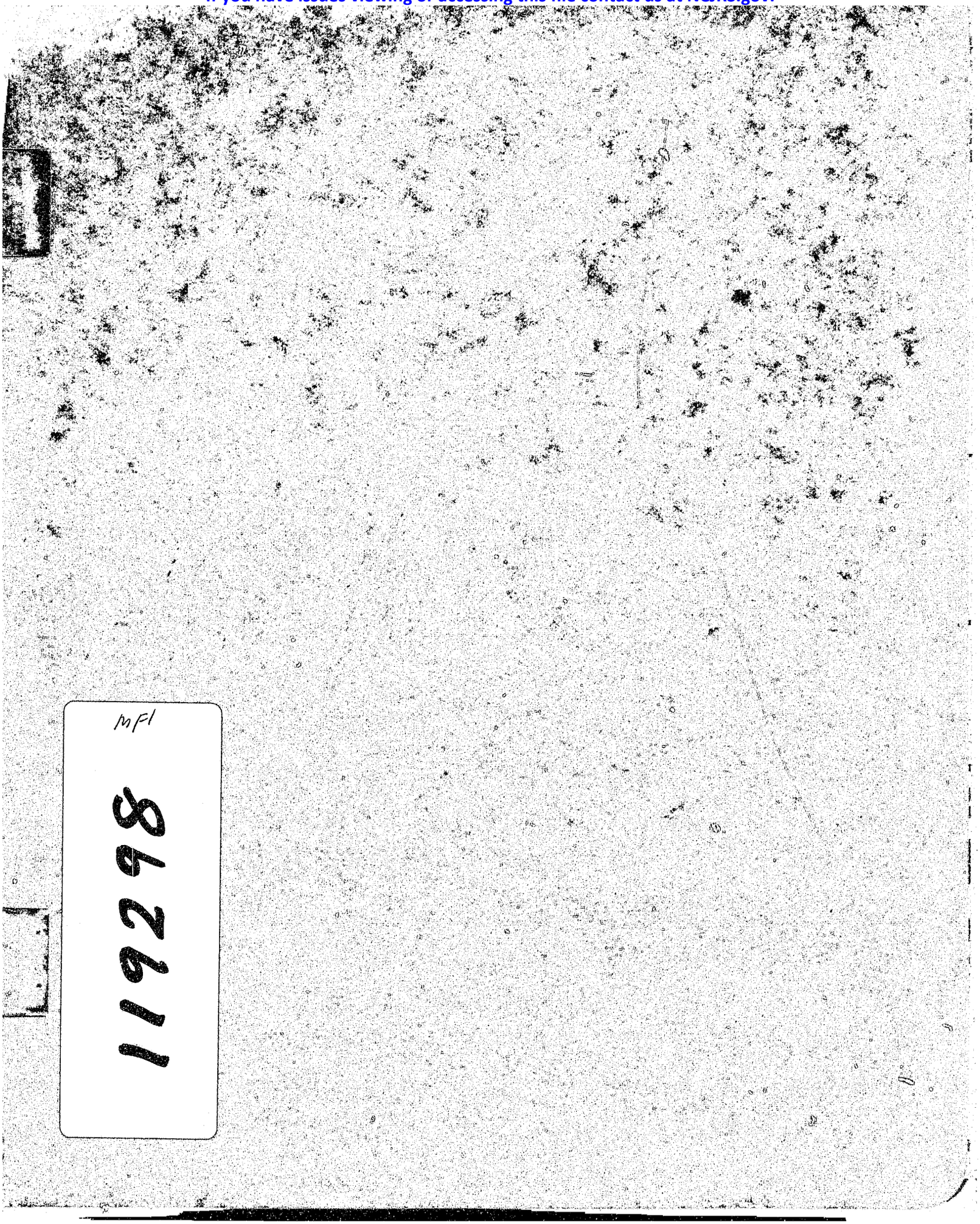

CORRECTIONAL PROGRAMS: THE IMPLEMENTATION PROBLEM

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This paper focuses on correctional program implementation. We examine over a four-year study period the ability of two prisons to improve vocational training of inmates. The experimental design randomly assigned 600 offenders to either an experimental or a control group. The experimental group participated in a vocational training program that included pre-training evaluation and counselling, priority for entry into vocational classes, pre-release employment counselling and post-release job placement. Participants were more likely to successfully complete programs than were control group members. The results also suggest that the program required 1.5 years to reach "steady state," a period longer than that allowed for many previous program evaluations.

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CORRECTIONAL PROGRAMS: THE IMPLEMENTATION PROBLEM

INTRODUCTION

Efforts to identify correctional programs which have positive effects on post-release behavior have, for the most part, proved futile.[1] This discouraging result was reported by Martinson (1974) who noted *"With few and isolated exceptions, the rehabilitative efforts that have been reported so far have had no appreciable effect on recidivism."* A National Academy of Sciences panel (the Panel on Research on Rehabilitative Techniques), after a review of the rehabilitation literature, concurred with the "Martinson conclusion" stating, "The entire body of research appears to justify only the conclusion that we do not now know of any program or method of rehabilitation that could be guaranteed to reduce the criminal activity of released offenders" (Sechrest, White and Brown 1979, p. 3). The Panel further stated, however, that the conclusion that "nothing works" was probably premature, pointing out that much of the research on rehabilitative techniques reflected weak programs, implemented to an unknown degree, which were evaluated using inadequate research designs (Sechrest, White and Brown 1979).

Of particular concern to the Panel was the lack of theoretical premises for the interventions which had been attempted, the failure to define the content of the intervention, and the inattention paid to the measurement of program delivery. Rezmovic (1979, 1984) specifically raised the issue of treatment integrity in an article addressing the problems facing social researchers studying correctional programs. She defined treatment integrity as "how well treatment practice conforms to treatment plan" and pointed out that investigators who have not measured treatment integrity often find themselves "at a loss to explain why a particular intervention did or did not produce the expected effects" (Rezmovic 1984). The appropriate response by evaluators, Rezmovic suggested, is to monitor treatment, to find out what is in the treatment "black box."

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[1] Reviews of this literature are given by Lipton, Martinson and Wilks 1975, Greenberg 1977, and Fienberg and Grambsch 1979.)

