Treatment Matching for Reentering Substance-Abusing Offenders: A Novel use of Latent Class Analysis

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ABSTRACT

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Matching offenders to appropriate treatment interventions is important for the provision of an effective continuum of care. Although prior research has conceptualized substance abusing offenders as a heterogeneous population, little research has attempted to utilize typological assessments to determine whether certain "types" of substance-abusing offenders are better suited for a particular style of intervention. The current study used a sample population of offenders released from New Jersey prisons to halfway house interventions. Based on assessments administered prior to halfway house admission, a set of intervention groups were established using Latent Class Analysis (LCA), which identified several classes or "types" of substance abusing offenders. The resulting classification was then utilized to identify specific responsivity among four program orientations: Therapeutic Community, 12-Step, Cognitive-Behavioral, and Rehabilitation programs. A proposed matching strategy was identified for class-program interactions based on Cox regression model findings. Policy implications describe extensions of the study methodology and resource allocations for substance-abusing offender populations in need of community interventions.

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I. Introduction

In spite of widespread evidence identifying the effectiveness of substance abuse interventions (Prendergast et al., 2002; Taxman, 2000), evaluation research makes continual attempts to detect what style/modality of intervention is most effective. Several studies have attempted to identify the most effective intervention by comparing outcomes of several styles/modalities of treatment (Holloway, 2006; Mitchell, et al. 2006; Holloway, 2006; Pearson and Lipton, 1999, Prendergast et al., 2002). Within many empirical examinations of differing treatment interventions it is a common finding that both experimental and control interventions decrease substance abuse symptoms, however a lack of significant differences between treatment types fail to detect positive effects of any one intervention. One possible reason given for this detection difficulty is the inefficient matching of intervention participants. Many treatments may be effective to some degree; however, certain interventions may be more effective for particular participants with a specific set of characteristics.

Despite their widespread use, evaluations of halfway house programs have been relatively rare in the past two decades (Seiter and Kadela, 2003). Each year in New Jersey thousands are released from prisons and placed in halfway house facilities. Once released, offenders may be placed in any one of 16 different halfway houses currently operating within New Jersey. Halfway houses in New Jersey are not required to operate under a single treatment philosophy, and thus provide differentiated intensities and types of service. Substance-abusing offenders assigned to halfway houses vary greatly with regard to services needs, such as:

treatment type, educational/vocational training, and medical services. Despite these variations, very little consideration is given to the type and style of halfway house intervention individuals are placed within. Understanding how to match substance-abusing offenders to the most appropriate intervention is essential and would no doubt increase the effectiveness of correctional rehabilitation.

Linking substance-abusing offenders to treatments that are responsive to their needs and learning abilities should benefit both the offender and community by decreasing substance abuse symptom severity, relapse, and recidivism. The current study attempts to create and explore the utilization of a classification technique that may improve rehabilitative efficiency by matching substance-abusing offenders to the most effective halfway house intervention. This study will used pre-placement assessment data gathered on substance-abusing offenders to create a typological assessment of halfway house participants. The constructed typology was linked with subjects' intervention participation to identify whether a given class or "type" of substance-abusing offender performs better/worse in a given halfway house.

1.1 Study Overview

A sample of substance-abusing offenders who participated in a New Jersey halfway house facility was collected. Under the continuum of care procedures, outlined by the NJDOC, substance-abusing offenders receive a graduated supervision and treatment regimen. More specifically, the continuum refers to a gradual reduction of supervision and treatment intensity during the rehabilitative process where offenders typically complete in-prison Therapeutic Community treatment, are transferred and evaluated at an assessment center, then placed in a

halfway house intervention followed by parole supervision before being released from correctional oversight.

The current study subdivided a sample population of substance-abusing offenders into a set of intervention classes based on response patterns to screening and assessment items collected prior to halfway house admission. This subdivision was performed using Latent Class Analysis (LCA), a statistical technique utilized for typology generation. Essentially, LCA categorizes a theoretically heterogeneous sample population into smaller intervention classes.

Following the classification of subjects, the study explored the utility of the created typology as a matching strategy for halfway house participants. As halfway house interventions vary considerably, differential effectiveness was anticipated; it was hypothesized that offender variations interact with halfway house provisions. Based on the created typology, classes or "types" were evaluated based on prison returns (or failure) following halfway house admission. Comparisons of interventions further illustrate a post hoc assessment of potential gains using a latent class matching strategy.

The study provided three key outcomes. First, a typological classification for substance-abusing offenders was identified. Second, differential effectiveness of halfway house interventions and programs are examined. That is, each halfway house was explored for overall effectiveness with all substance-abusing offenders, which provided a general assessment of program effectiveness with regard to offenders' days-to-return. This outcome was integral to the creation of the matching procedure as it is necessary to first know which intervention is most (or least) effective with all substance-abusing offenders in order to then match offender

classes to those interventions in which they will have the highest probability of success. Finally, and most importantly, the study provided a needed service, indicating a matching strategy for the substance-abusing offender population entering halfway house interventions.

1.2 Dissertation Overview

Chapter 2 examines the needs and deficits of substance abusers currently seeking treatment in the criminal justice system. Chapter 3 reviews the literature of matching and responsivity and provides an overview of key concepts and terms. Chapter 4 outlines the methodology, providing the study hypotheses, research design, concepts, operationalization, analytic plan and design and implementing issues. Subject and intervention descriptives are presented in Chapter 5. Chapter 6 provides the Latent Class Analysis results including post-hoc class profiles. Chapter 7 presents bivariate results from program, class and return outcomes. Chapter 8 presents the study interaction models and the proposed matching guidelines. Finally, Chapter 9 provides a discussion of the study findings, including: hypothesis testing, study limitations, future research and study limitations.

II. Substance Abuser and Treatment in the Criminal Justice System

In the last 25 years the United States has witnessed substantial increases in prison populations nationwide (Belenko, 2006). Researchers, scholars, prison administrators and many others have attributed much of this increase to heightened sanctions for drug law violations and drug related crimes (Belenko, 2006; Caulkins and Chandler, 2006; Festinger et al., 2002; Mackenzie, 2000; Marlowe, Patapis and Dematteo, 2003; Mumola, 1999). As a result of this trend, each year thousands of inmates leave correctional facilities and return to their communities in need of substance abuse treatment.

The increased flow of offenders into community settings creates new issues for communities, now forced to reintegrate a much larger population of released offenders. Gaining considerable attention during the last decade, investigations of reentry attempt to examine how offenders reintegrate into a community following their release from prison (and other incarceration types). To address reentry increases in substance-abusing offender populations, researchers and policy planners have attempted to identify and utilize treatments, and other interventions, which aid offender reintegration. As the following chapter will demonstrate, this research has identified key interventions effective for the treatment of substance-abusing offenders.

2.1 Reentry and Substance Abuse

To counteract the high recidivism rates of reentering offenders, corrections officials made concentrated efforts to create rehabilitation programs to address the specific needs of offender populations. Substance abuse treatment provided to

offenders within prison became a new and an increasingly attractive remedy (Belenko, 2006; Butzin, Martin, Inciardi, 2005; Mears, 2002). Although on the surface it appears a plausible solution has been identified (i.e. utilizing treatment interventions to prevent recidivism), a necessary condition of this solution is that the intervention provided be responsive to offenders' needs. That is, *how* do we treat substance-abusing offenders? While effective treatment interventions have been identified (MacKenzie, 2000; Mitchell, Wilson and McKenzie, 2006; Pearson and Lipton 1998; Prendergast et al., 2002), many are validated on specified offender populations in controlled environments. However, when these interventions are replicated in different populations, across time, in different locations, and in natural environments, they are often found to be less effective or even ineffective in preventing negative outcomes such as recidivism (Miller, Zweben and Johnson, 2005). One reason cited for the lack of generalizability is "net widening" with regard to the types of substance-abusing offenders treated within correctional environments.[1] More specifically, as the availability and use of substance abuse treatment within corrections has increased, the type of offender defined as "in need" of treatment has expanded. Hence, an additional problem emerged; how to address the heterogeneity of service needs for substance-abusing offenders?

Much like other special offender populations (i.e., mentally ill, physically disabled, elderly, HIV positive), substance-abusing offenders are typically treated as a single population in need of special attention, intervention, and rehabilitation. Until recently substance-abusing offenders have been classified as a homogeneous group of

[1] It should be noted that several rationales have been given for this phenomenon, including sample characteristics and researchers desire to show positive findings. Though other rationales may provide insight into the phenomenon's existence they are not the focus of the current study and will not be explored further here.

offenders where their common identity and needs were classified on a single dichotomous outcome: *absence of need* verses *need* for substance abuse treatment (Falkin and Prendergast, 1994). The increasingly apparent problem for correctional service providers is that this conceptualization ignores the variation of additional clinical characteristics among substance-abusing offenders, rendering the more common dichotomous classification no longer practical (Belenko and Peugh, 2005; Melnick et al., 2001).

One of the most common interventions for reentering substance-abusing offenders is the halfway house (Sacks et al., 2003). Sometimes referred to as "aftercare" or "community-based residential facilities," halfway houses are commonly used and attractive post-prison interventions as they are established, cost efficient solutions for correctional systems (Moos and Finney, 1995; Moos, Pettit and Gruber, 1995). These interventions are often contracted, privately managed organizations that develop on their own, providing their unique intervention style while utilizing the limited resources they are allotted. Because they develop without extensive oversight, their techniques are rarely studied and often forgotten in discussions of substance abuse treatment.

As a result, halfway houses have fewer mandates with regard to meeting correctional system needs. For state-wide correctional systems, attempting to provide substance abuse interventions to a large population of reentering prison offenders is an expensive and complicated process. The result is often a pool of community-based halfway house facilities providing a variety of services with a wide array of intervention goals, styles and directions (Gastfriend, ShaoHua and Sharon, 2000; Hser et al., 2004; Knight et al., 2006; Pelissier, Jones, and Cadigan, 2007; McLellan and

Alterman, 1991). Therefore, despite their widespread use, states have rarely developed a systematic way of designing and implementing such programs to strategically address the needs of their offenders.

A synthesis of these issues has led researchers and policy makers to conclude that a need exists to create a matching strategy that would address the varying needs of offenders being placed into community-based interventions (Moos and Finney, 1995; Taxman, 2000). The focus of this chapter is to describe the current state of substance abuse interventions and the substance-abusing populations in the correctional system, with an emphasis on prison and parole. To expand upon this concept, the heterogeneous nature of this population and its varying intervention needs were examined. Further description identifies the ways in which these issues relate to halfway house participants, the variety of halfway house treatments in which an offender may participate, and how these offenders are usually matched to such interventions. Finally, an argument will be made for the use of effective treatment matching for reentering substance-abusing offenders.

2.2 Terms, Definitions and Conceptualizations

Jargon of substance abuse, corrections and reentry terms can differ from study to study. To provide readers with a consistent description of study details, one must first define the conceptual terms to be used. The following section presents the details of study terms.

Reentry

The focus of the current study is to examine how best to plan reentry strategies for substance-abusing offenders. Although amorphous at times, reentry generally refers to the release of prisoners into the community (U.S Department of Justice, 2002). It is also used to describe the process of entering the community, which can be gradual (i.e. residential facility to parole) or abrupt (i.e. term completion or "max out"). For the purposes of the current study population, preparations for reentry occur in the prison Therapeutic Communities (TCs) and the halfway house facilities, while the actual point of reentry takes place when an offender leaves correctional residency and begins parole supervision.

Substance Abuse

There is no universally accepted definition of substance abuse. However, the most cited definition is that of the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, DSM-IV-TR, 2000), identified as a pattern of substance use leading to clinically significant impairment or distress in an individual's life. The emphasized portion of the definition is *impairment or distress*, typically viewed as the person's inability to maintain legal employment, sustain relationships with friends and loved ones, and persistent criminal justice involvement as a result of continued use and impairment.

Addiction

Addiction, dependence, and alcoholism are all typically interchangeable terms. Addiction is demarcated from abuse, to specify drug use intensities as the person's

consumption and day-to-day activities evolve. The continuum of use is generally thought to consist of three stages: social use, abuse and addiction/dependence. Three measurable factors are also present: tolerance (taking an increased amount to obtain a previously achieved effect), withdrawal (physical dependence) and compulsion (psychological dependence). In contrast to an abuser, an "addict's relationship with the drug becomes the most important relationship in their life and all daily decisions are related to the consumption of the substance" (American Psychiatric Association, DSM-IV-TR, 2000 p. 198).

Drug Abuse Treatment

Drug abuse treatment can take on several forms, or types, including behavioral therapies (including cognitive behavioral, psychotherapy, etc.) and medication therapies (i.e. methadone, antabuse, etc.) (National Institute on Drug Abuse, 1999). Treatments for drug abusers are generally delivered through four modalities: residential, outpatient, short-term inpatient, and outpatient-methadone maintenance (Gerstein, 2004). The current study focuses exclusively on residential treatment, where offenders reside in prison and halfway house facilities where they may have received a variety of services and treatments with varying degrees of intensity.

Intervention

Intervention is a less specific term used in medical and rehabilitative literature. The most concise definition is an attempt to modify an outcome through the process of intervening, interfering or interceding (Medicine.net, 2004). Most services, products, lectures, treatments and therapies can be classified under the conceptual umbrella of

intervention. Halfway houses are conceived as an intervention as a variety of services and treatments may be provided to participants during residency.

Service

Typically seen as each individual component of a treatment or intervention, a service can be as small as a referral to a treatment agency or something as large as the administration of methadone medication. Service is an all-encompassing term typically used to describe every element that can be offered by a treatment or intervention so as to describe the possible variations between treatment and intervention programming.

Rehabilitation

Rehabilitation is the process of returning to a previous, pro-social lifestyle once known, and perhaps rejected (De Leon, 2004). Within TC conceptualization, the term *habilitation* is often favored over rehabilitation as many participants are learning mainstream norms and values for the first time. In corrections, rehabilitation typically involves the provision of interventions, services and or treatments to offenders in an attempt to return participants to society without the need/desire to commit additional offenses. For reentering substance-abusing offenders, rehabilitation can involve the provision of substance abuse treatment, vocational training, psychological counseling, and intensive supervision.

Halfway House

Halfway houses are community residential facilities established to assist prisoners leaving a highly structured institutional life by helping them reenter society

and live within its accepted norms (Ritvo and Kirk, 2004). These facilities operate within the community and usually with no security other than supervised sign-in/sign-out and curfew rules.

Residential Treatment

Residential treatment is a facility-based level of care providing rehabilitation of substance abuse and dependency 24-hours a day, 7-days a week. Also referred to as a Residential Treatment Center (RTC) they are often less restrictive than inpatient treatment and more restrictive than outpatient treatment. Depending on the services provided, halfway houses often serve as residential treatment facilities and, if contractually obligated, may provide substance abuse treatment for offenders (as they are in New Jersey).

2.3 State of Drug Treatment in Criminal Justice System

Documented increases in substance-abusing prison populations have been consistently reported for over the last two decades. Belenko (2006) reported a quadrupling of state prison populations from 1980 to 2003, resulting in a 300 percent increase over the last 20 years. This influx is a direct result of arrests, convictions and incarcerations for drug-related crimes. Increases in punishments for drug law violations are a contributor to the rise in correctional populations. Offenses such as sale/distribution, possession, school zone infractions, and even parole and probation violations are linked to a heightened use of incarceration for drug law violations (Clear, Clear, and Braga, 1997).

Beyond those arrested for drug-related crimes, the effects of drug use and addiction seeps into nearly every criminal population. Prior findings estimate over 80 percent of inmates and parolees incarcerated for drug or alcohol related offenses, were under the influence while committing their offense, use drugs regularly, and/or committed their offense in furtherance of a drug habit (Festinger, 2002). Caulkins and Chandler (2006) state, over the last two decades, the number of substance-abusing offenders incarcerated for something other than a controlled substance offense has increased at an equal or even greater rate compared to those incarcerated for a drug related offense. Furthermore, over two-thirds of inmates were using regularly in the month prior to prison admission, and one in every 144 Americans has been incarcerated for a crime in which drug and/or alcohol involvement was reported (Belenko et al., 1998).

These figures are reported not to draw attention to the overwhelming pervasiveness of substance abuse among the incarcerated, but instead to illustrate the commonality of substance abuse among this population. With the majority of incarcerated offenders having a substance abuse issue, and over half of these offenders incarcerated for something other than a controlled substance offense, one can argue that the population of offenders with substance abuse intervention needs is far from homogeneous. Therefore, intervention needs for these offenders may represent a cluster of deficits rather than a single root cause (substance abuse), such as: lack of education or legitimate employment skills, criminal thinking patterns, mental or other health issues. Offenders presenting a variety of different deficit “clusters” can prove difficult to service providers that are ill equipped to handle more than the participant’s substance abuse problem.

If one is to argue that substance abuse interventions are needed for a substantial portion of the incarcerated population, it is logical to assume that these offenders will also vary with regard to substance use severity, psychiatric and substance use treatment needs, employment and educational deficits as well as criminal risk and security issues. Hence, lumping substance-abusing offenders into a single category and into a one-size-fit-all intervention is counterintuitive.

2.4 The Array of Deficits and Needs

Conceptualizing substance abusing offenders as a single-need population may have made sense two decades ago when identified populations were relatively small (few hundred offenders in a given prison facility) and resources for treatment were minimal (Seiter and Kadela, 2003). As treatment styles and modalities evolved and as substance-abusing prison populations grew, the array of deficits and needs of such individuals became more apparent. More specifically, the need to address issues *in addition to* substance use began to be incorporated in to a variety of treatment styles (Taxman, 2000; Mackenzie, 2000).

As the overwhelming number of reentering substance-abusers became a concern, policy makers became aware of the need to address other co-occurring problems in order to provide a successful reintegration strategy (Belenko, 2006). A long-standing view amongst treatment providers is that an effective intervention should attend to the “whole person”, suggesting a need to address all needs/deficits, i.e. the employment, health, housing and other “distal needs” of an individual (DeLeon, 2000; Fiorentine, 1998; Friedmann et al., 2004; Gerstein et al., 1997; Hser et al., 2004). The

section to follow will describe several domains of offender need, including: substance use, criminal severity, mental health, medical, family, and educational/vocational.

