	280
Total	262	29	62	101	180	634

Table 5 shows how many interviews of each type were given during the study and the status of the 142 *S*s. *S*s in the Montgomery, Alabama, area were interviewed monthly in an intensive follow-up effort; several received as many as 16 interviews during the 1971 study.

Table 5

Postrelease Disposition of 1971 Follow-up Study Subjects at 3-6 Months and 12-15 Months

Postrelease Interview Interval	Disposition of Subjects						
	Interviewed	Moved from Study Area	Deceased	Absconded	Returned to Prison	No Direct Contact	Total
3-6 months	123	9	2	3	5	0	142
12-15 months	89	16	3	4	29	1	142

The amount of data collected per interview was not as great as in the previous study, due to more sophistication in the discrimination of relevant and irrelevant information. The condensed IG allowed more of the interview time to be spent on questionable areas to increase data accuracy. In each of the prerelease interviews approximately 183 separate bits of information were collected, while in the 3-6 month and 12-15 month postrelease interviews 156 separate items of data were obtained. In the monthly interviews (Montgomery area *S*s only), 52 bits of information were gathered.

Since the amount of data available was voluminous, only summary tables are shown in the results section of this report. The interview guides and punch cards containing the individual data are available from the EMLC.

To facilitate the collection of data, a folder for each *S* was on file in the follow-up office. These folders contained demographic data, information concerning previous contacts, *S*'s arrest record, and other information about the individual. This readily available file enabled the interviewer to review relevant information prior to interviewing *S*s, therefore assuring inquiry into questionable or problem areas.

Individual charts were kept, by name, which contained release or parole data and interview dates. These charts provided quick assessment of individual status, as well as overall study progress, and were an asset for supplying data for progress reports.

A log was kept in which each *S*'s law encounters were recorded. Sources of information were FBI, county sheriff's offices, city police departments, circuit courts, criminal courts, parole offices, Alabama State Board of Corrections, State Criminal Identification and Investigation Division, newspaper, radio, television, or "rumor." Dates were included and verified when necessary, especially in the case of rumor. The final LESS status of each *S* was taken from this log when the study was completed after about 18 months.

RESULTS

Law Encounters by Institutional Treatment

There are a number of criterial dimensions along which the effects of institutional (or community) treatment can be assessed. One overall criterion consists of the incidence of various kinds of law encounters, including recidivism. The LESS with its five widely separated categories of increasing severity serves as an ideal yardstick in this connection. It should be noted, however, that law encounter frequency is only one index of treatment effectiveness. There are many others, including various aspects of job performance, scores on the predictive instruments (EDS, MBR, and WAR), and a variety of specific behavior patterns that can be assessed. A later section will deal with the relationship between measures of postrelease adjustment and institutional treatment.

The percentage of cases that fell in each LESS category were computed and sorted by type of institutional treatment. (LESS I involves no law encounters; II, pickups but no convictions; III, convictions for misdemeanors; IV, absconding and "on the run" after conviction; and V, conviction with return to prison for a year or more.) Table 6 presents the percentage of each study group falling in LESS Groups II-V after 18 months postrelease. The *N*s shown are the final numbers of *S*s involved in this phase of analysis.

Table 6

Percentage of 1971 Follow-up Study Groups in LESS Groups II-V after 18 Months Postrelease Follow-up

LESS Groups	Study Groups				
	MDT *N* = 54	TE *N* = 22	STS *N* = 19	Control *N* = 33	Total *N* = 128
II	19	23	15	12	17
III	13	18	16	12	13
IV	24	10	16	12	17
V	23	18	16	25	22
Total II-V	79	69	63	61	69
Total III-V	60	46	48	49	52

In the total data, 52% of the *S*s were convicted of criminal offenses, and only 31% had no law encounters whatsoever. The MDT group had the highest overall incidence of convictions as well as the highest percentages in LESS Groups IV and V. The TE, STS, and Control groups yield quite similar data. None of the differences in Table 6 among study groups reach a high level of significance, although the difference between LESS III-V percentages for the MDT group and those for the other three groups attains the 5% level. The reason for the higher incidence of convictions for the MDT group is not apparent.

The trends in the times of convictions constitute basic data. These are summarized in Figure 2 for the four study groups by two-month intervals over the total study period of 18 months.

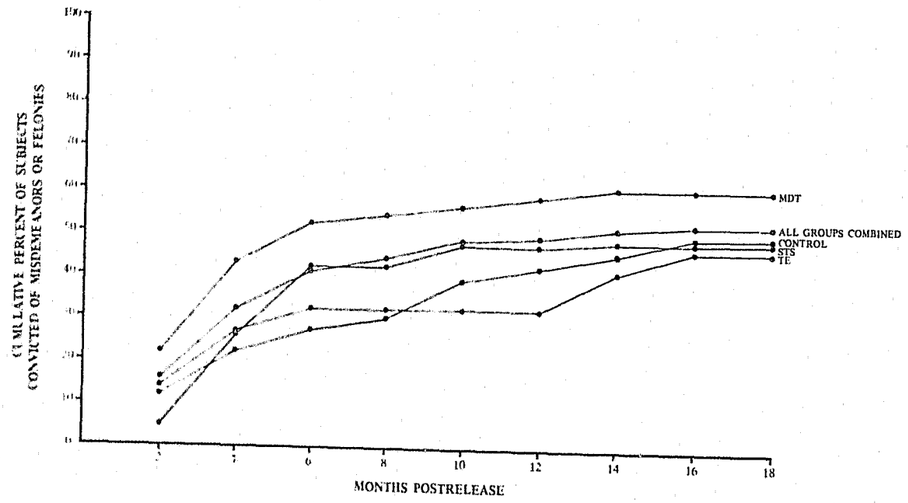


Fig. 2. Cumulative percent of subjects in the 1971 Follow-up Study groups convicted of misdemeanors or felonies (LESS Groups III-V) at 18 months postrelease.

The figure indicates a rapid accumulation of convictions during the first six postrelease months, followed by an asymptotic decrease that differs somewhat for the various groups. As previously noted, the MDT group is consistently higher than the other three groups, who cluster asymptotically although approaching their final levels in somewhat different ways. The STS group, for instance, shows a rapid accumulation of convictions nearing the final level in the first six months. The TE and Control groups, on the other hand, approach their asymptote more gradually in an almost linear fashion.

The overall rate of return to prison in these samples is 22%, with a range of 16% to 25% (LESS Group V). These figures are misleading and are clear underestimates, since

another 17% (ranging from 12% to 24%) are contained in Group IV. When apprehended, these *S*s will be returned to prison. In addition, some members of LESS Groups II and III will ultimately move into the more severe groups when employing a longer follow-up time period–for example, 36 months. Convictions for felonies run between 30% and 50% in these groups after 18 months. After 36 months in the 1969 study, this figure ranged between 50% and 70% for different groups.

Conviction frequencies, law encounters, and recidivism rates constitute a global criterion and, in one sense, are only rough indices of treatment effectiveness. Other criteria of a more specific nature will be reported in a later section of this report.

The type of crime is summarized in percentage terms in Table 7 for the four study groups. The main body of the table shows crimes for which *S*s were imprisoned when selected for the study. Also included, according to the type of crime, are mean EDS scores and percent postrelease crimes at the end of the study (18 months postrelease).

Table 7

Percent of Subjects in Each Study Group Serving a Sentence for One of Four Basic Types of Crimes, Mean EDS Score, and Percentage of Postrelease Crimes

Study Groups and Measures	*N*	Type of Crime			
		Person	Property	Statutory	Sex
Control	35	34	52	14	0
STS	20	30	55	15	0
TE	29	17	66	14	3
MDT	58	16	78	6	0
Total for all groups	142	23	65	11	1
Mean EDS Score		10.6	10.2	9.8	
Percent Postrelease Crimes	49	35	50	15	

The percentages in Table 7 add up to 100% across columns, but these totals are based on LESS Groups IV and V of Table 6 and therefore amount to one-third to less than one-half of each study group. The *N*s in Table 7 are the total *N*s for the study groups.

The overall figures suggest a clear preponderance of offenses against property, followed by crimes against persons, and a relatively low incidence of statutory crimes. There was

only one case of a sex crime. The postrelease crime-type figures are roughly comparable to the percentages of types of previous offenses, but extended time beyond the 18 months cutoff is needed for a more complete picture. Differences among study groups are not significant across crime types.

The lowest EDS scores occurred in the statutory crime group, but again the differences do not reach acceptable levels of significance. More detailed analysis of environmental and behavioral circumstances associated with the commission of different types of crime is needed.

Crime Severity by Institutional Treatment

The LESS is a continuous scale of 38 points with "1" representing no law encounters and "38" reflecting return to prison with a life sentence (or the death penalty if applicable). The LESS groups are formed by combining law encounter groups of comparable severity into clusters (I-V). As the LESS is an ordered scale, an average position can be computed for any group of *S*s. This was done with the 1971 Follow-up Study groups. The outcomes in terms of mean LESS position, or status, and percent of each study group in LESS Group III (convictions for misdemeanors) are summarized in the following figures:

Study Group	Mean LESS Position	Percent in LESS Group III
MDT	13.6	58
TE	9.9	30
STS	10.3	33
Control	12.3	48

The variability associated with each of these means is appreciable, covering the total LESS range (1-38), except for TE where it is 1-35. This prominent variance prohibits the occurrence of significant differences among the four means. The data in this representation are derived from the same data as, and are quite consistent with, the outcomes shown in Table 6 and Figure 2.

The overall outcome indicates that the typical releasee is convicted of a misdemeanor, but it must be remembered that about one-third of all *S*s had no convictions and two-fifths were convicted of felonies of some kind.

The Analysis of Criminal Behavior and the Prediction of Law Encounters

Data were collected in three behavioral interviews (prerelease, 3-6 months postrelease, and 12-15 months postrelease), using four basic instruments: IG, EDS, MBR, and WAR. The findings concerning the IG will be reported in a later section, as will be the outcomes of the computer analyses. This section presents an overview of the predictive efficiency of the EDS, MBR, and WAR for the law encounter criterion, the LESS. The detailed findings for these measures are contained in individual monographs and in a psychometric report (DeVine, Jenkins, Witherspoon, deValera, Muller, & McKee, 1974; Jenkins, Barton, DeVine, deValera, Muller, Witherspoon, & McKee, 1974; Jenkins, Muller, DeVine, deValera, Witherspoon, & McKee, 1974; Muller, DeVine, Jenkins, deValera, Witherspoon, & McKee, 1974).