The second area of weakness in the correctional programs literature identified by the Panel was the quality of the evaluation design. Few experiments were conducted using true experimental designs, reducing confidence that results were due to the program under study. Additionally, small sample sizes unavoidably reduce the power of statistical testing of effects.

This paper presents results from a four-and-a-half year evaluation of a vocational rehabilitative program for 18-to-22-year-old male offenders. This vocational program (the Sandhills Vocational Delivery System, VDS) and its evaluation were designed to overcome many of the limitations of earlier studies. Specifically,

1. The VDS program is based on an economic model of criminal behavior which suggests that improved potential to earn legal wages will reduce participation in criminal activity.
2. The elements of the VDS program were enumerated prior to initiation of the evaluation, thus the contents of the treatment plan were specified.
3. A true experimental design was developed and implemented for the random assignment of offenders to treatment (experimental) and two non-treatment (control groups); over 800 offenders were assigned to the three study groups.[2]
4. Every effort was made to monitor program delivery, in other words to determine what program elements were actually received by participants (and non-participants).
5. Data were collected to measure VDS effectiveness both with respect to the intermediate goal of better post-release employment and the ultimate goal of reduced recidivism.

In this paper, we are concerned with program integrity, that is, measuring the delivery of the correctional program. To a lesser extent, we are also concerned with evaluation integrity, that is, identifying the degree to which we were able to maintain a true experimental design in an institutional environment. Thus, we focus on steps 1 through 4 of the evaluation.

Our paper is organized as follows. The next section describes the rehabilitative program, the Sandhills vocational delivery system (VDS), which was provided to 18-to-22-year-old male property offenders incarcerated in two North Carolina prisons. Subsequently, we briefly describe the true experimental design, the data, and the subjects. "Implementation Results" examines how well the the elements of the program were provided to the participants and discusses problems with maintaining the integrity of the random assignments with respect to

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[2] This paper focuses on program delivery to members of two of these groups--the experimental and internal control groups. 591 subjects comprised the enrollment in these two groups.

treatment. We then examine the effectiveness of the VDS program as measured by successful vocational program completion. The paper concludes with a discussion and summary.

THE VDS PROGRAM

The VDS program is based on an economic model of criminal behavior.[3] The economic model suggests that participation in crime follows a rational decision in which the costs and benefits of criminal activity are weighed against the costs and benefits of legal activity. Crime is chosen if the expected returns to crime are higher than those to legal activity. The model suggests that criminal behavior can be affected by increasing the costs of participating in crime (for example, by more stringent penalties) or by increasing the returns to legitimate activity (for example, by providing marketable job skills). The VDS program rests on this second implication of the economic model. The importance of a theoretical model is to identify the "causal chain" which links treatment with effect. The relationship between the VDS program and its ultimate goal, reduced recidivism, is shown in Figure 1. As can be seen, the "link" between the VDS program and reduced recidivism is the hypothesized improvement in post-release employment following the acquisition of job skills.

The VDS program is offered at two facilities--Cameron Morrison Youth Center (CMYC) and Sandhills Youth Center (SYC)--located about 30 miles apart. CMYC houses about 400 medium- and minimum-custody offenders, while SYC houses about 200 minimum-custody offenders. SYC serves as a "sister" institution to CMYC in that offenders generally transfer to SYC from CMYC when they achieve minimum custody status. The VDS was originally conceived in the early 1970's as an effort to improve the post-release employment prospects of offenders. The premise of the program was to work individually with offenders to identify vocational interests and aptitudes, develop a plan of study leading to improved vocational skills, provide the programs identified in the plan, and assist in locating post-release employment. The Department of Correction was joined in the development and delivery of the VDS by the Department of

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[3] The economic model of criminal behavior was first proposed by Gary Becker (1968). Subsequent work in this area has been contributed by Ehrlich (1973, 1977), Block and Heineke (1975), and Witte (1980), among others.

I. Evaluation & Vocational Training --> Improved Job Skills

II. Improved Job Skills & Job Placement Services --> Better Job

III. Better Job --> Reduced Recidivism

Figure 1. The links between the VDS program and reduced recidivism.: This figure shows the theoretical links relating the VDS program to a hypothesized reduction in recidivism.

Community Colleges, The Division of Vocational Rehabilitation of the Department of Human Resources, and the Employment Security Commission. The VDS was defined to include the following elements:

1. Three weeks of intensive vocational evaluation, testing, and counselling.
2. A correctional plan, based on the results of step 1, which provides the basis for assignment to educational, vocational, and enrichment programs.
3. Monitoring of the inmate's progress with respect to his correctional plan.
4. Priority for placement in vocational programs.
5. A Mutual Agreement Parole Program (MAPP) contract, which guarantees a parole date (given compliance with the MAPP contract).
6. Community Re-entry Training (CRT), a program that provides special training in how to get along in the workplace and the free community.
7. Job development, including assistance prior to and following release.

The VDS is thus an ambitious program that attempts to assist the offender in developing and marketing job skills. Additionally, the VDS attempts to assure that the offender acquires basic educational skills, counselling for substance abuse and other psychological problems, and "living skills" necessary for "survival in the real world." The intent is to improve the offender's chances of finding and keeping employment post-release. None of the elements listed above is unique to the VDS program. The uniqueness of the VDS lies in the extent to which the activities of individuals responsible for individual elements are coordinated and integrated to provide the best possible use of existing resources. Thus, the VDS provides a **system** for enhancing the post-release employability of youthful offenders.

EVALUATION DESIGN

The VDS evaluation was conducted using a true experimental design which randomly assigned subjects to three groups which were differentiable on the basis of their exposure to the VDS program. The original design required random assignment of subjects to either an experimental group, an internal control group, or an external control group. The experimental and internal control group members received VDS services, with the internal control subjects receiving fewer of the services. These two groups constitute the **intra-facility comparison groups**. External control group members were assigned to facilities other than CMYC or SYC and did not receive any of the VDS services. The external control group and the two groups assigned to CMYC/SYC are the **inter-facility comparison groups**. *A priori*, the inter-facility comparison was expected to provide a statistically more powerful test of the effectiveness of the VDS program on outcomes (post-release employment and recidivism) as the difference in treatment between the inter-facility groups (no VDS services versus at least some VDS services) is greater than the difference between the intra-facility comparison groups (some VDS services versus "all" VDS services).

