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## Substance Abuse Treatment in Learning Centers: A Comparison Across Variables

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SUBSTANCE ABUSE TREATMENT IN LEARNING CENTERS:  
A COMPARISON ACROSS VARIABLES

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A Thesis

Presented to

The Faculty of the Department of Sociology  
The College of William and Mary in Virginia

In Partial Fulfillment  
of the Requirements for Degree of  
Masters of Arts

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by

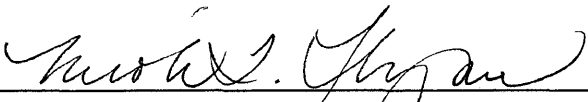
Nicole Thomson Flynn

1993

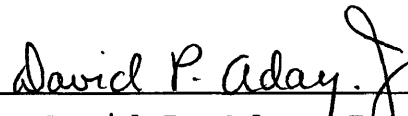
APPROVAL SHEET

This thesis is submitted in partial fulfillment of  
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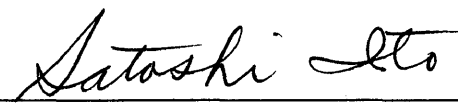
Master of Arts

  
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Satoshi Ito

To Scott,  
Thank you.

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## ABSTRACT

The purpose of this study is to evaluate a substance abuse treatment program as implemented in state operated learning centers. The primary hypothesis is that treatment will reduce drug use and then indirectly reduce recidivism. The drug use and crime connection is suggested by Akers (1992); Huizinga and Elliott (1981); Elliott, Huizinga, and Ageton (1985); among others. A secondary hypothesis is that prior behavior influences future behavior, supported by Akers (1992); Matsueda (1991); and Monahan (1981).

The total sample (n=115), the control group (n=63), and the experimental group (n=52), are compared across several variables: age, race, degree of delinquency, success time, and recidivism offense seriousness. Problems in the samples precipitated revisions that changed the original experimental model to a regression design. This study now compares differences in the total sample, and differences between the smaller non-treatment and treatment groups. Success time and recidivism offense seriousness serve interchangeably as dependent and independent variables.

The results of this study are inconclusive. The primary hypothesis (treatment reduces recidivism) is not confirmed or denied due to problems with the sample and the recidivism measure. The secondary hypothesis (prior behavior predicts future behavior) receives some support, although this may be due to the age of the samples and ambiguities in the degree of delinquency measure.

**SUBSTANCE ABUSE TREATMENT:  
A COMPARISON ACROSS VARIABLES**

## Introduction

Program evaluation is often a difficult process. In this study, I evaluate a state operated substance abuse treatment program as implemented in juvenile learning centers. The study was designed originally as an experiment. However, as the study progressed, I encountered difficulties with both sampling and measurement. The first portion of this paper describes the original questions and research design, presents and discusses relevant literature, and introduces expected results. Following that, I describe the changes in the sampling plan and the resulting analyses. The thesis concludes with a discussion of the results and the measurement problems.

## Statement of the question

Can incarcerated juvenile offenders be treated for drug use problems to reduce the probability of subsequent delinquent behavior? There is a long tradition of using incarceration or treatment during incarceration to "reform" juvenile offenders, but there is little evidence that such efforts work. More specifically, there is a complex relationship between drug use and other forms of law violating

conduct. It is not clear whether drug use causes crime or involvement in crime promotes drug use (Akers, 1992; Elliott, Huizinga and Ageton, 1985; Huizinga and Elliott, 1981). However, the persistent link between drug use and crime has suggested to some policy makers, criminal justice planners, and treatment program staff that treatment of drug use problems will reduce involvement in crime.

I am involved in evaluating a program to treat substance using juvenile offenders while they are incarcerated in state-operated learning centers. Learning centers are secure residential juvenile correctional facilities. After juveniles are adjudicated as delinquent, a dispositional hearing is held<sup>1</sup>. In these hearings, juvenile court judges evaluate juveniles' offenses and decide on appropriate dispositions. Judges have substantial latitude in this process, although the juvenile code in this state strongly encourages specific types and lengths of punishment<sup>2</sup>. Once youths are assigned to learning centers, they are processed through the Reception and Diagnostic Center. At this time, psychological tests are

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<sup>1</sup> I use the masculine pronoun throughout this study, since I am only studying male juveniles. I would not assert that these findings could be applied to females in the juvenile justice system. Females represent a small number of the youth committed to direct care.

<sup>2</sup> Juvenile Code, as outlined in the Code of Virginia, addresses this issue. Section 16.1-285 discusses duration of commitment; specifying minimum length of stay for certain serious offenders. However, the judge still is not required to adhere to this, although the clause allows for strict sentencing which must be implemented once the court agrees on the minimum length of stay.

completed and case histories are developed. After lengthy physical, psychological, educational, and behavioral evaluations (lasting approximately 21 days), juveniles are sent to learning centers.

One element of the evaluation concerns substance use and/or abuse. An advisory team (composed of psychologists, social workers and case managers) makes these decisions using the results of multiple evaluations. Juveniles who are identified as having substance abuse problems are referred to treatment in the Substance Abuse Programs at specific learning centers. Once in the program, juveniles participate in extensive group therapy and group drug education classes, in addition to individual counseling and family counseling when such services are available<sup>3</sup>. Certified Substance Abuse Counselors work with these youth. If deemed necessary, referrals are made to other residential programs provided by public or private agencies.