The instruments to be reviewed in this section were developed to serve a twofold purpose. First, by following up released offenders, specific behavioral and environmental events associated with postrelease "success" or "failure" (i.e., staying out of or returning to prison) could be identified. Such specification serves as the basis for building treatment programs that zero in on significant, relevant environmental and behavioral dimensions, ones that contribute greatly to postrelease adjustment.

The second major purpose for developing these instruments was to provide a broadly based evaluation procedure to assess the long-range effects of both community and institutional intervention. Evaluation is effective insofar as it generates improvements and refinements in the treatment system. It is not enough to determine that a treatment program is ineffective; evaluation must pinpoint the reasons and indicate how the retraining may become more effective.

In the following subsections, a synopsis and overview are presented for each of the predictive instruments developed and adapted to the analysis of criminal behavior and applied to the prediction of law encounters and violations.

Environmental Deprivation Scale (EDS)

In the application of the EDS to the 128 *S*s of the 1971 study, 166 EDS scores were associated with law encounters. (Some *S*s had more than one law encounter.) These 166 measurements were employed in the current analyses to validate the EDS against the LESS. The data relating EDS scores to LESS status are contained in Table 8. This

table presents the frequencies in percent by thirds of the distribution along with average and dispersion figures.

Table 8
EDS Distribution and Scores by LESS Groups

EDS Measures	LESS Group I N = 40	II N = 47	III N = 30	IV N = 21	V N = 28	Total N = 166
Distribution in Percent						
High one-third	5	26	33	48	79	33
Mid one-third	45	34	54	28	17	37
Low one-third	50	40	13	24	4	30
Scores						
Mean	7.7	8.7	10.4	10.4	12.4	9.6
Median	8.0	8.8	11.0	11.3	12.9	10.1
Range	4-12	3-14	5-15	4-15	7-16	3-16

Large and orderly differences may be seen in Table 8. As EDS score increases, severity of law encounters increases. For example, only 5% of LESS Group I falls in the top third of the EDS distribution, as compared with nearly 80% of Group V. Again, only 4% of Group V falls in the low third of EDS scores, as compared with 50% for Group I.

The average figures as well as the percentages show a high degree of covariation between EDS score and law encounter status. The median for LESS Group I is 8.0 but is nearly 13.0 in Group V, a difference of over 60% in this average.

Overall, the EDS is highly predictive of law encounters and violations. For instance, of the total of 54 instances of *S*s scoring 12 and higher on the EDS, 75% have convictions for felonies or misdemeanors, and only 2 fall in LESS I. Using an EDS score of 13 as a cutoff, nearly 80% have been convicted and no cases occur in LESS I. Again, at the low end of the EDS scale there are 50 instances of *S*s with a score of 7 or below. Only six of these (12%) are in LESS Groups IV and V. These figures indicate that the EDS discriminates and predicts at both ends of the law encounter scale. Individuals with low EDS scores have either no law encounters or minimal ones, while individuals with high scores have severe law encounters, resulting in convictions and return to prison.

Stimulus input cannot basically be entirely separated from response output. Behavior is a direct function of environmental circumstances. At the same time, research emphasis can be placed separately on either the environmental or behavioral side. The EDS shows the primary significance of environmental input and support in determining behavioral outcome.

It is noteworthy that the EDS has been widely used in studies of many forms of behavioral deviancy. It has been shown to be highly predictive not only of criminal behavior, but also of alcoholism, "mental illness," and psychosomatic disturbances (Pascal & Jenkins, 1961). In all these studies, the test-retest and rater-rater reliability of the EDS were found to be high, ranging between .80 and .95.

The analytical details for the EDS are summarized in Table 12 along with those for the MBR and WAR. The EDS is shown to be highly predictive, not only in percentage accuracy but also in validity coefficient. It is slightly (but not significantly) more valid for the criterion of law encounters than are the MBR and WAR.

The items of the EDS (except for the education item) are individually significant in predicting the criterion, forming three "natural" clusters: occupational, organizational, and interpersonal. All of these are highly significant as predictive indices. These details are contained in the separate EDS monograph, but it should be noted here that the EDS specifics point directly to particular areas where intervention is required and, along with the details of the MBR and WAR, thus set the stage for development of treatment that will generate rehabilitation and reduce recidivism.

The major computer details involving the EDS, including MDA and factor analysis, are reported in a later section of this report.

Maladaptive Behavior Record (MBR)

The 152 scores on the MBR collected during the 1971 Follow-up Study were related to the LESS in the same fashion as for the EDS. Table 9 contains this information for the MBR.

This table shows a large and orderly relationship between MBR score and LESS status. The outcomes are quite comparable to those of the EDS (presented earlier in Table 7). Nearly two-thirds of LESS Group I falls in the low third of the MBR distribution, as compared with only 12% for Group V. The highest third of the distribution shows 8% for LESS Group I and 71% for Group V. In the high and low thirds there is an orderly

progression of percentages from LESS Group I to Group V, an increase for the high third and a decrease for the low third.

Table 9
MBR Distribution and Scores by LESS Groups

MBR Measures	LESS Group I $N = 40$	II $N = 43$	III $N = 26$	IV $N = 17$	V $N = 26$	Total $N = 152$
Distribution in Percent						
High one-third	8	30	42	53	71	36
Mid one-third	27	23	39	29	17	27
Low one-third	65	47	19	18	12	37
Scores						
Mean	3.0	4.8	6.6	7.6	8.6	5.5
Median	2.8	4.7	7.5	8.7	9.0	5.5
Range	0-11	0-12	1-12	2-13	2-14	0-14

The average outcomes are completely consistent with the percentage figures. The means and medians increase in a regular fashion from the least to the most severe law encounter status. The changes in averages are large, greater than those for the EDS. For example, the medians increase from just under 3.0 for LESS Group I to 9.0 for Group V, an increment by a factor of 3.2. The JIC for these data is near .50, a highly significant outcome. Overall ANOVA on the data of Table 9 generates extreme significance, consistent with the JIC.

The psychometric details of the MBR are reported elsewhere (Jenkins, Barton, DeVine, deValera, Muller, Witherspoon, & McKee, 1974; Muller, DeVine, Jenkins, deValera, Witherspoon, & McKee, 1974). It may be noted here that rater-rater coefficients range from .70 to .80, while test-retest coefficients fall mainly in the .90 range.

All items of the MBR are individually significant with the exception of Item 13, Physical Condition. The clusters formed by the items of the MBR (occupational, addictive, interpersonal, economic, adjustment) yield highly significant outcomes.

The importance of the details of the MBR lies, as with the EDS, not only in its high predictive validity for law encounters and violations, but also in its pinpointing of

specific deviant behaviors in immediate need of intervention and treatment. The MBR outcomes, coupled with those of the EDS, provide a broad yet specific picture of the environmental and behavioral events closely associated with law encounters and crime commission.

The overall validity figures for the MBR are found in Table 12, along with those for the other two predictive instruments. The computer details for the MBR are contained in a later section.

Weekly Activity Record (WAR)

The WAR is scored in three different ways. First, the raw number of reported hours is a unit of measurement. Because of great individual differences in number of hours reported, however, the figure for each item is converted to a percentage of the total number of hours reported by the individual *S*. The percentage method of scoring is complicated by the fact that some activities correlate positively and some negatively with the law encounter criterion. For this reason, and to make the WAR scoring comparable to that of the EDS and MBR, a "0" or "1" scoring scheme was adopted. It was empirically derived by combining the data for all *S*s on a given item and computing the overall average number of hours for that item. If the item were positively related to the criterion, high scores (those scores above the overall average) were assigned "0" and low scores, "1". If the relationship was negative, the scoring procedure was reversed, with high scores being assigned "1" and low, "0".

The detailed outcomes for the WAR in predicting law encounters and violations are contained in a separate monograph (Jenkins, Muller, DeVine, deValera, Witherspoon, & McKee, 1974), but certain summary data have been selected for presentation here. Table 10 summarizes the percentage of time allotted to negative behaviors, those contributing to more severe law encounters and violations. The items involved are Item 10, Watching, Reading, and Listening; Item 12, Social Behavior; Item 14, Antisocial Behavior; Item 16, Maladaptive Associates; Item 17, Travel; and Item 18, Waiting. The information is presented separately for the 1971 Follow-up Study *S*s in each of the five LESS groups, for all LESS groups combined (N = 114), for a sample of 74 college students, and a sample of 50 business personnel.

A quite orderly progressive increase in time devoted to activities associated with more severe law encounters is clear across LESS groups: the higher the LESS group, the higher the percentage of time allotted to negative activities. Both of the non-criminal groups

(students and business personnel) show large and significantly smaller proportions of time devoted to negative activities. These outcomes not only indicate the basic validity of time allocation via the WAR for law encounters, but also clearly suggest the general diagnostic utility of the WAR.

Table 10

Percentage of Time, as Measured by the WAR, Which Was Allocated to Negative Activities (Study Groups Include 1971 Follow-up Study Subjects Broken Down According to LESS Group, a Sample of College Students, and a Sample of Business Personnel.)

Group	*N*	Percent Time Allocated to Negative Activities
1971 Follow-up Study Subjects:		
LESS Group I	39	31
LESS Group II	18	38
LESS Group III	15	39
LESS Group IV	18	48
LESS Group V	24	49
LESS Groups I-V combined	114	39
College students	74	20
Business personnel	50	15

Note.--Negative activities on the WAR are: Item 10, Watching, Reading, and Listening; Item 12, Social Behavior; Item 14, Antisocial Behavior; Item 16, Maladaptive Associates; Item 17, Travel; and Item 18, Waiting.