The original evaluation design specified the following steps for random assignment:

1. Identification of inmates at Polk and Harnett Youth Centers who met the Division of Prisons' criteria for transfer to CMYC.[4]
2. Random assignment of eligible inmates either to the external control group or to transfer to CMYC.
3. Screening of inmates arriving at CMYC to identify those meeting the study selection criteria, the "amenables."[5]

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[4] The Divison of Prisons' criteria were: (1) male inmates 18 to 21 years old; (2) inmates convicted of non-assaultive crimes, who have non-assaultive histories, serving total sentences of 15 years or less; and (3) first offenders, committed youthful offenders, regular youthful offenders, and multiple offenders who have no history of violence, aggressive behavior, or other negative institutional adjustment records.

[5] The selection criteria identified those with (1) an income-producing offense; (2) expected stay at CMYC of 8 months to 3 years; (3) IQ greater than or equal to 70; (4) good health; and (5) an expected in-state release. The first of these criteria was established as it seemed economically motivated offenders would be most amenable to the VDS program. The second was to assure that the offender would be an CMYC/SYC long enough to receive the full VDS program, but not so long that release would occur long after completion of the program. The third and fourth were seen as measures which would enhance the post-release employability of offenders. The final criteria was established to facilitate post-release follow-up.

4. Random assignment of amenable inmates to either the experimental or internal control group.

Preliminary estimates had suggested that approximately 200 experimentals, 200 internal controls, and 400 external controls could be identified within a year following initiation of enrollment in June 1983. A decline in the number of youthful offenders entering NC prisons, however, had two impacts on the evaluation design. First, we were unable to enroll an adequate number of subjects in the evaluation during a one-year enrollment period.[6] Secondly, the Department of Correction was unable to continue the first phase of random assignment. The DOC had agreed to the random assignment because the system had more inmates eligible for transfer to CMYC than this unit could accommodate. With a reduced number of youthful offenders entering the system, this condition no longer held and the randomization was interfering unduly with the operation of the prison system. In November 1984, the first stage of randomization (steps 1 and 2 in the above list) was eliminated from the experimental design, although the DOC agreed to maintain the integrity of the original design to the extent that, when possible, those previously identified for the external control group would not be transferred to CMYC. The enrollment of individuals into the experimental and internal control group continued at CMYC through May 1986. The final enrollment at this institution was 295 experimental and 296 internal control subjects. An additional impact on the evaluation was more subtle. Specifically, the differential treatment of inmates at CMYC and SYC was premised on the limited availability of program resources. Limited resources (for example, staff for evaluation, space in vocational programs) were to be allocated on the basis of group membership. Thus, experimental group members would receive first priority for placement in programs, while control group members would be placed routinely. If resources were not limited (due to a reduced population at these two prisons), all inmates could avail themselves of the VDS and there would be no difference in treatment between these two groups.

DATA

[6] The sample size was determined by estimating a program effect size of 20 percent, setting the power for statistical tests at about 80 percent, and setting the significance levels for the tests at 5 percent. See Cohen 1977 for a discussion of power, effect size, significance, and sample size.

The data for the analyses presented in this paper were derived from a computerized management information system that was brought into use concurrent with the start-up of the VDS evaluation. The purpose of the MIS was to computerize case management, making it easier for case managers to monitor the progress of inmates with respect to program participation and administrative procedures. The data include background information on the subjects (for example, sentence length, date of birth, and race) and information on all program activities in which the subjects took part. The activity data included for each program for each subject the recommended date for the activity to begin, the date the activity began, the date the activity ended, the reason the activity ended, and the score at completion of the activity. Data from this system are available through July 1986.[7]

SUBJECTS

The results in this paper focus on the two groups who were enrolled into the evaluation at CMYC. Thus, we are interested in the experimental (VDS participant) and internal control groups. Enrollment of these participants began June 3, 1983, and ceased on June 4, 1986. The total number enrolled in the VDS project was 591; 295 were experimentals (E's) and 296 were internal controls (C's). Subjects were compared on the basis of socio-economic, pre-incarceration employment and criminality variables. As of May 20, 1987, 450 members of these two groups had been released (232 E's and 218 C's). The results in this section are for these released subjects. (The results for equivalent analyses for the complete enrollment were identical to those presented here in terms of the significance of the test statistics.) The null hypothesis for each test was that there was no difference in the two groups; the alternative hypothesis was that the two groups differed on the measure (implying a two-tailed test for the continuous variables). The significance level for all tests was set at $\alpha = 0.05$; differences significant at the $\alpha = 0.10$ level are noted in the text.

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[7] This system was never "well received" by the staffs of the two prisons. The data were input by individuals re-assigned from other duties and, after July 1986, no one was available to assure that the system was operating correctly. The system's hard drive "crashed" in early 1987. Efforts to recover data continue but have been unsuccessful to date. The two facilities no longer use nor plan to use the MIS system.

The results showed that the released experimentals and internal controls are indistinguishable on a variety of socio-demographic, employment history, and criminality measures. The "typical" CMYC/SYC study participant is single with no children, white, and from an urban area. He has a poverty/subsistance level background and an IQ of 100. He was 20 years of age when enrolled in the study, had completed the ninth grade, and scored at the 5th or 6th grade level on the WRAT tests of reading, spelling, and mathematical skills. He was most likely employed when he was arrested for the crime which sent him to prison, working in either construction or manufacturing for a wage of $4.67 an hour. He has had less than a year of work experience and is unskilled. He was sentenced to five years for breaking and entering and was paroled after serving slightly less than 2 years. The enrollment incarceration was his first in NC prisons. If the "typical" participant was a member of the experimental group, he was more likely than a control group member to be a frequent user of alcohol and to be from an urban area. Additionally, he would have scored better on the WRAT arithmetic achievement test.

These findings suggests, within the limits of a Type I error, that the randomization procedures were followed and, thus, that the experimental design with respect to subject selection was correctly implemented. Subsequently, we can have confidence that differences in program participation or post-release behavior by the two groups are due to the VDS program, rather than to differentiable characteristics of the two groups.

