Florida Department Of Corrections

Substance Abuse Programs

Psychological Impact of Tier Programs: An Outcome Evaluation

G. Abbas Darabi, Ph.D.
Research & Statistics Section
March, 1991

Acknowledgments

Under very few circumstances in correctional settings is research done alone. It is only through the collective efforts of many that a research project is completed. It is a long process that requires sustained effort and a great amount of time. Although the final product is usually a few pages of report, much effort goes into those few pages and few people usually realize that.

Conducting the BSI study for Tiers II and III took a great effort. While doing a variety of other projects, it was a great accomplishment to conclude this study and many contributed. It was a coordinated process which involved much more than the routine research activities and many people share the credit for its successful conclusion.

First, I'd like to acknowledge the support of the Adult Services Director Jim Mitchell, for his understanding of the complexity of the problems, as well as his staff in the Substance Abuse Programs office.

Jennifer Bevino and her staff helped us in a variety of ways ranging from teaching us more about substance abuse through participation in training to helping us get some very badly needed equipment.

Finally, I want to thank the substance abuse staff at the institutions for they have been the key to any success we could possibly have. They eased our burden by their prompt cooperation and enthusiasm for their jobs and the drug program itself. Their days are demanding and difficult enough, but they came through for us and hopefully our research efforts will make their jobs easier and more meaningful.

INTRODUCTION

In the initial planning stages of the substance abuse treatment programs it was decided that the major problem regarding our program evaluation was the reliance on one measure, recidivism (recommitment), as the major indicator of a programs success or failure. While this is an important measure it is often not the best indicator of a treatment program's success. Many other factors contribute to an inmate's rearrest and recommitment, over which the treatment programs have no control.

Moreover, in the field of addiction and recovery, relapse is expected. One of the underlying premises is that addicts are going to relapse. A major treatment goal is to prevent the relapse or to get the relapse episodes to become both briefer and further apart until ongoing sobriety is achieved. Thus failure is expected, which in our case may lead to rearrest and recommitment. Any minor dent in the rate of recidivism is important for it indicates the treatment program's success, although it is not the only indicator.

In this analysis we have focused on the immediate psychological impact of the programs rather than on any longitudinal "success/failure " rate as measured by recommitment. By using the Brief Symptom Inventory (BSI) in the pre and posttest format we hoped to accomplish two major events. First, we wanted to discover if this psychological symptom inventory would be appropriate for measuring treatment outcomes in the institutional setting, and second, we hoped to ascertain the program's impact on offenders by measuring individual's psychological changes resulting from their participation in the programs.

The implications of these findings are numerous. First, if the instrument can be used with any validity, it gives us another tool for outcome evaluation. This enables us to move away from the current judgmental measures to a more practical and quantitative measure of program outcomes. Second, through this quantitative measure of outcomes, we will be able to determine differences between types of programs. Third, we can look at some long term implications by correlating the results of these measures with the findings of recidivism studies.

This study revealed two important findings. One, the BSI can be given in an institutional setting with inmates as subjects, and two, that in both Tier II and Tier III programs, there were statistically significant changes in test scores indicating that the inmates

participating in the programs are experiencing some reductions in their psychological symptoms. These findings are important because they not only give us a starting point for our future research activities, but are also positive results for the program itself.

According to these findings, both Tier II and Tier III participants changed their outlooks in a positive direction. Tier II participants had a slightly more measured change than the participants in Tier III and had a lower percentage of inmates who showed no improvements. Future studies are needed to speculate as to the reasons why.

A detailed analysis is given in the following sections of this report.

II. Psychological Measure

Given the emphasis on the therapeutic approach of the Tier programs, Florida Department of Corrections (FDC) decided to use one of the statistically sound psychological tests available in the market to measure psychological outcomes. The Brief Symptom Inventory (BSI) was selected for this purpose. The BSI's relatively short administration time, low reading level, and computerized scoring capability were among the factors influencing this selection.

The BSI is a normative measure of psychological symptoms tested on four different populations: Non-patient Normal, Psychiatric Outpatient, Psychiatric Inpatient, and Adolescent Non-patient. This study did not intend to measure the extent of normality or abnormality of inmates' behaviors. Nor is it intended to determine the psychological status of the inmate population according to the BSI. The primary purpose of this study is to measure the differences between the inmates psychological status before and after the substance abuse treatment, by using a statistically valid and reliable measure. The following is a description of the test and its various indices.