Table 11 relates WAR scores to LESS status. The data are not quite as consistent or as large in magnitude as those for the EDS (Table 7) and MBR (Table 9), but do indicate fairly consistent and rather large effects. For example, at the low end of the scores, LESS Group I contains 51% of the WAR scores as contrasted with 11% for Group IV and 12% for Group V. At the high end of the WAR scores, Group I shows 15%; Group II, 6%; Group IV, 61%; and Group V, 58%. Again the differences are quite large in magnitude at the extremes.

The average figures are highly consistent with the percentage data in showing large-scale trends, with direct covariation of means and medians occurring with increasing law encounter severity. The figures range from 8-9 for LESS Groups I and II to around 13 for LESS Groups IV and V. Overall, this increase amounts to nearly 50%.

Table 11

WAR Distribution and Scores by LESS Groups

WAR Measures	LESS Group I *N* = 39	II *N* = 18	III *N* = 15	IV *N* = 18	V *N* = 24	Total *N* = 114
Distribution in Percent						
High one-third	15	6	27	61	58	31
Mid one-third	34	44	46	28	30	36
Low one-third	51	50	27	11	12	33
Scores						
Mean	8.5	8.3	10.2	12.5	12.3	10.1
Median	8.9	8.5	11.4	13.5	12.8	10.4
Range	4-16	4-13	4-16	7-18	6-18	3-18

In terms of consistency of measurement or reliability the WAR poses an interesting case. It is one of the few instances of psychological and behavioral measurement where rater-rater reliability or judge agreement emerges as high or higher than test-retest reliability. Two interviewers rating the same *S* on the WAR agree perfectly for all practical purposes. The obtained rater-rater coefficients average close to 1.00. (This situation, of course, presupposes trained interviewers.) Test-retest reliability consistently yields coefficients of .90 to .95. In this same connection, changes in WAR scores over time are noteworthy. The lower LESS groups (I, II, and III) show little change over time, with most *S*s reporting little variation in time allocation. LESS Groups IV and V, on the other hand, show a marked increase in time allotted to negative activities over the 15-18 months of the 1971 Follow-up Study. Nearly 80% of these *S*s show a 0-1 score increase over time.

The validation details for the WAR are also contained in Table 12, along with those for the EDS and MBR.

All Three Instruments

The data concerning overall validity of the EDS, MBR, and WAR are presented in Table 12, where percent accuracy and validity (Q) coefficients are shown.

Table 12

Accuracy and Validity of the EDS, MBR, and WAR in Predicting LESS Status of 1971 Follow-up Subjects

Instrument	All Scores and Groups			Extreme Scores and Groups		
	Percent Accuracy	Validity Coefficient	Percent of Sample	Percent Accuracy	Validity Coefficient	Percent of Sample
EDS (N = 166)	83	.87	100	93	.98	51
MBR (N = 152)	79	.85	100	88	.95	55
WAR (N = 114)	73	.77	100	80	.87	57

The extremely high predictive validity of the EDS, MBR, and WAR can be seen in this table. The three instruments, as is characteristic of all predictive and selective instruments, have somewhat higher validity in both outlying score and criterial groups. At the same time, the predictive accuracy of the instruments for the total data is quite high.

To show the overall outcomes together, Figure 3 was constructed by calculating for each instrument the percentage of scores above the grand average for each LESS group. These percentages thus indicate maladjustment.

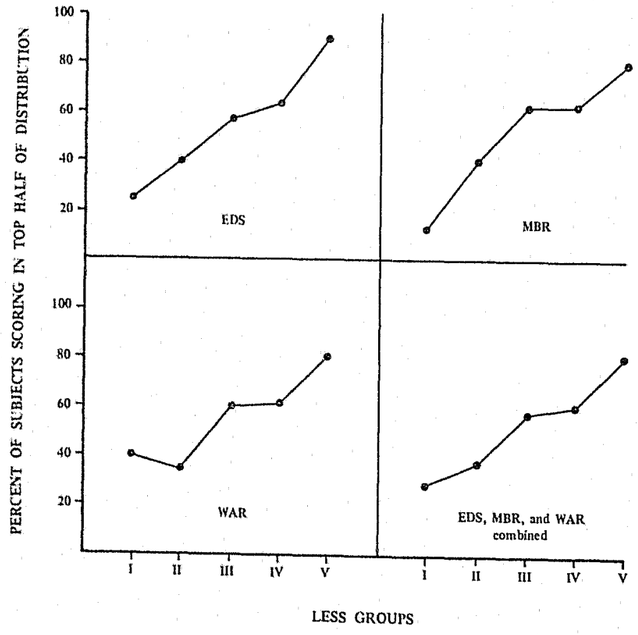


Fig. 3. Relationship of the EDS, MBR, and WAR to law encounter status.

Figure 3 shows quite clearly the predictive accuracy of the three instruments for LESS status. Overall, the percentage of scores indicating maladjustment (top half of the distribution) increases as severity of law encounter increases, a most orderly progression.

The intercorrelations of the three measuring instruments may be worth noting. The EDS-MBR figure is .73; the EDS-WAR, .54; and MBR-WAR, .65. These interrelationships are moderate to substantial, but leave considerable variance unaccounted for, suggesting the instruments are measuring somewhat different aspects of performance.

A clearcut inference from the results presented in this section is that the EDS, MBR, and WAR are highly effective diagnostic and detection devices for identifying specific environmental and behavioral events critically associated with law encounters and criminal behavior. In addition, they function as powerful tools for the evaluation of treatment programs, providing positive feedback to improve treatment as well as immediately assessing its effects. And, perhaps more importantly, the information provided by these instruments points the way directly toward intervention and retraining in the most critical areas. By focusing on the specifics identified by these instruments, effective treatment can be developed that will ultimately lead to the establishment of preventative programs to obviate the problem of law violation at its source, reducing the occurrence of crime.

Systematic collection of the data represented by the EDS, MBR, and WAR will provide information that can be utilized in short-term crime prevention by all branches of the criminal justice system. Use of the EDS, for instance, by parole supervisors will allow them to concentrate on cases with high scores, assigning these individuals to treatment programs designed to replace their behavioral deficits and surpluses.

Overview of Combined Measures

Six clusters formed in the data collected on the EDS, MBR, and WAR, focusing on these areas: Employment, Money Matters, Leisure Time Activities, Family and Friends, Antisocial Behavior, and Adjustment Problems. The data were combined, and the percents of study groups showing adjustment were then calculated for LESS Groups I and II (non-law violators) in comparison with Groups IV and V (major law violators). The outcomes are contained in Figure 4.

Large, highly consistent and quite significant differences between the two LESS groupings are readily apparent in Figure 4. These "natural" factors, represented by the six clusters, all contribute significantly to postrelease success. The makeup of these factors should be compared with the formal, statistical outcomes of factor analysis reported in detail later.

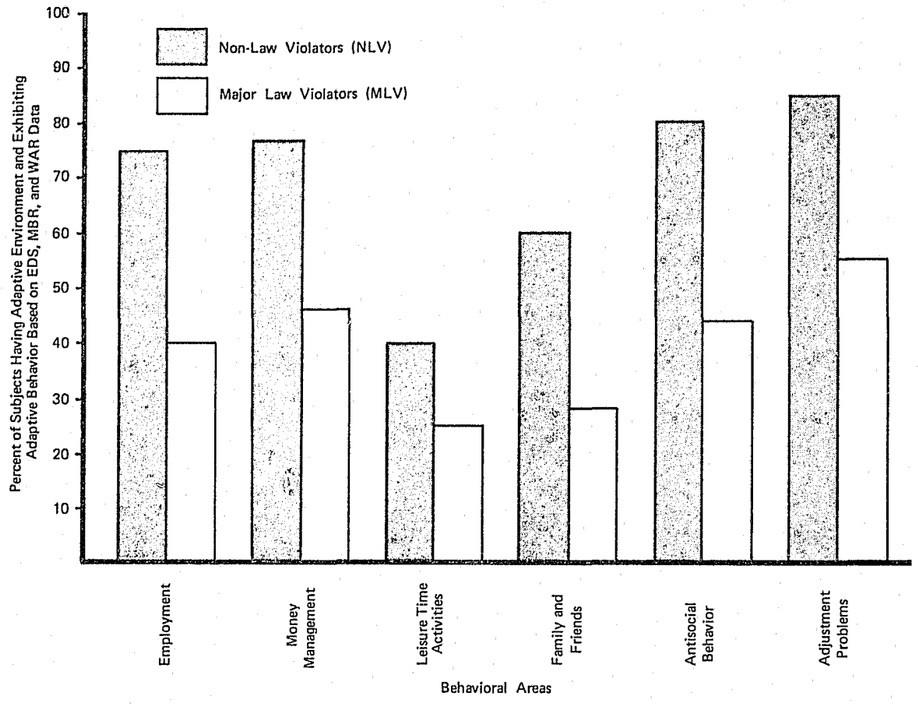


Fig. 4. Postrelease adjustment of non-law violators and major law violators in the 1971 Follow-up Study in six behavioral areas as measured by the EDS, MBR, and WAR.

Effect of Institutional Treatment on Predictive Instrument Score

The medians and ranges of the predictive instrument scores by institutional treatment (study) groups are contained in Table 13.

Differences across study groups are quite small relative to *S* variability. For instance, the range in medians for the EDS is from 8.3 to 10.0, while the range in individual *S* scores is from 3 to 15. None of the average differences in Table 13 are statistically significant. The average scores for the MDT group, however, are consistently higher than those for the other study groups, corresponding to the LESS data in Table 6. These outcomes clearly call for further investigation.

Table 13

Predictive Instrument Scores by Institutional Treatment Group

Predictive Instrument	Institutional Treatment (Study) Group			
	MDT (*N* = 47-54)	TE (*N* = 20-22)	STS (*N* = 17-19)	Control (*N* = 28-30)
EDS				
Median	10.0	8.5	8.3	8.7
Range	4-15	3-14	4-13	4-15
MBR				
Median	5.9	3.9	3.3	4.7
Range	0-15	0-11	1-10	0-13
WAR				
Median	12.7	10.5	9.3	10.9
Range	7-18	4-17	4-18	5-18

Any treatment procedure possesses special features that need follow-up evaluation. Specialized measures may have to be developed to evaluate these specific features and then used in addition to such instruments as the EDS, MBR, and WAR.

