Executive Summary for the *Outcome Evaluation of the Crossroads to Freedom House and Peer I Therapeutic Communities* Project

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Local Evaluations of the Residential Substance Abuse Treatment for State Prisoners Program (1998)

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Relevant Literature

The incidence of substance abuse among criminals is extremely high. Crimes are often committed by individuals under the influence of drugs and alcohol or out of the necessity to fund their dependence (Hiller, Knight, & Simpson, 1999). The costs of drug abuse are significant, not only to the individual, but to taxpayers and communities as well. High rates of recidivism and relapse among the offender population contribute to felons repeatedly cycling through the criminal justice system and overcrowding the jails and prisons (Martin, Butzin, Saum, & Inciardi, 1999).

Fortunately, there is hope for combating this pervasive problem. The effectiveness of treatment in reducing criminal behavior and substance use has been well documented (Chanhatasilpa, MacKenzie, & Hickman, 2000; Martin et al., 1999; Nielsen & Scarpitti, 1997). Concentrated research has found that cognitive-behavioral and social learning approaches have the best success with substance abusing offenders (Gendreau, Little, & Goggin, 1996) with priority for treatment given to high risk offenders and appropriately matching offenders to treatment modality (Andrews & Bonta, 1994; Knight, Simpson, & Hiller, 1999). Research has also demonstrated the necessity of a continuum of care between the prisons and community (Inciardi, Martin, Butzin, Hooper, & Jarrison, 1997; Wexler, DeLeon, Thomas, Kressel, & Peters, 1999).

Therapeutic Community Modality. The therapeutic community (TC) model has been widely implemented in response to the demand for more treatment options for offenders (DeLeon, Melnick, Thomas, Kressel, & Wexler, 2000). The TC is a highly structured program where clients are constantly engaged in a variety of activities including therapy, work, education classes, and recreation. Because of its intensity, the TC is generally reserved for substance abusers with long histories of abuse, multiple failed treatment attempts, and social deficits.

The effectiveness of the TC in reducing drug use and criminal behavior among criminal populations has made it one of the preferred treatment modalities in prisons and community corrections programs (Wexler, 1995). Despite the inherent difficulties of operating a TC within prison walls, there is strong evidence that these programs work. Earlier evaluations of the Cornerstone TC in Oregon and the Stay'n Out TC in New York revealed that prison TCs reduce criminal behavior and substance use (Field, 1984, 1989; Wexler, Falkin, & Lipton, 1990). Likewise, earlier research on community TCs have shown reduced criminal activity and substance use and increased employment among clients with criminal histories (De Leon, 1994; De Leon, Wexler, & Jainchill, 1982; Hubbard, Collins, Rachal, & Cavanaugh, 1988).

Factors Affecting Outcomes. More recent research has examined the key factors that contribute to positive outcomes following TC treatment. Research findings have shown that treatment for offenders is optimal when the services offered properly match the needs of the client (Knight et al., 1999). Treatment outcomes for high risk offenders are more positive when their needs are met with the appropriate programming; retention has also been shown to be higher when the clients' needs are matched to the correct treatment level (Melnick, De Leon, Thomas, & Kressel, 2001). The research has also shown offenders with lower addiction severity seem to respond better to less intensive treatment programming (Gendreau, Cullen, & Bonta, 1994; Knight et al.).

Once placed at the appropriate treatment level, retention of clients in treatment also becomes a fundamental factor contributing to successful outcomes. Researchers have recognized that both client factors and program factors contribute to a client's decision to stay or leave the program (Simpson, 2001).

Motivation and readiness for treatment are important dynamic client factors that affect retention. High internal and external motivation have been shown to generate longer lengths of stay (Knight, Hiller, Broome, & Simpson, 2000). Level of motivation has been shown to contribute to the client's engagement in therapy. Those with higher levels of motivation and readiness have stronger therapeutic relationships, more group attendance and interaction with peers, all of which contribute to improved treatment outcomes (Joe, Simpson, & Broome, 1998). Although motivation has been found to be an important factor used to predict retention, it has not been found to directly impact outcomes; rather it is thought to be an important factor in retaining clients (Wexler, Melnick, Lowe, & Peters, 1999).

Other client variables which include fixed variables (i.e., age, gender, and ethnicity) and dynamic variables (i.e., legal involvement, psychological status, self esteem) have also been studied to determine their impact on predicting retention. Nonetheless, there has not been an identified client profile that accurately projects how long a particular client will stay in a program. Much of the research has found that client factors are sporadic in their predictions. When comparing the predictive power of fixed client factors to dynamic client factors, dynamic variables have been found to predict retention more consistently than fixed variables, likely because they are a more accurate indicator of the client's perceptions and feelings at the moment they enter treatment (Condelli & De Leon, 1993).

Researchers have identified a critical threshold in which a client must remain in a TC in order to increase the likelihood of success following treatment. Ideally clients must remain in treatment for at least 90 days before the benefits of treatment can have an impact. Clients who have had less than 90 days in treatment have higher rates of relapse and recidivism (Knight et al., 2000; Siegal, Wang, Carlson, & Falck, 1999). The first 30 to 60 days of treatment is the most crucial period in which the risk of clients dropping out of treatment is highest (Condelli & De Leon, 1993; De Leon, Hawk, Jainchill, & Melnick, 2000). The greatest benefits have been shown when clients stay in treatment for 9 to 12 months (Condelli & De Leon; Wexler, 1995). It has been suggested that by remaining in treatment for this length of time the client is afforded more group hours and more individual treatment. It also provides more opportunity to interact with staff and more time to practice emotional and behavioral changes and to develop stronger control mechanisms (Bleiberg, Delvin, Croan, & Briscoe, 1994).

TCs that are coupled with aftercare treatment show the greatest magnitude of positive outcomes (Martin et al., 1999; Simpson, 2001). Clients who progress from a prison based TC to a community TC, are the least likely to be rearrested and/or relapse. It has also been found that clients who participate in aftercare have the longest elapsed time before recidivating (Knight et al., 1999). Research shows TC treatment without the aftercare component diminishes the success of the outcomes (Inciardi et al., 1997). Because the aftercare component has been proven to be so valuable, researchers have recommended TC programs offer more incentives for clients who go on to aftercare. They also suggest incorporating motivational tools to increase the clients' awareness of the importance of continuing with TC treatment (Wexler, Melnick, et al., 1999).

Study Goals

The present study aims to further evaluate these previous findings by investigating the effectiveness of two Colorado RSAT TC programs for offenders. The first is a prison based program, the second a community TC program. Together these programs provide a continuum of care for high risk substance abusing felons. The current project will allow for an analysis of outcomes for felons with varying amounts of treatment as well as further examining factors that may affect outcomes.

The effectiveness of these TC programs will be examined using two methodologies. The first study is a large sample analysis of quantitative data comparing the groups on several recidivism variables, including rearrest data, return to prison, and length of time until offense. The second study uses a case study methodology to further explore how the programs may have impacted the participants' outcomes as well as the supports and barriers that influence outcomes.

Study 1: Quantitative Study

Method

In the current project there are five study groups: (1) participants who receive both TC programs (n = 31), (2) participants who receive only the community TC program (n = 97), (3) participants who successfully complete the prison TC program (n = 162), (4) participants who do not complete the prison TC program (n = 256), and (5) participants who receive no TC program, but who are eligible for such a program (n = 232). These five groups were compared on several outcome variables: (1) technical violation, (2) new misdemeanor arrest, (3) new felony arrest, (4) return to prison, and (5) overall supervision failure. In addition to group comparisons, survival analyses techniques were used to explore the length of time until an offense occurs across the groups. To explore which factors may predict outcomes, the relationships between personality characteristics and motivation for change with outcomes were studied.

Results Summary

Similar to other research, we found that the group with the longest treatment duration (i.e., those who have participated in both TC programs) had the most successful outcomes. The table below shows the 1 year and 2 year recidivism rates for each group on each outcome variable.

	Technical Violation		***New Arrest: Misdemeanor***		***New Arrest: Felony***		***Return to Prison***		***Overall Supervision Failure***	
Group	*1 yr*	*2 yr*	*1 yr*	*2 yr*	*1 yr*	*2 yr*	*1 yr*	*2 yr*	*1 yr*	*2 yr*
Both Programs	0%	4%	6%	2%	2%	18%	8%	33%	11%	41%
Community TC	1%	11%	15%	21%	6%	17%	35%	54%	47%	69%
Prison TC completers	20%	28%	18%	29%	13%	20%	37%	49%	46%	63%
Prison TC noncompleters	24%	35%	23%	41%	18%	29%	50%	67%	60%	70%
Controls	26%	34%	25%	39%	15%	26%	45%	58%	53%	72%

Using only the overall supervision failure as the outcome variable, the group receiving both programs showed a reduction in 1 year recidivism of 79% compared to the control group.

Although the reduction of recidivism decreases to 43% in the second year, this is still a major impact of long-term care on outcomes. Participants who only received treatment in the community based program had an 11% reduction in recidivism for the 1 year outcomes but this reduction reduced to only 4% for 2 year outcomes. Participants who completed treatment only in the prison TC showed reductions of 13% and 12% for 1 and 2 year recidivism, respectively. The participants who started but did not complete the prison TC had increased rates of recidivism compared to the control group for the 1st year (13% increase) but had similar rates in the second year (3% reduction). The survival analyses supported these findings with participants from both programs showing longer survival times (length without an offense), people who received at least one TC program having the next longest times out, and the control and dropout groups having the shortest times outs. Contrary to past research, we did not find any stable meaningful predictors of outcome success, although we had some small effects (correlations below .2) with some of the personality disorder variables as well as the precontemplation stage of motivation. We did find that supervision status was related to outcomes and this variable was used as a control variable in the group differences analyses.

Study 2: Case Studies

Method

Case studies were completed on 10 participants, two from each of the five groups described in study 1. A participant with successful outcomes and another with unsuccessful outcomes from each group completed an in-depth interview in order to explore the barriers and supports participants have when being released from prison. Successful outcomes were defined as participants who were still living in the community after 12 to 18 months without any new charges. Unsuccessful outcomes were defined as those participants who were returned to prison for technical violations or new charges. These unsuccessful outcomes were eligible for the study only if they had been living in the community for 6 to 12 months before returning to prison. A semi-structured interviewed of both the participant and a significant other covered finances, housing, family and partner relationships, substance abuse and criminal history. There were 13 topic areas and five comprehensive questions targeting the participant's overall treatment and prison experiences. Using two researchers, a case study report was written for each participant. These reports were read by the research team and general conclusions and common themes across the participants were identified.

Results Summary

The case studies' results indicated some common barriers and supports:

(1) Most participants found something beneficial about a treatment program however there was no one thing that seemed to stand out as the most beneficial across multiple participants. In general it seemed that prison or program structures were beneficial in helping people to organize life and to remain sober. Transitions to differing levels of freedom led to high risk periods.

(2) Participants often found it difficult to adjust to high confrontation level of the TC programs; however, they felt that once they adjusted to the program they benefited from that type of interactions. This may suggest that orientation periods may need to be strengthened to help clients make the transition into the program.

(3) Another area that seemed particularly relevant to treatment programs is the difficulty participants have in meeting new people who can support a drug-free, crime-free

lifestyle. Participants seemed to understand that this was important but had difficulty with developing new relationships. It was also common for participants to feel isolated from others. Reasons why these problems occur need to be further explored and possible interventions or strengthening of programs in this area can be investigated.

(4) Internal locus of control and motivation also seemed to be relevant factors for these participants. Participants with higher levels of internal control seemed to have more positive outcomes than those with external control. This may be a factor that can be used to screening participants for admittance into the program.

Project Conclusions

Overall, the results of these two studies indicated that long-term intensive residential TC treatment providing a continuity of care as inmates transitioned from prison to the community can produce strong reductions in recidivism over a two-year period. Contrary to previous research, this study did not show any participant characteristics to be strong predictors of recidivism, at least when using quantitative data. In contrast, the case studies indicated that internal motivation rather than external motivation seems to be an indicator of positive outcomes. The case study results demonstrated that programs offer benefits to participants; however, they also suggest that strengthening treatment in developing social support may help to reduce recidivism.

Selection effects are a major problem for this study as well as for other studies that have been completed. Participants who completed the programs showed positive treatment effects; these participants may have unique characteristics that explain these results. Although there did not appear to be personality characteristics that could explain the positive outcomes, selection effects are still a viable alternative outcome to our conclusions.

A major problem for these types of programs is drop-out rates, which were over 50% for each program. The programs need to consider why the drop-out rates are so high. Additionally, research is needed to help programs to do better matching of needs to programs and to determine which personality characteristics are useful for predicting who will remain in a program. As long as demand for treatment exceeds available treatment space, there is a need to find better ways to predict who will benefit most from receiving treatment.

Final Report

Outcome Evaluation of the Crossroads to Freedom House and Peer I Therapeutic Communities

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Fortunately, there is hope for combating this pervasive problem. The effectiveness of treatment in reducing criminal behavior and substance use has been well documented (Chanhatasilpa, MacKenzie, & Hickman, 2000; Martin et al., 1999; Nielsen & Scarpitti, 1997). Concentrated research has found that cognitive-behavioral and social learning approaches have the best success with substance abusing offenders (Gendreau, Little, & Goggin, 1996) with priority for treatment given to high risk offenders and appropriately matching offenders to treatment modality (Andrews & Bonta, 1994; Knight, Simpson, & Hiller, 1999). Research has also demonstrated the necessity of a continuum of care between the prisons and community (Inciardi, Martin, Butzin, Hooper, & Jarrison, 1997; Wexler, DeLeon, Thomas, Kressel, & Peters, 1999).

Therapeutic Community Modality

The therapeutic community (TC) model has been widely implemented in response to the demand for more treatment options for offenders (DeLeon, Melnick, Thomas, Kressel, & Wexler, 2000). The TC is a highly structured program where clients are constantly engaged in a variety of activities including therapy, work, education classes, and recreation. Because of its intensity, the TC is generally reserved for substance abusers with long histories of abuse, multiple failed treatment attempts, and social deficits.

The TC model perceives substance abuse as a disorder of the whole person (De Leon, 1989). Consequently, addiction is considered merely a symptom of an individual's problems, not the problem itself. The problem lies instead with the individual and is exhibited in many areas besides substance abuse. For this reason, the TC endeavors to create comprehensive lifestyle changes related to substance abuse, employment, criminal behavior, and basic societal values and attitudes.

The TC itself is considered the healing agent as well as the context in which change occurs. Designed for individuals who cannot function sufficiently in society, the community provides an environment in which to effect pro-social change. The community models acceptable social behavior while reinforcing (negatively and positively) behaviors that do and do not conform to community expectations (De Leon, 1994).

De Leon (1994) noted the difficulty of defining, describing, and comparing TC programs. He reported that a variety of residential programs are considered to be TCs, some TCs may not be residential programs, and not all TCs employ the same model. Consequently, De Leon theorized that eight essential elements distinguish the TC from other approaches. These elements are: (1) use of participant roles, (2) use of membership feedback, (3) use of the membership as role models, (4) use of collective formats for guiding individual change, (5) use of shared norms and values, (6) use of structure and systems, (7) use of open communication, and (8) use of relationships.

The effectiveness of the TC in reducing drug use and criminal behavior among criminal populations has made it one of the preferred treatment modalities in prisons and community corrections programs (Wexler, 1995). Although successful outcomes have been documented in both environments (Chanhatasilpa et al., 2000), the implementation of a TC program within a prison offers specific challenges. For example, it is more difficult to engage offenders in a prison TC than other forms of substance abuse treatment, because the TC requires offenders to be open and to confront each other about socially unacceptable behavior. This is a concept that flies in the face of the convict code which is adopted by many felons in prison (Wexler & Love, 1994).