#### Review of relevant literature

Research on juveniles' substance abuse, crime, and methods for punishment or treatment is relatively new. The relevant literature is diverse and multi-dimensional.

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<sup>3</sup> Program staff regard family counselling as an important element in substance abuse counselling. However, this treatment component is limited by geographic accessibility. The learning centers I drew my population from are located in and around Richmond. The youth served in these centers come from courts state-wide.

Disagreement prevails: on the relationship between drug use and crime, over the purpose of punishment or treatment for juveniles, on the appropriate models for treatment, and on the goals of treatment for juveniles. Juvenile corrections professionals generally agree that there is a drug problem among court-involved adolescents.

It seems likely there is a relationship between alcohol and drug use and crime. Leukefeld and Clayton (1979) use data from the National Youth Polydrug Study to examine the link between youth drug use and crime. They note that data confirm a strong relationship between drug use and criminal activity. This relationship varies by the drug used and the intensity of criminal involvement. Youth using heroin on a regular basis are four times more delinquent (based on comparison of mean arrest scores) than youth using marijuana on a regular basis. From these data, the authors conclude that there is a relationship between levels of delinquency and use of certain drugs (i.e. "hard" drugs, such as heroin).

The nature of this relationship is often debated. Among others, Huizinga and Elliott (1981) support the idea of delinquency development, with delinquency preceding drug use. A study by Elliott, Huizinga, and Ageton (1985) suggests self-reported delinquency and bonds with delinquent peers have a direct effect on later delinquency and drug use. However, they also note that prior drug use is the most effective predictor of future drug use. The authors suggest that delinquency and

drug use are manifestations of a general deviant syndrome. The research is informed by social control, strain, and social learning theories; and the authors found some support for the socio-psychological argument that strong bonds to delinquent peers are directly related to a juvenile's delinquency and drug use.

Akers (1992) discusses the complexity of this relationship in reference to his Boys Town Study. He notes: "Among the users, the greater the level of drug use the greater the level of delinquency. There is also a strong relationship between multiple-drug use and delinquency" (Akers, 1992:65). He mentions narcotics use as a possible delinquency enhancer. According to this premise, "narcotics use does not initiate criminal activity but does act as a 'multiplier' of existing criminal behavior" (Akers, 1992:69). While there does seem to be some relationship between drug use and delinquency, the exact nature of this complex relationship is not known.

In addition to the unspecified relationship between delinquency and drug use, there are further disagreements about correctional methods. Zimring and Hawkins (1992) argue for a correctional approach oriented to the welfare of the youth. Zimring and Hawkins (1992), Murphy (1974), and Schwartz (1985) all point out that as a society, we assume a "paternalistic" attitude towards juvenile offenders. Murphy writes, "According to acts and statutes that have set up this

system, the juvenile court is only to serve as a vehicle by which the state assumes the role of a kindly and understanding parent" (Murphy, 1985:4). Zimring and Hawkins note the traditional policy of protecting "the young from the consequences of their own decisions" (Zimring and Hawkins, 1992:116).

Youthfulness and inability to assume responsibility are given as reasons for the separate system for juvenile offenders. Those creating the system assumed that youngsters and adolescents are less culpable for their behavior and should have the opportunity to reform before they become adults. Zimring and Hawkins (1992) criticize the harsh, punitive sanctions for drug use known as "schoolyard laws" as they are outlined in the National Drug Control Strategy (The White House, 1989). Such laws also are applied to juveniles involved in drug related activity near public youth facilities. The authors argue for prevention and intervention programs, but with this stipulation: "If a program cannot produce positive change...public agencies cannot fall back on symbolic, admonitory, or deterrent functions to justify such programs" (Zimring and Hawkins, 1992:129). Others also recognize the need for treatment rather than punishment for young offenders (Aday and Thomson, 1992; Fagan and Hartstone, 1984; Beschner and Friedman, 1979).

This research was intended to examine the effectiveness



of the learning center substance abuse program. Program effectiveness is measured by comparing recidivism rates of two groups: 1) substance abusing youth who have been through the program and 2) youth with similar characteristics who have not been in the program. The original plan required a random sample of 200 youth. The juveniles in this study must have been incarcerated in one of three selected learning centers, and those selected were male. Those selected are identified as having a substance abuse-use problem. Half of the juveniles in the study were to have participated in the substance abuse program. The remaining youth would not have participated in treatment. At the time of initial treatment, all were to have been between ages 13 and 17.

According to the theory of the program, successful treatment should reduce subsequent delinquent behavior. This supposition is based on the presumed connection between drug use and delinquency suggested by Akers, 1992; Elliott et al, 1985; and Huizinga and Elliott, 1981. If treatment reduces drug use, then youth receiving treatment should recidivate less often and with less serious offenses than their non-treated counterparts.