What Is The BSI ?

The Brief Symptom Inventory (BSI) is a self reporting inventory designed to reflect the psychological symptom patterns of individuals. This test is a shorter version of SCL-90-R test developed by Leonard R. Derogatis and his colleagues at the Clinical Psychometric Research Inc. The test requires a six grade reading level and 20-25 minutes of administration time. Given the characteristics of the inmate population, the BSI was considered to be proper for administration in the correctional setting.

The BSI contains 53 items that are rated on a 5-point scale of distress (0-4), ranging from "not at all" (0) at one pole to "extremely" (4) at other. The BSI is scored and profiled in terms of nine primary symptom dimensions and three global indices. The following is a brief description of these dimensions.

BSI Primary Symptoms Dimensions

According to Derogatis and Spencer (1982), nine primary symptom dimensions have evolved through a combination of clinical/rational and empirical/analytic procedures. In their BSI Administration and Procedure Manual, these authors describe them as follows:

I. **Somatization:**

This dimension reflects distress arising from perception of bodily dysfunction. Items focus on cardiovascular, gastrointestinal and respiratory complaints.

II. **Obsessive-Compulsive:**

This dimension reflects symptoms that are often identified with the standard clinical syndrome of the same name. This measure focuses on thoughts, impulses, and actions that are experienced as unremitting and irresistible by the individual, but are of an ego alien or unwanted nature.

III. **Interpersonal sensitivity:**

This dimension centers on feelings of personal inadequacy and inferiority, particularly in comparison with others. Self-depreciation, feelings of uneasiness, and marked discomfort during interpersonal interactions are characteristic manifestations of this syndrome.

IV. **Depression:**

This dimension reflects a representative range of the indications of clinical depression. Symptoms of dysphoric mood and affect are represented as are the signs of withdrawal from life interest, lack of motivation, feelings of hopelessness, and suicidal ideation.

V. **Anxiety:**

The anxiety dimension is composed of a set of symptoms and signs that are clinically associated with high levels of anxiety.

General signs such as nervousness and tension are included in the definition, as are panic attacks and feelings of terror. Cognitive components involving feelings of apprehension and some somatic correlates of anxiety are also included.

VI. **Hostility:**

The hostility dimension indicates thoughts, feelings or actions that are characteristic of state of anger. The items included in this index reflect qualities such as aggression, irritability, rage and resentment.

VII. **Phobic Anxiety:**

Phobic anxiety is defined as a persistent fear response to a specific person, place, object or situation which is characterized as being irrational and disproportionate to the stimulus, and which leads to avoidance or escapist behavior. The items of this dimension focus on the more disruptive manifestations of phobic behavior.

VIII. **Paranoid Ideation:**

This dimension represents paranoid behavior as a fundamentally disordered mode of thinking. Items selected for this measure represent the characteristics of projective thoughts, hostility, suspiciousness, grandiosity, centrality, fear of loss of autonomy, and delusions.

IX. **Psychoticism:**

This scale provides for a graduated continuum from mild interpersonal alienation to dramatic evidence of psychosis. Items indicative of withdrawn, isolated, schizoid lifestyle are included as are first-rank symptoms of schizophrenia, such as thought control.

Global Indices:

The global indices have been developed to provide more flexibility in the overall assessment of an individual's psychological status. These indices are:

1. General Severity Index (GSI). This is the individuals average score on the whole test, the most sensitive score of the three globals.

2. Positive Symptom Total (PST). This is the total score for all the positive (non-zero) responses to the questions.

3. Positive Symptom Distress Index (PSDI). This is the ratio of the individual's overall score (grand total) over the Positive Symptom Total.

All of the nine Primary Symptom Dimensions were used in this study. Of the Global Indices, only the General Severity Index was included in the analyses. In addition, a sum of the inmates' scores on all 53 BSI items was calculated to create an overall BSI score. This score was compared for pre and posttest situations and in our analysis is referred to as the Total BSI score.

III. Research Methodology

Given the structure of the Tier programs and their approaches to substance abuse treatment, only Tier II and Tier III programs were selected for this study. Over a period of nine months, inmates in both programs, at six institutions across Florida, were given the BSI test.