Employment as an Index of Postrelease Success

Occupational activity and full-time employment are considered indices of societal adjustment. An individual with a job is more likely to be coping with everyday problems than one who is unemployed. There are many dimensions to the employment area, including such matters as job participation and involvement, job satisfaction or reinforcement, job procurement and maintenance on the job, punctuality and absenteeism, money earned and its management, and, very importantly, occupation as an index and reflection of self-confidence (measured by EDS Item 16, Fear). Some of these dimensions are straightforward and easy to measure; others are more subtle and difficult to assess. This section will treat some of these matters.

To provide an overview of this discussion of employment, the relationship between full-time employment and law violations was extracted from a number of studies. To simplify the presentation, the percentage of *S*s fully employed were divided into law violators and non-law violators. The outcomes follow.

Study	Percent Law Violators	Percent Non-Law Violators
Calhoon, 1971, and Sullivan, 1971 (N = 148)	20	74
1969 Follow-up Study (N = 148)	53	79
Mullen, 1972 (N = 72)	49	80
1971 Follow-up Study at 3-6 months (N = 109)	60	74
1971 Follow-up Study at 12-15 months (N = 63)	43	78

A large-scale relationship emerges in which nearly twice as many non-law violators as law violators are employed full time. Employment is clearly associated with the absence of criminal behavior. Individuals who are unemployed or only employed part time tend to commit violations, be convicted, and return to prison.

Examining the employment record in more detail, Table 14 summarizes total income and percentage of time spent working full time for each of four 1971 study groups at 3-6 months and 12-15 months postrelease.

Table 14

Employment Data for 1971 Follow-up Study Groups at 3-6 Months and 12-15 Months Postrelease

Employment Items	Study Groups: MDT N = 73	TE N = 16	STS N = 19	Control N = 13
3-6 Months Postrelease				
Total income:				
Median	$1,000	$900	$1,200	$740
Range	$0-$3,000	$0-$1,950	$0-$3,300	$0-$3,400
Percent of time employed full time:				
Median	87	79	93	86
Range	0-100	0-100	0-100	0-100
12-15 Months Postrelease				
Total income:				
Median	$3,950	$4,140	$5,410	$3,660
Range	$0-$10,000	$1,400-$6,530	$650-$8,300	$300-$11,000
Percent of time employed full time:				
Median	80	87	83	81
Range	0-100	0-100	20-100	0-100

The vocational training groups (MDT and STS) initially work more and earn slightly more money during the first 3 to 6 months after release. The differences are small and insignificant, but quite consistent with those obtained in the 1969 Follow-up Study. After 12 to 15 months, the STS group is highest in income, while the TE group is highest in percent time spent working full time. Again the differences are small and insignificant.

It should be noted that the data in Table 14 are combined across all LESS groups. The data previously presented show a large covariation of employment with law encounter status. The trends of Table 14 are somewhat confounded by this law encounter dimension. To clarify this picture, the first five items of the EDS and MBR and the first item of the WAR–all dealing with occupational matters–were examined in more detail. Extreme LESS groups (I and V) were compared on these items in terms of percentage of *S*s scoring "0", i.e., the percentage of *S*s exhibiting adaptive environmental or behavioral patterns in the employment area. This information is summarized in Table 15.

Table 15

Percent of Non-Law Violators and Major Law Violators in the 1971 Follow-up Study Receiving Adaptive Occupational Input as Shown by the EDS, MBR, and WAR

Employment Items	Law Violation Groups: Non-Law Violators N = 40	Major Law Violators N = 25
EDS		
1. Employment	78	29
2. Income	70	25
3. Debts	88	50
4. Job Participation	39	13
5. Job Status	30	8
MBR		
1. Income	77	35
2. Working Conditions	65	27
3. Interaction with Co-Workers	79	38
4. Interaction with Employer	77	38
5. Work Attendance	69	23
WAR		
1. Time Working	74	29

An examination of Table 15 indicates very large and completely consistent differences favoring the group with no law encounters (LESS Group I) over the maximal encounter group (LESS Group V) in all facets of occupation and employment. The differences are all highly significant, averaging over two to one out to nearly four to one.

As far as the EDS is concerned, the group having no law encounters works a great deal more and, correspondingly, makes considerably more money and incurs fewer debts that cannot be handled. *S*s in this group show a much higher level of job participation, express more job pride, and find their jobs more satisfying and rewarding.

On the MBR, *S*s in LESS Group I, as contrasted with those in LESS Group V, handle their income more effectively and respond more favorably to their working conditions, co-workers, and supervisor or employer. Their greater job involvement is reflected in much higher work attendance.

The first item on the WAR, Work, focuses on the amount of time devoted to paid employment. About 2.5 more time is so allotted by *S*s in LESS Group I than by those in Group V, the maximal encounter group.

These items from the predictive instruments indicate some of the dimensions that must be considered in an effective vocational training program. Training must occur in such areas as job participation and job satisfaction, as well as in occupational skills. The latter alone will not guarantee work, but must be coupled with training in job procurement and self-maintenance on the job, including participation and reinforcing feedback. While these are not simple matters to build into a program, they are necessary to achieve effective vocational training.

Employability skills also involve interpersonal relationships. Interactions with co-workers and supervisors are integral parts of job skills. The 1971 Follow-up Study indicates that the area of interpersonal and social skills may well be the most significant behavioral area. Vocational training should thus include considerable training in interpersonal as well as occupational skills.

To complete the employment picture, data were collected separately for the MDT vocational trade areas involved in the 1971 study. Selected occupational information concerning money matters and full-time employment is summarized in Table 16 for the trades of barbering, butchering, refrigeration repair, and welding.

Table 16

Employment Data for MDT Trainees at 12-15 Months Postrelease by Vocational Trade Area

Items	Vocational Trade Area			
	Barbers $N = 6$	Butchers $N = 14$	Refrigeration Repair $N = 8$	Welders $N = 18$
Total income:				
Mean	$3,749	$2,714	$3,700	$3,642
Median	$3,280	$2,838	$3,470	$4,076
Range	$0-$7,000	$0-$5,440	$2,076-$5,976	$276-$10,000
Amount saved:				
Mean	$213	$10	$245	$75
Median	$30	$0	$6	$0
Range	$0-$700	$0-$90	$0-$750	$0-$500
Amount of debt:				
Mean	$846	$332	$1,271	$494
Median	$120	$212	$600	$100
Range	$0-$2,200	$0-$1,745	$0-$5,525	$0-$3,000
Percent of time employed full time:				
Mean	76	59	69	70
Median	87	52	64	75
Range	0-100	0-100	25-100	6-100
Total number of full-time jobs held:				
Mean	2.8	2.2	2.9	2.5
Median	2.5	2.0	2.0	2.0
Range	0-6	0-5	2-5	1-6

The *N*s are small and outcomes must be interpreted with caution. There is, however, a tendency for butchers to be consistently lower in the amount of money earned, saved, and owed, as well as in percent of time employed full time and total number of full-time jobs held. It seems likely that the relatively higher levels of employment and income in the other trade areas reflect the local employment scene at the time of the data collection (late 1972). The decrements in the butchering area approach moderate levels of statistical significance in several instances.

Computer Analysis of Study Outcomes

The results reported thus far have been based on a *univariate* approach to the problem of determining functional relationships between environmental variables, particularly between predictive instrument scores and law encounter status. *Multivariate* analysis offers an alternative approach to the problem of detecting data trends.

Univariate and multivariate analysis approaches are two different and partially complementary ways of examining the same set of outcomes. In the former case, the investigator has a set of tentative hypotheses concerning functional relationships inherent in his experimental setup. He then proceeds to test these hypotheses by direct empirical reference to his data outcomes. The kinds of experiments designed from the univariate approach usually involve a single dimension of experimental variation, e.g., severity of law encounters. Systematic behavioral measurements and differences are obtained along this single experimental dimension.

In the multivariate approach, on the other hand, a large number of both experimental treatments and/or behavioral measurements are taken. Computer procedures are then employed to determine what factors or variables contribute most significantly to overall outcomes. The advantage of the multivariate approach lies in its capacity to detect interaction effects among a number of treatments and/or measurements applied "simultaneously." As an example, a number of aspects of the complex behavior class known as criminal may be a joint and interactive function of a large number of simultaneously operating environmental and behavioral antecedents.

At the same time, the history of psychology and other disciplines of behavioral science suggests that the main source of derivation of basic principles for the control and change of behavior has been the univariate approach. The two approaches are not incompatible and may be applied, as was done in the 1971 study, to the same set of data with quite consistent agreement. Or, the multivariate technique may be employed as a forerunner to the univariate by detecting significant trends that require univariate follow-up research to pinpoint particular functional relationships.

In order to both replicate and validate the univariate outcomes, the data from the 1971 Follow-up Study were subjected to multivariate analysis, using the University of Alabama's computer system.

Two basic kinds of multivariate analyses were performed. The first, Multiple Discriminant Analysis (MDA), was applied to the individual item data of the three predictive

instruments and items from the IG. The MDA technique determines the relative contribution and significance of each of the input sources in predicting the criterion, in this case, LESS status.

The second form of multivariate analysis applied to the criterial and predictive data of the four instruments (EDS, MBR, WAR, and IG) was factor analysis. This basic intercorrelational procedure assesses and determines communalities and common factors among the various indices employed. It provides a statistical basis for clustering of individual items with a long-range view to the development of predictive devices that are more factorially "pure."

The outcomes of MDA and factor analysis applied to the 1971 study data are contained in the following sections of this report.

Multiple Discriminant Analysis (MDA)

Table 17 is an ordinal listing of the most significant and predictive variables in the MDA. The technique used was the Stepwise Discriminant Analysis from the UCLA Biomedical Series of canned statistical programs (BMDO7M). In this technique, the first variable selected, in this instance, Fear (EDS Item 16), is selected solely on the magnitude of the contributed F-value. Fear generated an F of 23.42, nearly three times as high as the next highest variable, and was therefore chosen as the primary item. Subsequent items were selected as an interactive function of F-value and accuracy of prediction, which, although highly correlated, are not synonymous.