Substance Use Severity

The most salient treatment need for substance-abusing offenders is their use/abuse of alcohol and other drugs. The logic for correctional officials is that desistance from substance use will ultimately decrease an offender's risk of recidivism. Mitchell, Wilson and MacKenzie, (2005) suggest that substance-abusing offenders who are not provided effective treatment are substantially more likely to recidivate, and therefore, any time that individual spends under correctional supervision should be viewed as a time for treatment to occur. A greater need for substance abuse treatment among criminal justice populations is commonly reported (Belenko and Peugh, 2005). Brownsberger, Love, Doherty, and Shaffer (2004) state that treatment need/prevalence is sevenfold greater in correctional populations when compared to general population estimates. Substantial evidence further suggests that drug abuse treatment can effectively reduce the likelihood of relapse and recidivism following incarceration (Friedmann et al., 2004; Gerstein et al. 1997; Hubbard et al., 1997; Inciardi; 1997; Mackenzie, 2000).

A major concern for correctional officials and treatment providers alike is the identification of offenders' substance use severity (Belenko and Peugh, 2005). Correctional assessments typically utilize a battery of actuarial tools to evaluate an individual's severity of substance abuse/addiction (Taxman, 2000; Knight et al., 1999). Assessments of substance use severity are typically multi-dimensional, gauging offenders' variations on dimensions, such as drug use frequency, drug of choice,

duration of use, age of first use, number of substances used, and problems caused by prior use. In correctional settings severity scores are often used to determine eligibility for treatment; as interventions are reserved for those offenders with the greatest need (National Institute on Drug Abuse, 2006).

Prior research on screening and assessment has found that there is a continuum of substance use severity levels, where differing intensities of addictions can be identified (Belenko, and Peugh, 2005; McLellan and Alterman, 1991; Thorton et al., 1998). The distribution and overall level of severity can impact treatment effectiveness (DeLeon, Melnick and Cleland, 2008; Knight et al., 2006; Westerber, Koele and Kools, 1998). High severity substance-abusing offenders logically have more substance use at baseline and thus have more room for improvement. Therefore, these offenders tend to demonstrate better substance use outcomes post-inetervention as they start higher on the need/risk scale and therefore have further room on said scale to fall (or improve) (Wexler, Melnick and Cao, 2004). However, many high severity offenders never achieve the results correctional officials hope to gain from substance abuse treatment (i.e., abstinence). In contrast, lower severity offenders have a greater ability to be treated and maintain abstinence. From a screening perspective it is hard to determine the difference (or threshold) between low severity treatment need and a lack of treatment need (Wexler, Melnick and Cao, 2004). In correctional populations, where treatment resources are scarce, many lower severity individuals are not provided with substance abuse treatment (Belenko and Peugh, 2005). Ziedonis and Violette (2004) suggest that neglecting to treat lower severity level offenders creates a missed opportunity for early intervention as these individuals are most likely to respond well to treatment interventions despite lower need intensity.

Thus, severity level has a practical implication for treatment delivery. More specifically, modality and styles of care can and do differ within correctional institutions and may also vary between correctional environments (Simpson et al., 1998). Whether one is speaking of minimum versus maximum-security incarceration or community-based responses (e.g., outpatient, residential) there is variation in where an offender can be placed for treatment and the amount and duration of said intervention. Currently many correctional systems utilize severity measures to evaluate treatment need, but very few use matching strategies that incorporate the distribution of drug severity levels to guide the placement of offenders to rehabilitate interventions (Belenko and Peugh, 2005). Taking into consideration substance use severity may produce better outcomes for treatment consumers and provide more efficient uses of treatment for correctional systems (Taxman and Marlowe, 2006).

Criminality

Criminal thinking patterns such as an enhanced sense of entitlement, justification, and lack of responsibility are behavior patterns that contribute to drug use and criminal behavior (National Institute on Drug Abuse, 1999). The strength of an offender's drug-crime connections has confounded researchers. An often-cited drug-crime relationship is the need to obtain money to purchase drugs in order to support an addictive lifestyle (Valle and Humphrey, 2002). However, substance use is not a necessary or sufficient cause for criminal behavior and offenders imprisoned for drug offenses are not always users themselves (which is common for sale and distribution offenses).

One rehabilitation complication for this population is that the degree of criminality is not always a one-to-one relationship with an offender's substance use severity. That is, some offenders who are high on criminality scales may be low on substance use severity and vice versa.

Figure 2.1 Spence (2003, p.177) Patient placement planning guide

		Addiction Severity	
		HIGH	LOW
Environmental Risk	HIGH	**Intensive Residential**	**Regular Residential**
	LOW	**Intensive Outpatient**	**Regular Outpatient**

Taken from Spence's (2003, p.177) Treatment Planning Model, the four-quadrant system presented in Figure 2.1 above was used to conceptualize chemical dependency treatment provisions for the state of Texas. This quadrant model is similar to the two correlated dichotomies of criminality and substance use severity. The goal of this illustration is to describe the population at hand and how the intertwining of the two issues may impact the correctional intervention system. For instance, many offenders that receive substance abuse interventions through the department of corrections are not routinely assessed to adjust for the possible changes in substance use and criminal risk. If offenders complete an intensive treatment (in-prison TC) they are assumed to have decreased their substance abuse risk and in need of lesser intensity intervention following completion. However, this is not always the case for persons with a severe substance abuse issue; research has indicated the initial treatment may not

decrease the individual's risk in either domain and an additional intensive treatment intervention may be warranted (National Institute on Drug Abuse, 1999).

Difficulties of treatment availability are also present within correctional systems. Some individuals exiting prison may be best suited for regular outpatient treatment; however, these treatments may not be available within the community they are returning to, and many offenders may not be eligible for such low security interventions. The result is that low criminal risk individuals may be forced to attend treatment interventions with high-risk offenders, which may not provide the therapeutic environment needed to create positive change.

An additional complication arises with the theoretical possibility that the two related behaviors may need examination on two correlated continuums rather than a simple quadrant model. Attempting to find an appropriate intervention for each pairing of several drug use severity and criminal levels (i.e. a Likert-type scale) can become daunting. Placement issues become further complicated with the addition of three or more offender deficits. Such is the case when considering Belenko and Peugh's (2005) conceptualization. Figure 2.2 below outlines their attempt to categorize treatment programs by combining drug use severity with additional recidivism risk factors for prison respondents of the National Inmate Survey (1995). The X-axis identifies levels of severity based on items such as: recency, type of drug, and frequency of use, the Y-axis identifies additional deficit areas with a scale of additive dichotomous measures including: legal problems, education, employment health and psychological problems.

Figure 2.2. Projected type of treatment needed by drug use severity, other problems, and drug-related consequences Belenko and Peugh - Drug and Alcohol Dependence, 77 (2005) p. 274

	# other problems					
Drug Use Severity	0	1	2	3	4	5
1 (least severe)						
1 (3+ DC)						
2						
2 (3+ DC)						
3						
3 (3+ DC)						
4						
4 (3+ DC)						
5 (most severe)						
5 (3+ DC)						

For correctional officials, selecting treatment eligible offenders is a difficult task in itself and finding the specific treatment style or modality that is appropriate for an offender's addiction severity, coupled with criminal and other risks, presents additional complications (Gottfredson and Moriarty, 2006; Knight et al., 2006; Mears, 2002).

Psychiatric Need

Substance abuse with the co-occurrence of psychiatric symptoms is another frequently presented characteristic for criminal offenders. Belenko and Peugh (2005) reported that 24 percent of state inmates have evidence of a psychological problem.

Rates of co-occurring disorders within criminal justice populations are significantly higher than in the general population (Teplin, Abram and McClelland, 1994). Peters and Hills (1997) reported that there are more mentally ill-substance-abusing offenders currently incarcerated than there are free clients receiving services in psychiatric hospitals across the country. Research has shown that offenders with co-occurring disorders can succeed in treatment, provided that the treatment is intensive enough and services are delivered comprehensively (Anglin and Hser, 1990; Falkin et al., 1992; Wellisch and Pendergast, 1995).

One major issue for treating persons with substance abuse and mental health issues is the confounding relationship psychiatric symptoms have with treatment success (National Institute on Drug Abuse, 2006). Social interaction and group treatment are techniques common to substance abuse treatments offered within correctional settings. These techniques require offenders to assist and participate in others' recovery (De Leon, 2000). Many offenders with metal health issues have difficulty with these types of techniques as psychiatric symptoms tend to exacerbate social and cognitive function difficulties experienced by these offenders (Miller, Zweben and Johnson, 2005; Peters, Kearns, Murrin and Dolente, 1992; Rubin and Gastfriend, 2001). These types of barriers prevent offenders with co-occurring issues from receiving the full effect of the treatment. Furthermore, treatment retention difficulties and high relapse rates are often found among persons with co-occurring disorders (Scott, Foss, and Dennis, 2005). To provide adequate treatment, correctional agencies often must provide added (and sometimes specialized-segregated treatment) to offenders with co-occurring disorders (National Institute on Drug Abuse, 2006; Sacks

et al., 1997). This places a heavy burden on criminal justice agencies, which already have a limited capacity without including participants with psychiatric restrictions.

Employment Barriers

Unemployment has also shown to have an impact on drug use and crime (Butzin, Martin and Inciardi, 2005). Aside from arrest records and drug testing, parole often uses employment as a gauge for rehabilitative success. Employability is typically viewed as a protective factor for recidivism (Inciardi, 1997; Laub and Sampson, 2001; McLellan and Alterman, 1991; Platt, 1995), and ranking low on employment aptitude assessments is seen as an indirect measure of re-entry failure risk.

Unfortunately, substance-abusing offenders have several barriers that prevent attainment and job retention upon re-entry. Felony offense records restrict the types of jobs they may obtain. Furthermore, released offenders typically have had little prior employment, few tangible skills, and lack education/degree requirements to obtain more profitable occupations, and rank lower than general population estimates with regard to problem solving skills (Belenko, 2006, Belenko, et al., 1998, Fiorentine, 1998, Seiter, and Kadela, 2003).

Substance-abusing offenders often present additional employment barriers. Parole officers often place restrictions on substance-abusing offenders, such as barring employment in establishments where alcohol is served, and occupy offenders' daily schedule with required attendance in interventions, including: outpatient, methadone maintenance, and Alcoholics Anonymous and Narcotics Anonymous. Furthermore, substance-abusing offenders are usually required to visit their parole officer for regular urine analysis during the workday. These constraints require that employment provide offenders with the flexibility to meet these additional scheduling demands.

Employment falling within these parameters is typically low paying and has a high turnover rate.

The highest prevalence of employment problems are typically found among those who rank the highest among substance use severity scales (Belenko and Peugh, 2005). On the positive side, substance abuse treatment alone has been shown to have an impact on the employment rates for reentering offenders. More specifically, providing drug treatment for substance-abusing offenders has shown to increase participants' outcomes in other behavioral domains, including employment. This treatment effect is buttressed when offenders are provided vocational and educational programming (Platt, 1995; Inciardi et al., 1997). However, similar to the relationship between duration in substance abuse treatment and effectiveness, educational and vocational interventions require a certain amount of attendance before discernable effects are obtained (Adams et al., 1994). Furthermore, vocational programs have to train individuals for occupations that are in demand and available. With shifting economic demands, the lack of employable skill sets, and the additional legal constraints placed on substance-abusing offenders, correctional institutions are hard pressed to create and maintain employment interventions that produce effective results. This is a difficult and often expensive endeavor for correctional programmers.

Family/Environment Issues

Family history of substance use and criminal activity is one indicator of an individual's perception of illegal behavior. Specifically, normality of drug use/abuse may be skewed if a parent or guardian commonly used addictive substances. In addition, much substance use is social, and often occurs with friends and love ones.

When an offender reenters a community or family life where addiction is present, these loved ones may be counterproductive to the offender's recovery (Rubin and Gastfriend, 2001). For recovery to occur, the environment in which the offender returns to needs to oppose the one in which his/her addiction was spawned. Otherwise relapse and recidivism are tempting alternatives to sobriety and a crime-free lifestyle.

Children represent an additional family issue for returning offenders. A substantial proportion of substance-abusing offenders have children, many of whom are minors and dependent on their care (Belenko et al., 1998). Reuniting with children and family members is a difficult task for reentering offenders. Attempting to reconnect with a child after a lengthy incarceration is often frustrating and stressful. In addition, many parents must begin providing child support and may have debts incurred during their incarceration or while attending residential treatment (U.S. Department of Health and Human Services, 2005). Parents who were once primary care providers may find their children in foster homes or housed in state sponsored group homes (Dodge and Pogrebin, 2001). In order to regain parental rights, some offenders must attend parenting programs, endure supervised visitations with their children and prove stable housing and employment for an extended period following their release. Often the completion of these processes can take months, sometimes years. Couple this with the added pressures of treatment attendance, employment, and other legally mandated tasks substance-abusing offenders are required to complete, it becomes quite difficult to reunite with their children following an incarceration. The stress and frustration associated with regaining guardianship is difficult for many parents to cope with, and for substance-abusing offenders, can provoke relapse (Travis, 2005).

Correctional agencies are well advised to intervene and provide assistance to offenders with these types of child and family environment needs. However, programming of this nature is expensive and time consuming. Legal aid, social workers, and other correctional officials are needed to inform and assist reentering populations. All of this must be combined with the offenders' current treatment program, which, depending on modality and intensity, may become a hindrance to achieving recovery.

Medical Issues

Many inmates also require medical services, not surprising given the high correlations among crime, poverty and poor health, (Anno, 1991; Belenko and Peugh, 2005; Hammett et al., 1999). Due to years of chronic use/addiction and time spent incarcerated, substance-abusing offenders are more likely to have medical issues that are in need of treatment. Infectious diseases such as hepatitis, tuberculosis, and HIV/AIDS are higher in drug abusers, incarcerated offenders, and offenders under community supervision when compared with the general population (Belenko and Peugh, 2005; Fiorentine, 1998; National Institute on Drug Abuse, 2006). Treating and managing chronic illnesses within a residential intervention can be a complicated task on its own. The amount of physician visits, referrals, medications and special facilities needed to accommodate the needs of such offenders is difficult and can be disruptive to the treatment process. Furthermore, many intensive substance abuse treatment programs utilized with offender populations (i.e. Therapeutic Community treatment) subscribe to strict drug-free policies. Mission statements of some substance abuse treatment programs state that sobriety is a necessary component of effective treatment

(DeLeon, 2000). Medications for some chronic illnesses have mind-altering psychopharmacological properties. The presence of offenders who take such medications can be a detriment to the treatment environment and are sometimes an exclusionary factor for participation.

To summarize, although a common thread exists - need for substance abuse treatment - there are an array of needs and deficits that a substance-abusing offender may possess. These variations can impact the effectiveness of substance abuse treatment and the overall impact of the rehabilitation program (Friedmann et al., 2004). Addressing each area of need for each offender is a difficult and expensive process. However, providing the successful blend of rehabilitative programming is tantamount to successful reentry and the prevention of recidivism (Hser et al., 2004).

2.5 Continuity of Care and the Need for Treatment During Reentry

The primary goal of corrections is to prevent offenders from returning to the correctional system. Belenko (2006) reported that of the substance-abusing inmates released to the community in 2002, either following a completion of their sentence or having been granted release from parole, 95 percent will relapse within three years of their release from supervision. Among this released population, over two-thirds will be rearrested, nearly half will be reconvicted, and a quarter will be sentenced to prison for a new crime (Belenko, 2006).

However, several empirical findings indicate that recidivism and drug use decrease significantly when substance abuse treatment is provided to offenders while under correctional supervision (Hepburn, 2005; Inciardi et al., 1997; Knight et al., 1997; Knight et al., 1999; National Institute on Drug Abuse, 2006; Rhodes et al., 200;

Taxman, 2000; Wexler et al., 1990; Wexler et al., 1999). Hepburn (2005) stated that there is a “treatment factor” which delays criminal activity, suggests that completion of treatment is not always necessary to achieve the desired effect, and the mere exposure to treatment has been shown to reduce the probability of future criminal activity.

Furthermore, providing offenders with aftercare programs following in-prison substance abuse treatment has been found to have the greatest positive impact (Butzin, Martin, and Inciardi,. 2005; De Leon et al., 1995; Incardi et al., 1997; Knight et al., 1997; Mackenzie, 2000; McKay et al., 2002; National Institute on Drug Abuse, 2006; Rubin and Gastfriend, 2001). Incardi and colleagues (1997) found those individuals who participated in in-prison TC treatment followed by community TC treatment and/or work release were significantly more likely to remain arrest and drug free than offenders who participated in in-prison TC treatment alone. Knight and colleagues (1997) found that the effectiveness of treatment was enhanced with the addition of aftercare. Butzin and colleagues (2005) suggest that participation in work release therapeutic communities during the transitional period between prison and community created longer lasting treatment effects, fewer incidences of relapse and, when relapse did occur, it was shorter in duration than those who did not participate in the work release program. The consistency of aftercare findings have lead the Office of National Drug Control Policy to suggest that the standard of care for those exiting TC treatment is a minimum of six months community-based after care (Office of National Drug Control Policy, 1999). These recent findings have provided evidence for many correctional systems that a *continuum of care*, from prison to the community, will achieve the greatest effects for substance-abusing offenders.

Correctional agencies (parole in particular) have known for decades that the riskiest time for recidivism and relapse occurs during an offender's transition from the prison to the community. Transitioning from incarceration to community corrections is often uncoordinated and disjointed. Parole officers may not be privy to all the services received, treatment gains and possible relapse triggers for each newly released offender on their caseloads (Taxman, 2000). For offenders, the reentry transition can be overwhelming in terms of new responsibilities, a lack of structured environment, and weakened family ties (Mears, 2002). These additional stressors can be intimidating and have the ability to erase treatment gains an offender may have achieved during his/her in-prison treatment program (Pelissier, Jones, and Cadigan, 2007). In order to reduce the effects of possible stressors during their return to free society, corrections must pay particular attention to individuals transitioning to the community so as to make reintegration as smooth as possible.