Considering the logistics involved in conducting this study, and given the inmate population movement across the institutions, a pre-posttest study was designed and detailed instructions were given to the Tier supervisors and counselors. In a training session specifically arranged for this purpose, they were asked to administer the BSI test to every inmate entering their programs. They were also asked to give the same test to the inmates upon their exit. Inmates background information and whether they finished their scheduled treatment or were discharged for any reason were coded on the tests.

Testing was stopped in December 1990 and, from the BSI tests collected, a total of 433 pairs of pre and posttest results were found "clean enough" to be included in the analysis. Test data was entered into the computer and a SPSS program was developed to analyze it.

An important point about the calculation of the BSI indices should be mentioned. The BSI is a test developed for profiling the psychological status of individual cases. The computerized program for scoring the test is designed to calculate the mean score for each scale and use that as raw data for further analyses. This is basically done to compare the individual scores to the established norms based on the studies conducted on samples from relevant populations.

In this study, however, inmates' raw scores were used to determine the difference between their performances in pre and post-treatment situations. A simple summation of the items within each of the BSI dimensions (indices) produced the total score for those dimensions. Also, an overall BSI score (BSI Total) was calculated by simply adding up all the items. This score was then categorized and used throughout the study to compare inmates based on other variables within each program. The General Severity Index was calculated according to the instructions given in BSI Manual by dividing the BSI Total by 53 (number of items in the test). The BSI authors found this index to be the most sensitive of the global indices(Derogatis & Spencer, 1982).

The results of this study are presented for the Tier II and Tier

III programs separately. In both cases a T-Test analysis was conducted for all inmates in the programs across all the BSI indices. Their overall BSI scores were then analyzed with regard to inmates' gender, status in the program (completed or discharged), and finally the amount of time they spent in the program.

In our initial analysis, the inmates were categorized according to the difference between their overall BSI scores in pre and posttest. Inmates with the lower posttest scores were considered "more improved." Since the mean decline of the BSI scores for male and female inmates in both programs were almost identical (13.6 for females, 13.5 for males, 13.6 for Tier II, and 12.6 for Tier III) the following four overall "improvement" categories were formed and used in all the analyses:

1. Inmates with decline of lower than 1 point in their posttest scores were categorized as "No Improvement" inmates.

2. Those whose scores declined between 1 to 20 points were grouped as "Low Improvement" inmates.

3. Accordingly, a decline of 21-40 points was labeled "Medium Improvement"

4. And finally, those with a score of 41 or higher were grouped as "Highly Improved" inmates.

Because inmates differed more on the other variables such as their length of stay in the program and age, additional analyses were conducted. They were categorized differently within each program (Tier II and Tier III) and also by gender. Inmates' length of stay in a program is simply the number of days they stayed in the Tier program.

A crosstabulation of inmates' BSI scores and other variables based on these categories produced several tables presented in the following sections.

IV. Findings

A total of 433 inmates were included in the data analyses. The majority of these inmate were from Tier II programs (381 inmates), and only 52 inmates represented the Tier III programs. There were 192 female and 189 male inmates in Tier II sample, while only 46 male and 6 female inmates came from Tier III. All institutions with Tier II programs were represented in this study.

Psychological Symptom Status

The analysis of Tier II data revealed a considerable reduction in inmates' posttest scores on BSI and its different dimensions. The results of our T-Test evaluation, presented in Table 1, indicated that the differences in inmates' pre and posttest scores are also statistically significant.

TABLE 1

Pretest, Posttest Means, Standard Deviations, Mean Differences, and T Values of BSI Scores for Tier II Inmates

BSI Scales	Pretest Mean	Pretest S.D.	Posttest Mean	Posttest S.D.	Pre-Post Difference	T Value
Somatization	3.28	3.92	1.97	3.05	1.31	6.86*
Obsess.-compuls.	5.47	4.63	3.80	3.37	1.67	7.39*
Intpsnl. Senstvty.	3.57	3.41	2.50	2.53	1.07	6.05*
Depression	5.40	4.47	3.19	3.39	2.21	9.23*
Anxiety	4.30	4.32	3.18	3.42	1.12	5.04*
Hostility	3.49	3.65	2.60	3.10	0.89	4.73*
Phobic Anxiety	2.18	2.73	1.56	2.24	0.62	4.38*
Paranoid	5.53	3.68	3.96	3.07	1.57	8.01*
Psychoticism	4.32	3.58	2.50	2.67	1.82	10.11*
General Severity	0.78	0.58	0.52	0.44	0.26	9.01*
BSI Total	**41.13**	**30.40**	**27.51**	**23.34**	**13.62**	**8.94***