It also seems likely that previous delinquency will be related to later behavior. Accordingly, I hypothesize that the seriousness of the committing offense will be positively related to recidivism. This proposed relationship is based in part on the strong effects of behavior at time one on behavior

at time two as reported by Akers, 1992; Matsueda, 1991; Monahan, 1981; and others. Generally, youth who have been more deeply involved in delinquency are expected to be at greater risk -- even after completing the treatment program.

### Research design

I will test the relationship between participation in treatment and recidivism, as measured by Aday's (1974) recidivism index. The treatment program is intended to reduce delinquency by reducing drug use and abuse. As program participants abandon or reduce drug use, they should be less likely to engage in law-violating behavior generally (cf. Leukefeld and Clayton, 1979).

The relationship between treatment and recidivism may be affected by other variables, including the prior delinquency of participants and the age of the participants. The juvenile's history of delinquency may reduce prospects for successful treatment. That possibility is suggested by research that describes the persistence of law-violating behavior over time (cf. Akers, 1992; Matsueda, 1991; Monahan, 1981). Generally, those who have been more deeply involved in delinquency are expected to be more resistant to change through treatment. Similarly, there may be a relationship between age and recidivism. Older offenders may have greater involvement in law-violating behavior and be more resistant to treatment.

The estimated recidivism rate for juveniles in the learning centers is between 30 and 50 percent. Davis (1986) conducted research concluding that almost 50 percent of the youth released from juvenile correctional facilities during a one year period recidivated over the following twenty four months. During this twenty four month period, half of those recidivating did so during the first six months. Current research by the Department of Youth and Family Services (1992) indicates the recidivism rate of juveniles released from learning centers is 30 percent<sup>4</sup>.

#### Measurement of Variables

Measurement in this study is done on the individual level, but scores will be presented as aggregate ( $\bar{x}$ ) measures. Information on age at entry into the institution and race are relatively simple to collect and to measure. Age will be recorded and transformed to years and proportion of months (as a two digit number with two decimal places), and ranges between 13 and 17. Race will be measured as an attribute, and coded as a dummy variable, "white" (1) and "not-white" (0). Not-white is understood to mean African American, and white refers to Caucasian. Samples were to be selected to represent participation or nonparticipation in treatment. Treatment is the experimental variable.

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<sup>4</sup> Of the 30% juveniles recidivating, 22% are on their second commitment, 5% are on their third commitment, and 3% are on their fourth or greater commitment.

Committing offense, prior offense and degree of delinquency will be measured using the offense severity matrix developed by Dennis Waite (Department of Corrections, 1987). The matrix provides numerical scores for crimes described in the Virginia Criminal Code, and is designed specifically for use with the Virginia Juvenile Justice system. The matrix is described in levels, from four to one. Each level has two corresponding scores, one for committing offenses and one for prior offenses. Level four is the least serious, and the points assigned are highest for both committing and prior offenses. Level one is most serious, and the points are lowest for both committing and prior offense. At each level, the committing offense is assigned twice the points of the prior offense. This is an arbitrary decision; it simplifies computation<sup>5</sup>, and reflects the idea that committing offense should be the anchor point for the study of recidivism.

Table 1  
Offense Severity Matrix  
Commonwealth of Virginia Department of Corrections

	Level 4	Level 3	Level 2	Level 1
Committing Offense	4	3	2	1
Prior Offense	2	1.5	1	.5

---

<sup>5</sup> I changed the direction (high to low) of the numbers from the original matrix. This will not effect scoring and will simplify computations.

The committing offense is defined as "one of the offenses for which the youth was committed" (Department of Corrections, 1988:3). Offense seriousness is the score of the most serious committing offense. A prior offense is defined as "an offense conviction which had been previously disposed of in court and was not one of the offenses for which the youth was committed" (Department of Corrections, 1988:3). Degree of delinquency score adds together the prior and committing offense scores.

Although there may be several committing offenses, and I recorded these data, I applied the scoring system only to the most serious offense. Committing offenses were scored according to the seriousness levels (4,3,2, or 1). For example, any level three committing offense was scored '3'. Prior offenses also were scored by level (2,1.5,1, or .5). To derive the score for degree of delinquency, I examined all prior and committing offenses, and recorded each according to this system. Scores from both were summed to create degree of delinquency scores.

Recidivism was measured using a method developed by Aday (1974) and the offense severity matrix just described. Aday (1974) suggests that seriousness measures should reflect some consensus, and the Division of Youth Services' matrix meets that test. According to Aday's (1974:11) method "the score for any recidivism incident would reflect the seriousness of the first offense, the seriousness of the second offense, and

the direction of change." The recidivism score is a ratio measure computed by dividing the score of the first offense by the score of the recidivating offense. If the value is greater than 1.0, the recidivating offense is more serious, and if the score is less than 1.0, the later offense is less serious.

The second element of the recidivism score is the "time at risk dimension" (Aday, 1974:18). This score is measured from the time between the committing offense and the recidivating offense. For juveniles in the study, the time score begins on the date youth are assigned to the learning centers. Time success is calculated from time of commitment until the time of recommitment, less the time spent in treatment or a correctional institution. Aday uses 60 months as the baseline measure for time at risk. For the purpose of this study, and because of time constraints, I use 18 months from release as a total time at risk<sup>6</sup>. While Aday's formula accounts for the possibility of multiple cases of recidivism, I am interested only in the recidivating event that results in return to the learning center. As will be discussed further below, this is a conservative and seriously limiting measure of recidivism.