With the variable and F-value columns are two columns of indices of predictivity, labeled "3-part criterion" and "2-part criterion," each containing a percent accuracy of prediction score and the absolute number of *S*s correctly classified. The specific classification category was developed when it became obvious that the typical dichotomy of recidivist/non-recidivist was not only statistically clumsy, but also behaviorally unsound. The data indicated three distinct law encounter groupings: those *S*s who had no encounters with law enforcement officials or had been picked up for questioning only, those *S*s who had been arrested and convicted on misdemeanor charges, and those *S*s who had committed acts sufficient to return them to prison for one year or more. Using this trichotomy of categories (non-law violators, minor law violators, and major law violators), statistical significance and predictive validity were improved. The column labeled "3-part criterion" lists the percent accuracy of the variable in predicting the law encounter category in which the *S*s fell, while the values in the column labeled "2-part criterion" give the accuracy

of prediction on a dichotomous basis. *S*s who did not return to prison in the course of the follow-up period and who fell into the two lesser law encounter categories were considered to have been accurately assigned in terms of overall predictivity, regardless of which of the two minor law encounter groups were actually involved. The first item in the MDA can accurately predict the specific law encounter category of 63% of the *S*s and the all or none overall categories for 69% of the *S*s.

Table 17
A Listing of Variables in Order of Entry into the Stepwise Discriminate Analysis
N = 166

Step	Variable	F-Value	Percent Predictivity	
			3-Part Criterion[a]	2-Part Criterion[b]
1	Fear (EDS Item 16)	23.4	63	69
2	Maladaptive Associations (MBR Item 11)	8.3	63	76
3	Number Arrests (I.G.)	5.3	66	76
4	Use of Alcohol (MBR Item 6)	4.2	59	76
5	Psychological Adjustment (MBR Item 14)	3.5	63	80
6	Daydreaming (WAR Item 15)	3.2	64	79
7	Income (MBR Item 1)	3.3	66	78
8	Total Income (I.G.)	4.7	67	80
9	Money Saved (I.G.)	3.4	67	79
10	Money Management (MBR Item 12)	3.6	70	85
11	Use of Drugs (MBR Item 7)	3.6	70	84
12	Wife (EDS Item 14)	2.3	72	87
13	Family Activities (WAR Item 11)	3.4	72	87
14	Eating and Drinking (WAR Item 3)	2.6	73	87
15	Hobbies and Avocations (EDS Item 6)	2.0	71	86
16	Checking Account Establishment (I.G.)	1.9	72	86
17	Maladaptive Associates (WAR Item 16)	1.9	72	86
18	Church (EDS Item 9)	1.8	73	87
19	Fighting (MBR Item 9)	1.6	75	88
20	Sexual Behavior (WAR Item 14)	1.3	76	89
21	Number Jobs Held and Left (I.G.)	1.5	78	89
22	Debts (EDS Item 3)	1.7	77	89
23	Percent Time Full-Time Work (I.G.)	1.4	78	88
24	Percent Time Part-Time Work (I.G.)	1.7	78	89
25	Sleep (WAR Item 2)	1.6	81	91
26	Hobbies (WAR Item 8)	1.6	81	91
27	Interaction with Co-Workers (MBR Item 3)	1.2	80	90
28	Work (WAR Item 1)	1.6	79	90
29	Clubs Joined (I.G.)	1.4	80	90
30	Other Maladaptive Responses (MBR Item 16)	1.3	80	90
31	Physical Condition (MBR Item 13)	1.3	81	91
32	Intellectual Activities (WAR Item 9)	1.2	82	91
33	Antisocial Behavior (WAR Item 14)	1.0	80	90
34	Income (EDS Item 2)	1.0	81	90
35	Verbal Abusiveness (MBR Item 10)	0.8	81	91
36	Residence (EDS Item 8)	0.8	83	92
37	Friends (EDS Item 11)	0.8	83	92
38	Employment (EDS Item 1)	0.7	83	92
39	Physical Activity and Health (WAR Item 7)	.8	83	92
40	Children (EDS Item 15)	0.5	83	92

[a]The three-part criterion is *no law violations, minor law violations,* and *major law violations.*
[b]The two-part criterion is *no law violations and minor law violations combined* and *major law violations.*

It should be noted that the first 20 variables (or steps) are nearly 90% accurate. Most of these times are from the three predictive instruments--the EDS, MBR, and WAR.

Factor Analysis

The factor analyses were based on 16 items from the EDS, 16 from the MBR, 18 from the WAR, and 15 from the IG. Table 18 lists the five major factors generated by the factor analysis program developed by Barker (1972).

Factor 1, the most powerful in terms of explaining total variance in the data set (20.17%), is associated with work and employment-related items. The three most heavily weighted variables in the factor are: Interaction with Co-Workers (MBR Item 3), Employment (EDS Item 1), and Income (MBR Item 1).

Factor 2, which explains 5.26% of the total variation in the data, is a mixture of a number of variables, all of which have in common the escape and avoidance of problems. The most heavily weighted variables in this factor are Daydreaming (WAR Item 15), Use of Drugs (MBR Item 7), and Social Behavior (WAR Item 12).

Factor 3 is composed of what might be termed maintenance behaviors, e.g., Shopping (WAR Item 6), Sexual Behavior (WAR Item 13), and Eating and Drinking (WAR Item 3). This factor explains 4.86% of the total variance.

The variables in Factor 4 are situations peculiar to released offenders or which are of particular importance to them. This factor, which explains 4.39% of the variance, includes such items as being threatened with return to prison and expressing feelings of being considered inferior because of having a prison record, both of which are taken from the IG.

Factor 5 is composed of family-related variables. Children (EDS Item 15) and Number of Dependents (IG) are the two most heavily weighted items. This factor explains 3.59% of the variance.

Other variables, such as the total scores on the EDS and MBR, were weighted extremely heavily and contributed greatly to the explanation of the variance in the factors. These variables, however, were "factorially impure" because they were significantly weighted in two or more factors and so were not useful as pure factor items. These variables were highly significant and predictive in the MDA described previously.

Table 18

Significant Variables in Each of the Five Major Factors Generated by Factor Analysis of the 1971 Follow-up Study

Factor 1 Employment	Factor Loadings	Factor 2 Escape	Factor Loadings	Factor 3 Maintenance	Factor Loadings	Factor 4 Inmate-Related	Factor Loadings	Factor 5 Family Items	Factor Loadings
1. Interaction with Co-Workers (MBR Item 3)	.92	Daydreaming (WAR Item 15)	.68	Sexual Behavior (WAR Item 13)	.73	Threatened with Return to Prison (I.G.)	.58	Number of Dependents (I.G.)	.75
2. Employment (EDS Item 1)	.91	Use of Drugs (MBR Item 7)	.54	Shopping (WAR Item 6)	.72	"Feels Looked Down Upon" (I.G.)	.53	Children (EDS Item 15)	.73
3. Income (MBR Item 1)	.86	Social Behavior (WAR Item 12)	.53	Eating and Drinking (WAR Item 3)	.44	Use of Alcohol (MBR Item 6)	.48	Family Activities (WAR Item 11)	.61
4. Interaction with Employer (MBR Item 4)	.86	Total Income (I.G.)	.41	Cleaning and Grooming (WAR Item 4)	.42	Friends (EDS Item 11)	.43	Wife (EDS Item 14)	.60
5. Income (EDS Item 2)	.89	Physical Activity and Health (WAR Item 7)	.40						
6. Work (WAR Item 1)	.79	Watching, Reading, and Listening (WAR Item 10)	.39						
7. Working Conditions (MBR Item 2)	.78	Other Maladaptive Responses (MBR Item 16)	.34						
8. Work Attendance (MBR Item 5)	.70								
9. Job Participation (EDS Item 4)	.58								
10. Percent Time Part-Time Work (I.G.)	.54								
11. Job Status (EDS Item 5)	.44								
12. Sleep (WAR Item 2)	.37								
13. Percent Time Full-Time Work (I.G.)	.36								

Overview of Multiple Discriminant and Factor Analyses

At first glance, the two multivariate analyses seem to offer some contradictions. Fear (EDS Item 16), the single most predictively valid item in the MDA, is not even listed in the tabular presentation of variables in the factors generated by the factor analysis. While highly significant items in MDAs are not necessarily heavily loaded in one of the factors, they frequently are.

In the case of the Fear item, it is the single most heavily loaded variable within Factor 1, the work and employment-related factor, with a factor loading of .99. Unfortunately, Fear also has a significant loading of .32 in Factor 2, the escape-related factor. Due to methodological considerations unique to factor analyses, this double significance of loading renders the Fear item factorially impure. It must thus be eliminated from the list of variables in a given factor.

Factor 1 contains 13 significant variables dealing with employment and money-related matters. Likewise, the first 20 most significant variables in the MDA contain five such variables (not including the EDS Fear item, which is also highly associated with the Work factor). This finding reiterates the findings of Jenkins, Barton, deValera, DeVine, Witherspoon, Muller, and McKee (1973) and those of Mullen (1972), who found that work and money-related factors were the best predictors of criminal behavior. Thus the early emphasis placed on such work-related factors as vocational training and adult education is supported as not only justifiable but essential.

The variables listed as significant in the MDA and those included as being associated with work in the factor analysis are not all pure work items. Such items as amount of money saved, whether or not a checking account had been opened, and Debts (EDS Item 3) deal not with work *per se*, but with the management and utilization of income derived from work. Similarly, such significantly loaded items as Interaction with Co-Workers (MBR Item 3) and Interaction with Employer (MBR Item 4) are not monetary or pure work-related items. Instead, these items are concerned with the ex-offender establishing and maintaining adaptive interpersonal relationships with those individuals he encounters during the course of his work.

These findings indicate that while vocational training and adult education are essential, they need to be coupled with training dealing with interpersonal interactions and income management. For example, 95% of the Ss who applied for and received MDT training either had never been previously employed or had held only menial day labor jobs.