Despite the inherent difficulties of operating a TC within prison walls, there is strong evidence that these programs work. Earlier evaluations of the Cornerstone TC in Oregon and the Stay'n Out TC in New York revealed that prison TCs reduce criminal behavior and substance use (Field, 1984, 1989; Wexler, Falkin, & Lipton, 1990). Likewise, earlier research on community TCs have shown reduced criminal activity and substance use and increased employment among clients with criminal histories (De Leon, 1994; De Leon, Wexler, & Jainchill, 1982; Hubbard, Collins, Rachal, & Cavanaugh, 1988).

Factors Affecting Outcomes

More recent research has examined the key factors that contribute to positive outcomes following TC treatment. Research has discovered the most prominent factors contributing to successful outcomes include appropriate matching of needs to programming, retention and length of stay, and continuation of care.

Research findings have shown that treatment for offenders is optimal when the services offered properly match the needs of the client (Knight et al., 1999). A term referred to as the *risk principle* implies that treatment is maximized when offenders with severe substance abuse issues and criminal histories receive the most intensive treatment opportunities. Treatment outcomes for high risk offenders are more positive when their needs are met with the appropriate programming; retention has also been shown to be higher when the clients' needs are matched to the correct treatment level (Melnick, De Leon, Thomas, & Kressel, 2001). The research has also shown offenders with lower addiction severity seem to respond better to less intensive treatment programming (Gendreau, Cullen, & Bonta, 1994; Knight et al.).

Once placed at the appropriate treatment level, retention of clients in treatment also becomes a fundamental factor contributing to successful outcomes. Researchers have recognized that both client factors and program factors contribute to a client's decision to stay or leave the program (Simpson, 2001).

Motivation and readiness for treatment are important dynamic client factors that affect retention. High internal and external motivation have been shown to generate longer lengths of stay (Knight, Hiller, Broome, & Simpson, 2000). Level of motivation has been shown to contribute to the client's engagement in therapy. Those with higher levels of motivation and readiness have stronger therapeutic relationships, more group attendance and interaction with peers, all of which contribute to improved treatment outcomes (Joe, Simpson, & Broome, 1998). Although motivation has been found to be an important factor used to predict retention, it has not been found to directly impact outcomes; rather it is thought to be an important factor in retaining clients (Wexler, Melnick, Lowe, & Peters, 1999).

Other client variables which include fixed variables (i.e., age, gender, ethnicity) and dynamic variables (i.e., legal involvement, psychological status, self esteem) have also been studied to determine their impact on predicting retention. Nonetheless, there has not been an

identified client profile that accurately projects how long a particular client will stay in a program. Much of the research has found that client factors are sporadic in their predictions. When comparing the predictive power of fixed client factors to dynamic client factors, dynamic variables have been found to predict retention more consistently than fixed variables, likely because they are a more accurate indicator of the client's perceptions and feelings at the moment they enter treatment (Condelli & De Leon, 1993).

In addition to client factors, certain program factors contribute to retention. Some of these identified factors include confidence in the program, rapport with the treatment counselor, and the ease with which the client can conform to the program demands (Condelli & De Leon, 1993; Simpson, 2001). Although client and program variables have been studied individually, much of the research suggests that these factors interact together to influence the amount of time a client stays in treatment. The Texas Christian University Model for Treatment Process and Outcomes charts the interaction of both client and program factors (Simpson). In this model both treatment characteristics and client characteristics work together to improve program participation and therapeutic relationships which promote retention thus leading to positive outcomes.

Researchers have identified a critical threshold in which a client must remain in a TC in order to increase the likelihood of success following treatment. Ideally clients must remain in treatment for at least 90 days before the benefits of treatment can have an impact. Clients who have had less than 90 days in treatment have higher rates of relapse and recidivism (Knight et al., 2000; Siegal, Wang, Carlson, & Falck, 1999). The first 30 to 60 days of treatment is the most crucial period in which the risk of clients dropping out of treatment is highest (Condelli & De Leon, 1993; De Leon, Hawk, Jainchill, & Melnick, 2000). The greatest benefits have been shown when clients stay in treatment for 9 to 12 months (Condelli & De Leon; Wexler, 1995). It has been suggested that by remaining in treatment for this length of time the client is afforded more group hours and more individual treatment. It also provides more opportunity to interact with staff and more time to practice emotional and behavioral changes and to develop stronger control mechanisms (Bleiberg, Delvin, Croan, & Briscoe, 1994).

TCs that are coupled with aftercare treatment show the greatest magnitude of positive outcomes (Martin et al., 1999; Simpson, 2001). Clients who progress from a prison based TC to a community TC, are the least likely to be rearrested and/or relapse. It has also been found that clients who participate in aftercare have the longest elapsed time before recidivating (Knight et al., 1999). Research shows TC treatment without the aftercare component diminishes the success of the outcomes (Inciardi et al., 1997). Because the aftercare component has been proven to be so valuable, researchers have recommended TC programs offer more incentives for clients who go on to aftercare. They also suggest incorporating motivational tools to increase the clients' awareness of the importance of continuing with TC treatment (Wexler, Melnick, et al., 1999).

The Present Study

The present study aims to further evaluate these previous findings by investigating the effectiveness of two Colorado RSAT TC programs for offenders. The first is a prison based program, the second a community TC program. Together these programs provide a continuum of care for high risk substance abusing felons. Prior to the current project, the prison based program located at the Arrowhead Correctional Center (ACC) was evaluated in two separate process evaluations (O'Keefe, Arens, Hughes, & Owens, 1996; O'Keefe, Crawford, Garcia, Hook, & McGuffy, 1997). These research findings indicated that retention of clients was a challenge. Although preliminary data indicated that this program had effective outcomes, the research had

many limitations. The current project will allow for better analysis of outcomes for this program as well as for the community TC program. However, its largest impact may be on looking at the effectiveness of the combined programs to reduce recidivism.

The effectiveness of these TC programs will be examined in two separate studies. The first study is a large scale analysis of quantitative data comparing the groups on several outcome variables, including rearrest data and return to prison. The second study uses case study methodology to further explore how the programs may have impacted the participants' outcomes as well as the supports and barriers that influence outcomes.

Study 1

Method

Participants

Treatment groups. Five groups of participants were used to examine treatment outcomes (N = 778). Participants in group 1 (*Both)* received treatment at both the ACC TC and the Peer I TC (n = 31). They successfully completed treatment at ACC TC, which included a minimum stay of 180 days and a progressive transition to the community.

Participants in group 2 (*Peer I)* received treatment at Peer I TC only (n = 97). They did not receive TC treatment at any prison-based TC, but may have been involved in a less intensive treatment program.

Group 3 participants (*ACC Completers)* received treatment at ACC TC only (n = 162). Participants in this group successfully completed the program, which included a minimum stay of 180 days and a progressive move to the community. They did not attend Peer I or any other community-based TC treatment, although they may have received lower levels of treatment.

The 4th group (*ACC non-completers)* received treatment at ACC TC only, but did not successfully complete the program (n = 256). An unsuccessful completion was defined as dropping out of the program, being expelled, or transferring out of the program with less than 180 days in treatment even if the move was a progressive one. Participants who left for medical reasons or were discharged with an administrative termination (e.g., transfer to another program) were excluded from the sample because these discharges were deemed beyond the participants' control.

The control group participants were identified through the standard DOC assessment protocol as needing residential substance abuse, but did not attend a TC in either prison or the community (n = 232). With two exceptions, participants in this group were not screened for other treatment participation, so they may have attended treatment at a less intensive level at some point. Treatment at the Department of Corrections (DOC) bootcamp facility as well as community residential substance abuse treatment was tracked in order to rule out the effects of these intensive treatments, but participants receiving those treatment modalities were not excluded from the study. Participants who received these treatments did not have differential outcomes, thus the analyses are done ignoring this variable. Control participants were screened individually for any refusals to go to TC treatment. Twenty cases were excluded for refusing admission to TC. Sex offenders and offenders who discharged their corrections sentence were excluded from this group to model TC admission criteria.

Table 1 shows the demographic makeup of each of the treatment groups. Groups were not different from each other on ethnicity, education, or marital status as indicated by chi-

squared tests for independence. Participants identified themselves as being in one of three racial groups, with the majority of participants being Caucasian (55%) followed by African-American (24%) and Hispanic (20%). Most participants had received their general equivalency diploma (55%), but others had graduated from high school (20%) or not completed either (25%). Marital status was fairly evenly split between participants who were single (34%), participants who were married or in a common-law relationship (36%), and those who were divorced, separated, or widowed (30%). An one-way ANOVA comparing groups on age indicated that the Peer I only group, the ACC non-completers, and the controls were significantly younger than the ACC completers and the Both group. Ages of all participants ranged from 19 to 65 years, with a mean age of 34.31 years (SD = 7.99).

Selection criteria. Although random selection to groups is desirable, it was not feasible in this study due to ethical concerns with prisoners; therefore, treatment placement criteria were used as is routine. Substance abuse treatment placement is driven by Colorado's standardized offender assessment (SOA), and offenders must have been recommended for residential treatment on the SOA in order to be admitted to either TC. Mental illness alone does not preclude one from participating in the TC, however offenders assessed as having a mental illness must not have acute symptoms. If an offender is taking psychotropic medications, both programs require that he be stable on those medications before treatment entry. Occasionally, an offender diagnosed with a mental illness is admitted to the ACC-Peer I sequence, however, most of the time, they are placed in a separate treatment track designed specifically for offenders with co-occurring disorders. Offenders in this separate treatment track were excluded from the study.

ACC TC requires that offenders have enough time before release to receive an adequate treatment dosage, approximately 6 to 12 months, and that at least 6 months has passed since their last disciplinary violation. Offenders convicted of a sex offense may not be admitted to the drug and alcohol TC, although a modified TC for sex offenders exists in the same facility.

Participants admitted to Peer I directly from prison were approved for placement by the Denver community corrections board. Offenders convicted of violent crimes are rarely admitted to Peer I, although each case is reviewed by the Peer I admissions board. Parolees are also eligible for admission to Peer I and can be recommended for treatment by a parole officer.

For all groups, offenders were excluded as participants if they released from a Colorado prison to a parole program out of state. Any offender who attended Peer I or ACC TC for less than 30 days was also excluded because the treatment dosage was deemed too small to have an effect. Participants were eligible to participate if there were at least two years between release from prison and end of the study period. All participants from the treatment groups were included in the study if they meet the eligibility requirements. Participants in the control group were randomly from all eligible participants.

Table 1. Demographic Characteristics of Study Participants

Variable	Both	Peer I	ACC Completers	ACC Non-completers	Controls	*p*
Ethnicity						n.s.
Caucasian	48%	47%	54%	58%	55%	
African American	32%	26%	25%	20%	25%	
Latino	16%	26%	18%	19%	18%	
Other	3%	1%	3%	3%	3%	
Education						n.s.
High school diploma	16%	18%	20%	22%	19%	
GED	58%	59%	58%	52%	54%	
Neither	26%	23%	22%	26%	27%	
Marital status						n.s.
Single	26%	30%	27%	40%	34%	
Married or Common-law	39%	40%	35%	35%	35%	
Divorced/sep/widow	35%	30%	38%	25%	31%	
Mean age (SD)	37.81 (8.15)	33.53 (7.05)	36.56 (7.32)	33.46 (7.83)	33.54 (8.58)	<.001

Materials

Placement in substance abuse treatment is contingent upon SOA battery scores. Two key SOA instruments are the Level of Service Inventory – Revised (LSI-R; Andrews & Bonta, 1995), a recidivism risk measure and the Adult Substance Use Survey (ASUS; Wanberg, 2001). Scores on the SOA determine placement into one of seven categorical treatment levels. The treatment system provides education and therapy services of varying intensity: (1) no treatment, (2) education and increased urinalysis, (3) outpatient treatment, (4) intensive outpatient treatment, (5) intensive residential treatment, (6) TC, and (7) no treatment, assess for psychopathy.

The LSI-R (Andrews & Bonta, 1995) is a semi-structured interview administered to Colorado offenders to assess criminal risk. It consists of 54 items with 10 subscales including criminal history, accommodation, companions, alcohol/drug problems, education/employment, financial, attitude/orientation, Family/marital, leisure/recreation, and emotional/personal. Information obtained in the interview is verified whenever possible through official offender records and other sources. Each item is scored using a coding system of either 0 or 1, with a score of 1 indicating that an item is true. The resulting overall LSI-R score can range from 0 to 54. This total score is used to assign the level of supervision for the offender and to determine allocation of services (Motiuk, Motiuk, & Bonta, 1992). The total score has demonstrated adequate reliability (Cronbach's alpha = . 80) for Colorado inmates (Arens, Durham, O'Keefe, Kllebe & Olene, 1996). When used in the Colorado criminal justice system, treatment levels are set by combining the LSI-R total score (supervision) with the score on the disruption subscale of the ASUS (substance abuse).

The ASUS (Wanberg, 2001) is a standardized self-report inventory to screen for adults who indicate a history of substance use problems. The ASUS consists of five main subscales and

a global scale. These subscales are designed to measure five domains (involvement in 10 common drug categories, degree of disruption resulting from use of drugs, antisocial attitudes and behavior, emotional and mood adjustment difficulties, and defensiveness and resistance to self-disclosure). Each subscale of the ASUS consists of between 5 and 20 items using either a 4- or 5-point Likert-type scale. An overall, or global, score is obtained by combining the scores of the involvement, disruption, social, and mood subscales. This measure is assessed for offenders as they enter the DOC. Internal consistency for the subscales is good with Cronbach's alphas ranging from .65 to .90 for criminal justice clients in TC (Wanberg, 1997).

In addition to the SOA, participants entering ACC TC received a battery of tests within 3 weeks of their admission to treatment. Participants attending treatment at both TCs received the same battery of tests again within 3 weeks of their entry to Peer I. This intake battery included the Millon Clinical Multiaxial Inventory-III (MCMI-III; Millon, Davis, & Millon, 1997) to measure the occurrence of psychopathology and personality disorders, the Barkley Attention Deficit Hyperactivity Disorder (ADHD) Rating Scale (Barkley, 1990), the Wender Utah Rating Scale (WURS; Ward, Wender, & Reimherr, 1992) to measure the presence of childhood ADHD, the University of Rhode Island Change Assessment (URICA; McConnaughy, Procchaska, & Velicer, 1983), and the Circumstances, Motivation, Readiness, and Suitability Scale (CMRS; DeLeon, Melnick, Kressel, Jainchill, 1994). The CMRS and URICA are scales of motivation and readiness for treatment. Participants in groups 2 and 5 completed the MCMI-III upon admission to prison, but did not complete the other instruments in this battery.

The MCMI-III (Millon, 1997) consists of 175 true/false items. The inventory provides diagnostic information in the areas of personality disorders and clinical syndromes. Internal consistency for the clinical scales ranges from .66 to .90 with 20 of the 26 scales having alpha coefficients in excess of .80. Test-retest reliability coefficients for the subscales range from .82 to .96 (Millon).

The Barkley ADHD Rating Scale (Barkley, 1990) is an 18-item measure that assesses the frequency of ADHD symptoms related to inattention and impulsivity or hyperactivity. Symptoms occurring over the past 6 months are rated on a 4-point Likert-type scale from 0 (*never or rarely*) to 3 (*very often*). In the current study, reliability was extremely high as indicated by a Cronbach's alpha of .96.

The WURS (Ward et al., 1993) is a 61-item instrument designed to assess criteria for a retrospective diagnosis of childhood ADHD in order to meet the DSM-IV criteria that ADHD be present before the age of eight. Individuals are asked to indicate how accurately each item or descriptive phrase characterized him as a child. Items are rated on 5-point Likert-like scales from 1 (*not at all or very slightly*) to 5 (*very much*). In a study of adults referred to an ADHD specialty clinic, internal consistency for the WURS total score was high, with a Cronbach's alpha of .95. Validity of the WURS has been established through comparing tests completed by adult participants to a subjective rating of childhood behaviors provided by the participants' mothers. The correlations were modest, .49 for those without a diagnosis and .41 for those with a retrospective diagnosis (Ward et al., 1993).