IMPLEMENTATION RESULTS

This section considers the following issues with respect to program integrity:

1. First, was the VDS successfully implemented? This question addresses not only the delivery of services (VDS program elements) to the experimental group, but also the difference(s) in services received by the experimental and control group.
2. Secondly, did the VDS program result in an appreciable increae in the participants' vocational skills? This question addresses whether the experimental group completed more vocational programs and completed more vocational programs successfully.

The VDS program and the experimental design dictated which elements of the VDS program were to be provided to the experimental group and which were either not provided to the

control group or were provided on an "as available" basis. The differences in treatment are shown in Table 1. With the exception of evaluation, community re-entry training, and job development services, the difference in treatment of the experimental and control group is defined by the availability of programs and services. Thus, if classroom space is available for all inmates, the training provided to experimental and control group members should be approximately the same. Similarly, the experimental and control group members could be equally likely to have MAPP contracts. In the following paragraphs we examine how well the VDS program was implemented, focusing on whether the elements of the VDS program were delivered to members of the two study groups in a manner dictated by the experimental design.

The first element of the VDS was the evaluation. Members of the experimental group were to receive a three-week battery of tests to measure their vocational interests and aptitudes. Additionally, the evaluators were to work with case managers on the development of a correctional plan which would lead the VDS participant to acquiring the skills needed to pursue his vocational interest once he was released. Although we have no "hard data" with which to analyze whether participants received this part of the VDS program, conversations with CMYC personnel involved in the program suggest that: (1) most experimentals did receive the three-week evaluation; and (2) cooperation between evaluators and case managers on the development of the correctional plans was dependent to some extent on the identity of the case manager. Thus, we believe that the VDS participants received the evaluation, but were less likely to receive the "integrated services" suggested by the coordination of the work of the evaluators and case managers.

The "corner stone" of the VDS program is the correctional plan, which is to provide the outline for program participation by inmates, and vocational program completion. All inmates at CMYC and SYC have a correctional plan. The intent of the VDS program was to increase the likelihood that an inmate was on schedule with respect to his plan (and, thus, was more likely to complete his plan). Specifically, VDS participants were to be given priority in program placement and were to be encouraged to complete (rather than change) the programs for which they were scheduled. Additionally, VDS participants were to be retained at CMYC and

Table 1. Treatment of Experimental and Control Group Subjects

Program Element	Experimentals	Controls
1. Evaluation	3-week evaluation	Interest inventory only
2. Correctional Plan	Coordinated w/evaluator	Routine
3. Monitoring of CP	Intensive	Routine
4. Program Priority	Receive	Routine
5. MAPP Contract	Receive	Routine
6. CRT Program	Receive	Do not receive
7. Job Development	Receive	Do not receive

SYC to assure completion of programs.[8] The data available for analyses allowed us to address the following questions with respect to correctional plan implementation:

1. Were scheduled activities begun? **If** resources were constrained, the experimental group members should have begun more scheduled activities than the control group members.
2. How were activities terminated? If the VDS program was being followed, the VDS participants should have completed more activities (as opposed to being transferred or reassigned from activities) than the control group members.

The first question addresses compliance with the VDS program as measured by whether offenders began scheduled activities. We compared (1) the number of programs scheduled for members of the experimental and internal control groups, (2) the number of programs actually begun, and, as a measure of compliance with individual correctional plans, (3) the difference between programs scheduled and programs begun. We did not necessarily expect to find a difference between the experimentals and controls with respect to the number of planned vocational programs since vocational programs are potentially available to all inmates at CMYC and SYC. If the VDS was properly implemented **and** there was a constraint on the number of individuals who could participate in programs, the VDS participants should have begun more planned activities than the controls. The final measure to be considered is the difference between programs scheduled and programs begun. If case managers are equally diligent in monitoring the progress of all of their caseload, we would expect to see no

[8] This policy, of course, was not intended to extend the period of incarceration, but to extend the stay at CMYC/SYC until programs were completed--rather than transferring inmates to other prisons prior to completion.

difference in this measure. On the other hand, if they were more attentive to the experimental subjects on their caseloads, we would expect to see a difference in this measure.

The results of these analyses are given in Tables 2 and 3. Entries in the tables are the number of subjects. A significance level of $\alpha = 0.05$ was used for these analyses. As can be seen, there was no difference in the number of vocational programs planned for the members of the two groups. (The χ^2 test statistic was 6.894; the critical value for rejection of the null hypothesis of no difference in the number of activities planned for the two groups, $\chi^2_{5,0.05}$, is 11.070).[9] There is a significant difference in the number of programs started by the two groups. (The χ^2 test statistic is 12.495, larger than the critical value of 11.070.) Specifically, members of the experimental group appear more likely to have started more programs than members of the control group. Thus, we find the first indication that the VDS participants (the experimental group members) may have received more vocational training (or more successful vocational training) than members of the internal control group.

Table 3 reports the results of comparing for each individual the discrepancy between number of programs scheduled and number of programs begun on or before July 6, 1986. A value of "0" indicates that the individual had begun as many programs as he had scheduled, while a value of "1" or more indicates the number of scheduled programs the he had not begun. As can be seen, about 80 percent of both groups were on schedule with respect to their vocational training. Not surprisingly, we found no difference in this measure. (The χ^2 test statistic of 1.963 is smaller than 5.991, the critical value of a $\chi^2_{2,0.05}$ test.)

We have noted in this discussion that we would expect to see no difference between the two groups' participation in programs **if** sufficient space in offered programs was available so that all could participate. One indicator of the availability of program space is the amount of time individuals had to wait to get into programs, in other words the difference between the date the program was actually begun and the recommended program start date. We calculated the

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[9] The large number of subjects for whom no vocational programs were scheduled to begin is partially attributable to the timing of the data collection. Approximately half of the subjects were still incarcerated at CMYC or SYC when these data were collected and some had been only recently enrolled (enrollment ceased about 1 month prior to collection of these data).