Individuals from this background have frequently had the experience that if jobs become too difficult and bosses too demanding, it is easier to quit the job and find new employment than to change their work habits. The construction industry, for instance, requires such a large number of unskilled laborers that an individual can always find work. Skilled and semi-skilled positions, however, are not as widely available as are unskilled labor slots. And, in the smaller circles of a specific skill, everyone tends to know everyone else, so a man develops a reputation for his work. A butcher, refrigeration repairman, barber, or welder who quits his job with little provocation or who offends his employer or customers finds himself out of work with little possibility of finding a new job.

Here the need for interpersonal relationship training is obvious. Old patterns of behavior have to be modified before even the best-trained releasee can comfortably adjust to a new employment situation and the people in it.

Similarly, these individuals have never had a constant source of income and thus have not learned to handle money logically. They accrue debts that they are unable to pay and misspend what money they have, omitting basic necessities. Money management training could possibly reduce criminal behavior by as much as 15%.

Factors 2 and 3 are basically different in that Factor 2 deals with behaviors used to avoid reality and 3 deals with behaviors necessary to the maintenance of day-to-day life. There is a major common feature, however, in that both factors deal with the allocation and use of leisure time. This is another major problem area, one which goes farther than association with known criminals and ex-felons, the traditional focus of parole and probation supervisors. While this particular behavior is highly significant and is the second most significant variable in the MDA, other behaviors are important and contribute to postrelease success. *S*s who sleep most of their leisure time away are not likely to be returned to prison while they are sleeping, but they are also not likely to make positive behavioral adjustments to postrelease life. When some form of environmental stress does occur, they are more likely to "get in trouble with the law" than is the person who has learned to allocate time to hobbies, organizations, or some other adaptive social behaviors. Likewise, devoting time to such seemingly innocuous behaviors as daydreaming, health activities, and shopping, if mishandled, can be highly detrimental to the formation of adaptive behaviors.

The variables in Factor 4 are, in combination, unique to released offenders. Factor 4 can best be described as a response-to-the-free-world factor. Those *S*s who are unprepared

for release and the environmental differences of the free world tend to respond to the change in maladaptive ways, such as overuse of alcohol and fighting. Although no functional relationship is obvious or, indeed, justifiable, these same individuals express feelings of being looked down upon by people in the community and report being threatened with return to prison. A number of social and employment items were also highly associated with this factor but were impure and thus are not listed.

Treatment of the deficiencies contributing to the items in Factor 4 would have to be indirect; that is, those impure items associated with this factor and outlined by the first three factors would have to be treated. Since Factor 4 is largely composed of reactive variables, the modification of the environmental input should be sufficient to modify the responses typified by the variables in this factor.

Factor 5 is extremely clear-cut; it deals with supportive input from familial sources. Equally clear-cut is the difference the variables in this factor make in postrelease adaptation. Those *S*s with strong positive input from family or surrogates do not return to prison, while *S*s with negative or little or no supportive input eventually return to prison on major charges. Although the results are not all-or-none in nature, the fact that three of the four items in Factor 5 are among the 41 most predictive indicates the importance of the variables in this factor.

The overall interpretation of the multivariate analyses is that:

1. Traditional areas of institutional treatment can be effective, if supplemental areas of training are implemented to extend and support the more traditional areas of intervention.
2. The number of factors and individual items which proved significant indicate the need for individual diagnosis, prescription, and community treatment for each soon-to-be-released offender.

Multiple Correlation Analysis

Multiple discriminant analysis orders variables predictive of a criterion in terms of variance accounted for and significance of covariation, without regard to interrelationships among the predictors. Factor analysis, on the other hand, highlights the intercorrelations among the predictive variables in generating "pure" factors among a large number of variables. The question still remains of predicting the criterion while simultaneously considering the validity and interrelationships of the predictive variables. Traditionally,

the method employed is that of multiple regression, which generates a single correlational figure or multiple correlation (R). This technique was extremely cumbersome and time-consuming prior to the development of computer procedures, particularly where a large number of variables (e.g., 50-60) were involved on the predictor side.

Computer programs are now available for the calculation of multiple correlation for a large number of variables, as in the 1971 Follow-up Study. Multiple regression was applied to compute the multiple correlation for the predictive variables in relation to two different but related criteria. The first criterion was continuous, using the 38 points on the LESS, which range from no law encounters to return to prison with a life sentence. The second criterion dichotomized the LESS into convictions (misdemeanors and felonies) and non-convictions. LESS Groups I and II (no convictions) constituted half of the criterion, and LESS Groups III, IV, and V (convictions) made up the other half. An alternative, which was rejected, would have been to omit the misdemeanor group and deal with the incomplete criterion of presence or absence of recidivism.

Multiple correlation outcomes were similar for both criteria. Results are presented only for the continuous criterial outcomes, since these are more representative and comprehensive.

Table 19 contains the outcomes of the computer multiple regression analyses, presenting the variables in order of contribution to outcome and the corresponding multiple correlation (R).

As is typical in these analyses, R increases rapidly with the addition of the first few variables, reaching .61 with the first six and .70 with the first 17, and then tails off asymptotically to a final level of .80 with all 67 predictor variables. The quite high level of multiple correlation, even with a few variables, is not surprising in light of the high level of predictive accuracy attained in the univariate analyses reported previously. The multiple correlation outcomes are quite consistent with those of the MDA as well.

The composition of the variables contributing largely to R is noteworthy. Five of the first 20 fall in the occupational area, and 8 fall in the interpersonal area. Of the first 30 predictive variables, which yield a multiple R of .75, 9 fall in the occupational area and 13 fall in the interpersonal area. These outcomes are in close accord with previous findings generated by the predictive instruments–the EDS, MBR, and WAR.

Table 19

Multiple Regression and Correlation Analysis of 67 Variables Predictive of Law Encounters and Violations Against the 38 Points of the LESS Criterion in the 1971 Follow-up Study

N = 166

Step	Variable	Correlation (R)
1	EDS Total Score	.44
2	Maladaptive Associations (MBR Item 11)	.50
3	Number Arrests/Pickups (I.G.)	.54
4	Fear (EDS Item 16)	.56
5	Job Status (EDS Item 5)	.58
6	Daydreaming (WAR Item 15)	.61
7	Other Maladaptive Responses (MBR Item 16)	.62
8	Family Activities (WAR Item 11)	.64
9	Use of Drugs (MBR Item 7)	.65
10	Total Debts (I.G.)	.65
11	Employment (EDS Item 1)	.66
12	Physical Condition (MBR Item 13)	.67
13	Wife (EDS Item 14)	.68
14	Hobbies (WAR Item 8)	.68
15	Eating and Drinking (WAR Item 3)	.69
16	Sexual Behavior (WAR Item 13)	.69
17	Work Attendance (MBR Item 5)	.70
18	*S* "feels looked down upon" (I.G.)	.70
19	Sleep (WAR Item 2)	.70
20	Percent Time Works Part-Time (I.G.)	.71
21	Total Income Postrelease (I.G.)	.71
22	Joined Clubs Postrelease (I.G.)	.71
23	Children (EDS Item 15)	.72
24	Intellectual Activities (WAR Item 9)	.72
25	Psychological Adjustment (MBR Item 14)	.73
26	Debts (EDS Item 3)	.73
27	Fellow Employees Associates (I.G.)	.73
28	Parents (EDS Item 13)	.73
29	Number of Jobs Held and Left Postrelease (I.G.)	.74
30	Cleaning and Grooming (WAR Item 4)	.75
40	Interaction with Co-Workers (MBR Item 3)	.76
67	All Predictive Variables	.80

Note.--Steps 31-39 and 41-66 have been omitted, since additional steps beyond 30 show neglibible changes in R.

The primary focus of the 1969 and 1971 studies has been the environmental and behavioral events characterizing the post-prison situation. Other major sources of behavioral variation examined in these studies in an initial way include the longitudinal behavioral history of *S*s with particular reference to both early-life deprivation and early deviancy or criminal behavior. Another source consists of prison experience and the learning and retraining that goes on in the institution.

In this context, Kassebaum, Ward, and Wilner (1971) report a multiple regression analysis of 957 individuals released from the California prison system at 36 months postrelease. These data are reproduced here for comparison purposes as Table 20.

Table 20

Ranking of the California Department of Corrections' Base Expectancy Score (BES) Variables Based on Stepwise Multiple Regression Analysis (N = 957) at 36 Months (Kassebaum, Ward, and Wilner, 1971)

Step	Variable
1	Older when first arrested
2	Offense not burglary
3	No history of excessive use of alcohol
4	No history of drug use
5	Offense not theft
6	Fewer months of prison time served
7	Regular parole supervision
8	No history of felony arrest in family
9	Older at first commitment
10	Psychiatric diagnosis (R = .60)
11	Measured grade achievement high
12	Some type violent offense
13	Last grade completed high
14	No crime record in community where paroled
15	Long sentence
16	Nonparticipant in mandatory large group
17	Had job arranged when paroled
18	Expected to support minor children
19	Nonparticipant in voluntary small group
20	Nonparticipant in mandatory small group
21	Unstable group leadership
22	Drugs as commitment offense
23	Black or white, but not Mexican-American
24	Black (no direction)
25	Fewer previous prison commitments
26	Older at most recent prison admission
27	Attended prison school (no direction)
28	Attendance at group counseling meetings low
29	No violation of prison rules (R = .62)

Source.--Reprinted from *Prison Treatment and Parole Survival: An Empirical Assessment* by G. Kassebaum, D. Ward, and D. Wilner. Copyrighted by John Wiley & Sons, 1971.

Note.--The first ten variables of the BES analysis reach a multiple correlation of .6052; inclusion of the remaining 19 raises this correlation to .6182.

The multiple correlation reaches a level of .60 with 10 variables and .62 with 29 variables. It should be noted that the predictive variables involved in this study pertain primarily to the criminal area and behavior patterns in the prison setting. In contrast, the variables of the 1971 study that were presented in Table 19 focus on environmental and behavioral circumstances in postrelease patterns antecedent to and associated with law violations. The two sets of data appear complementary to one another. It is noteworthy that the postrelease variables of Table 19 yield appreciably higher multiple correlations than the in-prison and criminal history variables of Table 20.