N.S.= Not Significant
* $p < .001$

According to this information there has been statistically significant improvements in inmates' psychological symptom status in every dimension. These changes are particularly noticeable in the areas of Depression, Psychoticism, Obsessive-Compulsive, Interpersonal Sensitivity, and Anxiety symptoms. General Severity, measured according to the BSI authors' instructions, is another important index indicating a significant change. The overall difference of 13.62 point decrease in inmates' BSI posttest scores is encouraging. It indicates a solid reduction in their symptoms as measured by the BSI scales. Given the size of the T Values for these differences one can discount the chances of improvements being accidental at this level of significance.

These same analyses were conducted for data collected from Tier III inmates. Our T-test evaluation of the differences between their pretest and posttest scores reveals the same overall improvement for this sample also. This data is presented in Table 2. Interestingly enough, the same psychological symptoms (Depression, Psychoticism, Obsessive-Compulsive, Interpersonal Sensitivity, and Anxiety) showed the greatest reduction in inmates' posttest scores. Except for the Hostility and Paranoid symptoms that did not show a significant difference, the results were encouraging for this group too. A difference of 12.63 points in inmates overall BSI scores indicates a great improvement on the part of Tier III inmates.

TABLE 2

Pretest, Posttest Means, Standard Deviations, Mean Differences, and T Values of BSI Scores for Tier III Inmates

BSI Scales	Pretest Mean	Pretest S.D.	Posttest Mean	Posttest S.D.	Pre-Post Difference	T Value
Somatization	2.30	2.89	1.50	2.42	0.80	2.52**
Obsess.-compuls.	5.00	5.20	3.40	3.70	1.60	2.95**
Intpsnl. Sens.	4.13	4.00	2.51	2.30	1.62	3.03**
Depression	5.65	5.40	3.31	3.43	2.34	3.67**
Anxiety	4.50	4.55	3.30	3.85	1.20	2.06*
Hostility	3.46	4.33	2.81	3.96	0.65	N. S.
Phobic Anxiety	3.10	3.06	1.83	2.13	1.27	3.21**
Paranoid	5.65	4.04	5.05	3.59	0.60	N. S.
Psychoticism	5.02	4.62	3.25	3.30	1.77	3.32**
General Severity	0.79	0.63	0.56	0.42	0.23	3.35**
BSI Total	**42.00**	**33.78**	**29.37**	**22.16**	**12.63**	**3.34****

N. S.= Not Significant,
* p < .05
** p < .001

While the mean differences for the two groups were statistically significant, and therefore of considerabl importance for the Tier programs, inmates' BSI scores were categorized (described in the methodology section) for a more clear picture of this improvement. Table 3 presents this categorization for inmates in both Tier II and Tier III programs.

TABLE 3

Percentage of Inmates by Their Improvement Shown by BSI Pretest - Posttest Difference

		BSI Categories Based On Inmates Total Score				
Program	No.of Inmates	No Improve.	Low Improve.	Medium Improve.	High Improve.	Total
Tier II	381	29.6%	37.3%	17.3%	15.7%	100.0%
Tier III	52	38.5%	26.9%	23.1%	11.5%	100.0%

According to this data almost 29.6% of Tier II inmates showed no improvement after their treatment compared to 38.5% of their counterparts in Tier III. At the same time a great number of inmates in both groups had some kind of reduction in their psychological symptoms. The low Improvement category contains the majority of the inmates in both groups. In general, the Tier II program appears to have higher percentages in the Low and High categories while Tier III has a higher percentage in the Medium Improvement category.

The large percentage of the Tier II and Tier III inmates who showed no improvements may be explained by realizing the fact that the clients of substance abuse programs in correctional settings are usually people with deepseated problems. More attention, longer treatment, and continuous care may lower these percentages significantly. However, one can not ignore the fact that more than 70% of Tier II inmates and 60% of Tier III inmates have shown improvement while in the program.

To determine how these improvements vary with regard to inmate sex, age, and treatment time, the categories were checked against these variables.