Table 2. Vocational Programs Scheduled and Begun by *Group*[1]

	Programs Planned		Programs Began	
Programs	Controls	Experimentals	Controls	Experimentals
0	120	106	145	120
1	57	44	62	46
2	55	63	44	69
3	32	49	26	36
4	23	22	13	17
> =5	8	10	5	6
Total	295	294	295	294
χ^2	6.894		12.495	

1. The $\chi^2_{5,0.05}$ critical value is 11.070.

Table 3. Difference between Programs Scheduled and *Begun*[1]

Difference	Controls	Experimentals
0	231	242
1	43	38
2	21	14
Total	295	294
χ^2	1.963	

1. The $\chi^2_{2,0.05}$ critical value is 5.991.

mean wait times for each individual and then compared the group means using a one-tailed t-test. The null hypothesis was that there was no difference in the mean wait time for the two groups and the alternative hypothesis was that the mean wait time for the experimental group was less than the mean wait time for the control group. The level of significance was set at $\alpha = 0.05$, which yields a critical value of the test statistic of 1.645. The mean wait time for the experimental group was 8.5 days, while the mean wait time for the control group was 9.4 days. There was not a significant difference in the mean wait times for entry to vocational programs; the t-statistic = -0.5233. This result suggests that vocational programs were not a "constrained resource" at these two facilities. Those scheduled for these programs were able to begin the programs.

We then considered the reason subjects terminated participation in vocational programs. The reasons for termination are as follows: completed (the individual completed the program), reassigned (the individual was reassigned from the activity prior to completion; the reassignment to another activity was within the facility), and transferred (the individual transferred to another prison or was released prior to completing the program).[10] We will test the null hypotheses that the mean of the percent of programs completed in each manner is the same for the experimental and control groups.

A priori, we would expect the following with respect to the VDS program and our two evaluation groups:

1. The mean of the ratio "programs completed/programs attempted" should be **larger** for the experimental group than the control group, implying, of course, that, on average, the VDS participants completed more attempted programs than the control group.
2. The mean of the ratio "programs ended because of reassignment/programs attempted" should be **less** for the experimental group than the control group.
3. The mean of the ratio "programs ended because of transfer/programs attempted" should be **less** for the experimental group than the control group.

Each of these *a priori* expectations suggest that, on average, the VDS participants were in greater compliance with their correctional plans than members of the internal control group. For each case, we will use a one-tail t-test and $\alpha = 0.05$. Thus, the appropriate critical value is for the first test is 1.645 and for the second and third tests -1.645.

Our results, for the most part, confirm these expectations. Specifically, the VDS participants had completed, on average, 50.5 percent of the vocational programs attempted whereas the control group had completed, on average, only 40.9 percent. This difference is statistically significant (t statistic = 1.9227). Secondly, the mean percent of vocational programs terminated for reason of transfer was significantly less for the VDS participants than for the controls (31.8 percent versus 40.6 percent, respectively; t-statistic = -1.8660). The comparison of percent programs completed by reason of reassignment yielded an insignificant t-statistic (-0.2014); on average, 17.7 percent of programs attempted by the VDS participants and 18.5

[10] Individuals can also terminate programs by quitting or never attending. No members of either group had terminated any vocational program by quitting.

percent of the programs attempted by the internal control group were terminated by reason of reassignment.

These analyses have considered program completion as a measure of compliance with the VDS program and the evaluation design. The question of whether the VDS participants were more successful in their vocational training will be addressed following the completion of our analysis of how well the VDS program was implemented.

Mutual Agreement Parole Program contracts (MAPPs) **were** to be negotiated for all eligible VDS participants, whereas MAPPs **may** have been negotiated for members of the internal control group. The rationale behind integrating MAPPs into the VDS was that the MAPP would reinforce the correctional plan by making parole conditional on completion of the vocational training defined by the correctional plan. Additionally, the MAPP specifies a date of release which could improve the likelihood of finding employment prior to release. Twenty-seven percent of the released VDS participants and 21 percent of the released internal control group completed a MAPP contract (63 of 232 and 46 of 218, respectively). Twenty-one percent of the released VDS participants and 26 percent of the released internal control group had discussed a MAPP contract but did not complete it. The remainder of both groups did not have MAPP contracts. A χ^2 test revealed no significant difference between the two groups ($\chi^2 = 3.143$, 2 degrees of freedom). Members of each group were equally likely to have had MAPP contracts, not completed the contracts, or not had MAPP contracts.

The community re-entry training program is provided to inmates shortly before release from SYC. The intent is to provide skills that will help the offender "get along" in the free world. This program, which can only be provided to a limited number of students, was designated as part of the VDS program. Compliance with the VDS program would suggest that all VDS participants (experimentals) should have received the training. Compliance with the experimental design would suggest that no control group members received the training. As of July 1, 1986, when the data base was established, 151 experimental group members and 128

internal control group members had been released from the North Carolina prison system.[11] Of these released subjects, 63 VDS participants and 4 control group members had participated in the CRT program. This finding suggests compliance with the evaluation design ("no" control group members participated in the CRT program), but suggests a lack of compliance with the VDS program plan (less than 41 percent of the released VDS participants received the community re-entry training). At least part of this discrepancy is due to individuals being transferred to a facility other than SYC (where the program was offered) or released from CMYC.

The final element of the VDS program involves assisting VDS participants in finding a job. Job development specialists at SYC begin this task with the VDS participants prior to release; assistance post-release is provided by ESC offender specialists. Ideal employment would use skills developed as a result of vocational training. This assistance was provided to most experimental group members who were transferred to SYC from CMYC. Additionally, it is believed that offender specialists made an effort to locate and help those transferred to facilities other than SYC. The following problems were reported during the course of the evaluation with respect to this part of the VDS program. First, offender specialists reported that training-related employment was often difficult to find and that many of their clients simply took the first job that was available. (This action was particularly true of paroled offenders for whom employment was a condition of their parole.) Secondly, the amount of training provided was often judged insufficient for placement in related employment. Thirdly, although the offender specialists were suppose to meet with their clients prior to their release, this was often not possible for the offender specialists from the western part of the state (about 250 miles from SYC). Measures of the effectiveness of this part of the VDS program include (1) whether those receiving these services were more likely to be employed and (2) whether the quality of the employment was "better." Although not reported here, analyses on post-release employment revealed no differences in the characteristics of post-release employment for the study groups (Lattimore, Witte and Baker 1987).