A continuum of care is outlined as a stream of treatment that takes place in a variety of institutions in a sequential and coordinated fashion (Taxman, 2000). For example, a continuum of care might begin with the screening for substance use and other needs, and once treatment need is identified, the individual is then placed within an intensive, segregated in-prison therapeutic community. This would be followed by a residential substance abuse treatment program in the community, work-release, electronic monitoring, and end in a graduated parole sentence where the offender receives moderate supervision, random urine analyses, and is required to attend self-help support meetings. The continuum of care model suggests that each stage of an offenders' incarceration (prison, community release, parole, etc.) is filled with opportunities to receive substance abuse treatment and services for other needs/deficits

(Pelissier, Jones, and Cadigan, 2007). When all correctional agencies work together, a treatment system is provided, which is designed around several stages of recovery, and where offenders decrease their risk of recidivism and relapse after the completion of each stage (Taxman, 2000).

Researchers and correctional officials who have studied and implemented systems of reentry agree that a continuum of care concept is critical to providing the offender the best available chance at reentry, producing the desired effects of rehabilitation (Aos, Miller and Drake, 2006; De Leon et al., 2000; Pelissier, Jones, and Cadigan, 2007; Inciardi et al., 1997: Seiter and Kadela, 2003). When the continuum of care is designed and implemented effectively, barriers to addiction recovery are removed and replaced with a system of support services. These services may include, but are not limited to: transitional housing, recovery homes, day care (to increase access to support meetings), sobriety-conducive employment, educational access, debt management and budget counseling, sober fellowship, as well as services traditionally offered in treatment settings, such as drug counseling, didactic drug education, Cognitive Behavioral Treatment and relapse prevention (White, 2000).

Finally, the key component of the continuum of care model is the need to make additional treatment gains at each stage (Pelissier, Jones, and Cadigan, 2007). That is, in addition to providing a continuum of treatment, the appropriately matched treatment at each stage is necessary to produce the intended effects (Swindle et al., 1995). If each treatment is coordinated to take into account the offenders' needs and risks and provides treatment in a unified modality/style of care, participants will have a greater likelihood of success (De Leon, 1995). For example, if an offender is provided TC care in-prison and then is placed in a residential TC upon release, this would make the

transfer from one stage of treatment to another easier and build upon the gains made while incarcerated. Alternatively, if an offender is provided TC treatment while incarcerated and then placed within outpatient methadone care, the contrast in treatment philosophy and delivery may create confusion and erase gains achieved within the in-prison TC treatment or produce negative effects as the offender is forced to un-learn one program's philosophy/modality and re-learn another (De Leon et al., 1995).

Typically all of the treatments and services needed to provide a continuum of care are currently being delivered in a correctional system; it is the coordination of programs and correctional agencies that needs to be constructed. Although providing offenders with such an extensive amount of treatments and services can be expensive, the net societal benefit is substantial. Belenko and colleagues (1998) identified economic gains across state correctional systems and found that inmates who received residential care, if only 10 percent of participants stay sober and work during the first year of their release; there is a positive economic return on treatment. In contrast, Mitchell, Wilson and Mackenzie (2005) found that if substance-abusing offenders are not provided such treatment, they are significantly more likely to be re-arrested.

2.6 The Role of the Halfway House

Halfway houses play a critical role in the continuum of care design. Specifically the halfway house bridges the gap between prison and community life. This venue can be viewed as a staging ground for many of the goals achieved during in-prison treatment. Lessons learned in treatment must now be applied in real world settings. Treatment at this stage in the continuum is often the most critical as relapse triggers and

other temptations reappear (Mears, 2002). For many offenders this means obtaining employment, paying arrearages and fines, returning to school, etc. (Hser et al., 2004).

When halfway houses where first created they primarily served as boarding houses or shelters, lacking treatment programs, or trained staff to either provide or refer substance abusing individuals to treatment (Moos, Pettit and Gruber, 1995). As they have grown and become more specialized, many halfway houses now provide in-house health and treatment services and connect to other agencies for additional services. For substance-abusing offenders in New Jersey, the halfway house also represents a second stage of drug treatment.

Typically substance-abusing offenders must achieve progress in several domains before successful rehabilitation is achieved (Hser et al., 2004). For individuals with long substance abuse and criminal justice histories this may require extensive services. Belenko and Peugh (2005) state that due to the educational deficits and sporadic work histories, rehabilitation requires long-term treatment and other services, complicating the transition back to the community. Relapse and recidivism risk are often high during this stage of reentry as the typical substance-abusing offender possesses few marketable skills and has limited opportunities for employment (Laub and Sampson, 2001; Platt, 1995). Unless the halfway house is prepared to address the multiple issues of the typical substance-abusing offender the risk for negative outcomes become substantial.

Mears (2002) suggests that too little attention has been given to the process of transition from institution to the community. Often, important treatment gains made during incarceration are not sustained when offenders return to the community because continuity of care is either inadequate or nonexistent. There is a great amount of

"discontinuity" that occurs in continuum of care models which is reflected in a number of service provider issues; such as duplication, under servicing, non-utilization, poor utilization, cost inefficiency and professional and agency turf problems (De Leon et al., 1995).

Effective Halfway House Components

Despite the stated obstacles, multiple studies have found that halfway houses are an effective intervention for reentering offenders with reference to post-intervention drug use and recidivism (Butzin, Martin and Inciardi, 2005; Department of Criminal Justice, 2001; Donnelly and Forschner, 1984; Dowell, Klien, and Krichmar, 1985; Mears, 2002; Moos, Pettit and Gruber, 1995; Sacks et al., 2003; Seiter and Kadela, 2003). In particular, community-based substance abuse treatment and work release for reentering offenders have shown significant positive effects (Butzin, Martin and Inciardi, 2005; Mears, 2002).

Although many exemplary halfway house programs have been identified (i.e. Inciardi et al., 1997), the difficulty in reproducing these results lies in the variation in types of treatment and services a halfway house may provide (McLellan and Alterman, 1991; Moos, Pettit and Gruber, 1995). The necessary characteristics of halfway houses are not formulated, pilot tested and implemented like many evidenced-based treatments. Moos, Moos and Andrassy (1999) found that 25 percent of halfway houses where considered undifferentiated, as they did not emphasize any specific treatment approach. Halfway houses, more generally, consist of privately-operated, community-based programs that offer at least some (to all) of a core set of services including: drug counseling, drug education, pharmacotherapy, psychotherapy, educational and

vocational services, urine analyses, and relapse prevention (Anglin and Hser, 1990; De Leon et al., 1995). Moos, Moos and Andrassy (1999) identified three general types of treatment models for substance abuse focused halfway houses: Therapeutic Community, psychosocial rehabilitation and the 12-step models. However, the amount, treatment modality, and service variety provided by each halfway house can vary greatly (De Leon et al., 1995; Gastfriend, ShaoHua and Sharon, 2000; Hser et al., 2004; Moos, Pettit and Gruber, 1995).

For instance, Inciardi and colleagues (1997) found that interventions which focus on work release as a major component of reentry, using transitional employment was the key to maintaining treatment gains. Sacks and colleagues (2003) focus on the delivery of psychological services that ameliorate the effects of co-occurring psychiatric disorders. Some halfway house facilities merely offer transitional housing while providing a less structured intervention, intermittently and without a fundamental philosophy (i.e., Evocative or Peer-Support) (Pelissier, Jones, and Cadigan, 2007). Others are constructed for high-risk offenders that aim to provide intensive supervision (Knight et al., 1999; Wexler et al., 1999). Self-help is another focus of many facilities, using foundations such as Alcoholics Anonymous and Narcotics Anonymous. Still others serve as a community-based TC (Moos, Pettit and Gruber, 1995).

Halfway House Placement

The placement of offenders is another issue surrounding halfway houses. Typically halfway houses are used by state correctional agencies to ease offenders into the community without allowing all the freedoms of parole. The decision to release an offender into these community-based facilities is guided by findings of various risk

assessment instruments, in-prison treatment progress, and duration of sentence remaining, as well as the opinions of prison administrators (Taxman, 2000). However, once the decision has been made to release the offender to a halfway house, little consideration is given to which and what type of facility the offender is to be assigned. Falkin and Prendergast (1994) reported that most criminal justice agencies do not consider an offender's drug use severity and other psychosocial problems; typically assigning offenders to an intervention primarily on the basis of criminal charges and prior record. The decision of where to place offenders (i.e. type/modality of halfway house facility) is often a subjective process driven by a first-come, first-serve approach based on program availability (Knight et al., 2006). Selecting individuals eligible for community treatment takes a significant amount of time and energy on the part of correctional employees and parole board officials; however, the location and type of facility an offender is placed within is based on the quasi-random space-availability assignment among of pool of halfway house facilities.

2.7 Summary - The Need for a Halfway House Matching Strategy

In the last two decades a large population of substance-abusing offenders has been incarcerated. Not only did this new influx of substance-abusing offenders cause strain on the resources of correctional systems, but once released, creates a substantial risk for recidivism. A promising solution for the prevention of future recidivism was found in substance abuse treatment. Despite having the commonality of needing treatment, these individuals' rehabilitative needs vary greatly. Substance abuse treatment providers have concluded that, in order to improve treatment effectiveness, rehabilitation needs to

address the “whole individual” by developing interventions and providing services addressing all the needs and deficits an offender may possess (De Leon, 2000; 1995).

Experts in the field agree, the best way to provide a lasting treatment effect to incarcerated substance-abusing offenders is to provide a continuum of care (De Leon et al., 1995; McKay et al., 2002; Taxman, 2000;). That is, in-prison intensive treatment (typically a TC modality) followed by a community-based residential facility, and graduating to decreasing levels of supervision while on parole. Although shown to be effective within a controlled environment (Inciardi et al., 1997; Knight et al., 1999; Wexler, Melnick and Cao, 2004), these exemplary continuums are often expensive and difficult to recreate on a statewide level and with a diverse participant population (Miller, Zweben and Johnson, 2005). What is typically done in most corrections continuums is to provide the intensive in-prison TC and then utilize community-based halfway house for the second stage of the continuum. The difficulty created by this system is that little consideration is given to the type of facility and individual placed, where placement decisions are often based on random (or arbitrary) availability of bed space in the given pool of interventions (De Leon et al., 1995).

Furthermore, when entering a halfway house, offenders bring to treatment different characteristics, including their addiction and treatment histories, goals of treatment, motivations, cognitive styles, social and economic statuses, support systems, and vocational and coping skills (Mears, 2002). Addressing these variations has been shown to improve post-treatment outcomes for substance use, criminality and other behavioral domains (i.e., psychiatric, family, employment, medical) (McLellan et al., 1997). Halfway house facilities possess their own unique characteristics with regard to treatment modality and services (Gastfriend, ShaoHua, and Sharon, 2000). To create an

optimal system of interventions with a goal of preventing future recidivism and substance use, the entire system should be utilized to meet that goal. Correctional systems must devise a plan to maximize the resources it has at hand to provide the best system of rehabilitation services. Given the variety of treatment types and services a given halfway house can provide and the number of services an offender may need, an argument can be made that to maximize the rehabilitative impact of the current system, one must attempt to match offenders to a style of halfway house treatment that best suits their needs and deficits (Rubin and Gastfriend, 2001; Scott, Foss, and Dennis, 2005; Wieczorek, and Miller, 1992). Failing to meet the needs of offenders through matched service designs will diminish the intended treatment effects of the interventions and, as a result, dilute efforts for preventing recidivism (Burdon et al., 2007; Taxman and Marlowe, 2006).

In Chapter 3, the theories underlying the principles of treatment matching are presented. Examples of matching designs utilized within the corrections and the substance abuse field is also provided. The culmination of this literature provides the backdrop and research questions to be addressed in later chapters.

III. Literature Review

Substance abuse treatment for offenders has come a long way, countering the well-known conclusions of Martinson's "Nothing Works" (1974). Evaluation research since this infamous article has consistently shown the effectiveness of treatment for substance abusers and, more specifically, for substance-abusing offender populations (Hepburn, 2005, Prendergast et al., 2002; Thanner and Taxman, 2003). The task of creating, pilot testing and evaluating substance abuse treatment programs has become the norm for treatment research, extending the findings of interventions and treatment modalities that are already producing significant reductions in substance use, recidivism and other related behavioral domains (Hepburn, 2005). The consensus among these evaluations indicates that some interventions work but only some of the time and only with a certain population (MacKenzie, 2000).

As mentioned previously, a major difficulty created with this type of research is that several styles of treatments have been identified as effective but their findings are often not generalizable to all participant types entering treatment (Burdon et al., 2007). Although rarely evaluated, there is a base of evidence outlining the need to provide the "appropriate" treatment to the right subgroup of offenders (Andrews, Bonta, and Hoge, 1990; Pearson and Lipton, 1999). Additional research has examined how a system of treatment agencies can be adapted to treat the myriad types of substance abusers utilizing interventions and services that are most appropriate for their needs/deficits (Hser et al., 1995; Taxman and Marlowe, 2006). In order to utilize this system and maximize the effects, a treatment matching strategy must be created to guide system administrators, aiding them in the planning and placement of offenders through the series of treatments best aligned to deliver positive outcomes.

Although the current findings on treatment matching are mixed, the general principles they are based upon have been logically derived and approved by the field (National Institute on Drug Abuse, 1999). Andrews, Bonta and Hoge (1990) were some of the first to outline the principles of matching in what they term: Risk, Need and Responsivity. Although infrequently researched, several attempts have been made to create and evaluate matching strategies outlined by the "Andrew's principles" and applied to substance-abusing populations seeking treatment (Andrews, Bonta and Wormith, 2006; Bonta, 1996; Lowencamp and Latessa, 2005; Andrews et al., 1990; Lowencamp and Latessa, 2002; Thanner and Taxman, 2003). The current chapter will outline this research, highlighting gaps and uncertainties in prior findings and suggest possible methodological solutions. These methodological solutions will provide the backdrop for the current study's attempt at the creation of matching guidelines for substance-abusing offenders placed within halfway house interventions.

3.1 Evaluation Research and Detection Difficulty

For several decades researchers and treatment providers have advocated for the increased use of substance abuse treatment, promoting its effectiveness in preventing future negative behaviors. An unspoken hope of the field is to find the "holy grail" of treatment; that is, a single treatment that works every time and for everyone. The obvious conclusion is that no treatment is "one-size-fits-all" and generalizability of findings decrease as study samples broaden the spectrum of participant types included (Hepburn, 2005). Ultimately, researchers and treatment providers are forced to create their niche in the field and work hard to find a *specified* "holy grail" for a particular subgroup of treatment participants, e.g. co-occurring disorders (Drake et al., 2001),

Medication Assisted Treatment (MAT), opioid abusers (Center for Substance Abuse Treatment, 2005), and pregnant mothers (Coletti et al.,1995).

To provide evidence of treatment effectiveness, evaluators utilize experimental and quasi-experimental studies to determine if recipients of the experimental program in question perform better than individuals given no treatment, an alternative treatment, or "treatment as usual." These types of designs attempt to isolate the effects of the treatment program by randomly assigning individuals to either the experimental (drug treatment program) or control condition (treatment as usual). A common finding in these types of studies is that both experimental and control conditions improve in terms of pre- vs. post-test differences, however, differences between experimental and control conditions do not reach significance (Anglin and Hser, 1990).

In recent years, drug treatment research has made attempts to move beyond the traditional experimental and quasi-experimental effectiveness evaluations and sought to identify the program or modality that is most effective. Projects such as the Treatment Outcomes Perspective Study (TOPS), the Drug Abuse Treatment Outcome Study (DATOS) and the Drug Abuse Reporting Program (DARP) evaluated the effects of several major drug treatment modalities in a head-to-head comparison, attempting to identify the most effective modality for substance abusers (Hubbard et al., 1997 Simpson et al., 1997; Simpson and Sells, 1990). The consensus from projects such as DATOS is that there are treatments that are slightly more effective than others in reducing targeted outcomes such as relapse and recidivism (Hubbard et al., 1997). However, nearly all identified modalities of treatment seem to be effective to some degree at reducing relapse and recidivism.

Discovering “what works” in criminal justice and substance abuse treatment has nearly become a field in itself. Several articles each year are produced attempting to counteract the work of Martinson and the long since discovered fact that treatment can be effective (Belenko, and Peugh, 2005; Burdon et al., 2007; Hepburn, 2005; Hubbard et al., 1997; MacKenzie, 2000; Thanner, and Taxman,2003). Although furthering the knowledge base of Evidence Based Treatments (EBTs), single intervention evaluation designs possess many complications and can often muddy the waters when trying to describe practical implications to intervention providers. Anglin and Hser (1990) suggest that determining the effectiveness of a given intervention is often confounded by the heterogeneous nature of substance-abusing populations, indicating that many interventions “work” but may only be effective within a select group of participants.

These findings have caused some evaluators to conclude that the type/modality of treatment intervention(s) an individual receives is important but may not be as important as originally perceived (Andrew and Dowden, 2005; Burdon et al., 2007; Welsh and Zajac, 2004). Instead they point to additional influential intervention characteristics that are involved in producing desired effects, including: duration/retention, funding source, program integrity, participant severity level, program size and treatment motivation (Andrews and Dowden, 2005; Moos, Moos and Andrassy 1999; Rodgers and Barnett, 2000; Simpson et al., 1997; Taxman and Marlowe, 2006, Wexler, Melnick and Cao, 2004). Furthermore, qualitative studies examining participants’ desires within treatment programs suggest that there are particular program elements that participants believe will help them improve while in treatment (Currie, 2003; Smiley-McDonald & Leukefeld, 2005), such as the structure

and integrity of group sessions, clearly defined program goals, enhanced roles within the intervention, and strictness of discipline when goals are not met.

For example, it may be appropriate to place a substance-abusing offender with a high risk of relapse in a residential treatment facility as a graduated sanction of their release. This type of intervention will allow an individual to continue to receive treatment while they are adjusting to the everyday stresses that living in the community may bring. However, if the participant only attends for three weeks (instead of the more agreed upon minimum duration of 90 days) (National Institute on Drug Abuse, 1999), then the potential impact of the treatment may be lost regardless of the claim that the type/modality was appropriately matched to the offender's substance abuse treatment needs.