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<sup>6</sup> Using 18 months for the baseline time to measure recidivism is reasonable. Through a conversation with Dr. Anthony Larimore Guenther (Virginia Department of Corrections Lead Research Analyst), I learned that a plateau in recidivism is reached around 18 months. Most recidivism occurs between 6 and 9 months. Professionals directly involved in juvenile corrections believe that recidivism may even occur much earlier.

The formula for this measurement is as follows:

**Aday's recidivism formula:**

$$R(i) = \frac{S(O1)}{S(O2)} + (.00T1 - .00TS1)$$

- Where R(i) = an individual's recidivism score
- S(O1) = the weighted seriousness value of the offense which resulted in the first commitment
- S(O2) = the weighted seriousness value of the offense counted as recidivism.
- .00T1 = total time at risk of 18 months calculated from the time of the youth's being taken into custody
- .00TS1 = time success (in months) calculated from the beginning of the time at risk for the immediately preceding event to the recidivism offense, minus the time spent in the learning center.

From this formula, I calculate a recidivism score. The number on the left of the decimal point, or when that number is zero, the number immediately following the decimal, indicates recidivism seriousness, and the numbers to the far right of the decimal (3rd and 4th places from the decimal) will indicate time success. This score is computed for all the youth in this study. It is then be used in aggregate ( $\bar{x}$ ) measures. If the treatment reduces drug use, and in doing so reduces juvenile crime, then the average recidivism score of the youth receiving treatment should be lower than the average score of those not receiving treatment.

### The Sample

In the original design the sample was to be selected from four lists of youth who were released from the learning centers before December 1, 1991. The first list would include those 13-15 year olds who were identified as having substance abuse problems and received treatment in the substance abuse program. The second list would include the 13-15 year olds who were identified as having substance abuse problems but did not receive treatment. The third list would include youth age 16-17 who were identified as substance abusing and participated in the substance abuse program. The final list would include the 16-17 year olds who were identified as having substance abuse problems who did not participate in the treatment program. I would randomly select 50 juveniles from each list; then use results from the Personal Experience Screen Questionnaire (PESQ) to identify the youth using substances.

Table 2  
Sample Selection Panels  
Juveniles in Virginia Learning Centers

Age	Treatment Group	Control Group
13-15	50	50
16-17	50	50

In the course of selecting the sample, I discovered a disparity in the ages of youth participating in the treatment



program as compared to youth not in the program. Approximately 110 youth were treated prior to December 1991. (This is the cut off date for inclusion in the study in order to allow time for recidivism within the defined time at risk.) Fifty of these youth were not eligible for inclusion because they would be over the age of 18 during the time at risk. In addition, eight cases were not selected because of missing data. The remaining fifty-two cases were used for the treatment group sample.

The control group could not be matched to the experimental group because the files of older youth were not accessible or available. One result is that the experimental group is on average one year older than the control group.

A serious problem with the lack of match on age is that the comparison on recidivism likely will be contaminated. Theoretically, older youth are more likely to recidivate (as already noted). However older youth are less likely to recidivate into the juvenile justice system. If they are arrested, they are likely to be tried and sentenced as adults. The measure of recidivism in this case is reassignment to a juvenile learning center. Accordingly, the recidivism measure almost certainly underestimates the recidivism of older offenders.

In selecting cases for the control group, I discovered some problems using the results of the Personal Experience Screen Questionnaire to identify non-treated youth with

substance abuse problems. For example results indicated that some offenders did not have substance use problems even though these youth were convicted of possession and had previous possession convictions. Accordingly, I used staffing reports completed by the evaluation team examining the youths. These reports comment on the obvious problems of the juvenile and suggest behavioral objectives to be developed during the stay in the learning center. The same team completes these reports on every youth, so there is a degree of consistency in the results of the evaluations. Beginning with 200 randomly selected cases that met the original sample criteria of the study, I selected 63 youth for the control group sample.

Table 3  
Actual Sample

Age	Treatment Group	Control Group
13.00-15.99	7	33
16.00-17.99	45	30

Finally, racial composition differs in the two groups. The experimental group is composed of 26 white youth and 26 African American youth. This ratio reflects the racial composition of the substance abuse program generally. The control group includes 16 white youth and 47 African American youth, a 25.4% and 74.6% split. This proportion approximates that of the learning centers generally. The 1991 fiscal year

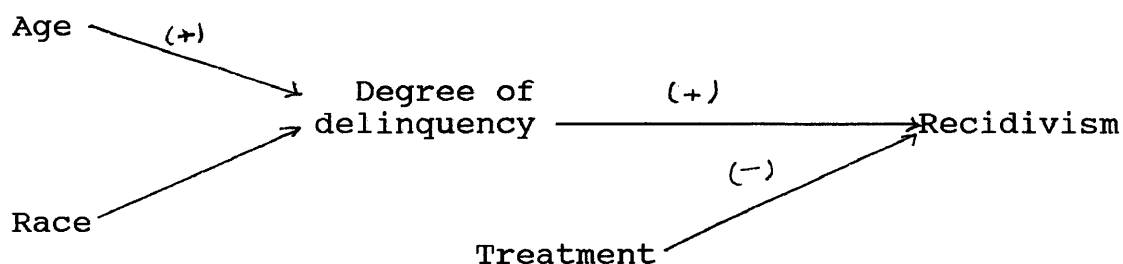
population of the learning centers is approximately 65% African American or other minority and 35% Caucasian (Department of Youth and Family Services, 1992).