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[11] This is the date of release from the prison system, not the date of, for example, transfer from CMYC or SYC to another prison. Thus, this figure **underestimates** the number of evaluation subjects still incarcerated at CMYC and SYC.

VDS PROGRAM EFFECTIVENESS

The integrated approach to correctional plan development, in concert with monitoring of progress on the plan, is hypothesized to increase the vocational skills of VDS participants. This is the first "link" between the VDS and reduced recidivism, as is shown in Figure 1. One measure of increased skills available from our activity data base is the grade received at the completion (termination) of a program. We considered the success of the two study groups with respect to vocational program completion, by comparing the experimental and internal control groups on the following measures:

1. Number of vocational programs successfully completed.
2. Vocational programs successfully completed as a percent of programs attempted and as a percent of programs completed.
3. Total time spent in vocational programs.

In addition to examining results for the entire 3-year period (June 1983 through July 1986), separate analyses were conducted to examine the effect of enrollment date on the success of VDS participants in vocational programs. Members of the internal control and experimental groups were assigned to "6-month enrollment cohorts" based on the date that they were enrolled in the evaluation. These analyses were directed at establishing whether the VDS improved over the course of the evaluation period under consideration here. **All results pertain to finished programs (programs were finished as a results of, for example, completion, transfer, or reassignment).** Some of the individuals were still incarcerated at CMYC or SYC when these data were collected in July 1986 and, thus, their program participation could be expected to continue. All results, therefore, understate program participation for the two study groups. As control and experimental group members were randomly enrolled throughout the enrollment period, were likely to remain in prison for the same length of time (on average), and were equally likely to have been transferred to other facilities, the results should not reflect any bias with respect to group.

Sixteen vocational programs were offered at one or both facilities during some or all of the period under consideration; these programs included those in construction trades, auto me-

chanics, metal working, graphic arts, food services, upholstery, and office management. An individual's participation in an activity terminated primarily as a result of completion, transfer to another institution, or reassignment within the two institutions; other reasons for termination were "never attended," escaped (no subjects), and quit. These six categories were reduced to four for the analyses: completion ("C"), reassignment ("R," which refers to reassignment within the two facilities), transfer ("T," which refers to transfer to a facility other than CMYC or SYC), and quit ("Q," which includes both never attended and quit). A variety of grading schemes are used for the various activities, including numeric grades and letter grades. Scores out (i.e., grade at termination) were coded as either satisfactory ("S") or unsatisfactory ("U"). The following scores were categorized as satisfactory: Scores of equal to or greater than 70%; letter grades of A, B, C, E (excellent), S (satisfactory), or P (pass). The following scores were categorized as unsatisfactory: Scores of less than 70 percent; and letter grades of D, F, I (incomplete), or U (unsatisfactory).

Using these three categories (activity type = vocational); why activity ended = C, R,T or Q), and score out = S or U), variables were created to measure activity participation and success for each of the participants. These variables are number of vocational programs attempted (**VPA**);number of vocational programs completed (**VPC**); and number of vocational programs successfully completed (**VPCS**). Additionally, the percentages of vocational programs that were completed successfully (of programs completed and of programs attempted) were calculated as a proxy for the stability of program participation and as an indicator of VDS implementation (as the VDS program is supposed to "keep an offender on a predetermined course").

The results presented below indicate that the VDS had the desired effects -- members of the experimental group were more likely to successfully complete activities than were members of the internal control group. These results are particularly encouraging since the number of activities attempted are not different for the two groups -- indicating that denial of activities to controls (as a result of limited space in various programs) is not the reason for the higher success rate.

Table 4 shows the number of vocational programs attempted (VPA) completed (VPC), and successfully completed (VPCS) by members of the two study groups (controls, C, and experimentals, E). The proportion of each group attempting none, one, two, or three or more vocational programs is not significantly different. (The χ^2 test statistic was 4.884; the $\chi^2_{3,\,0.05}$ critical value is 7.815.) In other words, there is no difference in the number of programs attempted by members of the two groups; 55 percent of the experimental group and 51 percent of the control group had attempted one or more programs. The proportion of each group completing none, one, two, or three vocational programs is also not significantly different, although this measure is significant at the $\alpha = 0.10$ level. Thirty-four percent of the experimentals and 27 percent of the controls completed one or more programs. The χ^2 statistic for the comparison of the proportion of each group who **successfully completed** none, one, two, or three or more programs is 10.267, which is significant at the $\alpha = 0.05$ level. Thirty percent of the experimental group and 20 percent of the control group successfully completed one or more vocational programs. Thus, the VDS program appears to have been effective in increasing the number of programs successfully completed. This result is particularly encouraging since the number of activities attempted are not different for the two groups--indicating that denial of programs to control group members (as a result of limited space) is not the reason for the higher success rate.

In addition to the number of programs successfully completed, the percentage of programs completed successfully (of programs completed and attempted) was calculated for each group. These measures serve as a proxy for program stability. The *a priori* expectation is that the percentage of programs successfully completed will be higher for the experimentals. On average, members of the control group successfully completed 68.7 percent of the vocational programs they attempted compared with 79.7 percent of the experimental group. This difference is significant at the $\alpha = 0.05$ level, using a one-tailed test. (The t-statistic = 1.8291; the critical value is 1.645.) For the comparison of the percentage of programs successfully completed of programs attempted, we find that, on average, the control group successfully completed 29.5 percent of attempted programs while the experimental group successfully completed 41 percent. The t-statistic for this comparison is 2.4635, which is significant at the

Table 4. Vocational Program Participation by *Group*[1]

	VPA		VPC		VPCS	
Number	C	E	C	E	C	E
0	144	134	216	194	238	207
1	53	39	35	31	24	29
2	49	60	33	51	26	50
>=3	50	62	12	19	8	9
Total	296	295	296	295	296	295
χ^2	4.884		6.859		10.267	

1. The $\chi^2_{3,0.05}$ critical value is 7.815.

$\alpha = 0.05$ level. Thus, the experimentals were successful at a higher percentage of programs attempted and completed.