The difficulty with the continual creation of highly-sophisticated evidenced-based treatments is that these modifications often increase in specialization, offering an entire intervention to address the needs of one subpopulation. Thus, after such programs are created, they are difficult to sustain after the initial research funding (seed money) ends. For example, obtaining a grant to implement and pilot-study a new program for cocaine-dependent mothers with post-traumatic stress may provide interesting findings and greater positive outcomes than the treatment as usual, but the ability of a correctional system to continue funding such a program after grant money had ceased is unlikely. For correctional systems treatment resources are limited. From their perspective, a more research-worthy task is to maximize the effects of the currently funded treatments; with a more efficient utilization of the entire system of interventions rather than evaluating a single newly piloted intervention. Given that many of the currently utilized treatments within correctional settings have been found

to be effective (Hepburn, 2005), the next step for correctional research is to examine how a correctional system can provide a continuum of treatment that provides the best individualized intervention for each offender's needs and deficits.

Especially true within correctional treatment environments, consideration of the specific attributes of programs and their participants are rarely taken into consideration when placing offenders in an intervention facility (Andrews and Dowden, 2005; Burdon et al., 2007; Falkin and Prendergast, 1994; Taxman and Marlowe, 2006). The quantity and quality of intervention(s) an inmate receives may depend, to a great extent, on the type of program available when the offender is deemed eligible to receive treatment. More specifically, a given correctional system may offer several different types of substance abuse treatment which vary in philosophy/orientation and the services they deliver. When the offender is considered eligible to attend treatment there may only be bed space available in one or two of the treatment facilities. What often occurs is that offenders are assigned to the facility that is currently available at the time of eligibility, and not the one that will most effectively serve their needs/deficits.

If substantial between-program differences exist within a system of seemingly interchangeable interventions, these program variations can and should be utilized to match the heterogeneous characteristics of the treatment population to the most appropriate intervention. An opportunity exists to provide programming that appropriately targets the specific needs and learning styles of offenders (Welsh and Zajac, 2004). Neglecting to perform effective treatment matching can be detrimental to offender outcomes and ultimately fails to maximize the potential effects of the rehabilitation system. However, correctional systems have particular difficulties creating and implementing matching systems, in part because of their limited resources

but also due to the lack of knowledge and empirical findings of matching strategies previously attempted.

3.2 Principles of Treatment Matching

Through a collaboration of experts and a thorough review of published findings, in 1999, the National Institute of Drug Abuse released *Principles of Drug Addiction Treatment: A Research-Based Guide*. The guide recognizes the difficulties of substance abuse treatment and outlines the need for treatment matching.

"There are many addictive drugs, and treatments for specific drugs can differ. Treatment also varies depending on the characteristics of the patient. Problems associated with an individual's drug addiction can vary significantly. People who are addicted to drugs come from all walks of life. Many suffer from mental health, occupational, health, or social problems that make their addictive disorders much more difficult to treat. Even if there are few associated problems, the severity of addiction itself ranges widely among people. A variety of scientifically based approaches to drug addiction treatment exists. (p.13)"

Treatment for drug abuse and addiction is delivered in many different settings, using a variety of behavioral and pharmacological approaches. Drug abuse and addiction are treated in specialized treatment facilities and mental health clinics by a variety of providers, including certified drug abuse counselors, physicians, psychologists, nurses, and social workers… Although specific treatment approaches often are associated with particular treatment settings, a variety of therapeutic interventions or services can be included in any given setting (p.24)"

These two statements present the most salient issues that must be considered for further development of treatment matching designs. As discussed in Chapter 2, drug abuse treatment participants come to an intervention with a myriad of needs and deficits. The program they are assigned can be delivered in a variety of settings, by differing types of providers and professionals, with varying therapeutic approaches and services. Each intervention is designed to serve a particular type of clientele. Placing substance abusers in the intervention that is most appropriate to their needs is the goal of

treatment matching. It is through this process that treatment systems obtain the most effective results from the intervention resources available.

3.3 Theoretical basis for matching – Risk, Need and Responsivity

Andrews, Bonta and Hoge (1990) were the first to stress the importance of treatment matching and provide theoretical principles for such strategies. Their three principles of effective correctional treatment - *Risk, Need and Responsivity* (RNR) - are cornerstones of the rehabilitation field and routinely cited when discussing offender treatment matching. Their theoretical principles suggest that when intervention(s) are provided that meet these three provisions, the probability of recidivism is significantly reduced.

The principle of *Risk* is a combination of static and dynamic factors that help gauge an individual's probability of recidivism (Andrew Bonta and Hoge 1990). This principle relates to treatment amenability as not all offenders are appropriate for *any* treatment and some offenders are only appropriate for specific treatments. The principle states that treatment intensity and services should be matched according to the level of risk for recidivism within the community. They predict that for the maximum risk cases, treatment may not have an effect, and for the lowest risk cases, may increase the risk of recidivism. Medium-to-high risk cases, however, show moderate gains when provided treatment interventions. When the principle is met, the appropriate level of intervention intensity and supervision is provided to meet the level of risk the offender requires to prevent/reduce the negative behavior (e.g. substance abuse, mental health, employment issues, etc.) and thus decrease their risk of recidivism.

Andrews and Dowden (2006) indicate that when the appropriate level of treatment is provided, the risk-treatment interaction will significantly impact offenders' recidivism outcomes. In practical terms, this means providing highly structured interventions (i.e. residential) to high risk substance-abusing offenders and less structured (i.e. outpatient) interventions for those with moderate substance abuse severity levels. This process helps to insure the community and the offender are provided the adequate safeguards against future criminal behavior. For example, an offender with a 20 year addiction to heroin, serving time on their fourth robbery conviction, will require a substantial amount of supervision; however, the principle of "less is more" will be most efficient for providing an intervention to an offender serving their first term for a drug possession charge.

Furthermore, certain risks are considered changeable or dynamic (Andrews, Bonta and Hoge, 1990). Substance use risk for example can be decreased when appropriate treatment is provided. This decrease in risk will, in turn, decrease the offender's overall risk of recidivism. The conceptualization of dynamic risk is consistent with the provision of a continuum of care for offenders. That is, once a high risk offender is provided an intensive treatment (e.g. in-prison TC) their substance abuse severity decreases and their risk of recidivism is thereby lessened; allowing the individual to advance in the continuum and to be placed within a facility of lower security (e.g. halfway house).

The second principle – *Need* – refers to the psychodynamic aspects of the offender's deficits. Although closely related to risk in correctional terms, the principle of *Need* is best described as the potential for change. Change here is focused on offenders' criminal lifestyle. That is, if one can identify those things which influence an

offender's criminal behaviors (e.g. lack of vocational skills, lack of education, substance abuse, criminal thinking patterns, etc.), then corresponding interventions can be used to diminish, or change, these criminal influences. Actuarial tools are often used to gauge offender need. Typically correctional systems provide an offender a battery of assessment instruments examining services needs to identify both the existence and level of intervention required for specific offender deficits. When used properly these assessment instruments will guide correctional official's placement of offenders into appropriate intervention(s).

Finally, the principle of *Responsivity* is one of the least studied of the three principles and the most critical to the design of matching protocols. Andrews and Dowden (2005) define *Responsivity* as provision of intervention(s) that are capable of maximizing an offender's ability to learn from a rehabilitative intervention by providing treatment and tailoring the intervention to the learning style, motivation, abilities and strengths of the offender. Essentially, correctional officials must provide interventions that are able to demonstrate the proper intensity, duration, and integrity that will be able to create the desired change in the offender. Andrews, Bonta and Hoge (1990) outlined two types of responsivity that must be met to create effective treatment systems.

General Responsivity refers to a threshold of treatment intensity and/or modality that must be delivered in order to produce change in a given intervention population. Offenders are difficult to treat. Characteristics such as manipulation, persistent lying, and aggression are common and even more typical within substance-abusing populations (De Leon, 1994). Program styles utilizing unstructured, peer-oriented group counseling, and permissive, relationship-oriented milieu approaches are suggested to be inappropriate for offender populations as a substantial level of trust and

support must be achieved before these treatments demonstrate effectiveness. Instead Andrews, Bonta and Hoge (1990) suggest correctional interventions utilize behavioral and social learning principles of interpersonal influence, skill enhancement, and cognitive change. These styles of intervention are of the appropriate type and intensity threshold to counteract, or resist, the offender characteristics that prevent effective treatment. Therefore, *General Responsivity* suggests that all interventions used in correctional populations must meet certain standards just to have the ability to achieve a minimum level of effectiveness.

The second type of responsivity Andrews and colleagues have outlined is *Specific Responsivity* (1990). Where general responsivity referred to characteristics needed in all correctional interventions, *Specific Responsivity* makes provision for individual offender needs. This principle identifies the heterogeneity of offender population needs and the multitude of treatment and service options that can be utilized to increase the effectiveness of a given intervention plan. They state that, for the responsivity principle to be met, specific treatment styles and services must be "matched with the personality, motivation, ability and offender demographics such as age, gender, and ethnicity" (Andrews, Bonta and Wormith, 2006). Whether the intervention involves a single didactic course on the pharmaceutical effects drugs or a series of interventions and services that target multiple offender domains (i.e. education, vocational skills, HIV risk, mental health, etc.), specific responsivity outlines that all necessary provisions must be made to rehabilitate/habilitate the specific needs of each offender to prevent further negative behavior.

Many correctional matching strategies have been (at least implicitly) based on the Andrews RNR principles (Lab and Whitehead, 1990; Miller and Cooney, 1994;

Thorton et al., 1998). Despite their level of acceptance, RNR principles are often utilized inconsistently and rarely investigated (Andrews, Bonta and Wormith, 2006; Thanner and Taxman, 2003). Despite having theoretical grounds to assume that matching can be effective within rehabilitative therapies, few investigations have been conducted that illustrate a consistent positive effect. Westenberg, Koele and Kools (1998) suggest that a main reason for the paucity of evidence is due to the lack of a standard methodology for matching research. Among the studies testing the effects of treatment matching, several designs, samples and analysis types have been utilized, all with differing implications and methodological issues. The proceeding section will describe the current state of knowledge provided by the (relatively few) of investigations examining matching and responsivity within correctional and substance abuse treatment settings.

3.4 Investigating Treatment Matching

As differential treatment effects within substance abuse populations became more apparent, the realization for treatment matching has become evident (Hepburn, Johnston and Rogers, 1992; National Institute on Drug Abuse, 1999). Although all criminal justice systems assess and place offenders in treatment, the protocols that guide placements are rarely routinized (Knight et al., 2006; Westenberg, Koele and Kools, 1998). Many placement decisions are based, at least in part, on discretion. Knight and colleagues (2006) describe the assessment/placement process as “highly subjective”, based on staff judgment and sometimes on a “gut feeling.” Despite the apparent utility of clinician oversight, discretion ultimately creates placement inconsistencies within correctional systems with multiple agencies and clinicians

providing thousands of assessments annually (Knight et al., 2006; Knight et al., 2002; Westenberg, Koele and Kools, 1998). Matching strategies are commonly developed to provide a protocol to guide placement decisions that are more reliable and valid than subjective decisions.

Several attempts have been made to examine the matching process in an effort to identify and create a nationwide matching strategy/protocol that produces positive offender outcomes above and beyond the usual assessment/discretion system (American Society of Addiction Medicine, 2001; Project Match Research Group, 1997a; 1997b). However, matching strategies for correctional populations are difficult to design. Each state has a different configuration of sanctions, sentencing guidelines and reentry policies. The process of matching often involves the integration of multiple systems (e.g. prison, parole, outpatient, residential treatment). These agencies are connected but their systems of tracking offenders are not integrated, which makes it difficult to follow offenders though the multiple agencies in which they may reside, be matched to, or supervised within.

Researching the effects of matching is also a difficult process. Designing a study to investigate treatment matching is not as simple as evaluating a single treatment program. Often the standard methodological techniques used in experimental and quasi-experimental designs (i.e. randomization, control groups, follow-up assessments) are difficult to implement within a system of interventions and agencies (Hser et al., 2001; McLellan and Alterman, 1992). Hence, matching investigations have taken on a variety of designs, utilizing several types of populations and settings (Westenberg, Koele and Kools, 1998).

Hindsight vs. Foresight Experimental Design

One of the main differences in matching investigations is how the treatment groups are assigned. In hindsight designs, participants are assigned to treatment interventions without the aid of matching protocols or schemas. Participants are then followed though programs and outcomes are collected. Following collection procedures, the success of participants is profiled via potential matching characteristics. Miller and Cooney (1994) suggest that these types of designs can be informative, "allowing single predictor variables to be examined in relation to outcome, or utilizing multivariate analysis to simultaneously analyze the relative predictive contributions of client characteristics" (p. 39).

Commonly based upon secondary data analysis of larger treatment evaluations, hindsight studies examine treatment matching by operationalizing matches and mismatches and then testing these conceptualizations in post hoc analyses (Belenko and Peugh, 2005; Broome et al., 2007; Etheridge et al., 1955; Hser et al., 1999; Friedmann et al., 2004; Hser et al., 2004; Marlowe et al., 2006; Mckay et al., 2002; Melnick et al., 2001; Moos et al., 1997; Project Match Research Group, 1997a; 1997b; Simpson et al., 1997; Thornton et al., 1998; Tiet et al., 2007; Wieczorek and Miller, 1992). Magura and colleagues (2005) utilized a hindsight design examining a sample of subjects participating in one of three program modalities: inpatient, intensive outpatient and regular outpatient. Following the study's completion, participants' placement into the three modalities were reviewed and treatment matches and mismatches were identified by examining differences in clinicians' placement decisions compared to placement criteria suggested by the American Society of Addiction Medicine's (ASAM) Patient Placement Criteria (PPC). The authors found "incremental" benefits where the PPC

was able to indicate how much subject outcomes improved at follow-up (above and beyond clinicians' standard treatment placement practices) if participants' had been matched to treatments using the ASAM criteria.

Hser and colleagues (1999) utilized an alternative hindsight strategy, identifying a matching schema on a continuum of needs and services. They utilized a large data pool collected from publicly funded treatment programs in Los Angeles County. Each participant's service needs were assessed prior to treatment and then assessed again in a follow-up to identify if client needs had been met. They operationalized matching on three categories of service received: met (1), unmet (-1), and no need (0) – and measured matching among eight behavioral domains. These measures were then totaled, creating a continuum ranging from -8 to +8. This hindsight strategy conceptualized matching as more than just a dichotomous category of matched versus unmatched and instead judged among scale of "matched-ness."

In contrast, foresight studies assign participants to experimental or control conditions, as in a research experiment, varying the treatment conditions by use, or lack of use, of a matching protocol. That is, one condition's participants are placed in treatment using the *usual* placement methods, and the other's are done using a treatment matching protocol. These types of designs usually hold more empirical weight as they allow for a more direct test of the main effects of matching (Miller and Cooney, 1994). However, given their rigorous design, they are often expensive and difficult to manage.

The most notable foresight studies attempted to validate *a priori* placement instruments - Addiction Severity Index (ASI) (McLellan, 1997) and the ASAM (Deck et al., 2003). McLellan and colleagues (1997) selected subjects seeking treatment in an

Employee Assistance Program (EAP) and randomly assigned participants to either standard services or matched services. The standard services consisted of clinicians' usual treatment matching procedures. In the matched services group, the ASI was utilized to identify significant problem areas (e.g., employment, family relations, and psychiatric status) and matched to treatments providing services in these need areas. Although previously used only as a screening/assessment instrument, this experimental design attempted to determine the effectiveness of the ASI as a placement tool for matching participants to services.

One of the most widely used treatment matching tools; the ASAM is utilized, in some form, in nearly every state to provide placement decisions for publicly funded substance abuse services. The ASAM's patient placement criteria (PPC) provide guidelines for matching participants to four modalities of treatment. Despite its widespread use, very few attempts have been made to validate the utility of the PPC. Deck and colleagues (2003) utilized a foresight design but, in contrast to McLellan (1997), the investigators utilized a naturalistic sample, identifying comparable samples of treatment participants in both Oregon and Washington State. Due to recent policy changes in Oregon requiring the use of the ASAM PPC, the investigators were able to compare participants matched to treatment by the ASAM PPC in Oregon to those matched by standard methods in Washington State, thus identifying the PPC's validity in a real world environment. This alternative to randomization also allowed for the identification of implementation issues assessors have when switching to a new matching strategy.

Both design types can provide equivalent results of the main matching effects as long as subjects have an equal chance of being assigned to the various treatment groups

(Miller and Cooney, 1994). One advantage of hindsight designs is that they also allow for the testing of the main effects of the treatments and the testing of more than one matching hypothesis (Miller and Cooney, 1994). The rarely used *staged design* makes use of both types of designs by utilizing a hindsight to identify characteristics influential to matching, then creating a protocol around those findings, and finally, testing the protocol using a foresight design (McLellan et al., 1993; McLellan et al., 1997).

Matching Based on Modality vs. Intervention Variance

Matching offenders within specific modalities has been the most popular type of design dating back nearly 15 years (Gastfriend and McLellan, 1997). Given that all treatment modalities have found consistent effectiveness (Hubbard et al., 1997), these studies attempt to find client characteristics that are most *responsive* in a handful of generalized treatment modalities. Several federally funded studies were created with the specific purpose of examining differences in effectiveness with regard to whole modalities of treatments (i.e. DATOS, TOPS, and DARP). One characteristic of modality driven designs is that investigators typically utilize large aggregated samples in an attempt to make their findings generalizable and thus to infer wide-reaching policy guidelines for treatment providers (Belenko and Peugh, 2005; McGee and Me-Lee, 1997; McKay et al., 1996; Melnick et al., 2001; Thornton et al., 1998; Tiet et al., 2007; Turner et al., 1999). This typically means identifying three to seven types of treatment programs; collapsing hundreds of treatment interventions into a small grouping of modalities.