The URICA (McConnaughy et al., 1983) is a 32-item inventory designed to assess an individual's placement along a theorized continuum of behavioral change. Items describe how a person might think or feel when starting therapy and elicit the level of agreement with the statements. Participants answer on 5-point Likert-type scales that range from 1 (*strongly disagree*) to 5 (*strongly agree*). Four stages of change are measured using 8-item subscales:

precontemplation, contemplation, action, and maintenance. For the four subscales Cronbach's alphas were .75, .79, .83, and .78 respectively (Pantalon, Nich, Frankforter, & Carroll, 2002).

The CMRS (De Leon et al., 1994) inventory assesses external pressures (circumstances), intrinsic pressures (motivation), readiness, and suitability for residential TC treatment. The 52 items on the CMRS are answered on 5-point Likert-like scales ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) or 9 (*not applicable*). The four subscales are: circumstances (C; 11 items), motivation (M; 17 items), readiness (R; 8 items), and suitability (S; 16 items). Internal consistency of the M, R, and S scales is adequate, with Cronbach's alphas ranging between .70 and .81; the reliability of the C scale was lower (approximately .44). For the total scale, internal consistency reliability is .87 (DeLeon, Melnick, & Kressel, 1997). The CMRS has limited predictive validity for retention in treatment. Validity coefficients for 30-day retention ranged from .19 to .31, whereas those for 10- and 12-month retention ranged from .16 to .21 (DeLeon et al., 1994).

Procedure

Baseline data. Self-report assessment instruments were used to collect psychological profile data. A researcher administered the intake packet in group format to participants within 3 weeks of admission to ACC TC. Participants were informed of the voluntary nature of the study and the strict procedures used to ensure confidentiality of the data. Each participant signed a consent form. Participants were neither compensated for participation nor subjected to negative consequences for non-participation.

Data regarding program attendance were collected from computerized databases maintained by TC staff at both ACC TC and Peer I. These data were verified through the DOC administrative database. All demographic, assessment, and treatment data, as well as some MCMI-III data, were collected from the DOC database system.

Outcome data. Outcome data were gathered for a 2 year follow-up period for each participant. For groups 3, 4, and 5, the trigger date was the date that participants released from prison into the community. For groups 1 and 2, the trigger date was the date that they entered Peer I, because not all Peer I clients enter treatment directly from prison.

Data regarding new crimes and arrests were gathered from the National Crime Information Center and the Colorado Crime Information Center. The date of the first arrest during the 2 year follow-up period in each category (felony, misdemeanor, and technical violation) was recorded. Number of days between trigger date and first arrest was calculated and analyzed.

Date of reincarceration was obtained from the DOC data system. The date of reincarceration was defined as the date an offender came back to prison or to jail if a prison stay followed immediately. For offenders who absconded from parole, the date they absconded from supervision, rather than the date of the consequent arrest was used as a reincarceration date.

Results

Group comparisons were made across baseline measures of criminal history and substance abuse. Chi-square tests were conducted on categorical data and one-way analyses of variance (ANOVA) were conducted with interval and continuous data. Data for each group are presented in Table 2. No analyses were conducted for release type by group because of empty

cells. Post-hoc tests revealed the following differences between groups, including: (1) less serious degree of felony classification for ACC non-completers and controls, (2) lower LSI-R scores for Peer I only than all other groups, (3) higher ASUS disruption score for controls than ACC non-completers, and (4) higher ASUS social score for controls than ACC completers.

Table 2. Baseline Comparisons across Groups

	Both	**Peer I**	**ACC Completers**	**ACC Non-completers**	**Controls**	***p***
Release Type						--
Parole	0%	36%	42%	41%	59%	
Comm. corrections	100%	64%	52%	43%	41%	
Sentence discharge	0%	0%	6%	16%	0%	
Mean prior incarcerations (*SD*)	0.7 (1.0)	0.5 (0.8)	0.4 (0.6)	0.5 (0.7)	0.4 (0.7)	n.s.
Mean felony degree (*SD*)	3.8 (0.8)	4.0 (0.8)	3.9 (0.8)	4.3 (0.9)	4.4 (0.9)	<.001
Mean LSI-R score (*SD*)	33.0 (6.0)	29.7 (5.8)	31.9 (5.2)	32.6 (6.1)	32.6 (5.1)	<.01
Mean ASUS (*SD*)						
Involvement	16.8 (7.9)	16.3 (8.4)	14.0 (10.2)	14.5 (10.2)	15.0 (7.8)	n.s.
Disruption	37.1 (18.3)	31.7 (18.5)	31.7 (19.6)	31.0 (22.0)	37.4 (11.6)	<.01
Social	13.3 (6.0)	13.2 (6.3)	11.6 (5.5)	13.4 (10.0)	14.8 (5.2)	<.01
Mood	9.1 (4.8)	7.9 (4.7)	7.6 (5.4)	8.8 (10.3)	9.0 (7.7)	n.s.
Defensive	4.4 (2.8)	5.5 (3.0)	6.4 (3.2)	7.1 (7.3)	6.7 (6.9)	n.s.

Recidivism Rates

Rearrest and return to prison rates were examined for participants of each group, as well as supervision failure. A series of ANCOVAs were conducted to determine difference in outcomes between groups (see Table 3). Variables (from Table 2) were used as a covariate if there were significant group differences on the variable and if the potential covariate was significantly related to outcomes. Supervision failure is defined as return to prison, misdemeanor arrest, or felony arrest. All comparisons were significant except felony arrests at the 2 year follow-up period. Figures 1 through 5 present the adjusted mean percentage of recidivism for 1 and 2 year results for each of the outcome measures.

Table 3. ANCOVA Results for Outcome Variables

Outcome	df_{error}	*F*	*p*	η^2	Covariates
1 Year outcomes					
Technical violations	695	9.01	<.001	.05	Release type, LSI-R, ASUS disruption
Return to prison	708	6.01	<.001	.03	Release type, LSI-R
Misdemeanor arrests	708	2.45	<.05	.01	Release type, LSI-R, age
Felony arrests	771	3.02	<.05	.02	Release type, age
Supervision failure	707	6.57	<.001	.04	Release type, LSI-R, felony degree
2 Year outcomes					
Technical violations	709	7.12	<.001	.04	Release type, LSI-R
Return to prison	709	5.57	<.001	.03	Release type, LSI-R
Misdemeanor arrests	772	7.94	<.001	.04	Release type
Felony arrests	772	1.91	n.s.	.01	Age
Supervision failure	771	6.33	<.001	.03	LSI-R

Post hoc tests were conducted on statistically significant variables to examine where the group differences existed. In this section a summary of the significant findings are given. The results for all post hoc comparisons are available in Appendix A. Participants who received treatment at both programs generally had better outcomes than the other four groups, particularly for return to prison and supervision failure outcomes. The only significant comparison between the Peer I and the ACC completers groups was that Peer I group had fewer technical violations at both follow-up periods. Likewise, the ACC non-completers and controls were very similar to each other; the only difference being that non-completers had a higher return to prison rate at 2 years. While control participants consistently had worse outcomes than those in the both group, they were not that different from the Peer I and ACC completers groups. The only differences were that controls had more technical violations and felony arrests than the Peer I group at 1 year, more technical violations and misdemeanor arrests than Peer I at 2 years, and more misdemeanor arrests and supervision failures than ACC completers at 2 years. On the other hand, the ACC non-completers generally had worse outcomes than the three treatment groups.

Figure 1. Technical Violations Outcome by Group

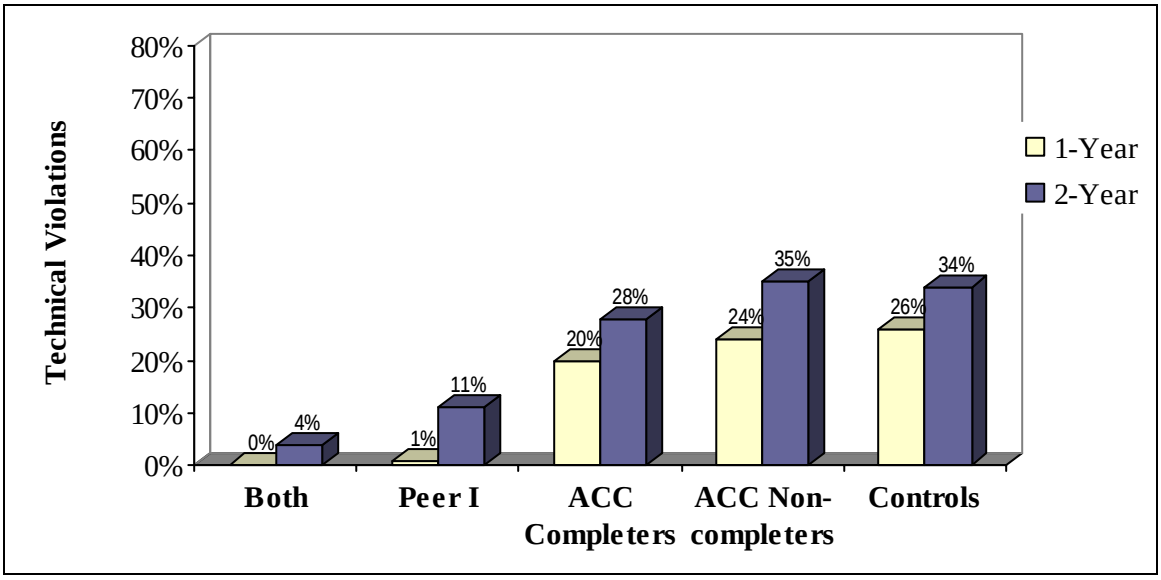


Figure 2. Return to Prison Outcome by Group

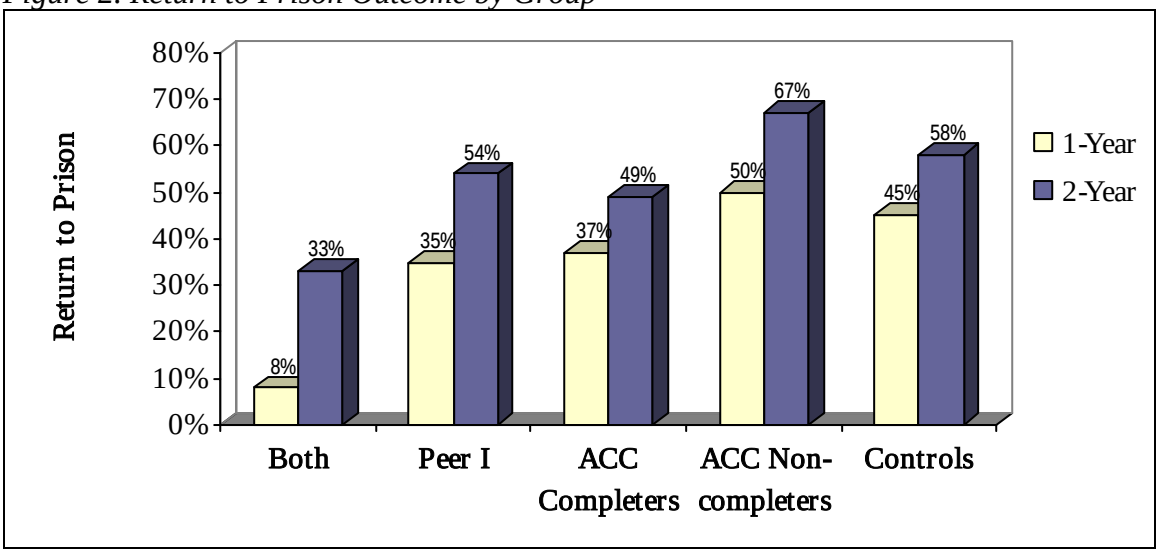


Figure 3. Misdemeanor Arrests Outcome by Group

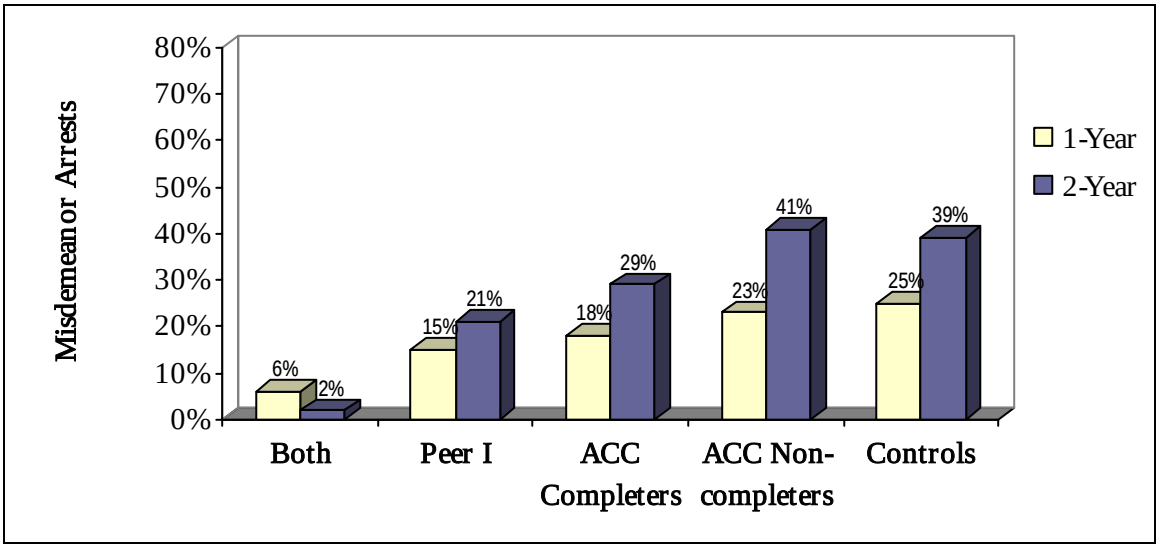


Figure 4. Felony Arrests Outcome by Group

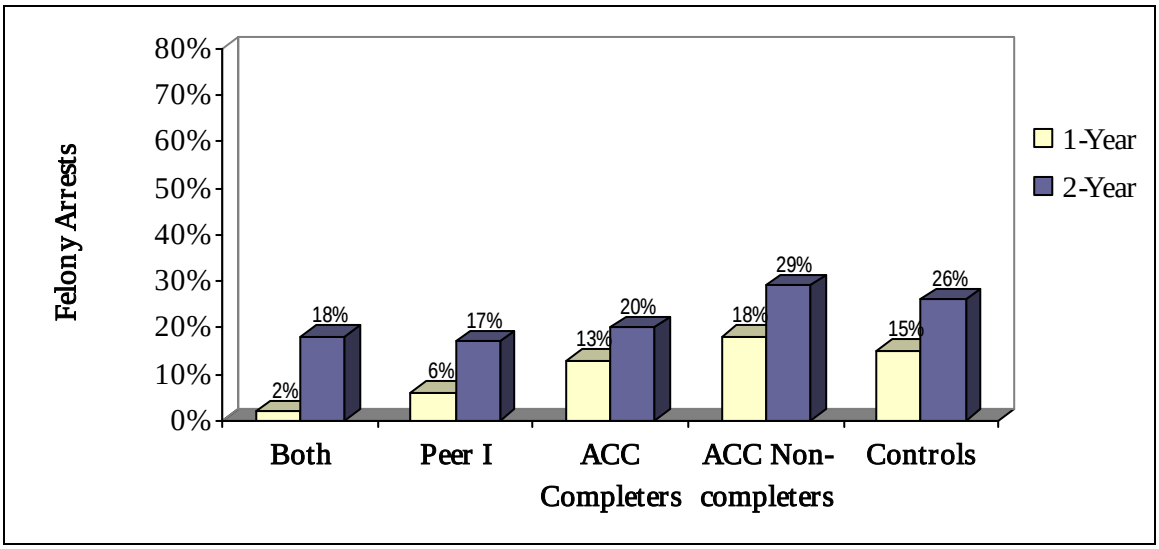
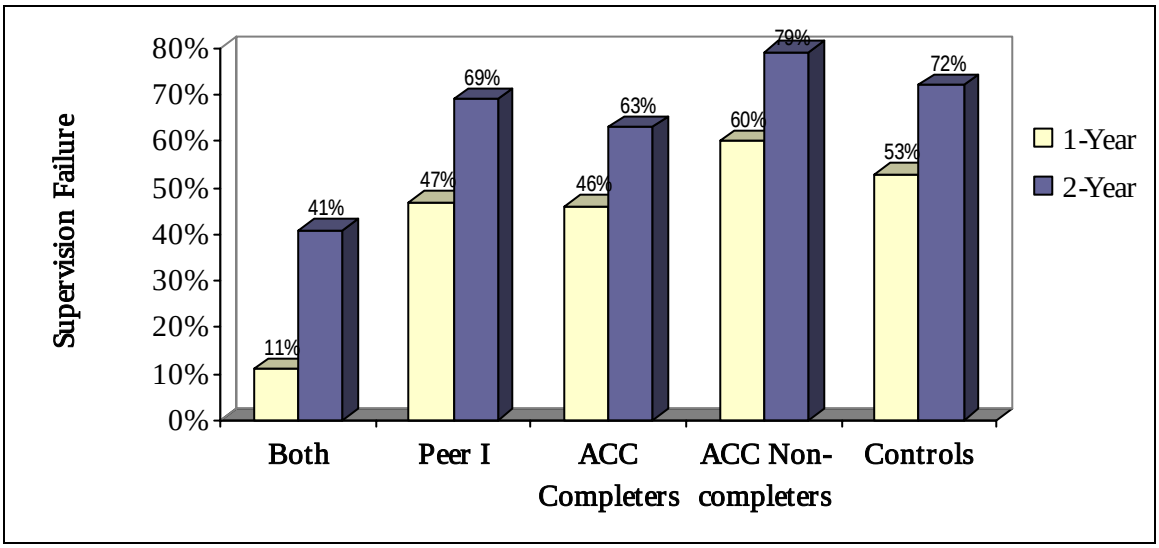