Since other studies (Pascal & Jenkins, 1961) have found that early-life experience, particularly behavioral deprivation, has high predictive accuracy for adult deviant behavior patterns, a systematic long-range investigation is needed that will focus on all three major sources of behavioral variation: postrelease environmental and behavioral circumstances and events, historical factors (including early-life deprivation and criminal history), and institutional behavior and experience.

DISCUSSION AND CONCLUSIONS

This section contains an overview of the findings from the 1971 Follow-up Study, along with separate discussions of treatment and behavior change and the basic research dimensions of the entire criminal justice system.

Overview of Findings

The findings of this investigation may be summarized in terms of a few major generalizations.

1. *The Criterion*. A systematic analysis of criminal behavior, law violation, and recidivism yielded a new view of the criterion. The Law Encounter Severity Scale (LESS) provides a highly functional criterion of progressive severity of law encounters. The five law encounter groups formed by the 38 categories of the severity continuum were validated in the course of this study.

2. *Environmental Deprivation*. The Environmental Deprivation Scale (EDS) was again found to be highly predictive of law encounters and violations. The degree, consequence, and kind of environmental input determine in large part the degree of deviant behavior and the severity of law encounters. Because behavior is a major function of environmental circumstances, these circumstances are highly predictive of behavior.

3. *Maladaptive Behavior*. The Maladaptive Behavior Record (MBR), which assesses the frequency and type of maladjustive reactions, also was highly predictive of the severity of law encounters. The MBR, like the EDS, showed high predictive accuracy for behaviors in the areas of occupation, organizational behavior, interpersonal relationships, and personal adjustment. It is noteworthy that environmental events, as assessed by the EDS, are slightly more predictive of law encounters than are maladaptive behaviors, although predictive accuracy is very high for both instruments.

4. *Time Allocation*. The Weekly Activity Record (WAR) was developed as a measure of the time allotted to typical activities, such as work, physical activities, and social interactions. The data collected with this instrument were also highly predictive of law encounters. The WAR thus assesses a new dimension of behavior and opens the door to research in this area.

5. *Evaluation of Institutional Treatment Programs*. Participants in a variety of institutional training programs were followed up post-prison for about 8 months. No large

or significant differences among treatment conditions were found in either LESS status or postrelease adjustment as assessed by the EDS, MBR, and WAR. There was an indication, however, that *S*s who participated in vocational training in the institution worked more time and earned more money in the first 3-6 months after release. This finding agrees with those of the 1969 Follow-up Study. There is a need for more detailed analysis of both the postrelease adjustive behavior and environmental circumstances, as well as a critical examination of the details of the treatment programs.

6. *Diagnosis and Treatment*. The outcomes of the present study, along with those of the 1969 study, strongly suggest a need for designing treatment programs on the basis of factors and variables contributing to postrelease success and failure. Effective intervention is contingent on identification of critical behavioral and environmental features.

In the next section some basic matters of treating and changing behavior are discussed from the standpoint of established learning and behavior principles.

The State of the Treatment Art

When the question of treatment effectiveness is raised, the overall answer must be, "We don't know." There are two related reasons for this situation: lack of diagnostic assessment before initiation of treatment and absence of long-range evaluative follow-up of intervention effects. Omission of initial diagnosis and terminal evaluation prevents an answer to the question of effectiveness.

Evaluation is a three-stage process. First comes *immediate* assessment of treatment events, such as performance on tests in an educational program. Next is *intermediate*, where the generalized effects of training are assessed in their transfer beyond the limits of the treatment setting, e.g., increase in level of reading material as a function of education training. Finally, there is *long-range* evaluation, in which the generalized and persisting effects of treatment are measured over long periods far beyond the treatment situation, e.g., outside the institution. Long-range evaluative follow-up is a critical component because it provides diagnostic and assessment feedback to the treatment and intervention system.

Institutional treatment programs have only small impact on specific behaviors in long-range postrelease follow-up, e.g., vocational trainees earn somewhat more than non-trainees in their first few postrelease months. These small-scale outcomes can be explained by two major related factors: the primary adjustive behaviors are not

institutionally treated, and there is minimal participation by staff and administrative personnel in treatment programs. Institutional training must focus on relevant resident behaviors and must include staff involvement.

As another case in point, studies of the effectiveness of group and individual psychotherapy and counseling can be similarly interpreted. The relevant behaviors are not diagnostically assessed or measured initially, and there is typical absence of long-range follow-up evaluation of treatment impact. Careful consideration of these matters is an essential precursor of effective treatment. If the effectiveness of psychological and behavioral treatment is to be determined, the essential ingredient is longitudinal, evaluative, diagnostic follow-up.

The Process of Changing Human Behavior

Changing human behavior is a two-sided coin. The established, ongoing, maladaptive behavior must be weakened, while simultaneously new adaptive behavior is induced, strengthened, and made prepotent. The connection between the stimuli and the "undesirable" response is broken, and an association is created between these small stimuli and a new, "acceptable" behavior. (The process is easily described, but may take thousands of trials and hundreds of hours to accomplish.)

The model for the change process may be summarized as follows:

$$S_a \text{---} R_a \text{---} S_x \text{---} R_x$$

The first component represents the already established behavior that is to be replaced. The second component represents the stimulus and response changes, usually labeled reinforcement. The essence of the process is substitution of an incompatible, adaptive reaction, R_b, for the maladaptive response, R_a.

The following steps summarize behavioral change.

1. S_a is changed, thereby weakening R_a.
2. A new set of stimuli, S_b, is intruded into S_a so as to elicit the new incompatible response, R_b.
3. Reinforcement, S_x, is removed from R_a and applied to the new response class, R_b.
4. The process is repeated frequently until S_a elicits the new behavior, R_b.

There are about ten primary principles and methods for changing behavior. One group of these is active *response replacement* methods, in which stimuli for new, incompatible behavior are intruded into an ongoing stimulus-response sequence. These methods include counterconditioning (described earlier), retroactive and proactive interference ("forgetting"), and introduction of new (usually intense) stimuli to disrupt and interrupt ongoing behavior while leading to the induction of new reactions.

The second class of methods requires more time and generates less permanent effects. These *massed elicitation* techniques include cue change and generalization decrement, direct extinction, indirect extinction and graduation ("desensitization"), adaptation and habituation, and satiation and fatigue.

In actual behavioral change practice, combinations of several of these principles and methods are usually employed. For instance, induction of new behavior by intrusion of its stimuli may be combined with extinction and changes in the composition of the eliciting stimulus compound (cue change).

The actual steps involved in the process of establishing new behavior patterns and building new habits are summarized by the following statements.

1. Select a response class potentially available in *S*'s repertoire.
2. Choose a response measure appropriate to the class, e.g., frequency.
3. Find stage-setting or trigger stimuli for the response, e.g., verbal cues (instructions) or food deprivation.
4. Determine a stimulus class that serves as a reinforcer for *S*, e.g., food or money.
5. Identify and control activating stimuli for interfering response classes.
6. Present the trigger stimuli for the required response and reinforce any behavior resembling it.
7. Shape up and stamp in the response on successive occasions until it meets the change agent's criteria.
8. Reinforce the response in a wide variety of situations, i.e., generalize it and set up appropriate discriminations by differential reinforcement.
9. Taper off and fade out reinforcement to a very occasional basis so as to increase resistance to extinction and make the response "self-maintaining."

The process of reduction in established behavior goes hand in glove with the induction of new behavior. There are many variants on the basic theme, but the usual process of behavioral weakening and elimination takes the following form:

1. Specify precisely the response class to be diminished.
2. Identify the activating simuli for the behavior in question, including experiential history.
3. Earmark post-response consequences ("reinforcement") that maintain and support the behavior.
4. Change the stimulus set described in (2) while simultaneously removing the reinforcing stimuli (3) for the behavior (where possible).
5. Specify activating stimuli for the new replacement class of behavior.
6. Intrude the stimuli for the incompatible behavior into the original (changed) cue compound.
7. Apply large doses of the original reinforcing stimulus (or a more powerful one) immediately after the occurrence of some behavior in the new class.
8. Repeat the process, gradually enlisting the stimuli for the old behavior to the new, increasing its strength while that of the original behavior declines.
9. Generalize the new behavior for maximum transfer of occurrence by rewarding its appearance in a wide variety of environmental circumstances.
10. Taper off ("fade out") external control by radically reducing the frequency of reward, while still maintaining a considerable level of response strength.

The Research Dimensions of the Criminal Justice System

The work of the EMLC in the criminal justice system has focused on one primary component–the criminal himself. There are many other dimensions to this problem, however, and basic research must proceed ultimately along all these dimensions to achieve major advances.

There are at least six major target groups toward which research efforts must be directed. These are listed with the primary categories of research questions applicable to them:

1. *The client, criminal, or law violator.* All four problem areas apply, in sequence: diagnosis, treatment, evaluation, and prevention.

2. *Law enforcement personnel.* The primary questions here concern specification of the salient behaviors, development of selection and training procedures, and long-term evaluation of effectiveness.

3. *The judiciary and legal personnel.* The focus again is on identification of basic behavior patterns, selection, training and evaluation.

4. *The public.* Information must be disseminated to keep the public aware of and responsive to developments in the field. Information interchange is, of course, a pervasive thread in all areas.

5. *The change agents.* The concern here is with the selection of interventionists (e.g., probation and parole supervisors, correctional officers, behavioral scientists, parents, peers, teachers, and ministers) and their training. Questions of identification and evaluation clearly apply.

6. *Administrators and government officials.* The focus here is on commissioners of corrections, their staff, prison administrators, and public officials involved in the criminal justice process. While one might well raise basic research questions of selection and training, the practical concerns are information, coordination, and cooperation in establishing the need for and design of programs.

Only the beginnings have been made in the research approach to crime, corrections, and the whole criminal justice system. Several behavioral identification and diagnostic approaches are available, along with a number of basic principles for changing human behavior in a generalized and persisting fashion. Only a small start has been made at putting these approaches together in the criminal justice area, and the primary focus has been on the offender, with minimal attention paid to other target groups. It should be added that this state of affairs is not unique. The same situation prevails in the multifold fields of "mental health." It should be pointed out that the analysis presented here for criminal justice applies equally well to mental health.