One of the largest studies examining modality matching among substance abusers is the Drug Abuse Treatment Outcome Study (DATOS). DATOS collected admission, treatment and follow-up data on nearly 3,000 substance abuse treatment participants in four main modalities: drug-free outpatient (ODF), out-patient methadone maintenance (OMT), short-term inpatient (STI), and long-term residential (LTR) programs. One of the first investigative teams to examine the differential patterns of outcomes across modalities was Hser and colleagues (1998). They hypothesized that use patterns and primary substance type would be influential factors of participants' responsiveness to a given treatment modality. For example, participants who regularly use "speed balls" (heroine mixed with cocaine) may not be as responsive to methadone maintenance treatment as participants who are only heroin dependent. These types of designs paint broad strokes, examining the effectiveness of treatment matching for entire modalities that are recognizable by treatment practitioners and thus, their findings are viewed as generalizable.

When sample sizes are not as large often investigators examine modality matching strategies using only a few matching criteria. Teit and colleagues (2007) attempted to create a matching strategy based on drug use severity at program intake. Utilizing a multi-site, hindsight design, investigators attempted to find the appropriate addiction severity level for five treatment modalities: in-patient, residential, domiciliary, intensive outpatient and regular outpatient programs. They hypothesized that greater addiction severity would be best served in residential treatment while less severe addictions are best served with outpatient treatments. Where DATOS possessed the resources to investigate many matching mediators across a large sample, Teit and colleagues (2007) simply matched on the basis of severity level.

In contrast to modality matching, studies that examine *intervention variance* attempt to illustrate treatment matching schemas, identifying participant success/failure rates across treatments with differing service elements (Broome et al., 2007; Burdon et al., 2007; Friedmann et al., 2004; Etheridge et al., 1995; Hser et al., 2004 ; 1999; Karno and Longabaugh, 2007; McKay et al., 2002; McLellan et al., 1997; Moos et al., 1997; Project MATCH Research Group, 1997a; 1997b; Simpson et al., 1997; Thornton et al., 1998; Thanner and Taxman, 2003). For example, Friedmann and colleagues (2004) utilized a sample of participants in the National Treatment Improvement Evaluation Study (NTIES) they attempted to match participant need areas (such as medical, mental health, family, vocational, and housing) with therapies, services, treatment intensity and duration that varied across 63 participating programs.

In one of the first large scale matching studies for substance abusers, Project MATCH, attempted to create a matching strategy for alcohol-abusers (Project MATCH Research Group, 1997a; 1997b). In two independent studies, investigators utilized 10 theoretically relevant client characteristics and attempted to match outpatient and aftercare participants to the manually guided therapies: Cognitive Behavioral Coping Skills Therapy (CBT), Motivational Enhancement Therapy (MET), and Twelve-Step Facilitation Therapy (TSF). The 10 characteristics were chosen to highlight differences in clients that were most likely to interact with the three therapies (e.g., motivational readiness to change, psychiatric severity, social support and client conceptual level).

In a similar conceptualization, Moos and colleagues (1997) examined program variations among Community Residential Facilities (CRFs). They identified several program characteristics that influenced patient outcomes, such as: program size and staffing, policies and services, treatment orientation, and participation in treatment.

They found positive effects among programs that were larger, had a higher proportion of recovering staff, higher levels of participation in program activities, and those with an emphasis of psychosocial or cognitive-behavioral treatments.

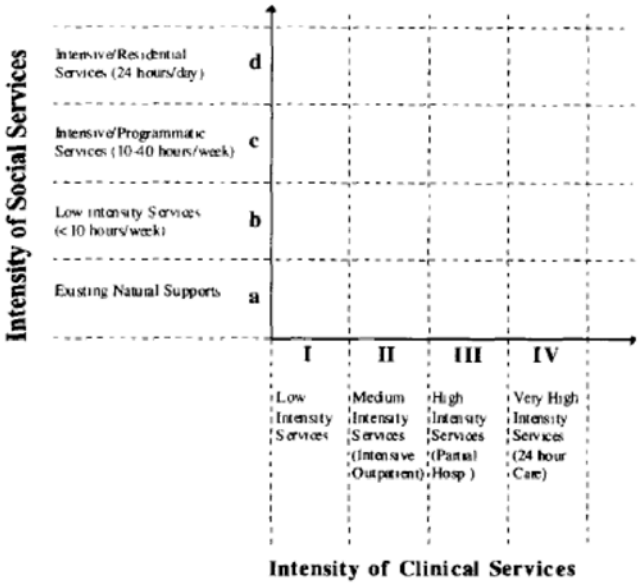
Advantages of intervention variance over modality designs are a matter of assumptions. More assumptions are needed for modality designs. First, for comprehensive investigation of relevant client characteristics, modality matching designs require a large sample with at least two (and usually more) interventions. Second, the conceptualization of the modalities must be valid and generalizable. Typically investigators classify treatments into three to seven modalities, such as inpatient, outpatient, residential, self-help. If these modalities are not valid constructs - or if there is too much within-modality variance - then protocols derived from their results will be inconsistent. Third, all interventions within a given modality grouping should provide similar treatments, including treatment philosophy (e.g., behavioral, social learning, self-help), wraparound/distal services (e.g., educational/vocational, child care, medical), intensity, and duration. In contrast, intervention variance studies are not bound by these assumptions, and thus, have greater specificity with regard to application of study findings.

One advantage of modality designs is the application of findings. Modality comparisons provide more generalizable results that are easily interpretable for readers and treatment placement officials. These designs are able to make broad statements about the effectiveness of a large set of programs with a variety of client characteristics. Using language and program elements that are easily interpreted by treatment providers, these types of designs provide matching protocols that can be applied nationally.

Clinical Judgment vs. Automated Decision-Making

When constructing matching protocols, one of the main considerations is how to design and implement the matching instrument. As discussed previously many of the current matching strategies of correctional systems are based on clinical discretion; however, that is not to imply that actuarial tools are not used to aid clinicians decisions in providing effectively matched placements. Although many variations exist, the main difference among matching instruments is *who* makes the final placement decision. For some instruments there is little distinction between assessment and matching. The ASAM (MeeLee, 2001) and its precursor, the Human Service Matrix Model (McGee and Mee-Lee, 1997), provide guidelines for treatment placement based on two or more continuums. Intensity of social service is scored on the vertical axis (e.g., self-help, residential, legal, financial); while intensity of clinical services is ranked on the horizontal axis (e.g., counseling, case management, psychotherapy, medical). Several levels of intensity and modalities are then matched to the client's needs within this matrix of treatment provisions.

Figure 3.1. Rethinking Patient Placement: The Human Services Matrix Model for Matching Services to Needs (McGee and Mee-Lee, 1997)



What sets these instruments apart from automated instruments is that they require clinician input and discretion. The levels of intensity and services are somewhat fluid, as the two axes are derived from more than one dimension of client need. However, each box in the matrix may not match the services available to the placement provider. Therefore, clinician input is needed when clients fall into a box that doesn't exist among the available treatments and when borderline cases straddle the level of intensity/level of care.

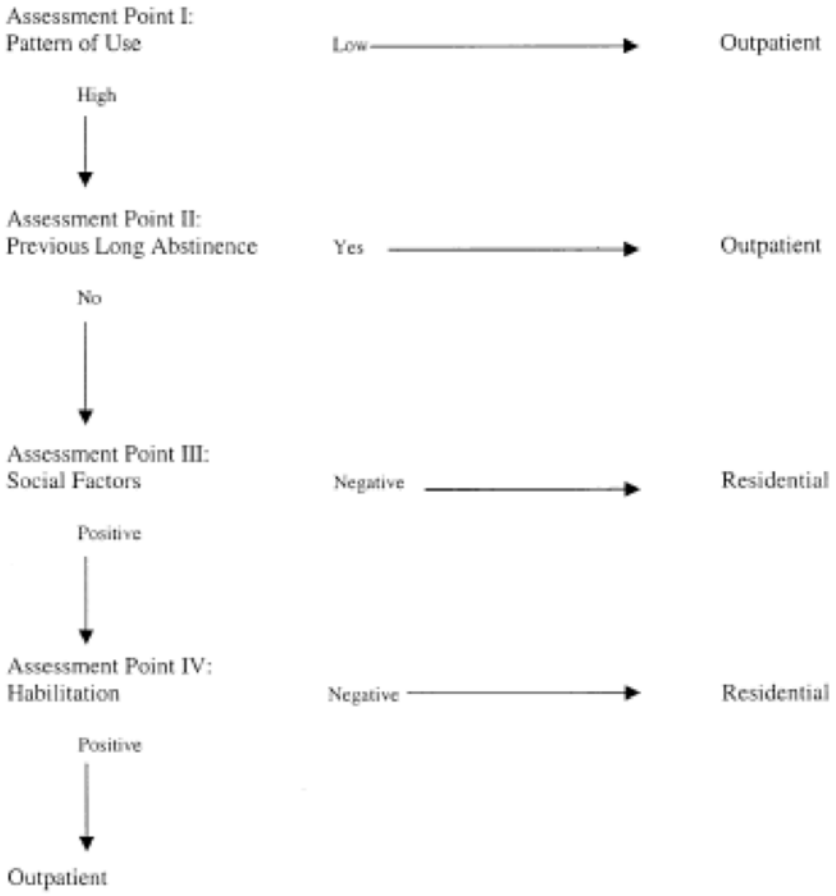
In contrast, automated designs attempt to eliminate clinician discretion by invoking the theoretical concepts of Judgment Analysis (Westenberg, Koele and Kools, 1998; Hammond et al., 1975)[2]. Judgment Analysis suggests that when several dimensions of information are used, decision makers become overloaded with the many criteria to consider, ultimately basing their decisions on the few criteria they *feel* are most important. Furthermore, Gottfredson and Moriarty (2006) suggest that human

[2] It should be noted that all risk assessment tools have a clinical override; where extraneous factors, not taken into account by the instrument, are allowed to justify the assessor's recommendations outside that of the instrument.

decision makers often inappropriately weight items and may assign weight to items that lack predictive validity. Therefore, some clinicians make decisions based on only a few items for client A but these same items may not be helpful when making a placement decision for client B. This creates idiosyncratic assessments that become unreliable, especially when multiple decision makers are utilized.

Recently, investigators have made attempts to automate treatment matching instrumentation (Belenko and Peugh, 2005; Marlowe et al., 2006; Melnick et al., 2001) Melnick and colleagues (2001) developed an automated instrument to guide placements into residential and outpatient substance abuse treatment settings - the client-treatment matching protocol (CMP). Similar to the ASAM, CMP's development was based on counselor focus groups, clinical expertise, and client validated assessment questionnaires. However, the implementation of the instrument is automated using a decision-tree format.

Figure 3.2 CMP Decision Tree Conceptualization Melnick and Colleagues (2001)



With this type of instrument design, information overload is reduced and the assessor's job is made much easier with regard to placement decision making.

Since the ASAM's PPC conception, the knowledge of clinical overrides and discretion have been identified as confounding factors in the instrument's reliability and validity. Two studies have attempted to identify the utility of the automated version of the ASAM PPC. Turner and colleagues (2003) identified a set of decision rules that could streamline the PPC, converting the large body of data produced by the instrument into a series of dichotomous responses. The results of the decision tree design were successful and provided concurrent validity with similar assessments of substance abuse (i.e., ASI and RAATE subscales). In addition, the authors raise concerns

regarding the ability to implement the ASAM PPC without a computerization algorithm format. Staines and colleagues (2003) compared an automated version of the ASAM PPC with the original, clinician guided PPC. They found that the two methods of placement disagreed more than they agreed. Ultimately, neither the algorithm nor the original (clinical version) was deemed more effective or “right”. The algorithm was more consistent but triggered higher than needed treatment levels. The original version was deemed less generalizable but the decisions were better tailored to the treatment resources available.

Both types of matching designs utilize prior experience and judgment when constructing the assessment instrument. Non-automated strategies for placement decisions are ultimately left to the clinician, requiring assessors to sift through the data collected and identify a placement based on the several factors and domains. Although logically having more information on each subject should be seen as an advantage, when a placement official must make several hundred decisions a year based on hundreds of survey responses, inconsistencies are bound to creep in, limiting reliability and ultimately impacting the predictive validity of the instrument (Turner and colleagues, 2003). By contrast, an automated instrument streamlines the process of placement, producing a reliable, generalizable decision, requiring only a limited amount of information. The limitations of prior automation designs are that they are not easily implemented for two reasons. First, the limited amount of information collected does not allow for safeguards critical to the participant’s profile (e.g., suicidal tendencies, HIV risk) and the current automated models paint only broad strokes with regard to placement, identifying modalities rather than specific interventions, services and treatment duration.

Treatment vs. Participant Centered Classifications

Whether implicit or explicit in their design, all matching protocols seek to create a typology. In essence, the goal of creating a treatment matching protocol is data reduction. This entails taking a large population of heterogeneous treatment participants and simplifying placement decisions by grouping them into a heuristic set of classes. There are two schools of thought when creating classes of participants. Treatment focused classifications attempt to identify treatments/interventions currently available. Participant centered strategies seek to create classes of participants based on pretreatment characteristics and find treatments and interventions that appropriately match these classes.

The ASAM and CMP are both examples of treatment focused matching designs. In both, the level of care is predetermined based on modalities of treatment typically offered. For example, ASAM groups treatment by levels; outpatient, intensive outpatient, residential services, and inpatient services. For each level, a set of participant characteristics are identified that dictate their corresponding level of treatment. In both instruments, the levels of care provided determine where participants will be matched. Participant characteristics are scaled and guide the placement decision. These scales are often closely tied to DSM IV definitions of substance use severity. Another participant matching design, created by Spence (2003), identified the modality of need for a population of individuals seeking treatment within the Texas Alcohol and Drug Abuse network. Using DSM-structure criteria he identified the overall treatment modality needs for the sample based on the four modalities currently available. He found 63 percent needed regular outpatient, 13 percent intensive

outpatient, 14 percent needed regular residential, and 10 percent needed intensive outpatient.

In participant-centered matching strategies, treatment participants are grouped based on a set of pre-treatment characteristics. In these designs, assumptions based on availability of treatments are not required. In fact, it is possible that an exhaustive list of treatment types/levels have not been created or made available for all types of participants. Wieczorek and Miller (1992) used a sample of DWI offenders to create a treatment matching typology. Authors rated participants on four dimensions (alcohol severity, psychiatric severity, social instability and driving ability) and utilized cluster analyses to create five classes of treatment participants. These types of analyses allow for heterogonous populations to vary on several types of service/need domains, with various rankings (i.e. dichotomous, ordinal, interval), without being tied to the exhaustive list of available/created treatments.

Each type of classification system has its advantages and disadvantages. Classifications from the treatment perspective allow placement providers to work within the scope of interventions currently available, thus allowing for immediate implications with regard to placement decisions. The disadvantage is, by not allowing offender characteristics to dictate the classifications system the typology may not be real, as it ignores classes that may exist but do not have corresponding treatments. The advantage of participant-based designs is that they provide a current snapshot of the treatment population. An apparent disadvantage is that treatment populations can change over time (Belenko and Peugh, 2005) and repeated classifications are needed to update the client classes.

Methodological Issues in Matching Designs

There are several methodological issues that should be considered when attempting to design a treatment matching study. The purpose of the current section is to present those issues so as to make readers aware of the design caveats to be avoided, as well as to examine how one creates a design tailored to research question(s) and system need in the current study.

Safety

Safety can be an important issue when implementing matching protocols. When conducting a foresight design often participants are randomized to treatment as usual or matched conditions. These types of designs are typically used to validate an instrument or created matching protocol. However, without a prior knowledge of the instrument's validity one is placing participants at risk in the matched condition, as the clinician's hand is forced to provide the instrument's placement decision rather than allowing for clinical discretion to override a potential mismatch and prevent a participant's placement in an inappropriate intervention (Sharon et al., 2003).

Hindsight and non-randomized foresight designs (naturalistic) are less ethically controversial as they do not require randomization, and are often performed in real world settings, in order to identify effectiveness among the natural/typical matching procedures. The disadvantages of hindsight designs is that they are exploratory and, hence, do not provide the methodological rigor that is needed to justify the validity of the instrument and rationalize its immediate implementation in a rehabilitation setting. The disadvantage of naturalistic studies is that they are difficult to implement. The

ability to compare two systems is a unique situation often not afforded to many investigators and difficult to replicate.

Generalizable vs. Tailored Instrument

Some instruments take great pains to identify levels/modalities of care that are typically available to placement providers. This provides a very generalizable matching protocol that is easily understood and adopted by a treatment system needing a validated and reliable matching strategy. Given their generality, these instruments do not take into account the variations of interventions and the heterogeneity of participants within those systems. However, what is recommended and what is available may vary greatly from state to state or even county to county. Furthermore, variation within a modality grouping may also impact the matching strategy's effectiveness.

Despite lesser generalizability, tailored matching protocols provide a better individualized strategy for a treatment system within the set of interventions and services available. These types of strategies also allow for better horizontal matching, this is within a level/modality or among a subpopulation. However, these strategies require an evaluation of client needs while taking into account current services and interventions available, a formidable task.

Decision making

Prior to the availability of matching protocols and instruments, clinicians made their own judgments about placement based on a variety of instruments, clinical knowledge and discretion. The intended purpose of a matching strategy is to decrease

the idiosyncratic nature of the clinician (discretion driven) process. Automated designs strip the clinician of discretion that could possibly confound the protocol derived placement decision. Although found to be more reliable and valid than their clinician/discretion driven counterparts, automated designs may not consider all of the necessary items that may confound placement decision.

3.5 Prior Findings on Matching

Despite the apparent need, very little research has attempted to establish and determine the effects of treatment matching protocols/instruments. Among the published studies attempting to evaluate matching in substance abuse treatment, few have shown positive results and mixed findings are often reported. Others find that matching works, but not in the “medical model” version of care. Still others believe that matching individual services to needs (instead of just an entire modality) will have the best results.