Inmates' Gender and Their Improvement

To find out the difference between male and female inmates with regard to their scores on BSI, their overall BSI scores were analyzed. As Table 4 displays, the change was almost evenly distributed among males and females in Tier II. Even the percentages of inmates with no improvement was nearly equal (15.2% for males and 14.4% for females). Almost the same percentage of males (18.1%) and females (19.2%) fell in the Low Improvement category.

TABLE 4

Percentage of Male And Female Tier II Inmates by Their Improvement Shown by BSI Pretest - Posttest Difference
N = 381

Inmates Gender	BSI Categories Based on Inmates Total Score				
	No Improve.	Low Improve.	Medium Improve.	High Improve.	Total
Male	15.2%	18.1%	7.9%	8.4%	49.6%
Female	14.4%	19.2%	9.4%	7.3%	50.4%
Total	29.6%	37.3%	17.3%	15.7%	100.0%

Given the small number of female inmates in the Tier III sample, this analysis was not as clarifying for Tier III programs. Table 5 presents the data for this group. For the male inmates in this group, improvement appeared to occur at the low and mid levels more noticeably.

TABLE 5

Percentage of Male And Female Tier III Inmates by Their Improvement Shown by BSI Pretest - Posttest Difference
N = 52

Inmates Gender	BSI Categories Based on Inmates Total Scores				
	No Improve.	Low Improve.	Medium Improve.	High Improve.	Total
Male	36.5%	23.1%	21.2%	7.7%	88.5%
Female	2.0%	3.8%	1.9%	3.8%	11.5%
Total	38.5%	26.9%	23.1%	11.5%	100.0%

Inmates' Tier Status And Their BSI Scores

Based on the data presented in Table 6, over 90 percent of the inmates completed Tier II program. About 27 percent of these inmates did not show any improvement while more than 70 percent did show some decline in their symptoms. A low percentage (8.9%) of the inmates did not complete the program, the majority of whom fell in No and Low Improvement categories.

TABLE 6

Percentage of Tier II Inmates Who Completed or Were Discharged by Their Improvement Shown by BSI Pretest - Posttest Difference
N = 381

Inmates Status	BSI Categories Based on Inmates Total Score				
	No Improve.	Low Improve.	Medium Improve.	High Improve.	Total
Completed	27.1%	33.9%	16.0%	14.1%	91.1%
Discharged	2.6%	3.4%	1.3%	1.6%	8.9%
Total	29.7%	37.3%	17.3%	15.7%	100.0%

The same analysis for the Tier III programs reveals that they had a greater percentage of discharged inmates than Tier II. According to the data displayed in Table 7, 19% of the inmates were discharged compared to 8.9% for Tier II. Because of its length, the Tier III program is more susceptible to attrition usually caused by inmate movement. Thus the rate of discharge was to some degree expected.

TABLE 7

Percentage of Tier III Inmates Who Completed or Were Discharged by Their Improvement Shown by BSI Pretest - Posttest Difference
N = 52

Inmates Status	BSI Categories Based on Inmates Total Score				
	No Improve.	Low Improve.	Medium Improve.	High Improve.	Total
Completed	26.9%	23.1%	21.2%	9.6%	80.8%
Discharged	11.6%	3.8%	1.9%	1.9%	19.2%
Total	38.5%	26.9%	23.1%	11.5%	100.0%

Out of those who completed the Tier III program, the No Improvement rate (26.9%) was similar to the Tier II program, but Tier III did have a lower percentage in the High Improvement category.

Due to the small number of discharged inmates in both programs, it is difficult to make a conclusive statement comparing them with those who completed the program. However, it appears that completing the program made a difference in the extent of psychological changes in inmates.

Inmates Age And Their BSI Scores

Given an average age of 28, inmates in both Tier programs were divided into three age groups. Tables 8 and 9 display these age groups and their percentages in the different BSI performance categories. In both groups, inmates who showed no improvements appeared to have a higher percentage in low or middle age categories. At the same time, the middle age inmates in both programs appeared to have a high percentage in the BSI categories.

While the data does not support inmate age as a great influential factor, it indicates that younger inmates have a lower presence in the High Improvement category in Tier II, whereas they have a higher percentage in the same category in Tier III. It also appears that the middle age inmates have a higher success rate in the Medium Improvement category in the Tier III program.