What is clearly needed is coordinated research program planning, involving all levels of policy and operational staff, and immediate implementation of systematic research examination in the areas of identification, intervention, and evaluation to develop effective prevention. The systematic viewpoint expressed here stresses the necessity of dealing with behavioral specifics throughout such research programming.

Immediate Research Needs

At various points in this report reference has been made to the need for further research and direct application of available principles and findings. This section will briefly review these needs and problem areas.

1. An immediately pressing need is the translation of the diagnostic information provided by the EDS, MBR, and WAR into treatment action. Effective treatment programs can be built only on the foundation of such information.

2. Immediate and long-range follow-up evaluation must be built into the design of treatment and intervention programs from their inception. Only from feedback from such evaluation will refinements and improvements in treatment emerge.

3. The information provided by the diagnostic and predictive measures must be disseminated to parole supervisors and other agents who are in a position to utilize and act on the information.

4. The public must be educated and systematically informed about research findings and their practical applications to generate support for continued research. An informed public can be a powerful force in promoting improvements in such areas as program staffing (e.g., correctional and probational) on both the operational and administrative levels.

There are a large number of other needs, but these offer a representative sample of critical problem areas.

REFERENCES

Abt Associates. *An evaluation of training provided in correctional institutions under the Manpower Development and Training Act, Section 251*. Abt Associates, Contract No. 43-9-008-23, Manpower Administration, U. S. Department of Labor, 1971.

Bailey, W. C. Correctional outcome: An evaluation of 100 reports. *Journal of Criminal Law, Criminology and Police Science*, 1966, 57(2), 153-160. Cited by N. Johnston, L. Savitz, & M. E. Wolfgang, *The sociology of punishment and corrections*. New York: John Wiley & Sons, 1970.

Baker, H. R. *Behavioral science statistics programmed library*. Tuscaloosa, Ala.: University of Alabama, 1972.

Barton, M. C., & Jenkins, W. O. *The Maladaptive Behavior Record (MBR): A scale for the analysis and prediction of the community adjustment and recidivism of offenders*. Rehabilitation Research Foundation, Contract No. 82-01-69-06, Manpower Administration, U. S. Department of Labor, 1973.

Barton, M. C., Witherspoon, A. D., Jenkins, W. O., & Sanford, W. L. *A manual for use of the Maladaptive Behavior Record (MBR) in corrections: The role of the MBR in the prediction of criminal behavior*. Rehabilitation Research Foundation, Contract No. 82-01-69-06, Manpower Administration, U. S. Department of Labor, 1974, in press.

Brown, P. G. A systematic approach to the study of parental affection and punishment in juvenile delinquents. Unpublished master's thesis, Auburn University, 1970.

Calhoon, B. J. An experimental and statistical analysis of criminal recidivism. Unpublished master's thesis, Auburn University, 1971.

Conrad, J. P. *Crime and its connection*. Berkeley: University of California Press, 1965.

deValera, E. K., Witherspoon, A. D., Jenkins, W. O., DeVine, M. D., Muller, J. B., & McKee, J. M. *Hypothesis generating studies emerging from the longitudinal follow-up assessment of released and paroled offenders*. Rehabilitation Research Foundation, Grant No. 21-01-73-38, Manpower Administration, U. S. Department of Labor, 1974, in press.

DeVine, M. D., Jenkins, W. O., Witherspoon, A. D., deValera, E. K., Muller, J. B., & McKee, J. M. *The Environmental Deprivation Scale (EDS): The role of environmental factors in the analysis and prediction of criminal behavior and recidivism*. Rehabilitation Research Foundation, Grant No. 21-01-73-38, Manpower Administration, U. S. Department of Labor, 1974, in press.

Flanagan, J. C. The critical incident technique. *Psychological Bulletin*, 1954, 51, 327-358.

Glaser, D., Carter, R. M., & Wilkins, L. I. (Eds.) *Correctional institutions*. New York: Lippincott, 1972.

Glaser, D. *The effectiveness of a prison and parole system*. New York: Bobbs-Merrill, 1964.

Glueck, S., & Glueck, E. *500 criminal careers*. New York: Alfred A. Knopf, 1930.

Glueck, S., & Glueck, E. *Later criminal careers*. New York: The Commonwealth Fund, 1937.

Glueck, S., & Glueck, E. *Predicting delinquency and crime*. Cambridge, Mass.: Harvard University Press, 1959.

Heaton, W. S., & Adams, S. *Research Report No. 15: Community performance of three categories of institutional releasees*. Washington, D. C.: District of Columbia Corrections Department, 1969.

Horner, R. F. Important stimulus variables in the early family relationships of schizophrenic patients. *Journal of Clinical Psychology*, 1964, 20, 344-46.

Jenkins, W. O., Barton, M. C., deValera, E. K., DeVine, M. D., Witherspoon, A. D., & Muller, J. B. *The measurement and prediction of criminal behavior and recidivism: The Environmental Deprivation Scale (EDS) and the Maladaptive Behavior Record (MBR)*. Rehabilitation Research Foundation, Contract No. 82-01-69-06, Manpower Administration, U. S. Department of Labor, 1972.

Jenkins, W. O., Barton, M. C., deValera, E. K., DeVine, M. D., Witherspoon, A. D., Muller, J. B., & McKee, J. M. *A longitudinal follow-up investigation of the postrelease behavior of paroled or released offenders*. Rehabilitation Research Foundation, Contract No. 82-01-69-06, Manpower Administration, U. S. Department of Labor, 1973.

Jenkins, W. O., Barton, M. C., DeVine, M. D., deValera, E. K., Muller, J. B., Witherspoon, A. D., & McKee, J. M. *The Maladaptive Behavior Record (MBR): The role of maladaptive reaction patterns in the analysis and prediction of criminal behavior and recidivism*. Rehabilitation Research Foundation, Grant No. 21-01-73-38, Manpower Administration, U. S. Department of Labor, 1974, in press.

Jenkins, W. O., & Hatcher, N. C. *The design of behavioral experiments*. New York: McGraw-Hill, 1974, in press.

Jenkins, W. O., Muller, J. B., DeVine, M. D., deValera, E. K., Witherspoon, A. D., & McKee, J. M. *The Weekly Activity Record (WAR): A measure of time allocation in the analysis and prediction of criminal behavior and recidivism*. Rehabilitation Research Foundation, Grant No. 21-01-73-38, Manpower Administration, U. S. Department of Labor, 1974, in press.

Jenkins, W. O., & Sanford, W. L. *A manual for the use of the Environmental Deprivation Scale (EDS) in corrections: The role of the EDS in the prediction of criminal behavior*. Rehabilitation Research Foundation, Contract No. 82-01-69-06, Manpower Administration, U. S. Department of Labor, 1972.

Joint Commission on Correctional Manpower and Training. *A time to act*. College Park, Md.: American Correctional Association, 1969.

Kassebaum, G., Wilner, D., & Ward, D. *Prison treatment and parole survival: An empirical assessment*. New York: John Wiley & Sons, 1971.

Kinsey, A. C., Pomeroy, W. B., & Martin, C. E. *Sexual behavior in the human male*. Philadelphia: Saunders, 1948.

Milan, M. A., Wood, L. F., Williams, R. L., Rogers, J. G., Hampton, L. R., & McKee, J. M. *Applied behavior analysis and the imprisoned adult felon: Project I: The cellblock token economy*. Rehabilitation Research Foundation, Grant No. 21-01-73-38, Manpower Administration, U. S. Department of Labor, 1973.

Minnesota Corrections Department, Research and Planning Division. *Manpower Development and Training Act–Multioccupation vocational training program at Minnesota State Prison*. St. Paul, Minn., 1971.

Mullen, W. E. Evaluation of manpower development and training program, Draper Correctional Center, 1968-1969–A multivariate discriminant analysis. Unpublished doctoral dissertation, Florida State University, 1972.

Muller, J. B., DeVine, M. D., Jenkins, W. O., deValera, E. K., Witherspoon, A. D., & McKee, J. M. *The psychometric analysis of a comprehensive longitudinal follow-up evaluative study of criminal behavior and recidivism*. Rehabilitation Research Foundation, Grant No. 21-01-73-38, Manpower Adminstration, U. S. Department of Labor, 1974, in press.

Murray, H. A. *Explorations in personality*. New York: Oxford University Press, 1938.

New York (State) Parole Division, Research and Statistics Bureau. *Recidivism rates of New York State male parolees*. Albany, N. Y., 1970.

Nichols, J. D., & Brodsky, S. L. After they leave: A vocational follow-up study of former prisoners. In S. L. Brodsky & E. Eggleston (Eds.), *The military prison*. Carbondale, Ill.: Southern Illinois University Press, 1970.

Pascal, G. R., & Jenkins, W. O. A study of the early environment of workhouse inmate alcoholics and its relationship to adult behavior. *Quarterly Journal of Studies on Alcohol*, 1960, 21, 40-50.

Pascal, G. R., & Jenkins, W. O. *Systematic observation of gross human behavior*. New York: Grune & Stratton, 1961.

Pownall, G. A. *Employment problems of released prisoners*. University of Maryland, Contract No. 81-19-37, Manpower Administration, U. S. Department of Labor, 1969.

Sullivan, S. J. Effects of manpower development training and intervention: A follow-up study of paroled and released inmates. Unpublished master's thesis, Auburn University, 1971.

Thoroughman, J. C., Pascal, G. R., Jenkins, W. O., Crutcher, J. C., & Peoples, L. C. Psychological factors predictive of surgical success with intractable duodenal ulcers: A study of male veterans. *Psychosomatic Medicine*, 1964, 26, 618.

Witherspoon, A. D., deValera, E. K., Jenkins, W. O., & Sanford, W. L. *Behavioral interview guide.* Rehabilitation Research Foundation, Grant No. 21-01-73-38, Manpower Administration, U. S. Department of Labor, 1973.

Witherspoon, A. D., deValera, E. K., & Jenkins, W. O. *The Law Encounter Severity Scale (LESS): A criterion for criminal behavior and recidivism.* Rehabilitation Research Foundation, Grant No. 21-01-73-38, Manpower Administration, U. S. Department of Labor, 1973.

END