Poor to Mixed findings

Several investigations have attempted to match intervention modality to offenders needs and have found little to no effect (Burdon et al., 2007; Marlow et al., 2006; McLellan and Alterman, 1991; Project MATCH Research Group, 1997a; 1997b). Burdon and colleagues (2007) used a hindsight strategy to examine matched versus mismatched prison offenders entering either outpatient or residential aftercare. Using a matching strategy gleaned from previous placement criteria, they hypothesized that offenders high in substance abuse severity would benefit more from residential treatment than outpatient and vice versa for lower severity offenders. They found that,

although both modalities produced significant positive recidivism outcomes, there was no differential of effectiveness between the matched vs. mismatched offenders.

One of the first empirical tests of a matching hypothesis, Project MATCH (Project MATCH Research Group, 1997a; 1997b) attempted to examine if a set of client characteristics could be matched to one of three modalities of treatment. They obtained a relatively large sample (N=952) of alcohol using clients in nine clinical research units. Although a set of 10 characteristics were hypothesized to interact with matched vs. mismatched treatments, only one, psychopathology, was found to interact (albeit negatively) with the lowest level of modality (Twelve-Step Facilitation). Therefore, not only did one of the first and largest matching studies find no evidence supporting a matching hypothesis, but the one significant finding identified was a cautionary recommendation *against* treatment for a specific set of clients. Karno and Longbaugh (2007) went as far as to suggest Project Match's disappointing results created enough skepticism that the findings were detrimental for matching as a subfield of substance abuse treatment.

Given its wide use as a matching instrument, several studies have tested the ASAM PPC; however, the predicative validity of the instrument has yet to be established (Turner, et al., 1999). Some studies have found that clients matched with ASAM showed no improvement in comparison to unmatched groups and others have shown that the ASAM can be effective but only with certain subgroups or over short-periods of time. McKay and colleagues (1996) examined the effectiveness of ASAM PPC in a sample of cocaine and alcohol dependent clients. The investigators found patients correctly matched to outpatient or residential treatment did not show differential outcomes when compared to mismatched clients. A small trend was found

among matched cocaine patients but this trend failed to reach pre-established levels of significance. It was further suggested that the ASAM may have difficulty predicting which types of clients would be most appropriate for higher intensity treatments (e.g., inpatient).

Better findings using "non-medical" model

Some more recent studies have identified effects though the modification of a previous assumption of matching theory. As mentioned, the matching theory for substance abuse and other behavioral interventions is based around a medical model of treatment. That is, the right prescription/intervention at the proper dose/intensity for a given duration will produce the desired outcome. As matching studies have repeatedly found zero-to-marginal effects, investigators have begun to examine the dosage assumption with regard to behavioral treatments. More specifically, in the medical model an overdose of treatment may have detrimental (even fatal) effects; however, this may not be the case for substance abuse or other behavioral treatment. A few studies have sought to test the effect of over- and under-treatment for administration of behavioral treatments for substance abuse.

Using a non-randomized, naturalistic design Magura and colleagues (2003) identified matches and mismatches using the ASAM PPC algorithm. Clinicians, blind to the ASAM recommendations, provided their placement matches using their own clinical protocol. Investigators examined three categories of treatment participants: matches, undertreated and overtreated. The conceptualization of two differing types of mismatches allowed for the test of directionality of the matching theory. They found

that under-treated patients were associated with poorer outcomes than matched cases; however, over-treated patients had similar outcomes to matched cases.

De Leon, Melnick and Cleland (2008) examined dosage with similar conceptualized mismatches. Investigators employed the CMP on the DATOS sample attempting to identify differential matching versus mismatching effects among long-term residential (LTR) and outpatient drug-free (ODF) treatment. Differential effects between matched and mismatched cases were not able to be identified. However, when mismatches were categorized as over or undertreated, effectiveness of the CMP was found to predict successful outcomes among matched and overtreated participants.

Needs-Service Matching

In addition to treatment modality, investigators have also hypothesized that individual services should be appropriately matched to offenders needs/deficits. The underlying construct being although services represent only part of the drug abuse treatment intervention, programs that identify client needs and provide services to meet those needs will more likely to have a positive effect on client outcomes. Although yet to be developed into a protocol or matching strategy, several exploratory investigations have identified effects when matching to specific services/interventions. (Etheridge et al., 1995; Friedmannn et al., 2004; Hser et al., 1999; 2004 ; McLellan, et al., 1996; Thornton et al., 1998; Wieczorek and Miller, 1992). Using DATOS subjects, Etheridge and colleagues (1995) calculated the percentage of met versus unmet service needs within seven service domains: medical, psychological, family, legal, educational, vocational, and financial. Although their findings did not directly translate into a matching strategy, the authors were able to identify several cautionary implications

from clients unmet needs. Specifically, a large proportion of clients in the treatment system have unmet service needs, and client reports indicate drug abuse counseling alone did not address their needs prior to release.

Hser and colleagues (1999) assessed a sample of drug-using individuals who sought and were admitted to publicly funded treatment programs in Los Angeles County. They estimated met versus unmet needs across eight problem domains and found the most frequently needed services (besides counseling) were job counseling, transportation, housing and medical services. In addition, those who were provided services in an identified need area showed improvement in that area. However, despite the intent of providing ancillary services, improvement in other problem areas and drug use severity were not observed.

Typologies

The last category of findings to consider is the use of a typology for treatment matching. Classifying substance abusers by their dimensions of severity, criminality and other deficits can provide a pattern that can be utilized to decide the kind of correctional programs that might be effective for an offender (Hepburn, 2005). Over the last 25 years only a small amount of research has identified substance abuse offender typologies and fewer yet have identified a treatment matching strategy based on a typological assessment (Hepburn, 2005).

Bailey, Hser and Anglin (1994) analyzed an existing database of released offenders to identify types of substance-abusing offenders based on use severity and criminal activity post-release. They identified four types of offenders: (1) *winners* were those who reported no use after initial contact, no criminal activity, no arrest or parole

violations, and no incarceration; (2) *striving addicts* had a negative urine analysis at the time of the interview and no incarcerations or self-reported use within the 12-month period prior to the interview; (3) *enduring addicts* reported use within the past 12 months prior to the interview or had a positive urine analysis at the time of the interview, but had not been incarcerated within the prior 12 months; and (4) *incarcerated addicts* had been incarcerated at some time during the 12 months prior to the interview. This typology was one of the first thorough examinations of the types of substance-abusing offenders and their differing links between drugs and crime. Although conceptually logical, this typology only takes into consideration use and criminality patterns and provides few implications for rehabilitative programming and service matching.

Farabee and colleagues (2004) suggested a typology based on hypothesized drug-crime connections of offenders who use substances. These connections are based on motivation to use and severity of criminal behaviors. They identified four types of substance-abusing offenders: addicts, sellers, users, and predators. Addicts are imbedded in the drug culture and typically only commit crimes to obtain money to purchase drugs; these offenders need highly structured substance abuse treatment. Sellers have no personal commitment to drugs besides the desire for making money from them; these offenders do not require substance abuse treatment. Users have little commitment to drugs and do not exhibit much of a criminal lifestyle (periodic or recreational users); these individuals do not require treatment and should not be incarcerated as it may exacerbate their low levels of either problem behavior. Finally, predators are committed to a risky lifestyle which includes drug use and crime; these offenders require treatment that addresses both their drug use and their criminal thought

patterns. Although more complete in terms of descriptive patterns of substance-abusing offenders, this typology falls short of being empirically derived or statistically validated and only provides broad outlines for treatment matching considerations.

As previously mentioned, Wieczorek and Miller (1992) utilized a typology to classify DWI offenders. Contrary to the previous examples, this study set out to create an empirically grounded typology that would have implications for treatment placement. They selected treatment matching criteria that were directly related to the needs of the participants (alcohol, driving, or both) based on characteristics theoretically derived from a systematic review of the alcoholism treatment matching literature. Using a cluster analysis they were able to identify five types of DWI offenders and provided profiles of each "type." They then provided treatment recommendations for each cluster based on each cluster's profile. This typology construction is, in many ways, far superior to the anecdotal ones described earlier. Not only do they provide an empirically verifiable typological assessment but the created typology can then be used to form practical treatment matching recommendations. However, Wieczorek and Miller only *suggest* treatments that may fit the types of offenders and do not provide any evidence that a given "type" of offender benefit if provided the recommended treatment.

3.6 Summary – Matching, Typologies and the Current Study

Matching

The concepts of treatment matching have been around for decades and are at the core of the medical model. Within correctional rehabilitation, the three principles of criminal justice treatment – Risk, Need and Responsivity – have been clearly defined

by Andrews, Bonta and Hoge (1990), and their utility for treatment matching are relatively self-evident. Despite research efforts investigating these principles, little evidence has been found validating the importance of the RNR principles and matching strategies as a whole. The lack of evidence can be linked to two key issues: (a) the constantly changing and heterogeneous population of individuals requiring substance abuse treatment; and (b) the inability of research designs and statistical techniques to adequately address the multi-dimensional needs of participants coupled with the array of treatment program types available.

Despite the relative sensibility of the concept, treatment matching is a difficult process to define, test and analyze. As shown, the methodologies of matching designs vary considerably. Whether a study is hindsight, modality focused, or comparing implementation strategies each has its own advantages and disadvantages, often corresponding to the situational aspects available to the investigator (e.g. financial capacity, empirical rigor, varieties of treatment, availability of matching instrument). Identifying the appropriate design is a complex process that can be daunting. Examining the caveats and methodological difficulties of a selected design is essential to creating and testing a matching protocol.

The established research on substance abuse treatment matching is sparse. Although tests of matching and matching protocols have been conducted for decades, the amount and quality of studies and instruments are still relatively new. As shown, published research finds mixed to small isolated effects of treatment matching designs. Early studies could not demonstrate that matching strategies were more effective than “matching as usual” (or no matching). Although recent advancements suggest that matching can impact treatment outcomes, this is not the case with the typical “medical

model” originally thought to be effective. Additionally, few studies have attempted to match participants to services rather than modalities of treatment.

Typologies

At the heart of every matching strategy is classification. Treatment classification schemas should attempt to distinguish “types” of substance-abusing offenders, which should ultimately include: type, intensity, and duration of their drug use; potential for violence, mental illness, HIV, employment and education needs (Hepburn et al., 1992). Classification typologies are utilized to subdivide a heterogeneous population into a set of heuristic classes and to recommend treatment options for complex populations (Gottfredson and Moriarty, 2006). Three examples of typologies for substance-abusing offender were presented in this chapter. Although each had limited utility for developing treatment matching protocols and instruments, the potential for the creation of an empirically derived typological assessment is worth exploration.

Using a typology to classify offenders based on treatment needs is a strategy that places emphasis on the offenders, not the treatment modality or even treatment availability. By creating a typology based on offenders’ needs, the assumptions that have been drawn from previous ‘treatment centered’ typologies are no longer required. A participant-based typological matching strategy does not assume that the current treatments available are exhaustive or effective. These types of strategies are different in that they attempt to match offenders to treatments rather than treatments to offenders. Furthermore, if a typological assessment is developed through an empirically-derived, statistically-sound method, the ability for the matching strategy to provide predictive validity may be vastly improved over current instruments. In addition, typological

assessments have increased feasibility for automation, which possess positive implications for their reliability and, ultimately, the predictive validity for treatment outcomes.

Current Study

The current study attempted to address the gaps of prior research by developing a matching technique that explored and quantified matching guidelines for a population of substance-abusing offenders utilizing a statistically-based typological assessment. As previously mentioned, when designing a treatment matching technique, one should be aware of the caveats of each research design and ultimately identify the research design and matching strategy to fit the research questions in a given situation. As discussed in Chapter 2, the basis of this dissertation was to identify a matching strategy for offenders exiting in-prison TC programs and entering halfway houses. The ultimate goal of this research was to identify the needs and deficits of offenders and match them with the appropriate halfway house. Using a typological assessment, based on offenders' pre-intervention characteristics and needs, a matching strategy was deduced from offenders' post-treatment outcomes[3].

Given the situational factors that surround matching design elements, the current study avoids potential caveats by meeting several design considerations. First, one must consider safety. The ultimate goal of the research project is to create a matching instrument, and a hindsight design based on exploratory research questions was used to create the matching design. If the exploratory matching strategy can be established, the table will be set for a future, prospective analysis of study findings.

[3] The details of the design will be discussed in greater detail in Chapter 4.

This safe exploration provides an initial evidence base that can then be used in a prospective experimental design, where risk of harmful effects is of greater concern.

The second design consideration to apply is: how to derive the placement decisions? The current study strategy made use of a typological assessment. The typology created by this assessment was based on several items and domains of pretreatment measures. These pre-treatment variables were gathered largely from assessments summaries where a variety of instruments were administered. Given the large amount of information needing to be processed in the creation of the typological assessment, an automated design utilizing a statistically and empirically verifiable methodology was utilized.

The final design consideration deals with the specificity of the instrument. Taking from methodologies of previous matching investigators, the ultimate goal of this study was to explore a method of creating a matching instrument that could be generalizable to all correctional systems, across a variety of modalities and among offenders in differing systems (i.e. probation, prison, parole, etc.). The general course of previously cited matching instruments is to then validate and test the newly created instrument in a variety of treatment systems. The current research project *did not* attempt to design such a product. The reasons the current project did not attempt to create a generalizable matching instrument are two-fold. First, the research need was not present. The current study attempted to apply findings to the current needs of the New Jersey Department of Drug Programs by creating a matching strategy for offenders entering a single modality – the halfway house. Sometimes referred to as residential-community treatment, halfway houses are not conceptualized into differing treatment modalities such as those produced by the CMP or ASAM's PPC. Described

in greater detail in Chapter 4, all study subjects have already been referred to residential-community treatment and therefore, do not require modality matching. Although each intervention does vary considerably, these variations are need-service variations. Therefore, creating a *tailored* matching strategy to the needs of the Department of Corrections was preferred over a *generalized*, modality-focused instrument. Second, as previous findings have indicated, there has been little success producing large-scale generalizable instruments that can be applied to all substance-abusers in all environments. The lack of success has been attributed to an inability to appropriately assess and match based on *specific responsivity*. As Andrews and Dowden (2005) describe, the efforts have been confounded by 1) constantly changing population characteristics of substance-abusing offenders over time, and 2) the inability of previous instruments to design techniques that address the multi-dimensional, heterogeneous nature of substance abuse treatment participants.

In addition, one can make the argument that all treatment matching is local. That is, every system possesses differing treatment participants and can only provide a limited amount of interventions and services to meet the needs of those participants. This is a main reason currently available matching instruments (i.e. ASAM PPC) are not universally utilized, and often only pieces of these instruments are adopted in conjunction with several other clinician-discretion assessments. Therefore, a truly effective strategy must be based on the needs/deficits of the *current*, yet heterogeneous population of treatment participants, and take into account the *current* interventions and services available. The word *current* is stressed to reinforce the altering nature of such a matching strategy. It is a foregone conclusion that the assessment instruments, treatment participants and the treatments themselves will change over time. Therefore,

instead of creating a matching product (i.e. instrument) that is generalizable enough to weather these changes, this study explored a new methodology that can be adapted to meet the various needs of the correctional system. This methodology provides a generalized protocol for utilizing pretreatment assessments to create a typological assessment. This technique has the ability to be automated and, with time and multiple applications, has the potential to become highly routinized. Typological assessments can then be adapted to the treatments available to identify which “type” of treatment participant is most appropriate for a given intervention based on post-treatment outcomes (i.e. recidivism and substance use). The advantage of the current methodology is its adaptable nature, with regard to the matching strategy it produces, as the procedure retains the ability to adjust to the ever changing nature of treatment systems. For example, if the current project is successful in the creation of a matching strategy, that strategy has the ability to be applied to that system (and only that system) as long as the current system remains unchanged. However, if a new intervention or program is introduced, a new instrument is incorporated into the assessment procedure, or a changing trend in a particular type of participant is identified (e.g. an influx of methamphetamine users), the matching strategy must then be abandoned (or modified) in favor of one that takes into account these system changes. Working closely with data collection, the same methodological procedure can be used again and again, and a replacement matching strategy can be created that adjusts to new system variations.

IV. Methodology

This chapter describes the methodological procedures used in the current study. The research questions of the current project and the hypotheses that seek to address these questions are discussed first. The data collection is discussed next, which includes a description of the sample participants, New Jersey Department of Corrections (NJDOC) procedures, assessment and intervention facilities, and the data collection procedures. Third, a conceptualization for the measures and their operationalization for the current study are presented. Finally, the analytic plan is described, detailing the Latent Class Analysis (LCA) procedures.

The main objective of this study was to establish a matching strategy for substance-abusing offenders needing halfway house treatment. Understanding how to appropriately match offenders to a specific treatment intervention is critical to the implementation of continuum of care and rehabilitation systems. Linking substance-abusing offenders to treatments that are responsive to their needs and learning abilities should benefit both offender and community by decreasing substance abuse symptom severity, relapse, and recidivism. The basis for the development of all matching strategies is, ultimately, to decrease effort needed by treatment placement providers by reducing the amount of data utilized when making placement decisions; thus providing a reliable and valid method for matching a heterogeneous population into appropriate interventions and services. To this end, the current study created an offender typology that subdivides the substance-abuse treatment sample into groups based on participant characteristics and needs. This typology was then linked to halfway house intervention in which subjects were participants.

4.1 Research Questions

As discussed in Chapter 3 methodological approaches to treatment matching study designs vary greatly. Much of this variation is determined by the types of research questions needing answered. A current need of the NJDOC is to find an efficient and empirically verifiable procedure for matching substance-abusing offenders entering halfway house treatment. Within the NJDOC, substance-abusing offenders receive a series of treatments and services within the continuum of care, where in-prison TC treatment is the first phase, followed by halfway house placement in the second phase, and ending with parole supervision and/or community-based services. The matching need for the NJDOC occurs between phases one and two.