Another measure of attainment in vocational programs is the total time spent in vocational programs. (This measure was calculated as the sum of "date ended minus date begun" for all vocational programs in which the subject participated; therefore, it is actually the number of days enrolled in vocational programs.) The control group spent an average of 129.4 days in vocational programs, while the experimental group spent an average of 149.7 days in vocational programs. The t-statistic for this comparison is 1.4589. This statistic is not significant at the $\alpha = 0.05$ level, but is significant at the $\alpha = 0.10$ level, for a one-tail test.

Results presented in this section show that the VDS has been effective in increasing the successful completion of vocational programs by participants. An important finding is that the program participants (experimentals) did not receive training in lieu of the controls; control group members were as likely as the experimental group members to attempt vocational programs and spent about the same amount of time in vocational classes.

We next considered whether there was an improvement in the VDS program with respect to time. In other words, we were interested in determining whether the VDS program became more effective as prison staff experience with the program grew. We examined this issue by looking at the percentage of each enrollment cohort who (1) attempted one or more vocational

programs ($VPA \geq 1$), (2) completed one or more vocational programs ($VPC \geq 1$), and (3) successfully completed one or more vocational programs ($VPCS \geq 1$). If the VDS became more effective over time, we would expect to see an increase in the percentage of VDS participants successfully completing programs.

The experimental and internal control group members were assigned to one of six cohorts based on the date of enrollment into the study. The enrollment periods were defined as six-month intervals beginning June 1, 1983. Results, by evaluation group, are given in Table 5. The percentage of subjects in each group attempting vocational programs remained relatively constant over the six enrollment periods, although a slight upward trend is apparent for both groups.[12] The largest differences between the two groups occurred during the first year of enrollment (Periods 1 and 2), when about 45 percent of the control group and 54 percent of the experimental group attempted vocational programs.

Table 5 also shows the number of individuals in each group cohort who completed one or more programs. This percentage increased for both groups over the evaluation period. Only 26 percent of the experimental group enrolled in Period 1 completed one or more programs compared with 46 percent in Period 5. More dramatically, only 11 percent of the control group enrolled in Period 1 completed one or more programs compared with 41 percent in Period 5. This trend for both groups suggests that, perhaps, a "spillover" effect occurred with respect to the controls. In other words, program aspects applied to the experimentals may have been applied to the controls as case managers integrated these techniques into their duties.

This trend is more apparent when we consider the percentage of each group cohort who **successfully completed** one or more vocational programs. As shown in Figure 2, only 17 percent (9 of 34) of the experimentals enrolled in Period 1 successfully completed one or more vocational programs while 46 percent of those enrolled in Period 4 successfully completed one or more programs. A similar result obtains for the control group cohorts: 8 percent of the

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[12] The figures for Period 6 are misleading, as many of these individuals were enrolled shortly before the data were collected and, thus, would not yet have been scheduled for or begun programs.

Table 5. Vocational Program Participation By Enrollment Cohort

Experimentals				
Period	No.	*VPA* ≥ 1	*VPC* ≥ 1	*VPCS* ≥ 1
1	34	18	9	6
2	30	17	8	6
3	44	25	13	13
4	48	33	23	21
5	58	39	27	27
6	81	29	21	15
Total	295	161	101	88
Controls				
Period	No.	*VPA* ≥ 1	*VPC* ≥ 1	*VPCS* ≥ 1
1	36	17	4	3
2	34	15	9	7
3	46	32	12	9
4	48	24	12	10
5	58	37	24	18
6	74	27	19	11
Total	296	152	80	58

control group enrolled in Period 1 successfully completed one or more vocational programs, while 31 percent of those enrolled in Period 4 successfully completed one or more.

Table 5 and Figure 2 suggest that Periods 1 through 3 appear to constitute a "start-up state" which is followed by the "steady state" equilibrium of Periods 4 and 5. The "decline" in percentage successfully completing programs between Periods 4 and 5 may be due to subjects who were still completing vocational programs when the data were acquired in July 1986. As was discussed in footnote 7, we are continuing our attempts to acquire the data for the period between July 1986 and February 1987 (when the management information system "crashed"). These eight months of data would provide insight into whether the VDS program "peaked" two years into the evaluation and has since declined, reached an equilibrium two years into the evaluation, or is continuing to show signs of strengthening.

DISCUSSION AND CONCLUSIONS

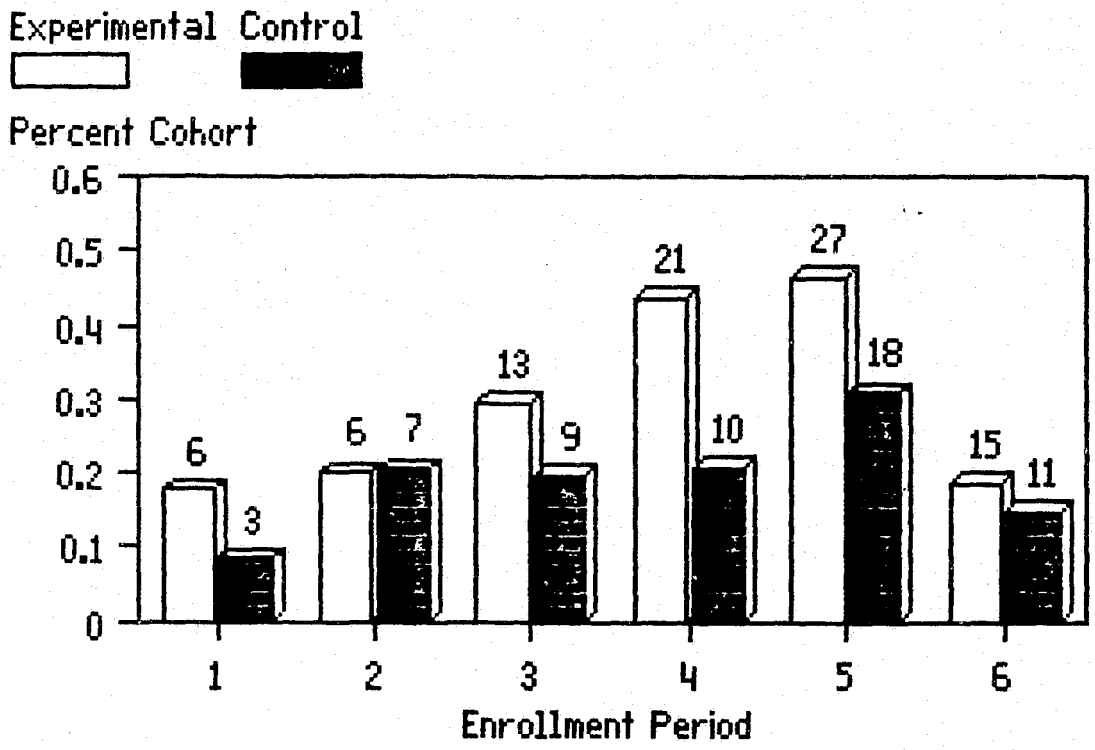

Figure 2. Percentage of cohorts successfully completing vocational programs.: The figure shows, by evaluation group and enrollment cohort, the percentage of each cohort successfully completing one or more vocational programs.