TABLE 8

Percentage of Tier II Inmates in Different Age Categories by Their Improvements Shown by BSI Pretest - Posttest Difference
N = 381

Inmates Age	BSI Categories Based on Inmates Total Score				
	No Improve.	Low Improve.	Medium Improve.	High Improve.	Total
Below 24 years	9.7%	11.5%	6.8%	3.7%	31.7%
25-31 years	11.0%	14.4%	6.6%	6.6%	38.6%
32 & Older	8.9%	11.4%	3.9%	5.5%	29.7%
Total	29.6%	37.3%	17.3%	15.8%	100.0%

TABLE 9

Percentage of Tier III Inmates in Different Age Categories by Their Improvements Shown by BSI Pretest - Posttest Difference
N = 52

Inmates Age	BSI Categories Based on Inmates Total Score				
	No Improve.	Low Improve.	Medium Improve.	High Improve.	Total
Below 24 years	15.4%	5.8%	1.9%	7.7%	30.8%
25-31 years	17.3%	9.6%	15.4%	1.9%	44.2%
32 & Older	5.8%	11.5%	5.8%	1.9%	25.0%
Total	38.5%	26.9%	23.1%	11.5%	100.0%

Time in Program and BSI Scores

The average length of time that inmates spent in the Tier II program was found to be different for males and females. Females spent an average of 52 days in Tier II while males had an average of 69 days. For this reason separate categorizations were made for both groups' length of stay. Also, due to the small number of females in Tier III sample, this analysis only included the male inmates in that program.

Table 10 presents the results of this analysis for male inmates in Tier II. Out of 189 inmates 30.7% did not show any improvement and the majority of them (12.2%) had the lowest length of stay. Inmates who stayed in the program close to the average number of days outnumbered others in the Low Improvement category. There were no noticeable differences among the groups in other categories.

TABLE 10

Percentage of Tier II Male Inmates with Different Times in Treatment by Their Improvement Shown by BSI Pretest - Posttest Difference
N = 189

No. of Days in Program	BSI Categories Based on Inmates Total Score: No Improve.	Low Improve.	Medium Improve.	High Improve.	Total
Below 53 days	12.2%	11.1%	4.2%	5.3%	32.8%
54-73 days	9.5%	14.3%	4.8%	7.4%	36.0%
74 days & Up	9.0%	11.1%	6.9%	4.2%	31.2%
Total	30.7%	36.5%	15.9%	16.9%	100.0%

The differences were more obvious for Tier II female inmates. As it appears in Table 11, inmates who stayed in the program close to the average length of time outnumbered others in all four categories of improvement. Although they had the majority (19.2%) in the No Improvement category, a large percentage of them showed some improvement.

Comparing the results of these two tables, one can find that for inmates with a longer stay in the program, the percentage of male inmates in improvement categories is higher than the percentage of the female inmates.

TABLE 11

Percentage of Tier II Female Inmates with Different Times in Treatment by Their Improvement Shown by BSI Pretest - Posttest Difference
N = 192

No. of Days in Program	BSI Categories Based on Inmates Total Score: No Improve.	Low Improve.	Medium Improve.	High Improve.	Total
Below 50 days	7.3%	12.4%	6.3%	4.7%	30.7%
51-69 days	19.2%	24.0%	10.4%	9.4%	63.0%
70 days & Up	2.1%	1.6%	2.1%	0.5%	6.3%
Total	28.6%	38.0%	18.8%	14.6%	100.0%

Given the results of these 2 tables one may conclude that the Tier II program is more effective when the inmates stay in the program for at least two months. Inmates with a short period of time in the program did not appear to be very successful. Neither did the ones who stayed in the program for 70 days or more.

The same analysis of Tier III data for male inmates, presented in Table 12, reveals that more than 41% of them showed no improvement. The figure for their counterparts in Tier II was less than 31%. In this sample the middle age group had a high percentage in the Low Improvement category, whereas the younger and the older groups appeared more successful at the Medium Improvement level. This trend was not found in Tier II male inmates.

TABLE 12

Percentage of Tier III Male Inmates with Different Times In Treatment by Their Improvement Shown by BSI Pretest - Posttest Difference
N = 46

No. of Days in Program	BSI Categories Based on Inmates Total Score: No Improve.	Low Improve.	Medium Improve.	High Improve.	Total
Below 53 days	13.0%	4.3%	10.9%	2.2%	30.4%
54-73 days	17.4%	13.0%	2.2%	0.0%	32.6%
74 days & Up	10.9%	8.7%	10.9%	6.5%	37.0%
Total	41.3%	26.0%	24.0%	8.7%	100.0%

V. Conclusions and Recommendations

As previously mentioned, it is not the purpose of this study to determine whether the inmates are psychologically abnormal. This study attempted only to measure the differences in inmates' psychological status before and after their participation in a substance abuse treatment program. Given this purpose, the study was designed as a pretest-posttest evaluation of the Tier programs outcome.