In New Jersey, in-prisons TC interventions provide very similar programming and services; however, this is not the case for the halfway house interventions. There are 18 halfway houses utilized by the NJDOC. Each intervention developed from the ground up (i.e. not created or designed by the NJDOC) and is allowed to provide any number and type of treatments and services they see fit. This has created great variation among the halfway houses. In addition to program variation, heterogeneity exists among substance-abusing offenders assigned to halfway houses, with substantial variations in substance use severity, criminal risks, educational/vocational skills and mental and family history risks. For the NJDOC, variation (or lack of standardization) among halfway house interventions is not perceived as a detriment to the rehabilitative system but instead viewed as an example of programming diversity that should be maximized to provide the most appropriate intervention for participants. Unfortunately, matching protocols for offenders entering halfway house facilities do not currently exist. Offenders are placed in halfway houses somewhat randomly, typically based on

bed space availability. Therefore, the current research need for the NJDOC is to create a matching strategy that will eliminate the “randomness” of the current halfway house assignments and instead provide placement recommendations that have the highest probability to rehabilitate and produce positive outcomes (i.e., prevent recidivism).

Based on the NJDOC needs cited, three research questions were evident. First, given the heterogeneity of substance-abusing populations, can an empirically and statistically derived typological assessment be created within a population of offenders? Second, with regard to the general effectiveness of the halfway houses, are there pieces within the system (i.e. halfway house facilities or programs) that are more (or less) effective at meeting rehabilitative goals of substance abusing offenders? That is, are there halfway houses that fail to sufficiently prevent the return of their participants (compared to other facilities utilized by the NJDOC)? Third, can a typological assessment be utilized to match offenders to halfway house treatment? That is, can a matching strategy for halfway house interventions be established after examining the types of offenders who perform better (or worse) in a given halfway house based on prison return outcomes?

4.2 Hypotheses

Using the study research questions, three hypotheses were created. These hypotheses form the basis of the analytic plan to be described. Several testable hypotheses can be derived from the three research questions presented. The current section details the hypotheses to be tested.

Hypothesis 1

With regard to the first question, an assumption is made that there is a substantial amount of heterogeneity within the sample population. Based on the literature cited in Chapters 2 and 3, this assumption becomes a framing argument for the current study. The ability to create a typological assessment of the sample requires that, at the very least, a moderate amount of heterogeneity exists providing enough variation to allow for the classification of offenders into subgroups based on pre-intervention assessments. The current study utilizes a statistical process with the intended use of identifying groups of subjects by subdividing the population into related classes. The first hypothesis relates to the current study's ability to produce a typology of offenders from the current sample.

- *1-H_0:* The null hypothesis is that a single class structure (or no classes) exists within the current sample of substance-abusing offenders, indicating that a statistically significant amount of heterogeneity cannot be determined by the pre-halfway house assessment characteristics of the sample.
- *1-H_A:* A class structure exists among the current sample of substance-abusing offenders, where a statistically significant amount of heterogeneity can be determined by pre-halfway house assessment characteristics of the sample.

Utilizing several statistical procedures, a determination of the existence and number of treatment classes will be established based on offenders' pre-halfway house assessment of needs and characteristics. It is expected this procedure will produce an

exhaustive set of offender classes in which substantial within-class homogeneity and between-class heterogeneity can be established through model fit indices.

Hypothesis 2

The second research question focuses on the responsivity of halfway houses. The New Jersey Department of Corrections utilizes a quasi-random strategy for halfway house placement. As discussed, the variations of intensity and services provided by halfway houses were anticipated to impact the success of the intervention with regard to participant returns to prison. Andrews and colleagues (1990) suggest that criminal justice programs utilize behavioral techniques (e.g. role-playing, role-modeling, problem-solving, and graduated reinforcement techniques) provide effects that reduce recidivism among offenders. If there is (or there is alack of) general responsivity of a given halfway house or group of halfway houses, a head-to-head test of the main effects of halfway houses will reveal possible variations of general responsivity.

- *2-H_0*: All programs provide equally responsive interventions with regard to participants' prison returns post-halfway house admission.
- *2-H_A:* A statistically significant amount of variation exists among participants return rates dependent on the halfway house in which they participated.

Ideally a test of general responsivity would examine each intervention to a comparison group through experimental methods. Given the retrospective nature of the current analysis this was not possible. The head-to-head comparison of halfway houses

will test if one or several halfway houses increase or decrease the propensity for failure with regard to prison returns. Therefore, 2-H actually examines differential general responsivity among the halfway house interventions currently utilized, where if a given halfway house decreases the propensity for failure, then it is generally responsive for all participants compared to other programs used by the NJDOC and increases in propensity for failure indicates a program is comparatively less responsive for the sample population.

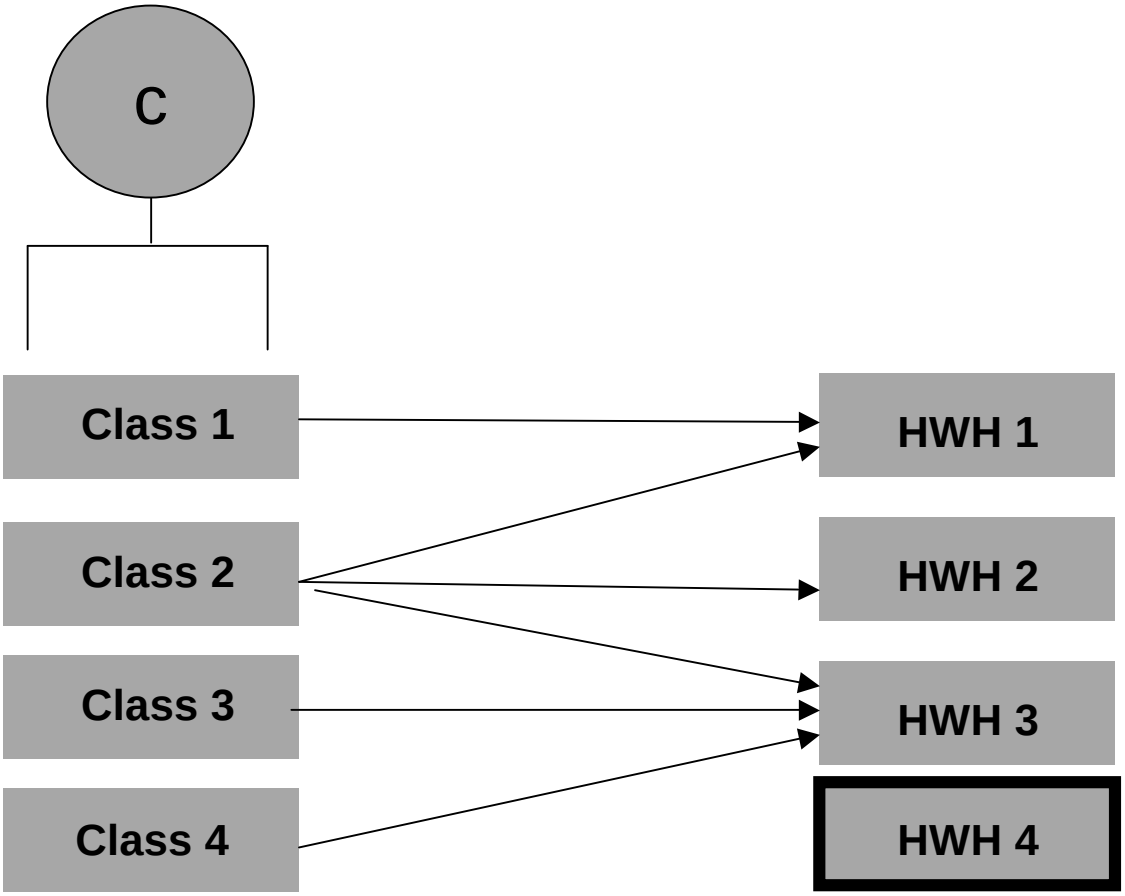
Hypothesis 3

A final hypothesis relates to the effective components of the rehabilitative system. This hypothesis seeks to identify if the relationships between program characteristics vary as a function of the type of offender. The intended purpose of the study findings was to create matching guidelines that assemble the interventions in a way that will allow the NJDOC to distribute (or assign) offenders to the halfway house intervention that is predicted to most effectively prevent returns to prison. This can only be accomplished through a thorough understanding of participant types based on pre-halfway house risks and needs. Essentially, the typological assessment will provide an exhaustive list of offender classes and a matching protocol will be created in which the classes are matched to the available interventions, indicating the most effective placement decision based on the intervention that is least likely to result in failure, or a return to prison. Hypothetically one may find that Class 1 functions best in Halfway House 1, while Class 2 functions best in Halfway House 1, 2, or 3, and Class 3 functions well in Halfway House 3, thus indicating differential effectiveness of the

halfway house facilities (i.e. Figure 4.1 below). It is expected that prison returns will vary based on specific interactions of classes within programs.

- 3-H_0: All halfway houses and programs are equally effective for all participant classes with regard to prison returns following halfway house admission.
- 3-H_A: Significant variations will be identified among the halfway house-class interactions, where variations in prison returns will be identified when each participant class is examined within each halfway house.

Figure 4.1 Hypothetical Matching Strategy



As described, the current study attempts to create a participant-based matching strategy by identifying the service and treatment needs of offender groups. The first two hypotheses test the main effects of both classes and interventions, making assumptions regarding the heterogeneity of the participants and the programs they were assigned to attend. Confirming these hypotheses would help identify the importance of *risk, need* and *general responsivity* principles when making matching considerations for offenders in need of treatment.

Hypothesis 3, however, focuses on the differential effectiveness of the treatment interventions, thus exploring the *specific responsivity* of the provided interventions. It is predicted that findings will identify differential effectiveness among the treatment interventions (resembling something similar to the hypothetical example presented in Figure 4.1 above). This finding would confirm the importance of the principle of *specific responsivity*, where halfway house facilities and program styles must be "matched with the personality, motivation, ability and offender demographics" (Andrews, Bonta and Wormith, 2006: 7). If Hypothesis 3 is *not* confirmed, it would indicate that the overall impact of the halfway houses is relatively the same, despite differing characteristics of offender participants. This would be counterintuitive to study expectations but would also suggest that there are *common* active ingredients inherent in all halfway houses that produce equally effective outcomes for all types of participants (Finney, 1995; Moos et al., 1997).

4.3 Study Data and Setting

NJDOC Continuum

The NJDOC Department of Drug Programs has instituted a policy to provide a "continuum of care" for all incarcerated substance-abusing offenders. The continuum is provided through several stages of treatment interventions. First, offenders are screened for substance abuse need upon prison entry by the Central Reception Assignment Facility (CRAF). Need for substance abuse treatment is determined by a sore of 5 or greater on the Addiction Severity Index (ASI). Following this identification, offenders can be placed in any one of the 10 possible in-prison TC treatment programs. Typically offenders are placed in the TC within their current prison facility. If there is not a TC available within the offender's current prison facility an offender may be transferred to another facility when bed space is available.

As mentioned, all New Jersey in-prison TCs provide similar treatment programming and are all delivered by Gateway Foundation, the Department's contracted provider for in-prison substance use disorder services. Due to the consistency among the programs' interventions, no matching considerations are needed when placing an offender in a TC intervention site, with the exception of the "First Step" program which provides treatment to young offenders (age 18-22). All programs are segregated residential facilities, with a treatment duration lasting anywhere from 9 to 24 months. Typically offenders are placed in TC treatment when they have 15 to 30 months remaining on their term (i.e. until their potential parole date). The timing of TC entry reinforces the continuum of care by decreasing, or eliminating, the gap between the initial in-prison TC portion of the continuum and the halfway house intervention. For the current study the TC programs provide a generalized platform, which creates a

more level playing field for all participants entering halfway house interventions in terms of prior treatment experience and continuum of care considerations. However, the TC treatments received by the sample participants is not the primary focus of current study and, therefore, only a brief description is presented.[4]

The second stage of the continuum is community release procedures. Nearly all substance-abusing offenders participating in the treatment continuum are provided community treatment. Offenders apply for community release during incarceration and, in accordance with the treatment continuum policy, must be approved for community treatment by the NJDOC – Office of Community Programs. Following approval offenders are then granted release and must agree to comply with the conditions of community corrections requirements. Offenders are then transferred to one of two NJDOC assessment centers – Bo Robinson or Talbot Hall. The assessment centers also function as temporary residential facilities, where offenders may receive some continual treatment services prior to their community placement. However, the main objective of the center is to provide offender assessments. While residing in the center, offenders are assessed on a battery of instruments (details of actual instruments to be described in later sections) with the final goal of the assessment process to recommend a community placement modality. Assessments guide the NJDOC decisions to place offenders into the intervention modalities; however, as described previously, once the general modality is recommended, the offender is placed within a given intervention based on bed space availability. This "quasi-random" placement of substance-abusing offenders to halfway house interventions is critical an advantage of the current study as it provides a naturalistic design element. Placement procedures will be discussed in

[4] If readers would like further description of the NJDOC TC programming and services please refer to Appendix 1.

greater detail in later sections. While awaiting community placement, offenders remain in the assessment center anywhere from 2 to 16 weeks, all the while receiving basic substance abuse programming and other services. For the current study, treatments and services provided by the assessment centers are not the main focus of the current study and assumptions regarding their effectiveness or responsivity will not be addressed.

The third stage of the continuum begins when offenders are placed in community treatment. For the current study only halfway house placements are be described. When bed space becomes available, eligible offenders were assigned to any of 16 possible halfway house facilities. Offenders may remain in a halfway house anywhere from six to eighteen months. While residing in a halfway house offenders may receive several different types of services. Descriptions of services and treatments provided by each site will be described in greater detail in sections to come.

The final stage of continuum is parole. Following the completion of halfway house participation, offenders are placed on parole supervision. There is no pre-established range of parole duration as the amount of time an offender participates is based on their sentence length. During this period offenders are required to meet with parole officers regularly and provide random urine samples. Offenders may be mandated to attend additional outpatient treatment services, obtain employment, and maintain a stable residence. This final stage represents a substantial portion of the post-treatment phase of the continuum. Parole represents a critical stage in a substance-abusing offender's recovery where relapse and recidivism risks are high. The extended supervision time also allows for better reporting of outcomes, where official/reliable measures of recidivism are collected (i.e. parole violations).

Participant Eligibility

Official records obtained by the NJDOC represent the main source of data for the study and were critical to the study sample selection process. The study utilized a *purposive* sample were participants meeting specified eligibility criteria were identified from official records. First, all offenders must have participated in the NJDOC continuum of care i.e. they have all attended an in-prison TC treatment, received an assessment from one of the two assessment centers, followed by halfway house treatment, and finally parole supervision. Second, in order to obtain a sample of offenders who have participated in all four stages of the continuum, a sample frame was established. To have time to complete the longest possible duration of TC treatment (24 months), assessment (four months), halfway house intervention (18 months) and then provide a sufficient length of follow-up parole supervision (operationalized as one year) at the time of data collection, offenders must have participated in in-prison TC treatment some time during the years of 2001 to 2003.

Offenders are still eligible for study inclusion if they entered but failed to complete/graduate from in-prison TC treatment. There are several reasons an offender may leave TC treatment before completion, including: administrative transfer, criminal detainer, program failure, or early release. Although unfortunate, leaving in-prison treatment prior to completion is not uncommon and many times not under the control of the offender (e.g. detainer found, programming change, administrative transfer, etc.).

Offenders are eligible for study inclusion if they “failed” in their assigned halfway house intervention. The goal of matching and specific responsivity is to provide the offender with a treatment that is appropriate to his/her needs and learning styles. If an offender fails in the assigned treatment, then the treatment “match” failed

either because the program's treatments and services did not meet the offender's needs or the offender's criminal (or other) risks did not merit a placement in that halfway house. Although it is a lofty assumption to believe that substance abuse treatment is always effective if appropriately matched, one study assumption is that providing treatment should increases the probability of successful outcomes. Hence, it is only a small leap to assume that a "correct" matching enable the completion of the program. Therefore, negative outcomes can logically be recorded during the one year parole follow-up *and* during the halfway house residency. Halfway house "failures" occur for several reasons, including: substance use, escape, and other behavioral infractions. Those offenders who are forced to leave the halfway house for reasons beyond their control (or not related to program failure) will be excluded from the study. Reasons offenders maybe removed other than failure include: detainer found, sentence expired, and death.

Due to confounds relating to the assessment process, female offenders are also excluded from the study sample. In 2000 the NJDOC implemented policy changes requiring all male offenders receive an assessment prior to community placement. Unfortunately, the similar policy change for female offenders did not occur until 2002. Based on the time constraints for the stated data frame, this would only allow for 12 months of female TC program participants to be selected for the analysis. In addition, women are treated in separate facilities from the male offenders, this would necessitate the creation of two distinct matching strategies, one for each gender. Given the small number of female offenders for whom data could be collected during the study time frame and the necessity of a separate, gender specific matching strategy, there would be insufficient statistical power to conduct such analyses. Therefore, the two female

halfway house facilities were excluded and the study sample consisted entirely of male participants.

4.4 Data Collection

Three separate data sources were utilized and compiled for the current study: 1) NJDOC offender record files, 2) offender assessment summaries and 3) halfway house program survey findings. Each data source contains a unique variable set and is described in the following section.

1) NJDOC- Department of Corrections Database

1a) Pre-Intervention - Offender Record Files

The Department of Correction database (ITAG) was used to determine potential subjects study eligibility, and also to collect re-incarceration records for sample offenders. This database tracks offenders' movements though the correctional system using a unique identifier (SBI number). Each offender possesses a State Bureau Identification (SBI) number which is used to track offenders as they move from facility to facility, and remains connected to their file if the offender violates, commits a new offense and/or returns to NJDOC system due to a reconviction. Through a filtering of offender files, NJDOC staff identified a sample of all offenders assigned to in-prison TC beds within the 2001-2003 eligibility period.

In addition to identifying TC participation, eligibility was also determined by halfway house and assessment participation. During the individual examination of official records the identification of the halfway house placement and length of parole supervision is determined. If offenders have participated in an in-prison TC treatment

(anytime during 2001-2003), followed by a halfway house, followed by a minimum of one year follow-up eligibility post-program, the offender then meets all eligibility requirements and was included in the study sample.

Additional measures of program eligibility are also collected through these DOC official records. These measures include: age, race, TC and halfway house facility, parole date, program violations, ASI Drug and Alcohol rankings, and halfway house and TC treatment duration. These measures and their use in the current study are described in greater detail in the *Measurements* section.