As described in the discussion above, the sub-samples could not be matched on relevant non-experimental variables and they were not selected randomly. Accordingly, the experimental design was abandoned and the research now involves an examination of variables that are believed to be related to recidivism, including substance abuse treatment, age, race, and degree of delinquency. The relationships among these variables and between the variables and recidivism are examined through regression analyses and analyses of variance. Age at entry should be related to the degree of delinquency because older offenders will have had more time to commit violations than have younger offenders (Tolan, 1987; Ganzer and Sarason, 1973). Age also may be related indirectly to recidivism through the suspected positive relationship between degree of delinquency and recidivism. As described earlier, I expect degree of delinquency to be positively related to recidivism because previous research suggests that behavior at time one affects behavior at time two. Data from intake reports reveal that 65 percent of the learning center population is minority, while 35 percent is white. This may reflect some effect of race or ethnicity, but there is no clear theory for predicting the nature or direction of the

relationship.

The regression model is described below. Due to the change from experiment to regression model, references to treatment and control groups are deleted, and treatment becomes a variable scored 1 or 0 (presence or absence).

#### Regression Model



There is also a change in the use of Aday's recidivism score. Instead of using the score as a composite measure, I separate it into two components. The first is a score based on the ratio of the committing offense seriousness and the recidivating offense seriousness. This is the recidivism offense seriousness score. The second is the success time component, a positive number representing the number of days of success out of the total 550 possible. Success means days the youth is not recommitted to the learning center. Youth may be arrested and released during this period. This is considered successful time and not recidivism until youth are returned to a learning center. Individual recidivism scores will be aggregated as average measures. If the treatment

reduces drug use, and in doing so reduces juvenile crime, then the average recidivism offense seriousness scores of youth receiving treatment should be lower than the average scores of the youth not receiving treatment. Likewise, average success time of the youth receiving treatment should be higher than the success time of youth not receiving treatment.

### Data Analysis

This study involved secondary analysis of existing data. The data were available from the Department of Youth and Family Services. The data were examined first by comparing the mean, median and mode recidivism scores for each group. Then, I used correlation analyses to examine basic relationships between each independent variable and the dependent variable. I expected a significant positive correlation between measures of degrees of delinquency and recidivism seriousness. Such correlations would be consistent with the hypothesis about behavior at time one and behavior at time two. Alternatively, very high coefficients might result from including the measures of committing offenses in both scores. In that case, there would be concern about collinearity. I also expected a significant inverse correlation between age and degree of delinquency. This might result because younger offenders have had less time to commit offenses. Next, the independent variables were entered in regression analyses. Recidivism offense seriousness was regressed on treatment, degree of

delinquency, race, age and success time. These analyses were then repeated, omitting success time as a variable. Success time also was regressed on recidivating offense seriousness, degree of delinquency, age and race. Relationships among variables were explored further through comparisons of means and analysis of variance. Results of the various analyses are presented below.

#### Variable Distribution

The variables in this research include age, race, degree of delinquency, treatment and recidivism. As noted in the discussion of the revised sampling strategy, 52 youth received treatment and 63 were appropriate for treatment but did not participate in treatment. A total of 115 youth are included in this study. For a description of frequencies by total sample, treatment group (0) and non-treatment group (1), refer to table 4.

Slightly more than 63% of the total sample are African American and 36% are Caucasian. The non-treatment group is 74.6% black and 25.4% white, while the treatment group is 50% black and 50% white.

The average age of the two groups differs by about one year. The mean age of the total sample is 16.12, and the median age is 16.065. The mean age for the non-treatment group is 15.66 years, and the median is 15.77. The mean age of the treatment group is 16.75 years, and the median age is 16.85.

The average degree of delinquency for the entire sample of youth is 12.99. The minimum score is 2.0 and the maximum is 33.5. The average degree of delinquency is slightly different for the two sub-samples. The mean degree of delinquency score of the non-treatment group is 13.08. The lowest score is 2.0 and the highest is 33.5. The mean degree of delinquency score for the treatment group is 12.89. The minimum score for this group is 3.0 and the maximum is 30.0. It is difficult to interpret the meaning of the degree of delinquency measure, and thus to compare these scores. As the degree of delinquency scores increase, it becomes difficult to distinguish the relative seriousness of the delinquency involvement. For example, if the degree of delinquency score is 10, the youth may have five level one committing offenses (score=5), three level two prior offenses (score=3), and four level one prior offense (score=2). It is also possible that a score of 10 represents two level four committing offenses (score=8) and one level four prior offense (score=2). The score can be composed of any of 14 prior offenses and eight committing offenses. Alternatively, the degree of delinquency score may seriously underestimate involvement of older youth because those who engage in serious or repeated violations may be tried as adults, and therefore would not be in the sample. Accordingly those who are selected for the juvenile justice system would be those who have committed relatively minor offenses.