Figure 5. Supervision Failure Outcome by Group



Survival Analysis

A survival analysis was completed on supervision failure (returned to prison or new arrest) in order to compare groups on length of time until recidivism (for comparisons on each outcome variable see Appendix B). For participants who did not recidivate, the length of time from trigger date until the end of the study (10/03/03) was used to calculate the survival time.

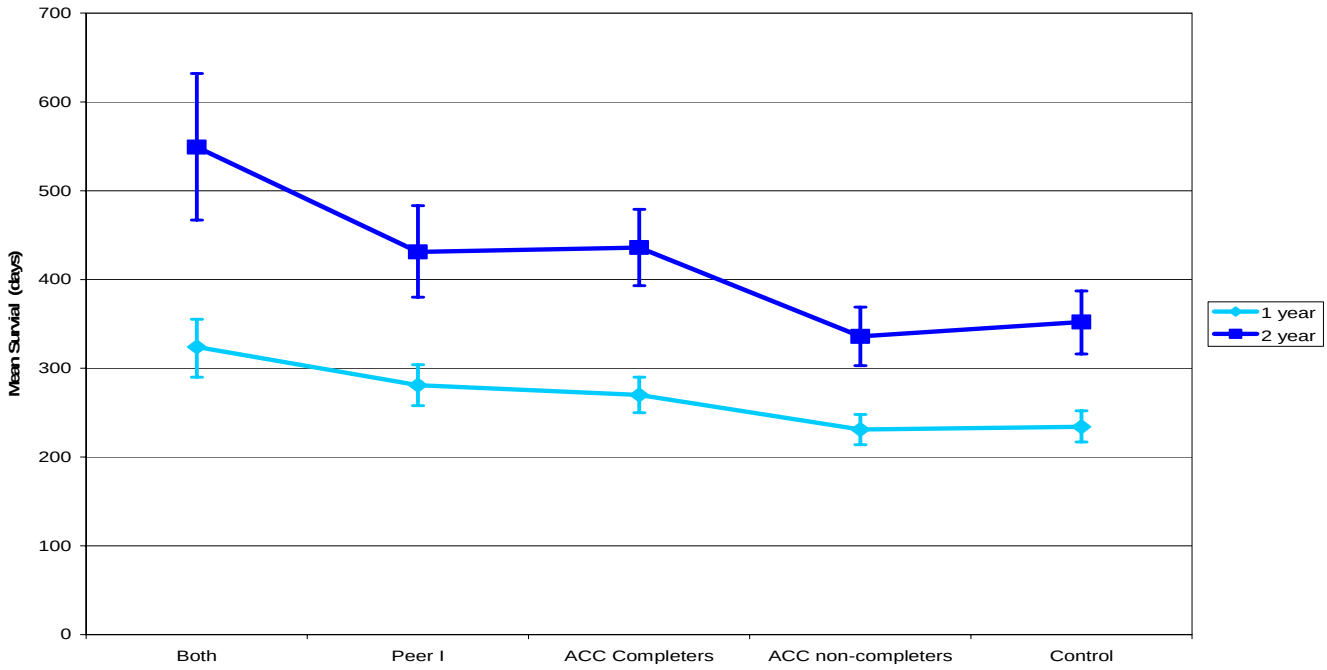
Table 4 gives the estimated survival times for each group for 1 and 2 year recidivism periods and Figure 6 depicts the 90% confidence intervals for mean survival time for 1 and 2 year recidivism periods. To compare differences between groups, pair-wise comparisons between groups using the log rank statistic were completed, using a .05 significance level. For the participants who received both treatment programs, both the 1 and 2 year mean survival times were greater than all other groups. For the participants who participated in just the Peer I treatment program, both 1 year and 2 year mean survival times were greater than the ACC noncompleter and the control groups; however, there was no difference between the Peer I only and the ACC completer groups. For the ACC completers group, both the 1 year and 2 year mean survival times were greater than both the ACC noncompleter group and the control group. There was not a significant difference between the ACC noncompleter group and the control group.

Table 4. Survival Analysis: Recidivism Rates

	1 Year Outcomes			**2 Year Outcomes**		
Group	*Mean Survival Time (days)*	*SE*	*% Censored*	*Mean Survival Time (days)*	*SE*	*% Censored*
Both	324	16.5	77	549	5.0	55
Peer I	281	11.8	54	431	26.1	32
ACC completers	270	10.3	57	436	22.1	38
ACC non-completers	231	8.7	41	336	16.8	21
Control	234	9.1	45	352	18.2	28

These outcome findings for survival time match the findings found in the ANCOVA results and indicate that not only are the treatment groups returning to prison less, but that the rates of survival are higher for treatment groups with the group receiving both programs having the strongest effects in reducing recidivism.

Figure 6. 95% Confidence Intervals for 1 year and 2 year Mean Survival Rates



Figures 7 and 8 give the survival functions for 1 year and 2 year supervision failure outcomes. These figures show that the participants who received both TCs have the slowest failure rates; the groups who received at least one of the programs look similar to each other and have faster failure rates than the both group, and that the ACC non-completers and control groups had the fastest failure rates and look similar to one another.

Figure 7. Survival Function for 1-Year Supervision Failure

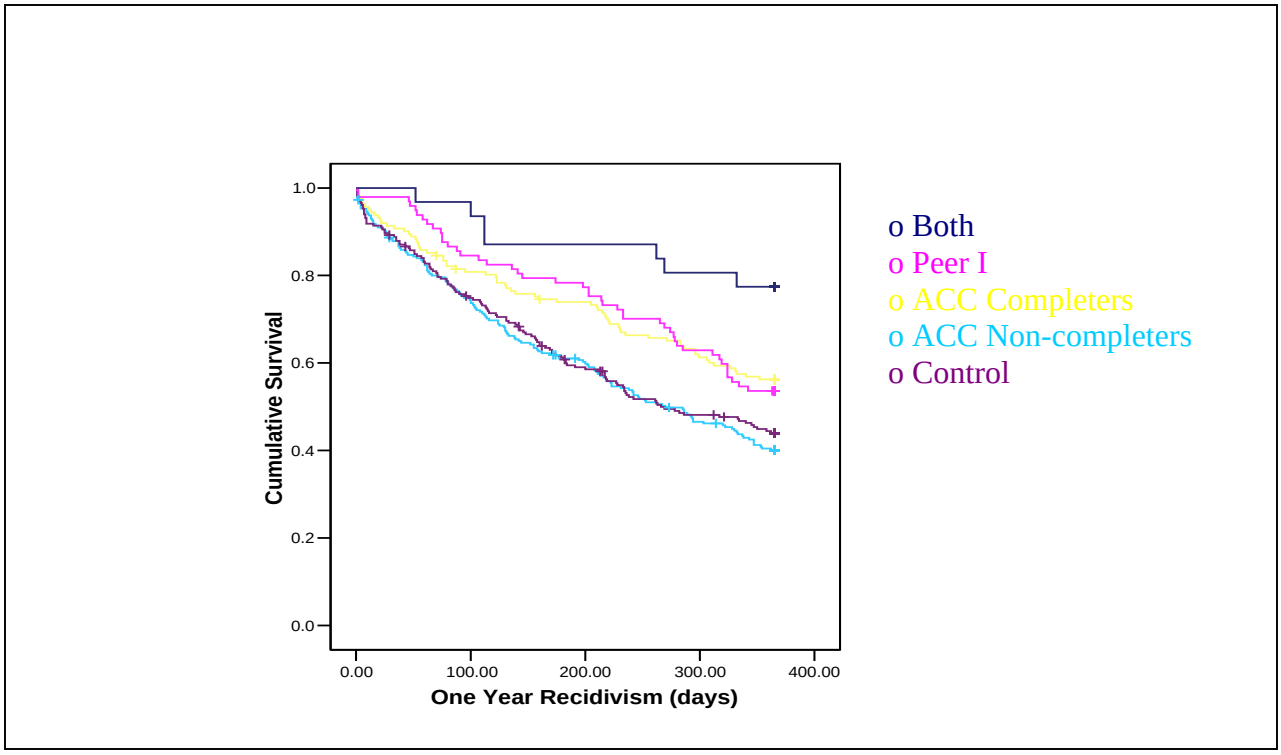
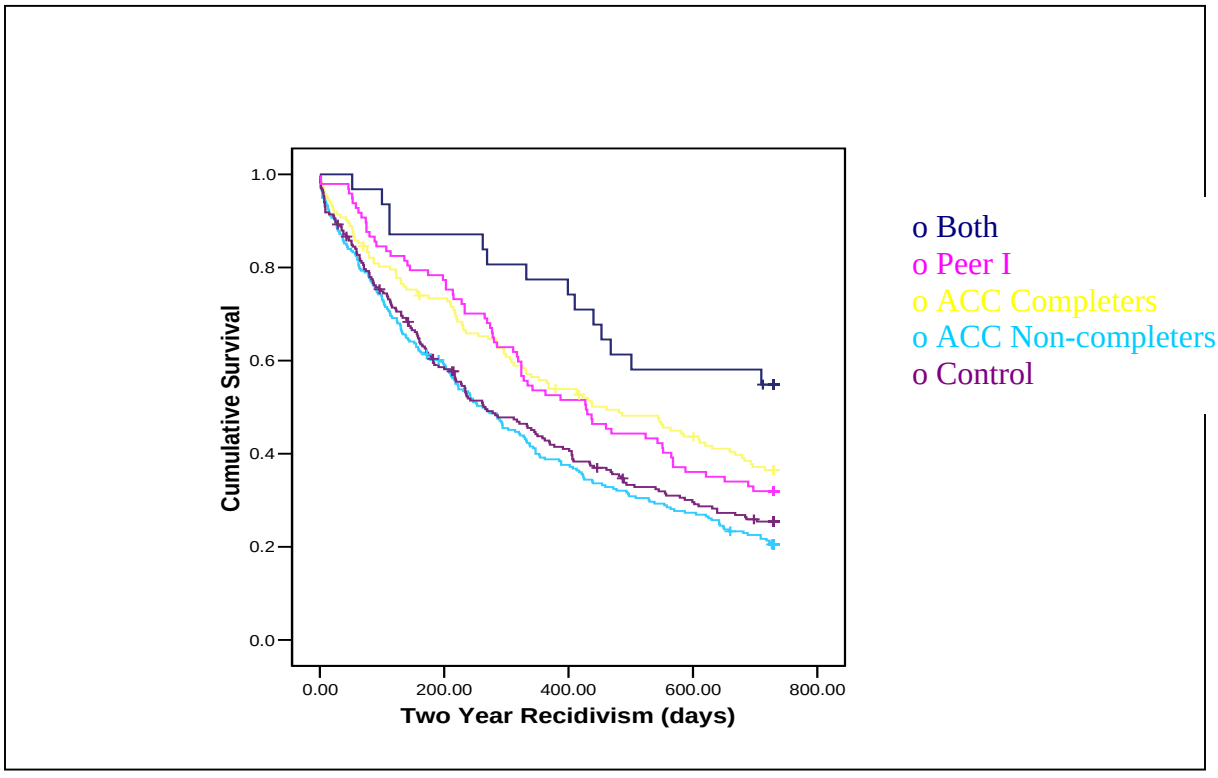


Figure 8. Survival Function for 2-Year Supervision Failure



Figures 9 and 10 give the hazard functions for 1 year and 2 year periods. The hazard gives an estimate of failure risk at any given point in time. The hazard functions are useful to examine potential high-risk periods. Both of the prison-based only treatment groups and the control group tend to have the highest risk periods when first leaving prison and risk continues to decline over time. The groups that have participated in the Peer 1 program have peak risk periods a year after leaving prison. This longer period until the highest risk period compared to the other three groups is probably an artifact of participants leaving the residential component of the Peer 1 program about a year after they start the Peer I program. However, the group receiving both treatments has lower risk and a longer period of time to the high risk period.