The evaluation of the VDS program was based on the implementation of a true experimental design which required that a group of randomly selected inmates (the experimentals) received all of the VDS services, while a second group of randomly selected inmates (the internal controls) received only some of the VDS services on an "as available" basis. This paper focused on issues pertaining to program delivery, examining evidence related to the implementation of the VDS program, the provision of services to the experimental and internal control groups, and the completion of vocational programs by members of the experimental and internal control groups. Secondly, we considered whether the VDS program was effective

in increasing participants' vocational skills. We addressed this question by comparing the successful program completions of the experimental and internal control group subjects.

As described earlier, the VDS is an integrated program which consists of seven elements:

1. Evaluation of participants;
2. Development of a correctional plan;
3. Monitoring of a correctional plan;
4. Priority for vocational education placement;
5. Development of a Mutual Agreement Parole Program (MAPP) contract;
6. Community re-entry training; and
7. Job development counselling and job placement services.

Each of these services were available to both experimental and control group members with the exception of elements 1 (evaluation), 6 (community re-entry training), and 7 (job development and placement). The provision of the other four services was constrained only by the availability of services (e.g., classroom space), with experimental group members receiving priority for placement in programs.

Anecdotal evidence was presented which suggested that experimental group members did receive the evaluation services, whereas the control group members did not. This evidence also suggests that efforts were made to discuss vocational plans with job placement specialists and ESC personnel, although it is unlikely that the majority of experimental group members received these services. The final "unique" service to be provided to the VDS participants was community re-entry training. Less than 50 percent of released experimental group members participated in this program. Thus, the three elements of the VDS which were unique to experimentals were only partially implemented.

Elements 2 (correctional plan development), 3 (monitoring of the correctional plan) and 4 (vocational training) comprise the "heart" of the VDS. Determination of how well the correctional plan was implemented, updated and followed was thus of critical interest in the evaluation of the VDS implementation. A correctional plan, which outlines program participation, is developed for all inmates at CMYC and SYC. The programs or activities included in the correctional

plan include vocational, academic and personal enrichment programs. Compliance with the correctional plan was measured by comparing for the two study groups (1) the number of vocational programs scheduled with the number begun, and (2) how programs were terminated (completion, transfer, reassignment or quit). The results showed that there was no significant difference in the number of vocational programs scheduled for the two CMYC/SYC groups. Compliance as measured by the difference between the number of programs scheduled and the number of programs begun appears to be equally good for members of both groups. A second measure of compliance with the VDS program was the reason for vocational program termination. The VDS was intended to encourage an inmate to participate in and complete the activities in his correctional plan. Thus, if the VDS were properly implemented, we would expect to find members of the experimental group completing a higher percentage of programs attempted and being transferred or reassigned from a smaller percentage of programs than members of the internal control group. Our results suggest that experimentals did complete a significantly larger percentage of programs attempted and were transferred from a significantly smaller percentage of programs than the controls. Additional analyses on the waiting time to enter vocational programs showed no difference in the mean waiting times for these programs of the two CMYC/SYC groups. These results suggest that vocational programs were not a constrained resource at CMYC/SYC; those scheduled were equally likely to enter a vocational program within approximately the same amount of time.

The final element of the VDS program is the development of a MAPP contract. Experimental group members were to be given special consideration in the development of MAPP contracts. Our results showed, however, that members of each group were equally likely to to have MAPP contract, to have not completed the contract, or to not have had the contract.

Thus, although some elements of the VDS were implemented (for example, correctional plans), other elements (for example, MAPPs, and community re-entry training) were not universally delivered. Other elements (the evaluation and job development/placement services) were most likely delivered only in part. Results do show, however, that members of the experimental group received more of the VDS services (particularly with respect to training) than did members of the control group.

The integrated approach to correctional plan development was hypothesized to increase the vocational skills of VDS participants. One proxy for increased skills is the grade received at the completion of a program. The two study groups were compared with respect to their "success" in the completion of vocational programs. Results showed that the VDS had the desired effect; members of the experimental group were more likely to successfully complete activities in which they were enrolled than were members of the control group. It should be noted that only 30 percent of the experimentals successfully completed vocational programs. This significant difference is important, however, and is particularly encouraging given that the number of programs attempted by the two groups did not differ significantly, indicating that the lower success rate among controls was not due to limited access to programs.

Vocational program participation of the two groups was also examined for "enrollmemt cohorts" to determine whether the VDS program became more effective with time. Results showed that the number of individuals in each cohort who completed one or more programs increased for both groups over time. In addition, there was an increase in the number of participants who successfully completed one or more programs. This trend suggests that a "spillover" effect may have occurred with respect to the control group. The presumption is that as case managers integrated these techniques into their duties more program elements were applied to the control group. The analyses of program delivery by time period suggests that during the first 18 months the project was in a "start up" or transition phase after which time the program reached a "steady-state."

In summary, when the effectiveness of the VDS program is measured by the successful completion of programs, the results indicate that members of both groups attempted equal numbers of programs, experimental group members completed more vocational programs, and experimental group members successfully completed more programs than did members of the internal control group.

This paper addressed the issue of program integrity. We examined the first of three links between a rehabilitation program and its goal, reduced recidivism. Our results suggest that the program was effective in improving vocational skills as measured by successful program

completion. Thus, the first "link" in the causal chain between the VDS and reduced recidivism was established. These results suggest that, if post-release differences in behavior are found, confidence can be placed in attributing these differences to the effectiveness of the VDS program.

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