More than thirty four percent (34.2%) of the youth from the total sample recidivated. The recidivism rate for the non-treatment group is 44.4%. The proportion for the treatment group is 21.6%. This difference is significant ( $p < .05$ ).

Success time was collapsed to four levels: 1 to 183 days (scored 1), 184 to 367 days (scored 2), 368 to 550 days (scored 3). A fourth group (scored 4) consists of those who did not recidivate into the juvenile justice system at all during this study. These numbers are computed in levels using two whole numbers and decimals. A score of 3.50 would represent a recommitment halfway through the third period, or at 459 days.

The average success time for the total sample is 3.26 (approximately 413.2 days or 13 months). The time scores for the total sample vary as follows: 13.2% recidivate within the first six months, 13.2% recidivate within the second six months, and 7.9% recidivate within the final six months. The remaining 65.8% of the sample did not recidivate during the 18 month follow-up. For the treatment group the rate for the first period is 11.8%, for the second period it is 7.8%, and in the final six months the rate is 2.0%. Seventy eight percent of these youth did not recidivate into the juvenile justice system. The average success time for the non-treatment group is 3.47. The pattern is different for youth in the treatment group: 14.3% recidivate in the first six months, 17.5% recidivate in the second six months, and 12.7%



Table 4 Descriptive Statistics

TOTAL	RACE	AGE	DOD	ROS	SUCCESS TIME*
FREQ.	b=73 w=42	na	na	na	1=15 2=15 3=9 4=75
MEAN	na	16.13	12.99	.51	3.26
MODE	na	16.27	10.50	.00	4.00
STD DEV	na	.92	6.61	.66	1.12
RANGE	na	13.59- 17.98	2.0- 33.5	0.0- 2.0	1.0- 4.0
<b>CONTROL</b>					
FREQ.	b=47 w=16	na	na	na	1=9 2=11 3=8 4=35
MEAN	na	15.66	13.08	.61	3.10
MODE	na	16.27	10.50	.00	4.00
STD DEV	na	.78	6.65	.64	1.15
RANGE	na	13.59- 17.58	2.0- 33.5	0.0- 2.0	1.0- 4.0
<b>EXPERIMENTAL</b>					
FREQ.	b=26 w=26	na	na	na	1=6 2=4 3=1 4=40
MEAN	na	16.75	12.89	.39	3.47
MODE	na	16.54	7.00	.00	4.00
STD DEV	na	.69	6.61	.66	1.07
RANGE	na	14.64- 17.98	3.0- 30.0	0.0- 2.0	1.0- 4.0

\* Success time is computed in a three six month time periods; a decimal indicates a proportion of the time period. There is one missing case in the total sample.

DOD= degree of delinquency ROS=recidivism offense seriousness

recidivate in the final period. More than 55.6% of the non-treatment group did not recidivate during the 18 month time frame. The average success time score for this group is 3.095.

The mean recidivism offense seriousness score for the sample is .55. This indicates that the recommitting offense is slightly less serious than the original committing offense. The minimum score is 0 and the maximum score is 2.0, for all cases. The mean recidivism offense seriousness score for the non-treatment group is .61 and the median is .5. The mean recidivism offense seriousness score for the treatment group is .39 and the median is 0. The median score is a result of over half the cases being scored 0. The scores in the middle of the distribution fall in the 0 category. This indicates that the treatment group's recommitting offenses are slightly less serious on average than those of the non-treatment group.

These data appear to support the hypothesis that youth receiving treatment will have lower recidivism than youth not receiving treatment. Analysis of the proportions of recidivists in the control group and the experimental group reveals differences that are statistically significant (44.4% vs. 21.6%, respectively;  $p < .05$ ). The recidivism offense seriousness score is lower for the control group. And, the success time score is higher for the experimental group. These findings will be considered in more detail in the following discussions. Also, data relevant to the second question, the

effect of behavior at time one on behavior at time two, will be examined.

### Correlations

Zero-order correlations for the sample reveal some interesting patterns (table 5). There is a significant negative correlation ( $-.58, p < .001$ ) between success time and recidivism offense seriousness. Recidivism offense seriousness increases as success time decreases. There is also a significant negative correlation ( $-.41, p < .001$ ) between recidivism offense seriousness and age. The recidivism offense seriousness score decreases as age increases. There is a significant positive correlation ( $.32, p < .001$ ) between age and success time. Time success increases with age. And, there is a significant positive relationship ( $.24, p < .01$ ) between race and degree of delinquency: higher degrees of delinquency are associated with being white.