The results of the T-tests conducted on the inmates' overall scores on the BSI indicates that there was a significant reduction in their psychological symptoms after their Tier treatment. A mean difference of close to 14 points for Tier II and 13 points for Tier III demonstrated encouraging progress in inmates who went through these programs.

Looking at the different psychological indices measured by the test, one finds similar improvement for almost all of the symptoms. In both programs the most noticeable changes occurred in Depression, Psychoticism, Obsessive Compulsive, Interpersonal Sensitivity, and Anxiety symptoms.

Comparing the overall improvement categories in both programs, one finds few differences between the programs. For example, there was a higher rate of "no improvement" for Tier III program. Or, there was a slight difference between the programs in terms of the number of inmates in each improvement category. Further studies could show if these differences are real or they are a function of this particular testing situation. One should keep in mind that in this study, Tier II program was represented by a much larger sample. Also, Tier III program, because of it's structure, has a higher rate of attrition. These may explain some of the differences that appeared to exist between the two programs.

Inspite of these minor differences, in both programs the results demonstrate significant decreases in inmates' psychological symptoms. Given the size of the T-Values on these tests one may conclude that these reductions are systematic and not accidental.

Inmate background variables as analyzed did not show considerable effects on the inmate's BSI scores. This was especially noticeable for inmates' gender as male and female inmates were almost evenly distributed along the improvement continuum. This may have been different had there been more female inmates represented in analysis for the Tier III program.

The inmates' completion rate showed some differences in the overall scores within each program. Discharged inmates in this particular sample had lower percentages in the improvement categories.

This may indicate that there is more chance of a psychological improvement for those inmates who complete the program. The analysis also indicated that the rate of completion was much higher for Tier II programs. Again one should realize that Tier III program is a long term program, therefore more susceptible to attrition. However, these differences are not large enough to indicate a substantial change in the programs.

Inmate age appeared to be slightly influential in the outcome of the program. The middle age groups were found to be more active in either program. Tier III data showed a slight direction with regard to age categories. Out of those who showed any improvements, younger inmates had a higher percentage in high improvement category, middle age inmates in medium, and older inmates in the low improvement categories. The results were more evenly distributed for the Tier II program. Based on these findings one may conclude that younger and middle age inmates have a better chance of improvements in Tier programs. This finding is consistent with the notion that older inmates, who probably have a longer addiction time, are harder to influence and therefore less likely to change.

Inmates' time-in-program was also found to be not critical with regard to inmates' improvement. This variable appeared to show some differences in categories within each program, but the differences were neither large enough nor sufficiently directional for drawing any conclusions. Only in the case of female inmates in the Tier II program does there appear to be some relationship between this variable and their psychological improvements. Women with the average length of stay had a higher rate in all the improvement categories.

Despite the minor differences shown by these variables either between or within the Tier programs, none of them persuasively shifts the inmates' BSI score one way or another. The results reveal a slight indication of how these variables may have an effect on the outcome of the Tier programs. Until further studies are completed, no causal relationship should be assumed between the performance of the inmates and any of these variables.

Recommendations:

Obviously there is need for further studies in this area if one is to establish a direct relationship between inmates' psychological improvements and their substance abuse treatment. Future studies must be designed for a tight control of all the variables involved. Granted, research circumstances in correctional settings for experimental studies are difficult, mainly because of the logistics. However, comparing the results of the current study with the same results for a control group, selected from general population with no treatment, would enhance the generalizability of these outcomes.

In addition to being statistically valid and reliable, the BSI was found to be an appropriate psychological measure for correctional settings. We would recommend the use of this test in future studies basically because of its low reading level and short administration time.

Future psychological studies should be integrated in recidivism studies. Studying inmates' BSI scores in light of their rate of recidivism will provide a clearer picture of the Tier programs' outcome.

References

Derogatis, Leonard R. & Spencer, Philip M., 1982, Baltimore, MD: Clinical Psychometric Research Inc.