Figure 9. Hazard Function for 1-Year Supervision Failure

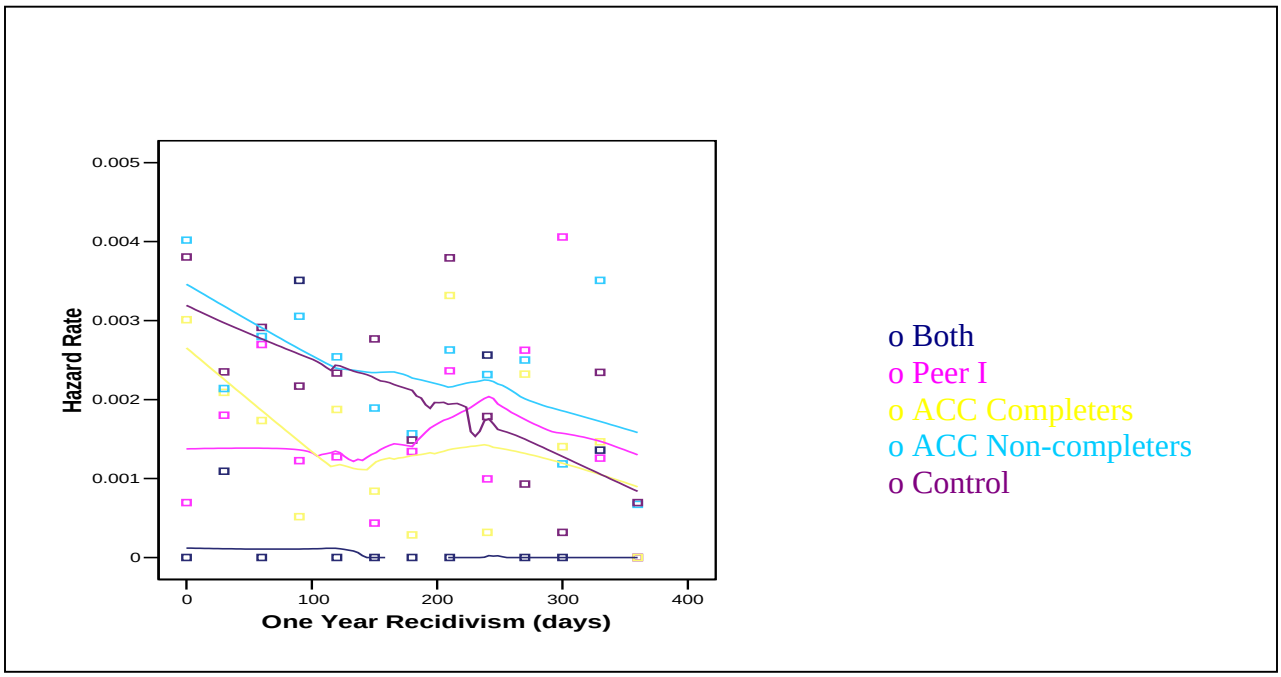
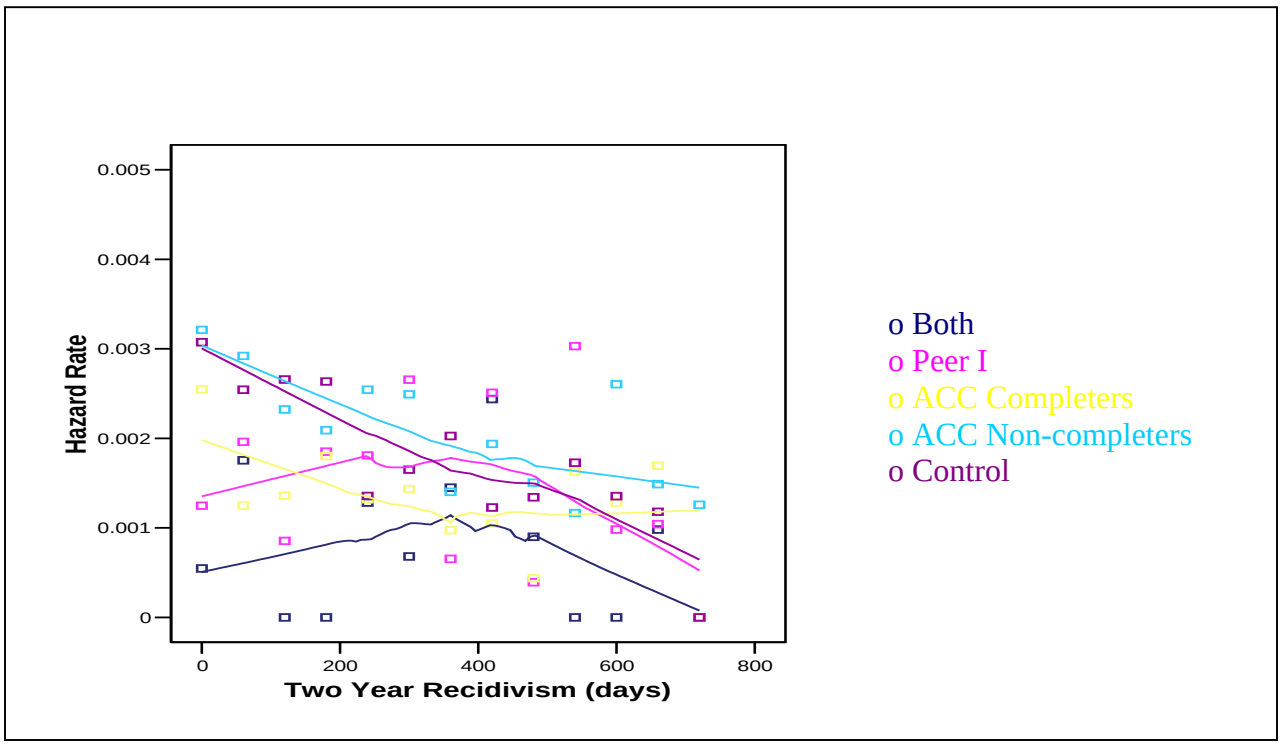


Figure 10.Hazard Function for 2-Year Supervision Failure



Additional Recidivism Rate Comparisons

The above analyses use the five groups planned in the original research design. In those groups, a distinction is made between completers and non-completers of the prison program but all participants of the community TC program are grouped together regardless if they successfully completed the program or not. Thus, in order to look at the effects of treatment for those who completed the community based TC, additional analyses were conducted that excluded participants who did not complete the residential phase of the Peer I program, if they were included in groups 1 or 2. The sample size reduced by 5 for the Both group (n = 26) and by 47 for the Peer I only group (n = 50). One year outcomes were analyzed, using the completion date for the residential program as the trigger date to begin tracking outcome successes and failures. Two-year outcomes were not available for many group participants due to the shift in trigger dates.

A series of one-way ANCOVA analyses were conducted to compare outcomes between groups. Tables 5 and 6 provide re-offending rates and ANCOVA results. Complete post hoc analyses results are available in Appendix C. The results indicate lower recidivism rates for the Peer I group when only completers are included in the analyses. Consequently, the Peer I only group was not different from either the Both or the ACC completers groups, but had significantly improved outcomes over the Control and ACC non-completers groups. Overall, the community-based program demonstrated more successful outcomes, as compared to the control group, than the prison program alone. However, prison plus community aftercare continued to demonstrate the most positive effects.

Table 5. 1 year Recidivism Rates by Group for those completing Community TC Residential Component

1-Yr Outcomes	Both Completers	Peer I Completers	ACC Completers	ACC Non-Completers	Controls
Technical violations	0%	9%	20%	24%	25%
Return to prison	14%	22%	37%	50%	45%
Misdemeanor arrests	4%	10%	20%	26%	24%
Felony arrests	8%	8%	12%	18%	15%
Supervision failure	22%	34%	46%	59%	52%

Table 6. ANCOVA Results for Recidivism Rates of Program Completers

1-Yr Outcomes	df_{error}	F	p	η^2	Covariates
Technical violations	662	3.37	<.05	.02	Release type, LSI-R
Return to prison	662	5.98	<.001	.04	Release type, LSI-R
Misdemeanor arrests	717	3.32	<.05	.02	Release type, age
Felony arrests	719	1.46	.21	.01	None
Supervision failure	661	4.91	<.05	.03	Release type, LSI-R, felony degree

Predictors of Outcome

Baseline psychological assessments were analyzed to discern profiles of offenders who are more or less likely to succeed. Tables 7 and 8 present results from a series of two-way ANOVAs; independent variables were group and supervision outcome at 2 years. Post-hoc tests were conducted to determine specific comparisons that were statistically significant. For the personality disorders (MCMI scales) data were available for participants in all groups. Due to the change in the research design midway through the study, the ADHD (WURS and Barkley) and motivation (URICA and CMRS) data were only available for participants in the ACC completer, ACC noncompleter, and Both groups (see discussion section).

For the MCMI variables (Table 7), there were group differences on the narcissistic, antisocial, alcohol dependence, and drug dependence subscales. Post hoc tests indicated that participants in the Both group had higher antisocial, drug dependence, and motivation scores. Peer I only and ACC noncompleters had higher narcissistic scores than ACC completers. The only significant main effects for supervision outcome indicated that supervision failures had higher bipolar manic and thought disorder scores than successes. Finally, there were two variables which had a significant interaction effect. These indicated (1) that higher dependent personality scores predict failure for the Peer I group, while lower scores predicted failure for the Both, ACC noncompleter and control groups, and (2) higher self-defeating scores predict failure for the Both and ACC noncompleters, but failure is predicted by lower self-defeating scores for ACC completers.

Table 7. ANCOVA Results for MCMI-III Personality and Clinical Syndromes with Group and 2 Year Supervision Failure

	Group	Failure	Group x Failure
Personality Scales			
Schizoid	$F(4, 560) = 0.29, \eta^2 = .00$	$F(1, 560) = 3.68, \eta^2 = .01$	$F(4, 560) = 0.98, \eta^2 = .01$
Avoidant	$F(4, 560) = 0.72, \eta^2 = .01$	$F(1, 560) = 0.32, \eta^2 = .00$	$F(4, 560) = 1.49, \eta^2 = .01$
Depressive	$F(4, 560) = 0.87, \eta^2 = .01$	$F(1, 560) = 2.51, \eta^2 = .00$	$F(4, 560) = 1.82, \eta^2 = .01$
Dependent	$F(4, 560) = 0.92, \eta^2 = .01$	$F(1, 560) = 0.39, \eta^2 = .00$	$F(4, 560) = 2.66^*, \eta^2 = .02$
Histrionic	$F(4, 560) = 0.84, \eta^2 = .01$	$F(1, 560) = 0.00, \eta^2 = .00$	$F(4, 560) = 0.67, \eta^2 = .01$
Narcissistic	$F(4, 560) = 2.90^*, \eta^2 = .02$	$F(1, 560) = 0.09, \eta^2 = .00$	$F(4, 560) = 1.72, \eta^2 = .01$
Antisocial	$F(4, 560) = 2.62^*, \eta^2 = .02$	$F(1, 560) = 0.97, \eta^2 = .00$	$F(4, 560) = 1.59, \eta^2 = .01$
Aggressive	$F(4, 560) = 1.52, \eta^2 = .01$	$F(1, 560) = 0.02, \eta^2 = .00$	$F(4, 560) = 0.77, \eta^2 = .01$
Compulsive	$F(4, 560) = 1.12, \eta^2 = .01$	$F(1, 560) = 0.89, \eta^2 = .00$	$F(4, 560) = 1.80, \eta^2 = .01$
Passive-aggressive	$F(4, 560) = 1.40, \eta^2 = .01$	$F(1, 560) = 1.36, \eta^2 = .00$	$F(4, 560) = 1.41, \eta^2 = .01$
Self-Defeating	$F(4, 560) = 0.60, \eta^2 = .00$	$F(1, 560) = 0.86, \eta^2 = .00$	$F(4, 560) = 3.12^*, \eta^2 = .02$
Clinical Syndromes			
Schizotypal	$F(4, 560) = 0.82, \eta^2 = .01$	$F(1, 560) = 0.28, \eta^2 = .00$	$F(4, 560) = 0.76, \eta^2 = .01$
Borderline	$F(4, 560) = 1.18, \eta^2 = .01$	$F(1, 560) = 1.53, \eta^2 = .00$	$F(4, 560) = 1.98, \eta^2 = .01$
Paranoid	$F(4, 560) = 1.54, \eta^2 = .01$	$F(1, 560) = 1.90, \eta^2 = .00$	$F(4, 560) = 0.86, \eta^2 = .01$
Anxiety	$F(4, 560) = 2.20, \eta^2 = .02$	$F(1, 560) = 1.92, \eta^2 = .00$	$F(4, 560) = 0.65, \eta^2 = .01$
Somatoform	$F(4, 560) = 1.55, \eta^2 = .01$	$F(1, 560) = 1.29, \eta^2 = .00$	$F(4, 560) = 0.97, \eta^2 = .01$
Bi-polar: manic disorder	$F(4, 560) = 0.98, \eta^2 = .01$	$F(1, 560) = 4.89^*, \eta^2 = .01$	$F(4, 560) = 1.65, \eta^2 = .01$
Dysthymic disorder	$F(4, 560) = 0.66, \eta^2 = .01$	$F(1, 560) = 0.27, \eta^2 = .00$	$F(4, 560) = 1.57, \eta^2 = .01$
Alcohol dependence	$F(4, 560) = 2.76^*, \eta^2 = .02$	$F(1, 560) = 1.26, \eta^2 = .00$	$F(4, 560) = 0.55, \eta^2 = .00$
Drug dependence	$F(4, 560) = 3.37^{**}, \eta^2 = .02$	$F(1, 560) = 0.30, \eta^2 = .00$	$F(4, 560) = 1.82, \eta^2 = .01$
Post traumatic stress	$F(4, 560) = 0.92, \eta^2 = .01$	$F(1, 560) = 3.40, \eta^2 = .01$	$F(4, 560) = 1.58, \eta^2 = .01$
Thought disorder	$F(4, 560) = 1.65, \eta^2 = .01$	$F(1, 560) = 4.54^*, \eta^2 = .01$	$F(4, 560) = 1.06, \eta^2 = .01$
Major depression	$F(4, 560) = 1.40, \eta^2 = .01$	$F(1, 560) = 1.47, \eta^2 = .00$	$F(4, 560) = 0.61, \eta^2 = .00$
Delusional disorder	$F(4, 560) = 1.73, \eta^2 = .01$	$F(1, 560) = 1.87, \eta^2 = .00$	$F(4, 560) = 0.29, \eta^2 = .00$

For the individual difference variables listed in Table 8, although there were two variables that had mean differences between groups, none of the variables were different across supervision status or had a significant interaction between group and supervision status, indicating that these variables are not strong stable predictors of outcomes.

Table 8. ANCOVA Results for Individual Difference Variables with Group and 2 Year Supervision Failure

	Group	Failure	Group x Failure
WURS			
Total	$F(2, 268) = 0.23$, $\eta^2 = .00$	$F(1, 268) = 1.54$, $\eta^2 = .01$	$F(2, 268) = 1.17$, $\eta^2 = .01$
Conduct problems	$F(2, 269) = 2.02$, $\eta^2 = .02$	$F(1, 269) = 2.44$, $\eta^2 = .01$	$F(2, 269) = 0.56$, $\eta^2 = .00$
Learning difficulty	$F(2, 265) = 0.07$, $\eta^2 = .00$	$F(1, 265) = 0.20$, $\eta^2 = .00$	$F(2, 265) = 1.47$, $\eta^2 = .01$
Irritability	$F(2, 263) = 0.36$, $\eta^2 = .00$	$F(1, 263) = 3.17$, $\eta^2 = .01$	$F(2, 263) = 0.76$, $\eta^2 = .01$
Attention problems	$F(2, 269) = 1.34$, $\eta^2 = .01$	$F(1, 269) = 0.84$, $\eta^2 = .00$	$F(2, 269) = 3.38$*, $\eta^2 = .03$
Unpopularity	$F(2, 268) = 0.45$, $\eta^2 = .00$	$F(1, 276) = 0.48$, $\eta^2 = .00$	$F(2, 276) = 1.25$, $\eta^2 = .01$
Barkley ADHD scale			
Inattention	$F(2, 274) = 0.27$, $\eta^2 = .00$	$F(1, 274) = 0.19$, $\eta^2 = .00$	$F(2, 274) = 1.36$, $\eta^2 = .01$
Impulsive	$F(2, 274) = 1.78$, $\eta^2 = .01$	$F(1, 274) = 0.45$, $\eta^2 = .00$	$F(2, 274) = 0.94$, $\eta^2 = .01$
URICA			
Precontemplation	$F(2, 274) = 2.54$, $\eta^2 = .02$	$F(1, 274) = 0.23$, $\eta^2 = .00$	$F(2, 274) = 0.14$, $\eta^2 = .00$
Contemplation	$F(2, 272) = 5.20$**, $\eta^2 = .04$	$F(1, 272) = 0.01$, $\eta^2 = .00$	$F(2, 272) = 2.74$, $\eta^2 = .02$
Action	$F(2, 275) = 2.81$, $\eta^2 = .02$	$F(1, 275) = 0.02$, $\eta^2 = .00$	$F(2, 275) = 0.95$, $\eta^2 = .01$
Maintenance	$F(2, 272) = 5.16$**, $\eta^2 = .04$	$F(1, 272) = 0.00$, $\eta^2 = .00$	$F(2, 272) = 2.15$, $\eta^2 = .02$
CMRS			
Circumstances	$F(2, 241) = 0.27$, $\eta^2 = .00$	$F(1, 241) = 0.27$, $\eta^2 = .00$	$F(2, 241) = 1.58$, $\eta^2 = .01$
Motivation	$F(2, 248) = 1.64$, $\eta^2 = .01$	$F(1, 248) = 1.66$, $\eta^2 = .01$	$F(2, 248) = 1.24$, $\eta^2 = .01$
Readiness	$F(2, 256) = 6.23$**, $\eta^2 = .05$	$F(1, 256) = 0.02$, $\eta^2 = .00$	$F(2, 256) = 1.61$, $\eta^2 = .01$
Suitability	$F(2, 252) = 9.92$**, $\eta^2 = .07$	$F(1, 252) = 0.01$, $\eta^2 = .00$	$F(2, 252) = 1.36$, $\eta^2 = .01$

Note. WURS, Barkley, URICA and CMRS data were not available for Peer I only or control groups.
* $p < .05$, ** $p < .01$

In addition to the ANOVA analyses done for each group, the correlation between these predictors (variables listed in Tables 7 and 8) and the length of time until supervision failure and the dichotomous failure variables were completed while ignoring group membership. Although all predictors had small correlation coefficients (less than .20), there were several predictors which had statistically significant correlations ($p < .05$) with outcomes. These variables were the Schizoid [$r(n = 570) = -0.09$], Depressive [$r(n = 570) = -0.08$], Narcissistic [$r(n = 570) = -0.12$], Antisocial [$r(n = 570) = -0.12$], Passive-Aggressive [$r(n = 570) = -0.10$], Borderline [$r(n = 570) = -0.09$], Paranoid [$r(n = 570) = -0.11$], Anxiety Disorder [$r(n = 570) = -0.08$], Bipolar: manic disorder [$r(n = 570) = -0.15$], Alcohol Dependence [$r(n = 570) = -0.12$], Thought Disorder [$r(n = 570) = -0.10$], and Delusional Disorder [$r(n = 570) = -0.12$] scales of the MCMI-III and the Precontemplation subscale of the URICA [$r(n = 281) = -0.12$]. Higher scores on each of these variables tended to have shorter time periods until supervision failure and had more failures.