For the non-treatment group, the time success score and the recidivism offense seriousness score are related negatively ( $-.47, p < .001$ ) and the relationship is significant. This is the only significant relationship for this sub-sample. Degree of delinquency and success time are negatively related ( $-.19, p < .07$ ) and the relationship approaches the .05 level of significance. There is also a negative relationship between recidivism and age. Age and race are correlated negatively with recidivism offense seriousness:

**Table 5**            **Zero Order Correlations****Total Sample**

	TIME	DOD	RECIDI	RACE	AGE
GROUP	.17 (.038)	-.01 (.441)	-.17 (.037)	.25 (.003)	.59 (.000)
TIME		-.08 (.189)	-.58 (.000)	.07 (.233)	.32 (.001)
DOD			-.08 (.184)	.24 (.006)	-.04 (.350)
RECIDI				-.05 (.299)	-.41 (.000)
RACE					.14 (.088)

**Non-Treatment Group**

	TIME	DOD	RECIDI	RACE	AGE
TIME		-.19 (.073)	-.47 (.000)	.05 (.356)	.07 (.307)
DOD			-.10 (.222)	.10 (.222)	-.02 (.452)
RECIDI				-.13 (.147)	-.14 (.150)
RACE					-.04 (.375)

**Treatment Group**

	TIME	DOD	RECIDI	RACE	AGE
TIME		.06 (.342)	-.68 (.000)	.01 (.476)	.60 (.000)
DOD			-.08 (.294)	.41 (.001)	-.06 (.357)
RECIDI				.12 (.192)	-.65 (.000)
RACE					-.10 (.269)

DOD=degree of delinquency

RECIDI=recidivism offense seriousness

younger offenders and black youth are likely to have higher recidivism offense seriousness scores.

This pattern persists in the treatment group. There is a significant negative relationship ( $-.68, p < .001$ ) between recidivism offense seriousness and success time. Recidivism offense seriousness increases as success time decreases. There is a significant negative relationship between recidivism offense seriousness and age ( $-.65, p < .001$ ). As age decreases, recidivism offense seriousness increases. There is a significant positive relationship between degree of delinquency and race ( $.41, p < .001$ ): being white is associated with having a high degree of delinquency score. Recidivating offense seriousness and race also are positively related, but the association is not statistically significant. None of the other correlations is significant.

Regression analyses allow examination of the simultaneous effects of the independent variables on the dependent variables. Three separate analyses were done for the treatment and non-treatment groups, and for the entire sample. The analyses include 1) regressing all independent variables on success time; 2) regressing all independent variables on recidivism offense seriousness; and 3) regressing all independent variables except success time on recidivism offense seriousness. Tables 6-8 summarize the results of the analysis. I present the analyses for the entire sample first.

The first analyses examine success time as the dependent

variable. The independent variables are age, race, degree of delinquency and recidivism offense seriousness; and together they account for 43 percent of the variance. The only significant variable in this equation is recidivism offense seriousness ( $p < .0001$ ). The results of the analysis are described in table 6. Looking at recidivism offense seriousness as the dependent variable, the equation explains 48 percent of the variance. Success time is the best predictor variable, with a beta coefficient that is significant beyond the .0001 level. Age is also significant beyond the .05 level. Without the success time variable, explained variance drops to 17 percent and age is the only significant variable. Throughout the sample, older youth are less likely to recidivate than younger ones.

These findings do not support the expectations about the effects of treatment. The treatment variable is not a significant predictor for either recidivism offense seriousness or success time. Degree of delinquency is not a significant predictor for either measure of the dependent variable, and again, the expectation about that relationship is not supported.

The analyses were repeated focusing on the non-treatment group (table 7). When success time is the dependent variable, the equation explains 28 percent of the variance. Recidivism offense seriousness is the best predictor, significant beyond the .0001 level. Degree of delinquency is also significant

Table 6 Regression results for Total Sample

Dependent variable = sucess time

independent variable	B	Beta
sucess time	na	na
age	.09	.07
race	-.07	-.03
group	-.03	-.01
dod	-.02	-.12
recidi	-1.12	-.63****

R2 = .43

Dependent variable = recidivism offense seriousness

independent variable	B	Beta
sucess time	-.33	-.58****
age	-.15	-.21*
race	-.04	-.03
group	-.01	-.01
dod	-.01	-.13
recidi	na	na

R2 = .48

Dependent variable = recidivism offense seriousness, w/o time

independent variable	B	Beta
sucess time	na	na
age	-.29	-.42***
race	-.02	-.02
group	-.02	-.02
dod	-.01	-.09
recidi	na	na

R2 = .17

dod= degree of delinquency

recidi= recidivism offense seriousness

\*\*\*\*p&lt;.0001, \*\*\*p&lt;.0005

beyond the .05 level. When recidivating offense seriousness is the dependent variable, the equation explains almost 30 percent of the variance. Success time is still the most significant variable. Degree of delinquency is a moderate predictor and approaches significance ( $p < .07$ ). When success time is removed from this equation, the explained variance decreases to five percent. None of the variables is significant in this analysis.

The same analyses were repeated a final time using data from the treatment group (table 8). When success time is the dependent variable, the equation explains 77 percent of the variance. The best predictor is recidivism offense seriousness, and it is significant beyond the .0001 level. No other variable is statistically significant. Using recidivism offense seriousness as the dependent variable, the equation explains 78 percent of the variance. In this case, success time is the best predictor of the dependent variable, and it is significant beyond the .0001 level. Age also approached significance ( $p < .08$ ). When success time is removed from the analysis, only 43 percent of the variance is explained. Age is a powerful predictor, significant beyond the .0001 level. Recidivism offense seriousness increases as age decreases.