Discussion

Group Differences

Similar to other research (Inciardi et al., 1997; Wexler, Melnick, et al., 1999), we found that the group with the longest treatment duration (i.e., those who have participated in both TCs) had the most successful outcomes and showed a reduction in 1 year recidivism of 78% compared to the control group. Although the reduction of recidivism decreased to 42% in the second year, this was still a major impact of long-term care on outcomes. Participants who received treatment only in the prison TC showed reductions of 12% and 14% for the 1 year and 2 year outcomes,

respectively. Participants who only received treatment in the community based program had similar reductions in recidivism for the 1 year outcomes (10%) but this reduction reduced to only 3% for 2 year outcomes. However, if only considered participants who completed the residential component of treatment, these participants had a 35% reduction in recidivism. The participants who started but did not complete the prison TC had nonsignificant but slightly higher rates of recidivism compared to the control group. Thus, treatment for substance abusing offenders shows reductions in recidivism, with the strongest outcomes for those who have had the longest treatment dosage.

These findings may be impacted by selection factors. The participants who received both treatments may have characteristics that make them uniquely different from the other groups. Self-selection plays a role in participating in both treatment groups, especially for the community-based TC. These participants may see the benefits of the TC program for their own recovery, and those who benefited especially well from the prison TC or who are highly motivated to change might be more likely to continue in the aftercare TC. Conversely, the participants who did not complete the prison TC may be different on variables that impact outcomes. The process evaluation profiling participants in these groups found that personality scales as well as the attention and learning variables predicted retention in the prison TC (O'Keefe & Klebe, 2001); however, the present study found limited group differences that would explain the differences in outcomes. Although it is plausible that pre-existing group differences explain the differential outcomes between the treatment groups, the analysis for predictors of success do not indicate that the group differences on various psychological measures are an explanation for positive outcomes.

Although the hypothesized predictors do not seem to explain group differences in outcome, the study groups did differ on release type or supervision status (e.g., parole, discharged sentence, community corrections) and supervision status was related to outcomes. Release type was statistically controlled through the use of analysis of covariance procedures, but it is worth discussing the implications of these group differences. Participants who received the community based TC treatment were on community corrections status more frequently than the other groups. Offenders under the supervision of community corrections tend to have more reporting obligations (e.g., more visits with correctional staff, more reporting, etc.) than those on parole who have more obligations than those who have discharged their sentence. Thus the participants receiving the community based TC treatment have more supervision requirements than the other groups. This might suggest that they have more opportunities to fail than other groups. Thus, one might expect more failures for higher supervision status and this would be indicated in higher recidivism rates. Thus differential release type should be working against these participants; however, the data showed that these groups perform better than the control group. Although in Colorado, the release type is associated with more supervision requirements, this may not be true in all states, and further research is needed to see how this variable may be influencing study outcomes. Additionally, investigators will need to be cognizant of this variable when planning outcome studies with participants who may have differential release types.

Contrary to other research, the motivation subscales, as measured by both the URICA and the CMRS, did not show a strong pattern of predicting outcomes; however, there was a statistically significant, albeit weak, relationship between precontemplation and recidivism with participants scoring higher on this subscale tending to have worse outcomes than those who scored lower. Participants in the precontemplation stage of change do not see substance abuse as a problem and often have no intention of changing (Connors, Donovan, & DiClemente, 2001).

Although, motivation has shown strong relationships with retention in treatment (Knight et al., 2000) its relationship with recidivism outcomes tends to be less obvious. Many of the clinical disorders and personality scales were weak predictors of outcomes. Additional research is needed to further delineate these relationships and to explore how these variables impact treatment retention.

Limitations

Selection effects, as discussed in the above section, are a major problem for this study as well as for other studies that have been completed. The most positive effects are usually found in programs that have an aftercare program that is voluntary in nature. Even though substance abuse treatment is not considered voluntary within the DOC, as there are many external pressures and consequences for refusing recommended treatment, participation ultimately lies with the offender. Many offenders believe consequences for non-participation are more palatable than attending TC treatment.

Although the original design called for measurement of psychological assessments for all participants, when the study design was changed due to problems in retaining field researchers (see discussion section for study 2), it was not possible to collect baseline psychological assessments for participants in the control group or the Peer I only group. Even though the MCMI-III is administered upon intake into the DOC, there was much missing data for participants not in the prison-based TC treatment groups. Additionally, participants' responses to the test might be different under research conditions where their confidentiality is maintained as opposed to intake conditions where decisions are made that may impact their incarceration stay. Although the range of possible scores was covered by the assessed sample, not collecting this data for all groups may impact

The original design also called for wages to be collected as an outcome variable. Although wage data were collected for all participants, the analyses of this data are presented in Appendix D rather than in the main body of the results section. The reason being is that the majority of people did not have any wages as reported from the Colorado Department of Labor. A substantial portion of the sample (30%) had no wage data at all and about 50% of the sample had no data in any given quarter. Thus the analyses are based on data from only 20% of the participants. This source of data may be inaccurate or it may be an indication that either this population is not working or is getting paid cash but not paying taxes. In future studies, researchers may want to consider that this type of data, collected from Department of Labor databases, may underestimate the earnings of participants.

In this study, recidivism (return to prison, rearrest, and technical violations) were used as outcome variables. An important variable to consider might be relapse rather than just recidivism measures. Although technical violations can be used as a surrogate relapse measure as most technical violations had to do with positive drug testing results, we did not directly measure relapse.

Demand for community-based TC programming is extremely high in Colorado, but in actuality such accommodations exist for only a very small segment of the offender population. Peer I placements are highly competitive, with referral sources encompassing courts, jails, Probation, and DOC. For these reasons and others within the DOC system, there were fewer participants than expected who progressed from the ACC TC to the Peer I TC. This small sample size may have negatively impacted out findings.

The Colorado Department of Corrections offers a variety of treatment programs, as do other prison systems. In this study, the effectiveness of intensive, long-term residential TC programs are evaluated without consideration of other types of treatments that the participants may have had other points during supervision under the criminal justice system. More research is needed on the cumulative effects of treatment programs as well as differing variations of treatment intensity. For example, this study does not address if outcomes would be similarly positive if outpatient treatment followed the in-prison TC treatment.

An additional concern for the programs is the high number of drop-outs in both the prison and community programs. The prison TC drop-out group was the largest group and was one and a half times larger than the group who completed the in-prison program. Additionally, when we looked at the community TC who completed the residential phase, there was a drop-out of 48% of participants who did not complete this section. For more effective utilization of the treatment program, the programs need to consider better ways to increase retention either through programmatic changes or through better selection of participants.

Study 2

In this study a case study approach is used in order to explore potential barriers and supports that people face when returning to the community. It is believed that this information can provide potential information that can be explored in future research studies. It also provides information about programs that people may have found particularly helpful or difficult.

Method

Participants

Case study participants were 10 men from CDOC. The participants were selected from a sample of potential participants who were eligible for the study based on their TC treatment history, using the same group selection criteria outlined in Study 1. The only difference being those participants eligible for the case study interviews must have released from prison to the community between January 2002 and June 2002.

After narrowing the sample of potential participants based on the above criteria, all potential participants (N = 411) were further divided into “successful” (n = 271) or “unsuccessful” (n = 140) outcome cases. For each of the five treatment groups, two cases were selected, one successful outcome and one unsuccessful outcome. Successful outcomes were defined as participants who were still living in the community after 12 to 18 months without any new charges. Unsuccessful outcomes were defined as those participants who were returned to prison for technical violations or new charges. These unsuccessful outcomes were eligible for the study only if they had been living in the community for 6 to 12 months before returning to prison.

The above time criteria were established to allow participants to have adequate time in the community, maximizing the distinction between successful and unsuccessful cases. It was important that the successful cases were in the community long enough to demonstrate positive achievements and stability. Likewise, it was important that the unsuccessful cases were in the community long enough to allow them to have experiences in the community relating to employment, housing, family and their recovery, etc.

Once all eligible participants in the five groups were determined, the participant demographic information was then considered to identify the most representative cases from

each treatment group. The demographic information included age, race/ethnicity, marital status, and education. The cases that best exemplified the average TC client (using the sample characteristics from study 1) were identified and then recruited to participate from each group to the extent possible, given small pools of eligible participants. The sample of 10 was selected so that it was representative of the larger TC population (e.g., roughly 50% of the participants were from a minority ethnic group).

The ages of the participants ranged from 31 years old to 43 years old with a mean age of 39 years old. Three of the men were divorced, 5 were single, and 2 were married. Of the 10, 6 had obtained their GED while in prison; the others had graduated from high school. Five participants were Caucasian, 2 were African American and 3 were Hispanic.

Participants were compensated for their participation with a monetary payment. Those participants in prison were paid a total of $65 and participants on parole were paid a total of $170. This differential reflects the earning potentials for those in the community versus those in prison. Because of this differential it would have been coercive to pay inmates such a significant amount. Significant others were also paid $40 for their interview.

Materials

An interview packet was used which contained prompting questions for the interviewers. The packet outlined general topic areas and semi-structured questions. General topic areas included finances, housing, family and partner relationships, substance abuse and criminal history. There were 13 topic areas and five comprehensive questions targeting the participant's overall treatment and prison experiences. Two tape recorders were used to record the entire interview. One tape recorder was used as the primary, the other for backup.

Procedure

Unsuccessful case participants were contacted, in person, in prison and approached to participate. Contact information for successful case participants was obtained through their parole officer. These potential participants were called by phone and if agreeable, were then met in person at an arranged location. There was only one potential participant who was contacted and declined to participate. This participant did not want to discuss his DOC experiences and was angry that he had been contacted (he was from the control group).

Willing participants were asked to read and sign a consent form outlining the nature of the study. They were asked to consent to a primary and follow up interview which would be tape recorded and transcribed. They were also asked to give permission to have a significant other (i.e., wife, family member, or friend) interviewed and to provide the contact information for that person. It was requested that the participant identify a significant other who had known the participant prior to their incarceration, who was in contact with them during the time of their recent release, and who could be reached for an interview in person.

Incarcerated participants were interviewed in a private visitation room within the prison. Community participants were interviewed in library group rooms or a park. Participants' significant others were interviewed in library group rooms or at their home.

The primary interview with consenting participants took an average of 3 hours. Participants were encouraged to respond to questions relating only to the specified timeframe. The time frame for unsuccessful cases included their time in the community until their return to prison. The time frame for successful cases included their time in the community through the day of the interview.

There were two interviewers present during the primary interview to increase objectivity and decrease researcher bias. The lead interviewer directed the majority of the interview, following the questions from the packet and probing responses with additional questions. The second interviewer served as an observer who asked adjunct questions not addressed by the lead interviewer.

The interviews followed the same format for each participant. Questioning was open-ended. Following the interview, the interviewers recorded their initial impressions and additional questions to address with the significant other or during the participant follow up. There was minimal content debriefing between the interviewers following the interviews to limit researcher bias.

The significant other interviews were conducted in person and were approximately 1 hour long. Only one interviewer was present and interviews followed the same format as the primary. These interviews aimed to confirm participant's self report and identify any conflicting or additional information.

Prior to the follow up interview, the transcript of the primary interview was used to write a case report. The case report is a summary of the participant's reported experiences in the community, highlighting each topic area. Information from the significant other's interview was not incorporated at this time. The report was reviewed by the other interviewer to substantiate the content.

Follow-up questions were generated by the interviewers using the transcripts and case report. The participants' criminal justice file was also reviewed to verify the accuracy of the report and to provide additional questions.

Only one interviewer conducted the follow up interview. The participants were asked to review the report and suggest any changes to the facts or content. Follow-up questions were then addressed. The entire follow-up interview, including the review of the report, took approximately 1 to 2 hours. Final changes were made to the report based on the follow up and any contradictory information from the significant other interview was added as an adjunct.

Results

A case study report was written from each transcript. The main interviewer wrote each case study. The secondary interviewer reviewed the case study for accuracy and potential bias. Other researchers read the case studies and discussed the themes that seemed to be common across the case studies. The following gives a summary of the common themes that people experienced with regards to transitioning from prison to community living with special emphasis placed on what programs people received to help make the transition from programs or prison.

History: Criminal and Substance Abuse

All participants had high levels of criminal risk. This is not a surprise as the TC treatment modality requires high levels of criminal risk and substance abuse for admission and the control group was selected so that those participants also meet the need for TC treatment. Substance use started during adolescence for nearly all (9 of 10) participants. Participants tended to be polydrug users, with alcohol or cocaine being the most frequent drugs of choice.

Although most participants had multiple felony charges, the sentence length tended to be shorter for participants who had successful outcomes compared to those who had failed

outcomes. This may indicate that the successful group had lower criminal risk than the failed group.

Employment/Finances

All participants were employed. Most talked about the importance of finding employment quickly due to the requirements of the treatment program, community corrections or parole. Most felt that they found their jobs fairly easily. Some returned to a similar line of work as they had before prison or were hired by people they knew, although the majority of the participants found new places to work. People expressed that programs were often helpful for developing resumes, giving strategies for finding jobs, or giving ways to discuss criminal record with potential employees. Only one participant claimed that it was difficult to find employment because of criminal history. More participants discussed the difficulty of balancing work with the requirements of parole or the treatment program (e.g., not able to drive, attending meetings with parole officer or for treatment, curfews). Both participants who were hired by a family member were failures. Six of the participants went to work with one company and stayed there during the duration of the study. The other 4 participants had several jobs. Sometimes the changing of jobs was due to finding more relevant employment, other times participants were laid off. No participant was ever fired for wrong-doing or poor job performance. This frequent changing of jobs did not seem to impact outcome as half of those participants had failed outcomes and half had successful outcomes. Many participants claimed that work was an important component of their life.

Participants had a wide range of salaries, from minimum wage up to $22/hr. Most claimed that they were just getting by. That is, all were meeting their financial obligations; however, they may not be saving much. No participant was receiving public assistance. Participants reported that programs, both treatment programs as well as criminal justice system, often gave classes on finances and budgets. Several thought that these classes were not useful as managing finances was not a problem. One participant thought it would be useful if programs or DOC would help inmates get the necessary paperwork for going to work (ID cards, etc.) before leaving prison.