The analyses conclude with a consideration of the mean time success scores and the mean recidivism offense seriousness scores across various groups: treatment vs non-treatment, white vs black, and age categories. The means



Table 7 Regression results for Non-Treatment group

Dependent variable = success time

independent variable	B	Beta
time	na	na
age	-.02	-.01
race	-.24	-.08
dod	-.04	-.24*
recidi	-.94	-.51****

R2 = .28

Dependent variable = recidivism offense seriousness

independent variable	B	Beta
success time	-.27	-.50****
age	-.09	-.11
race	-.21	-.13
dod	-.02	-.22+
recidi	na	na

R2 = .30

Dependent variable = recidivism offense seriousness, w/o time

independent variable	B	Beta
success time	na	na
age	-.12	-.15
race	-.19	-.12
dod	-.01	-.13
recidi	na	na

R2 = .05

dod=degree of delinquency

recidi=recidivism offense seriousness

+p&lt;.07, \*\*\*\*p&lt;.0001

success time scores were 3.47 for the treatment group and 3.10 for the non-treatment group. The difference is not statistically significant ( $p < .07$ ), although it is in the predicted direction. The mean recidivism offense scores were .39 for the treatment group and .61 for the non-treatment group. The difference does not meet the standard for significance ( $p < .07$ ), but it is in the predicted direction. The mean success time score is 3.37 for whites and 3.21 for blacks. This difference is not statistically significant. The mean recidivism offense seriousness score for whites is .54 and .47 for blacks. The difference is not significant. Analyses of variance examining recidivism offense seriousness and success time by age groups (13 to 17) reveal significant differences for 17 year olds, none of whom were shown as recidivating. The mean recidivism offense seriousness score for 16 year olds is .51, for 15 year olds is .74, for 14 year olds is .82, and for 13 year olds is 1.0. The score of 1.0 is a result of one case in the 13 year old age group. The mean success time score for 17 year olds is significantly different than that for 15 year olds. The mean score for 17 year olds is 3.95 and for 15 year olds it is 2.70.

### Discussion

The findings suggest support for the expectation that treatment reduces recidivism. However, when the data are examined closely, it seems likely that the findings reflect

Table 8 Regression results for Treatment group

Dependent variable = success time

independent variable	B	Beta
success time	na	na
age	.13	.08
race	-.02	-.01
dod	.01	.06
recidi	-1.45	-.82****
R2 = .77		

Dependent variable = recidivism offense seriousness

independent variable	B	Beta
success time	-.43	-.77
age	-.15	-.17
race	.02	.02
dod	7.35-04	.01
recidi	na	na
R2 = .78		

Dependent variable = recidivism offense seriousness, w/o time

independent variable	B	Beta
success time	na	na
age	-.59	-.65****
race	.10	.08
dod	-.01	-.08
recidi	na	na
R2 = .43		

dod=degree of delinquency

recidi=recidivism offense seriousness

\*\*\*\*p&lt;.0001

peculiarities of the sample -- especially concerning age. When age is controlled, there is no statistically significant relationship between treatment and recidivism offense seriousness. The treatment and non-treatment groups could not be matched, and case selection procedures resulted in differences that clearly affected the results. Moreover, the measure of recidivism confounded these effects. Simply put, recidivism should be measured as any arrest following release, rather than recommitment to the juvenile system. Otherwise older and more seriously delinquent youngsters will be treated as not recidivating as long as they do not return to juvenile programs. This study counts recommitment to the learning center as the only indicator of recidivism. This almost certainly biases the results. The expectation that prior behavior predicts future behavior receives some support in both the entire sample and in the non-treatment group. The degree of delinquency is related to time out of the system -- as degree of delinquency score increases, time out decreases. This relationship does not appear in the treatment group, but this may be because of the "aging out" effect. It may also be a result of ambiguities in the degree of delinquency score. While analyses of frequencies shows that recidivism is lower in the treatment group than in the non-treatment group or the total sample, this relationship may or may not be related to treatment. Regression analyses reveal that recidivism is related to age. Analyses of variance show significant

differences for 17 year olds compared to those in other age categories. Youth of this age simply do not recidivate into the juvenile system. The expectation about treatment receives little support when age is controlled. Comparison of means of recidivism measures for treatment and non-treatment groups suggests differences that are not statistically significant but approach significance. The differences are in the expected direction. Regression analyses do not support the expected relationship between treatment and recidivism. Treatment ("group") is not a significant predictor for either recidivism offense seriousness or success time.

Findings from this sample are not generalizable to the learning center population as a whole, because the focus of the study is on youth with substance use/abuse issues. The measure of degree of delinquency needs refinement if it is to be useful. This score shows only an accumulation of offenses and the scores cannot be interpreted clearly. The amount of delinquency can not be determined unless the numbers of committing and prior offenses are revealed in the score.

### Conclusion

This study highlights some of the difficulties in using secondary data and conducting program evaluation. Data access may be limited, or the study may be constrained by data limitations. Because of these difficulties, it is both critical to maintain rigorous measurement procedures and to

present a caveat when there may be problems with measurement techniques or sample development. Any results of this study must be considered along with the disparities between the two samples, and the intrinsic difficulties of doing research in any juvenile system.

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