Coworkers were sometimes a source of temptation for the participants. Coworkers would often go together for a drink or use illegal substances together. The participants felt they couldn't get to know their coworkers because they wanted to stay away from this type of activity or they sometimes relapsed with coworkers.

Housing

Several of the participants were still in the residential phase of the community TC so received housing or access to subsidized housing because of the program. Participants often did not like their roommates or area in this type of housing, or relapsed with roommates. Only one person moved back to the same house where he was living prior to recent prison sentence; all others found new housing. All said that having a criminal record was not an impediment to getting a house or apartment, although one participant admitted to renting from a place that was known for not requiring background checks. Some participants returned to old neighborhoods and this seemed problematic, whereas other participants made conscious efforts to live in new neighborhoods.

Social Support

Significant Other. All but one of the participants with failed outcomes had a significant other and these significant others also used substances. Thus the participants did not have significant other support against relapsing. Only one of the participants with a successful outcome was seriously involved with someone. This significant other was supportive of the participant's sobriety. All of the others with successful outcomes were not involved with anyone at this time. Several of them claimed that they didn't want to get involved until they were sure of their own recovery. Within programs and prison, participants were told that they should not be with others who were not being sober. Overall, it seemed that the participants did not think the programs spent much time on relationships within the programs. However, it also seemed that participants were also not willing to discuss these issues. One participant was regressed to prison because he was breaking the TC rules about seeing a woman who was using substances; another person did not bring up his concerns because he did not think the program would do anything.

Family. For participants who are interacting with family members, nearly all said that family provides support, even if the family members are also substance abusers. The participants often don't give concrete examples of the type of support they are receiving. The participants with failed outcomes tend to have overall less support than the participants with the positive outcomes. Some participants speak of the treatment programs providing help to reconnect with children. Some family members would attend family days in programs, others would not.

Friends. Nearly all participants said that programs discussed with them the need to find friends and acquaintances who were not substance abusers. Although participants tended to agree with this, they seemed to not know how to develop such friendships. Some discussed using churches or treatment groups to find friends, but were often not able to do so. Some returned to old neighborhoods and the same friends whereas others made conscious effort to not return to the same neighborhoods and to avoid old friends. Some of the failures relapsed with friends, whereas others discussed their isolation and how they used alcohol or drugs when alone. A strong relationship between support from friends and relapse did not seem to exist. That is, for both successful and unsuccessful participants, some had sober friends and some had substance abusing friends.

Treatment

All of the participants received some type of treatment even if they were not in the treatment groups. The control participants received lower levels of treatment and had not participated in a TC. All of the participants who had negative outcomes believed treatment is not useful, had a difficult time adjusting to the high level of confrontation in the program or did not want to fully engage in the treatment program. There were two people who had positive outcomes who did not believe that treatment was instrumental in their success. Both of these participants believed that change needs to be an internal decision and that each person must fully decide to change if the change is going to be long lasting. Three of the participants with successful outcomes believed that treatment was useful, even if they received low levels of treatment. They seemed to be using the resources available to them to stay sober and crime free.

For participants who attended treatment, both the successful and unsuccessful, there was much discussion about the difficulty in adjusting to the high levels of confrontation of the programs. The unsuccessful participants tended to find ways to just get along in the program whereas the successful participants eventually saw the need for the program to be the way it was. Participants discussed the difficulties that transitions between one stage to another brought.

Motivation for change

Many of the participants, both with successful and failed outcomes, seem to think they needed prison to get straight. Prison time provided them the opportunity to get their life under control and be able to change when they are out. The successful participants viewed their latest prison experience in this way, whereas those with failed outcomes were viewing their current reincarceration in this way. Like prison, treatment, community corrections, or parole often provides a structure for people. It seemed as if many participants needed the structure to maintain their sobriety. As the structure allowed more freedom, then participants begin make poor choices about substance use and criminal behavior.

Many of the successful participants talked about their recovery in terms of "one day at a time". Thus they seemed to commit to their recovery for this day and wait and see what the future brought. They renewed their sobriety commitment each day. In contrast, the participants with failed outcomes often seemed like they wanted to test their recovery. They believed that they can drink or use socially or that they would be okay if they just drank or used at home. However, once they started using alcohol or drugs they could not stop.

Participants who were more internally motivated appeared to have better outcomes than participants who had more externally reasons for change (e.g., doing it for children, doing it to stay out of prison).

Discussion

Common Themes

Although it is difficult to make broad generalizations about treatment from interviews with only 10 participants, there are some themes that were common across the participants that suggest areas for future research or for treatment programs to consider. Most participants found something beneficial about a treatment program; however, there was no one thing that seemed to stand out as the most beneficial across multiple participants. In general it seemed that prison or program structures were beneficial in helping people to organize life and to remain sober. Transitions to differing levels of freedom (e.g., prison to community, community to parole) led to high risk periods. Future studies might explore how structure helps people to stay sober and crime free and if there are ways to help participants make these transitions.

Participants often found it difficult to adjust to the high confrontation level of the TC programs; however, they felt that once they adjusted to the program they benefited from that type of interaction. This may suggest that orientation periods need to be strengthened to help clients make the transition into the program. It also reinforces the notion that these programs need to be of long duration so that participants may get the most from the program.

Another area that seemed particularly relevant to treatment programs is the difficulty participants have in meeting new people who can support a drug-free, crime-free lifestyle. Participants seemed to understand that this was important but had difficulty with developing new relationships. This could be due to poor social skills of the participants, discomfort with

revealing background to new people, inability to know how to make friends, living situations where it is easy to return to former acquaintances or being in high-risk neighborhoods. It was common for participants to be isolated from others and this isolation sometimes led to relapse. Reasons why these problems occur need to be further explored and possible interventions or strengthening of programs in this area can be investigated. It is also important that programs strengthen interventions with family members as participants often return to significant others and family members who may have similar problems.

Internal locus of control and motivation also seemed to be relevant factors for these participants. Participants with higher levels of internal control seemed to have more positive outcomes than those with external control. Although study 1 only showed weak relationships between readiness to change or motivation and outcomes, this variable seemed important for the participants in study 2. This may be a factor that can be used to screening participants for admittance into the program. These participants seem to be better able to use resources to remain out of prison. However, the weak relationships in study 1 may be an artifact of measurement difficulties.

Limitations

Because only a small number of participants are used in this study, the results can be highly specific to the sample studied. Although efforts were made to match participants to the larger population of inmates who are eligible for TC treatment, there were some differences. Most of our clients were single. There were two married clients although one of the clients was not able to be with his wife and children as the wife had a criminal background. Thus our clients may be unique in that they do not have a support system of a family that they return to when they leave prison.

Interviewing methods are often problematic because of the biases of the researcher or the biases of the participants. We attempted to reduce biases of the researcher by using multiple interviewers, having multiple reviewers of the case report including the participant. We also attempted to reduce the biases of participants by also gathering a significant other report, giving a follow-up interview to review potential differences, using collaborating information such as official data, and providing confidentiality. Initially we had tried to include interviews from case workers and parole officers but found that the knowledge about the client's personal life was often very limited, thus we did not continue with these interviews.

This case study approach was a redesign of the original proposed research study. In the original study we were to follow over 200 participants and give interviews (shorter in duration than the case studies but asking similar questions) and use official data (e.g., arrest data, reincarceration data) to look at outcomes. However, we had major difficulties in hiring and retaining field researchers. After many months of hiring, training, starting data collection and then losing the field researchers so that we had to start over, we redesigned the research study so that we did the current study with two components: using a larger sample with only official quantitative data and using a smaller sample with more in-depth interviews. We feel that the study with the official data gives a good overview of the effectiveness of the programs and that the case study project allows for some in-depth data to develop additional hypotheses.

Project Conclusions

Overall, the results indicated that long-term intensive residential TC treatment providing a continuity of care as inmates transitioned from prison to the community can produce strong reductions in recidivism over a two-year period. Contrary to previous research, this study did not show any participant characteristics to be strong predictors of recidivism. The case studies indicate that programs offer benefits to participants however strengthening treatment in developing social support may help to reduce recidivism. Additionally, internal motivation rather than external motivation seems to be an indicator of positive outcomes although the quantitative data only provide weak support for this conclusion.

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Appendix A

Outcome Analysis: Pairwise Comparisons

Group	1-Yr Outcome	1	2	3	4	5	2-Yr Outcome	1	2	3	4	5
(1) Both	Return to prison		✓	✓	✓	✓	Return to prison		✓		✓	✓
	Tech. viol.			✓	✓	✓	Tech. viol.			✓	✓	✓
	Misd. arrest				✓	✓	Misd. arrest			✓	✓	✓
	Fel. arrest				✓		Fel. arrest					
	Sup. failure		✓	✓	✓	✓	Sup. failure		✓	✓	✓	✓
(2) Peer I	Return to prison	✓			✓		Return to prison	✓			✓	
	Tech. viol.			✓	✓	✓	Tech. viol.			✓	✓	✓
	Misd. arrest						Misd. arrest				✓	✓
	Fel. arrest				✓	✓	Fel. arrest				✓	
	Sup. failure	✓					Sup. failure	✓			✓	
(3) ACC +	Return to prison	✓			✓		Return to prison				✓	
	Tech. viol.	✓	✓				Tech. viol.	✓	✓			
	Misd. arrest						Misd. arrest	✓			✓	✓
	Fel. arrest						Fel. arrest					
	Sup. failure	✓			✓		Sup. failure	✓			✓	✓
(4) ACC -	Return to prison	✓	✓	✓			Return to prison	✓	✓	✓		✓
	Tech. viol.	✓	✓				Tech. viol.	✓	✓			
	Misd. arrest	✓					Misd. arrest	✓	✓	✓		
	Fel. arrest	✓	✓				Fel. arrest		✓			
	Sup. failure	✓		✓			Sup. failure	✓		✓		
(5) Controls	Return to prison	✓					Return to prison	✓			✓	
	Tech. viol.	✓	✓				Tech. viol.	✓	✓			
	Misd. arrest	✓					Misd. arrest	✓	✓	✓		
	Fel. arrest		✓				Fel. arrest					
	Sup. failure	✓					Sup. failure	✓		✓		

Note. ✓Indicates statistically significant differences between groups at a .05 significance level.

Appendix B

Survival Analyses

This section presents the results of the survival analysis on each outcome variable. Table B1 gives the mean survival time for each group for each variable with corresponding standard error and percentage of cases which were censored. Table B2 gives the results of group pairwise comparisons on the mean survival time using the log rank statistics.

Table B1 *Summary Statistics for 1 year and 2 year Survival Times on each Outcome Variable*

	1 Year Outcomes			**2 Year Outcomes**		
Group	*Mean Survival Time (days)*	*SE*	*% Censored*	*Mean Survival Time (days)*	*SE*	*% Censored*
Supervision Failure						
Both	324	16.5	77	549	5.0	55
Peer I	281	11.8	54	431	26.1	32
ACC completers	270	10.3	57	436	22.1	38
ACC noncompleters	231	8.7	41	336	16.8	21
Control	234	9.1	45	352	18.2	28
Return to DOC						
Both	334	14.0	81	580	39	61
Peer I	296	10.9	63	486	26.1	44
ACC completers	297	8.6	65	505	20.8	50
ACC noncompleters	272	7.8	54	437	17.2	38
Control	263	8.2	52	423	18.3	38
Technical Violations						
Both	365	.25	97	707	15.6	94
Peer I	357	5.4	97	696	13.0	89
ACC completers	331	6.8	82	615	17.2	73
ACC noncompleters	319	6.3	78	582	15.2	67
Control	303	7.4	72	549	17.4	64
Misdemeanor Arrests						
Both	354	10.0	94	695	24.6	90
Peer I	345	6.9	87	640	19.4	75
ACC completers	329	7.4	83	618	27.4	73
ACC noncompleters	310	6.9	73	554	16.0	60
Control	314	6.9	76	562	16.4	61
Felony Arrests						
Both	360	5.0	97	690	20.2	84
Peer I	350	6.4	92	677	16.1	81
ACC completers	341	6.0	92	677	16.1	81
ACC noncompleters	332	5.3	82	612	13.6	71
Control	336	5.2	85	628	13.4	74

Table B2
Pair-wise Comparisons in Mean Survival Times

	Group						Group				
1-Yr Outcomes	**1**	**2**	**3**	**4**	**5**	**2-Yr Outcomes**	**1**	**2**	**3**	**4**	**5**
Return to DOC						***Return to DOC***					
1: Both		=	=	>	>	1: Both		=	=	>	>
2: Peer I	=		=	=	>	2: Peer I	=		=	=	=
3: ACC completers	=	=		>	>	3: ACC completers	=	=		>	>
4: ACC noncompleters	<	=	<		=	4: ACC noncompleters	<	=	<		=
5: Control	<	<	<	=		5: Control	<	=	<	=	
Technical Violations						***Technical Violations***					
1: Both		=	>	>	>	1: Both		=	>	>	>
2: Peer I	=		>	>	>	2: Peer I	=		>	>	>
3: ACC completers	<	<		=	>	3: ACC completers	<	<		=	>
4: ACC noncompleters	<	<	=		=	4: ACC noncompleters	<	<	=		=
5: Control	<	<	<	=		5: Control	<	<	<	=	
Misdemeanor Arrests						***Misdemeanor Arrests***					
1: Both		=	=	>	>	1: Both		=	>	>	>
2: Peer I	=		=	>	>	2: Peer I	=		=	>	>
3: ACC completers	=	=		>	=	3: ACC completers	<	=		>	>
4: ACC noncompleters	<	<	<		=	4: ACC noncompleters	<	<	<		=
5: Control	<	<	=	=		5: Control	<	<	<	=	
Felony Arrests						***Felony Arrests***					
1: Both		=	=	>	=	1: Both		=	=	=	=
2: Peer I	=		=	>	=	2: Peer I	=		=	=	=
3: ACC completers	=	=		=	=	3: ACC completers	=	=		>	=
4: ACC noncompleters	<	<	=		=	4: ACC noncompleters	=	=	<		=
5: Control	=	=	=	=		5: Control	=	=	=	=	
Supervision Failure						***Supervision Failure***					
1: Both		>	>	>	>	1: Both		>	>	>	>
2: Peer I	<		=	>	>	2: Peer I	<		=	>	>
3: ACC completers	<	=		>	>	3: ACC completers	<	=		>	>
4: ACC noncompleters	<	<	<		=	4: ACC noncompleters	<	<	<		=
5: Control	<	<	<	=		5: Control	<	<	<	=	

=Indicates no statistically significant differences. > Indicates mean survival for row group is significantly larger than mean survival for column group. < Indicates mean survival for row group is significantly smaller than mean survival for column group. Shading indicates a comparison of a group with itself.

Appendix C

Post-hoc Comparisons for Additional Recidivism Results

The Both and Peer I only groups include participants who have completed the residential phase, not all who entered the program.

Group	1-Yr Outcome	1	2	3	4	5
(1) Both	Return to prison			✓	✓	✓
	Tech. viol.			✓	✓	✓
	Misd. arrest				✓	✓
	Fel. arrest					
	Sup. failure			✓	✓	✓
(2) Peer I	Return to prison				✓	✓
	Tech. viol.				✓	✓
	Misd. arrest				✓	✓
	Fel. arrest					
	Sup. failure				✓	✓
(3) ACC +	Return to prison	✓				
	Tech. viol.	✓			✓	
	Misd. arrest					
	Fel. arrest					
	Sup. failure	✓			✓	
(4) ACC -	Return to prison	✓	✓			
	Tech. viol.	✓	✓	✓		
	Misd. arrest	✓	✓			
	Fel. arrest					
	Sup. failure	✓	✓	✓		
(5) Controls	Return to prison	✓	✓			
	Tech. viol.	✓	✓			
	Misd. arrest	✓	✓			
	Fel. arrest					
	Sup. failure	✓	✓			

✓ indicates a statistically significant difference at a .05 significance level

Appendix D

Wage Data Analysis

Earnings information was gathered from the Colorado Unemployment Benefits System through the Department of Labor database. This database records earnings as a total by quarter and earnings are attained by querying a social security number. Because participant trigger dates did not fall cleanly at the start of any quarter, earnings for the nine quarters after the trigger date were totaled to obtain earnings for the entire 2 year follow-up period.

There was a major problem with the quality of this data. A substantial portion of the sample (30%) had no wage data at all and about 50% of the sample had no data in any given quarter. Thus the analyses for this variable are based on data from only 20% of the participants. This source of data may be inaccurate or it may be an indication that either this population is not working or is getting paid cash but not paying taxes. The analyses are reported here; however, caution should be used when interpreting the findings.

Results

To investigate treatment effectiveness the groups were compared on the wage data across the study period (9 quarters). Participants were classified as having successful or unsuccessful outcomes at both one year and two years. To look at the effects of treatment on wages, 5 (treatment group) x 2 (outcome status: successful or unsuccessful) x 9 (quarter) repeated measures ANOVAs were completed on wages for both one year and two year outcomes. Data was recorded for all 9 time periods when looking at both one year and two year outcomes. Table D1 and Figures D1 and D2 give the results for one year outcomes, while Table D2 and Figures D3 and D4 give the 2 year outcomes.

Table D1. Wage Data Results with 1 Year Outcomes

Factor	**df_{IV}, df_{error}**	***F***	***p***	η^2
Group	4, 538	6.41	<.001	.04
Supervision failure	1, 538	26.98	<.001	.05
Group by failure	4, 538	1.40	.23	.01
Quarter	8, 4304	10.10	.002	.02
Quarter by group	32, 4304	1.30	.28	.01
Quarter by failure	8, 4304	6.23	.01	.01
Quarter by group by failure	32, 4304	.79	.80	<.01

$MS_{within\ error}$ = 4,056,634; $MS_{between\ error}$ = 3,690,474

When examining the effect of treatment on wages when classifying people as successful or unsuccessful at the end of 1 year outcomes, there were significant main effects of treatment group, outcome, and time, as well as a significant interaction between time and outcome status. Follow-up tests for the group effects showed that the ACC completer group (*M* = $1,738, *SE* = 158) had higher wages than all other groups. There were no other significant group differences. Additionally, the successful participants (*M* = $1,542, *SE* = 111) had higher wages than the unsuccessful group (*M* = $479, *SE* = 172). Follow-up tests of the main effect of quarter showed

that overall, income increased each quarter. To better understand the interaction between outcome and time, simple main effects were completed comparing quarterly income for each outcome group. For the unsuccessful group, wages did not significantly change from one quarter to the next, $F(8, 531) = .51$, $p = .85$, $\eta^2 < .01$. However, for the successful group, wages increased significantly for each quarter through the fifth quarter, then leveled off and started to have significant decreases each quarter for the 7th through 9th quarters.

Figure D1. Wages for Successful Participants at 1 Year

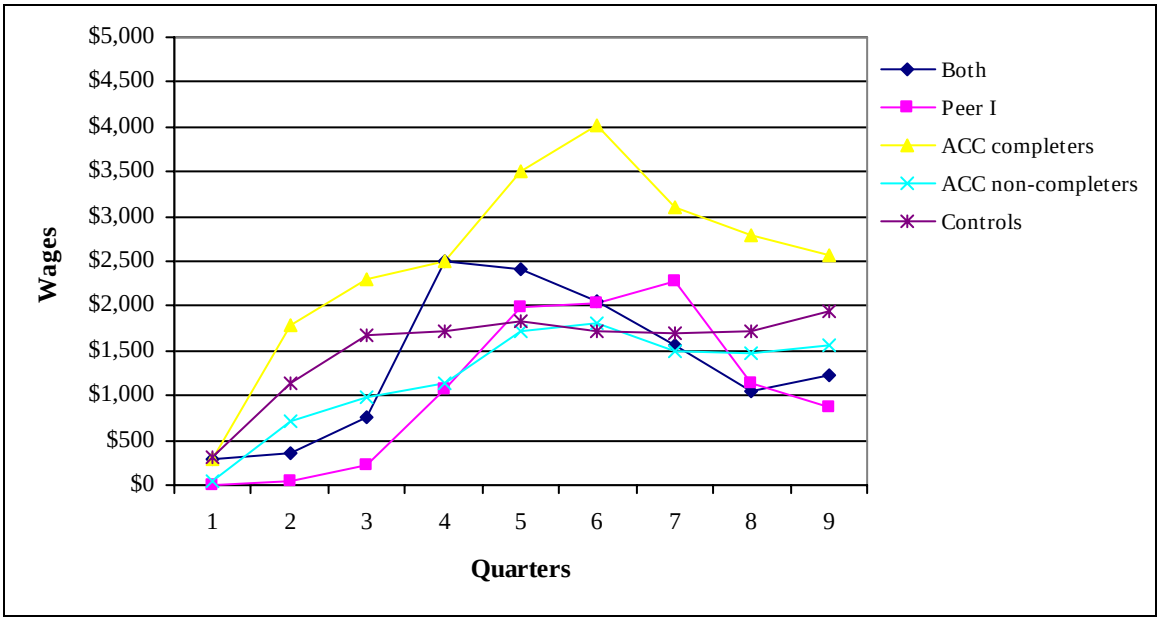
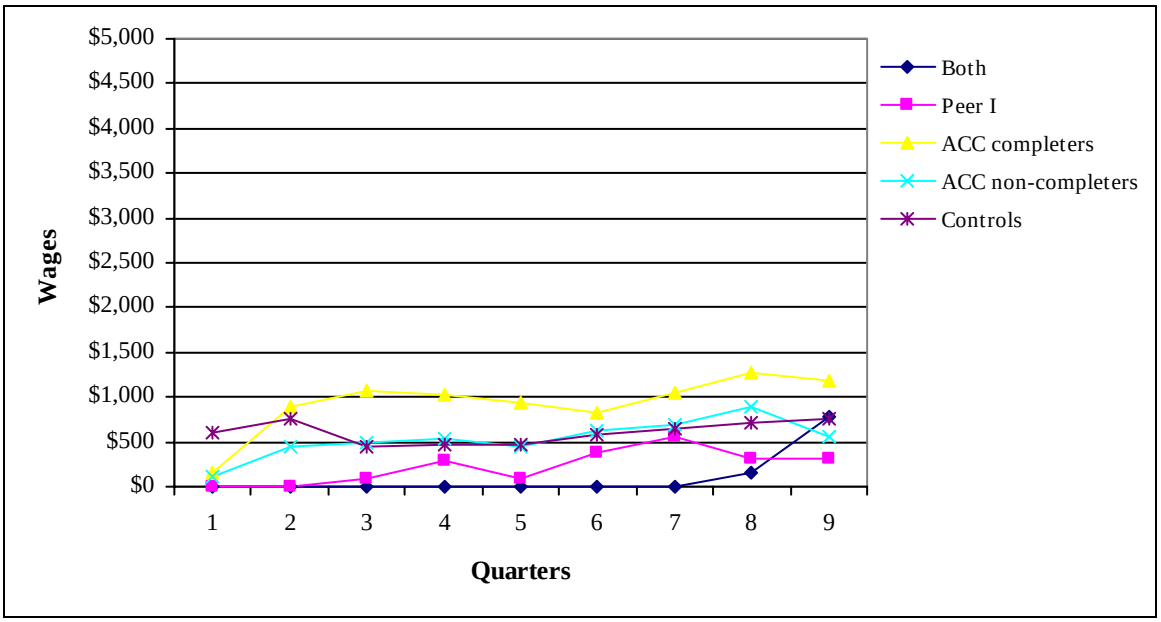


Figure D2. Wages for Unsuccessful Participants at 1 Year



For the 2nd year outcomes there were significant main effects of group, outcome, and time as well as significant interactions between time and both group and outcome variables. Follow-up tests for the significant effects were completed. Two year outcomes were similar to 1 year outcomes in that that the ACC completer group (*M* = $2,085, *SE* = 152) had higher wages than all other groups; the successful participants (*M* = $1,776, *SE* = 136) had higher wages than the unsuccessful group (*M* = $754, *SE* = 123); and the time effect shows that overall income increases each quarter.

Table D2. Wage Data Results with 2 Year Outcomes

Factor	**df_{IV}, df_{error}**	**F**	**P**	**η^2**
Group	4, 538	8.86	<.001	.06
Outcome	1, 538	31.19	<.001	.06
Group by Outcome	4, 538	2.19	.07	.02
Time	8, 4304	23.36	<.001	.04
Time by Group	32, 4304	2.34	<.001	.02
Time by Outcome	8, 4304	12.90	<.001	.02
Time by Group by Outcome	32, 4304	1.33	.10	.01

$MS_{within\ error}$ = 3,970,146; $MS_{between\ error}$ = 2,564,857

The interaction between time and outcome was slightly different for 2 year outcomes compared to the 1 year outcomes. For the unsuccessful group, wages did significantly change from each quarter up to the third quarter and then leveled off; whereas in the successful group, wages increased significantly for each quarter through the fifth quarter, then leveled off for the remaining quarters.

The interaction between time and group was an additional significant effect in the 2 year outcomes. Follow-up tests for this analysis show that the ACC completer group had increasing wages through the 6th quarter, these wages are higher than the other groups in most quarters, and that the discrepancy between this group and the others tends to increase over time. There are few differences between the other groups at each quarter.

These findings between the successful and unsuccessful groups are not surprising in that if you return to prison then wages will not increase. The lack of higher wages for the Peer I groups may be an artifact of participants not being able to work while they are in the orientation phases of the program. However, it is possible that the higher wages of the ACC completer group are helping these participants to attain positive outcomes.

Figure D3. Wages for Successful Participants at 2 Years

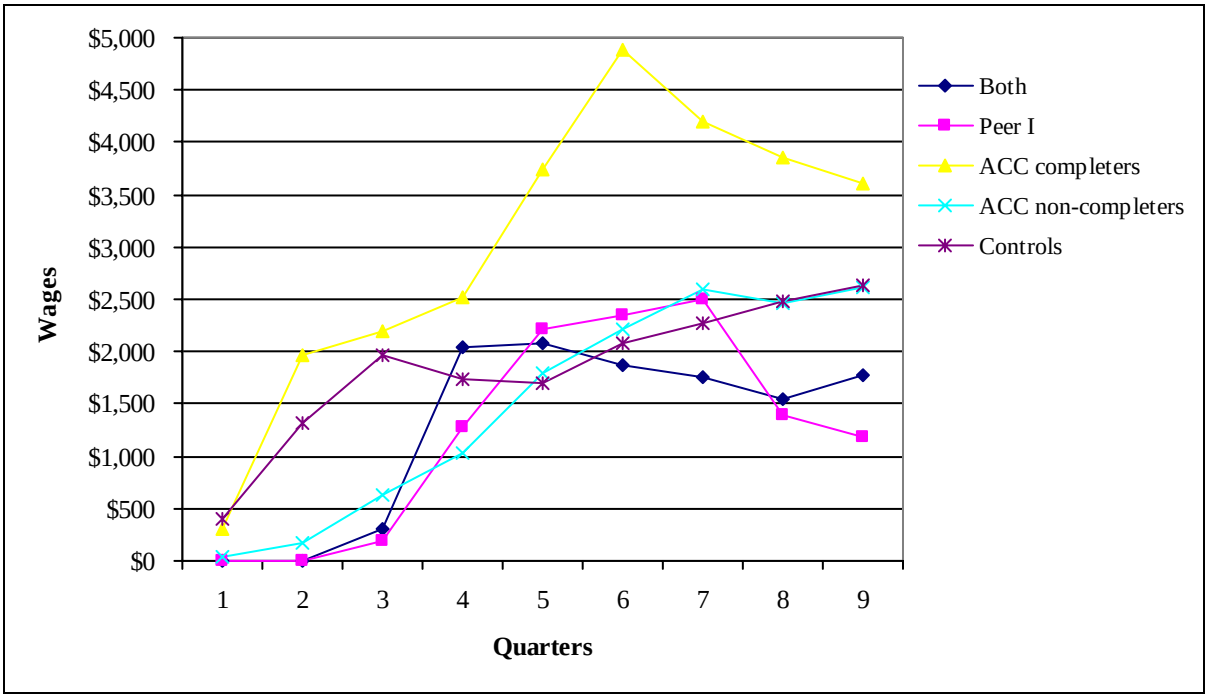
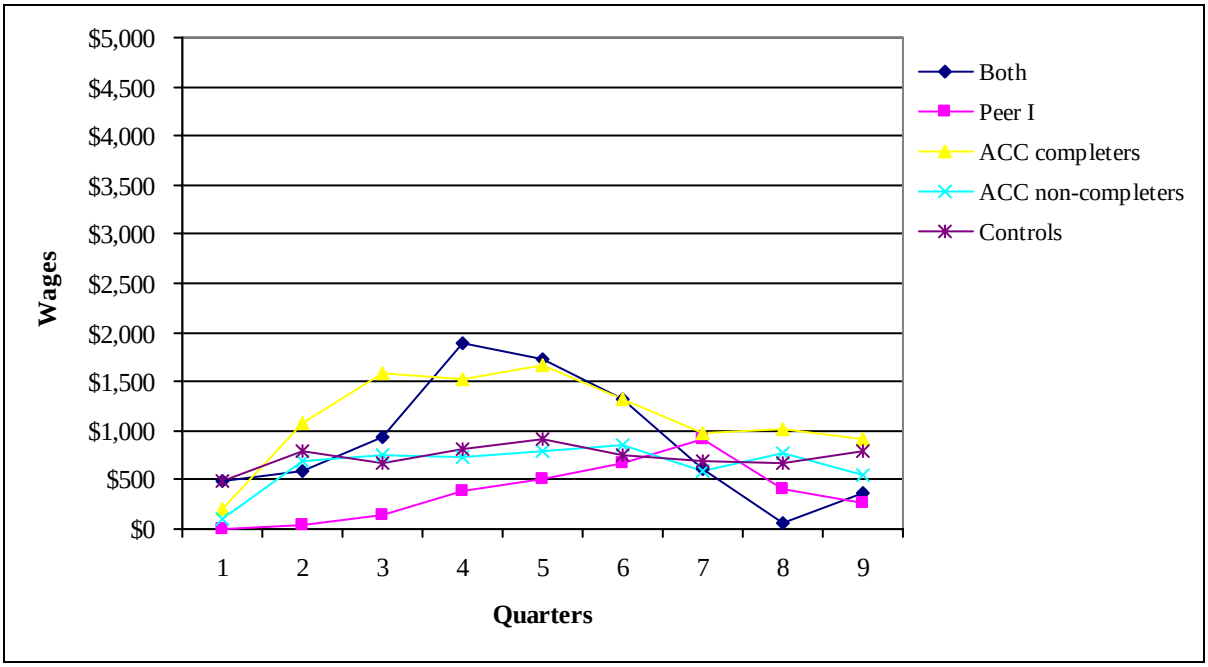


Figure D4. Wages for Unsuccessful Participants at 2 Years



The strongest predictor of wages was length of time remaining out of prison; nonetheless, the prison TC appeared to have a positive impact on wages. Although it is difficult to separate the effects due to longer times out from the treatment effects, participants who were successful in the prison based program and did not go to the community based program had higher wages than

all the other groups. It may seem surprising that those in the community-based TC did not do better on wages; however, part of the reason why this may be so is that participants in the community-based TC cannot start working until the transition phase of the program. Because the wage period included time periods while participants were completing this phase of the program, these groups essentially had reduced length of times that participants could be employed.