1b) Re-incarceration records during halfway house residence and follow-up period

The release to the community is one of the most critical times in an offender's rehabilitation. This period constitutes the first time in several years an offender has been forced to find employment and housing while remaining drug-free. This time also serves as the follow-up period where effectiveness of halfway house programming can be evaluated. In addition, offenders' progress is also evaluated during their halfway house participation. These measures examine success through the presence/absence of negative behaviors reported during their halfway house residency, such as escape, infractions and program failure.

Offenders' progress following the halfway house interventions is also utilized to assess success/failure. This period provides an opportunity in which offenders are monitored for new crimes and parole violations. The same ITAG database used to determine study eligibility was used to identify re-incarceration records for sample offenders; tracking participants' corrections records for: prison returns, reasons for

prison return (e.g. parole violation, new crime, etc.) and the date in which the return occurred.

2) Assessment data

As mentioned previously, following in-prison TC treatment, and prior to assignment to community interventions, offenders are transferred to one of two assessment centers. Here they were evaluated on several actuarial instruments. The instruments were administered by trained assessors with bachelor's degrees in behavioral science, supervised by clinical staff and directed by a doctorate level clinician. Each instrument seeks to provide information on one or several domains of the offender's needs and deficits. The findings of each instrument are then compiled into an assessment summary describing both static and dynamic characteristics of each offender.

The assessment summary is broken into two portions – the interview and the assessment report. The interview aims to identify severity of offenders' behavior within several domains, relying on both offender responses to target questions and official records. The assessment report summarizes the findings of the administered assessment instruments. Table 4.1 provides and overview of the instruments behavioral domains measured.

Table 4.1 Assessment Summary Overview

Interview		**Report**			
Official Records	*Face-to-Face*	*LSI-R*	*SASSI*	*Wonderlic*	*PAI*
- Criminal hx - Educational hx - Employ hx - Juvenile record	- Medical/ Psych hx - Family hx - Drug use hx	- Alcohol/Drug - Education - Companions - Criminal hx - Emotional/ Personal - Attitude orientation - Family/Marital - Accommodation - Financial - Companions	- Substance abuse / dependence	- Vocational aptitude - Education aptitude	- Violence - Aggression

Assessment Interview

The Assessment Interview is comprised of a thorough file review of official records and survey items obtained from face-to-face interviews with each offender. The interview covers several domains, including criminal history (including juvenile records), medical/psychiatric, family life, vocational and education history. A copy of the interview from can be found in Appendix 2.

Assessment Report

Several instruments were administered to offenders while residing in the assessment center. Assessment center staff compiles instrument findings and provide a summary in an assessment report. Each instrument has been selected by the assessment center director to provide insight into key behavioral domains relevant to community corrections programming. The instruments contained within each report are briefly described here. A copy of an example assessment report can be found in Appendix 3.

Level of Service Inventory-Revised: (LSI-R)

The LSI-R is a multi-dimensional instrument that measures criminogenic factors associated with recidivism. The 54 item instrument gathers responses within

several offender domains, including: alcohol/drug, emotional/personal, attitude orientation, education/employment, companions, criminal history, accommodation, family/marital, and financial. The LSI-R provides domain scores as well as an overall score, a total rank, a halfway house recommendation, and estimates of recidivism probability. The potential uses for the LSI-R include: placement decisions, security level classifications, monitoring treatment progress, and allocating treatment resources (Andrews and Bonta, 2001)

Substance Abuse Subtle Screening Inventory: (SASSI)

The SASSI is a brief instrument aimed at identifying the presence and severity of a substance abuse disorder. Substance abuse is measured as the "probability" of having a substance use disorder. The SASSI also contains several subscales of the disease of addiction, including: defensiveness, level of insight and awareness, emotional pain, and legal involvement (SASSI Institute, 1999).

Wonderlic Personnel Test (WPT)

The Wonderlic Personnel Test (WPT) is a brief instrument that measures individuals': ability to learn and understand instructions, solve problems, apply knowledge, benefit from job training, and job satisfaction. The results of the WPT can be used to identify the person's ability to understand and complete tasks for a particular occupation. The WPT provides and overall score that can be interpreted as a measure of vocational aptitude (Wonderlic, Inc., 2007). These scores can be further divided into levels of vocational aptitude, with individuals scoring in the lower 87th percentile, representing the lowest vocational aptitude level.

Wonderlic Basic Skills Test (WBST)

The WBST is also a brief instrument that measures an individual's basic skills in math and language that are related to employment. The results are used in pre-employment testing to assess an individual's English and Math skills required for entry-level employment. The WBST provides an estimate of grade achievement level, identifying an individual's basic skills comprehension (Wonderlic, Inc., 2007).

The Personality Assessment Inventory (PAI)

The PAI is a 344 item instrument utilized as an inventory of personality characteristics needed in clinical evaluation. The instrument provides broad-based assessment of mental disorders intended to provide relevant information for diagnosis, treatment planning, and screening. The PAI measures 22 scales, including: Inconsistency, Infrequency, Negative Impression, Positive Impression, Somatic Complaints, Anxiety, Anxiety-Related Disorders, Depression, Mania, Paranoia, Schizophrenia, Borderline Features, Antisocial Features, Alcohol Problems, Drug Problems, Aggression, Suicidal Ideation, Stress, Nonsupport, Treatment Rejection, Dominance and Warmth. Two important scales for correctional populations include the Aggression Treatment Scale and the Violence Potential Index. (Morey and Quigley, 2002)

3) Halfway House Program Summaries

Following a similar methodology utilized by Moos and colleagues (1995; 1997; and 1999), the current study examined variations of Community Residential Facilities

(CRFs) utilizing two survey instruments: the Drug and Alcohol Program Treatment Inventory (DAPTI; Swindle, Peterson, Paradise, & Moos, 1995) and the Policies and Services Characteristics Inventory (PASCI; Timko, 1995).

3a) Drug and Alcohol Program Treatment Inventory (DAPTI)

The DAPTI is a survey instrument that was developed to identify treatment orientations among those commonly used within substance abuse treatment programs. Based on items that describe activities, philosophies and priorities the DAPTI rates facilities through an indexing of item scores which, in turn, identify facilities' primary treatment orientation. Eight program orientations are possible under the DAPTI, including: 12-step (AA/NA), Cognitive-Behavioral, Psychodynamic, Family, Therapeutic Community, Rehabilitation (vocation focused), Dual Diagnosis, and Medical.

3b) Policies and Services Characteristics Inventory (PASCI)

The PASCI was developed to apply to hospital- and community-based substance abuse programs for adults, including inpatient units, community residential care and halfway house programs. The instrument contains 140 individual items that are organized into nine dimensions, including: Expectations for Functioning, Acceptance of Problem Behavior, Policy Choice, Resident Control, Policy Clarity, Provision for Privacy, Health and Treatment Services, Daily Living Assistance, and Social-Recreational Activities.

Both the DAPTI and PASCI have been utilized in similar settings (e.g. Community Residential Facilities). In the current study each instrument was

administered to participating halfway house directors via a web-based survey. Results highlight programmatic differences that were utilized to describe commonalities and variations among halfway house facilities. To view the DAPTI and PASCI instruments please refer to Appendices 5 and 6.

4.5 Measures

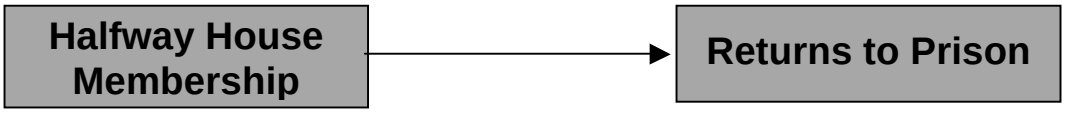
The study measures were drawn from the items collected within the instruments discussed above. The halfway house to which an offender was assigned represents the independent variable in the analysis. This takes the form of a single nominal variable, where each value represents a different halfway house facility. The dependent variables for the analysis were prison returns, tracked during halfway house participation and following release. The presence or absence of a prison return, and the time-to-return, identify if an offender was properly matched, or mismatched to the halfway house intervention. The last measure of theoretical importance is the typology. Within the typology, the created class structure represents the key moderator variable of the model. In constructing the typology several assessment and other pre-intervention items and scales, from a variety of domains, were explored. Each item and scale is examined for possible influence in the creation of the class structure. This section outlines the three variables to be used in the final analysis, focusing primarily on the items and scales to be used in the typological assessment.

1) Halfway Houses

As mentioned, the halfway house in which an offender is assigned represents the independent variable for the final analysis. The study hypothesizes that successful

outcomes are influenced by participation in a halfway house that is matched to subjects' pre-admission needs and risks. Therefore, each halfway house was predicted to have differential effectiveness with regard to successful outcomes. Offenders with successful outcomes were considered matched while unsuccessful outcomes represent mismatches. The key predictor of returns is the halfway house in which the offender participated represents the model's main effect, illustrated in Figure 4.2.

Figure 4.2 Study Model – Main Effects



Several scales were utilized from the DAPTI and PASCI survey instruments and two additional measures, program capacity and staff-to-participant ratio, were gathered from the halfway houses directly. From the DAPTI, two composite scores identify the orientation of study's halfway house programs. A description of each orientation conceptualized by Moos is presented below (Moos, 2004: 2).

Orientation	Description
1. *12-Step/AA*	Emphasis on Alcoholics Anonymous (AA) and Narcotics Anonymous (NA) goals and activities such as helping residents accept that they are powerless over the abused substance and working through the 12 steps.
2. *Cognitive-Behavioral*	Emphasis on developing confidence in coping with high-risk situations for relapse, and on helping clients identify alternative responses to using drugs or alcohol, and on improving communication and assertiveness skills.
3. *Psychodynamic*	Emphasis on helping clients understand how substance abuse dependencies develop and on gaining new insights into personal relationships.

4. *Family*	Emphasis on strengthening marital and family relationships, and involving the spouse and other family members in treatment.
5. *Therapeutic Community*	Emphasis on accepting personal responsibility for decisions and actions, and on assigning clients chores or duties as part of treatment.
6. *Rehabilitation*	Emphasis on developing better work habits and acquiring new job skills.
7. *Dual Diagnosis*	Emphasis on specialized treatment for clients who have both substance abuse and psychiatric problems.
8. *Medical*	Emphasis on using medications to decrease withdrawal symptoms and on using formal diagnoses as the basis of treatment plans.

The 140 PASCI items were scored on nine composite scores that determine variations of programs' policy and services. A description of each scale conceptualized by Timko is presented below (Timko, 1995: 50) and descriptions of these composites are provided in Table 4.2.

<u>Requirements for Residents' Functioning</u>

1. *Expectations for Functioning*	Assesses the minimum levels of physical and psychological functioning that are necessary for admission to the program.
2. *Acceptance of Problem Behavior*	Assesses the extent to which uncooperative, aggressive, or other problem behavior is tolerated in the program.

<u>Individual Freedom and Institutional Structure</u>

3. *Policy Choice*	Reflects the extent to which the program provides options from which residents can select individual patterns of daily living.
4. *Resident Control*	Measures the extent of formal structures that enable residents to influence program policies.

5. *Policy Clarity*	Measures the extent to which program policies are communicated clearly through formal mechanisms.
6. *Provision for Privacy*	Assesses the amount of privacy given to residents.
Provision of Services and Activities	
7. *Availability of Health and Treatment Services*	Assesses the availability of health and treatment services within the program.
8. *Availability of Daily Living Assistance*	Measures the availability of services provided by the program that assists residents in tasks of daily living.
9. *Availability of Social-Recreational Activities*	Assesses the availability of organized activities within the program.

Table 4.2 DAPTI and PASCI Composite Measures

Item	Measurement Type - Values/Range
Program Capacity	Interval – 25-345
Staff to Client Ratio	Interval – 3-25
DAPTI - Goal Item Composite	Nominal – 12-Step, Therapeutic Community, Cognitive Behavioral, Psychodynamic, Rehabilitation, Dual Diagnosis, Medical, or Family
DAPTI - Activity Items Composite	Nominal – 12-Step, Therapeutic Community, Cognitive Behavioral, Psychodynamic, Rehabilitation, Dual Diagnosis, Medical, or Family
PASCI - Expectations for Functioning Composite	Interval – 1-100
PASCI - Acceptance of Problem Behavior Composite	Interval – 1-100
PASCI - Policy Choice Composite	Interval – 1-100
PASCI - Resident Control Composite	Interval – 1-100
PASCI - Policy Clarity Composite	Interval – 1-100
PASCI - Provision for Privacy Composite	Interval – 1-100
PASCI - Availability of Health/Treatment Services Composite	Interval – 1-100
PASCI - Availability of Daily Living Assistance Composite	Interval – 1-100
PASCI - Availability of Social-Recreational Activities Composite	Interval – 1-100
PASCI - Substance Use Regulations Composite	Interval – 1-100

2) Return Outcomes

The outcomes collected during the halfway house intervention, parole and post-parole represent the dependent variables of the current study. There are four outcomes used in the final analysis: escapes, technical violations, new crimes (commitments) and halfway house violations. Although each measure represents a different negative outcome, the combination of these measures represents a single, dichotomous dependent measure – failure - where, if any one of these four events was recorded for an offender, a placement mismatch was operationalized to have occurred. The study assumed that if a participant was appropriately matched to a halfway house, these negative outcomes would not occur. The opposite is also assumed to be true; the absence of escapes, technical violations, new crimes or halfway house violations,

during or following the intervention, was operationalized as a successful treatment match.

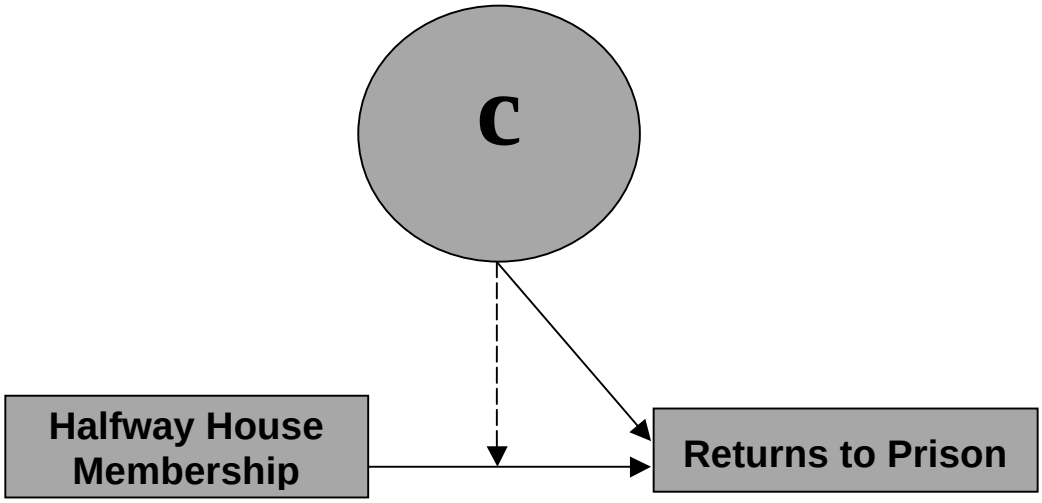
Table 4.3 Prison Return Outcomes

Item/Scale	Measurement Type/Values
New Commitment - New charges incurred following halfway house release resulting in a return to prison	Dichotomous - Yes/No
Technical Violations - Violations of parole conditions resulting in a return to prison	Dichotomous - Yes/No
Halfway House Violation – Violation of halfway house facility rules incurred while residing in the halfway house resulting in a return to prison	Dichotomous - Yes/No
Escape – An unauthorized exit from the halfway house (i.e. walk away), where upon recapture, results in a return to prison	Dichotomous - Yes/No

3) Typology Development

The typology, produced through the typological assessment, is hypothesized to moderate the effectiveness of the halfway house with regard to the prevention of return outcomes. That is, offenders successfully matched to a halfway house, based on their treatment class, were expected to have a greater probability of success at follow-up. The typology moderator represents a single variable in the final analyses but is actually a composite of several variables. An illustration of the conceptual model is displayed in Figure 4.3.

Figure 4.3 Study Model –Interaction Model



The typological assessment combined several influential assessment measures and subdivided the sample population into a set of classes from which a matching strategy could be derived. Therefore, all measures that may influence a participant's success in a halfway house were explored for possible influence in determining the treatment matching class structure.[5] As mentioned in an earlier section, the assessment measures utilized to construct the class structure represent a variety of domains and come from multiple agencies and record types. Each domain is discussed briefly, describing the individual items and composite scales used in the typological assessment.

Criminal risk

Criminal risk is a critical measure in any matching design for offender populations. One of the correctional principles cited by Andrews Bonta and Hoge (1990), offender *risk* is hypothesized to influence the effectiveness of the correctional treatment. More specifically, offenders higher in criminal risk will require a greater intensity of correctional intervention to counteract that risk. Offenders' assessments measured several theoretically relevant criminal risk items. First, offenders' criminal histories were examined. Assessment center staff collects information through a review of offenders' records and confirmed through face-to-face interviews. A list of the offense history items and values are presented in Table 4.4.

[5] It should be noted that due to the exploratory nature of the study all of the assessment measures discussed may not be included in the final construction of the typology. During the analysis it may be determined that some or several of the measures do not aid in the construction of the matching typology. In this proposal, measures are often discussed in terms of exploration of use rather than explicit inclusion in the final model. Ultimately, statistical data reduction techniques will be utilized to create composite measures when possible, reducing the number of measures used in the final analysis.

Table 4.4 Adult and Juvenile Offense History Items

Item/Scale	Measurement Type/ Values
Age at the time of halfway house admission[6]	Interval – Range 19-65
Of the many offenses the offender is convicted of, this represents the primary offense	Nominal – Controlled Dangerous Substance (CDS) , assault, robbery, burglary, theft, violation of parole, weapons, manslaughter/murder, procedural violation, and other
Longest prison duration offender can serve on current conviction	Continuous - Range 1-45 years
Shortest prison duration the offender can serve on current conviction	Continuous - Range 0-20 years
Minimum sentence length set by statue of offenders' current offense	Dichotomous - Yes/No
Total number of arrest offender has incurred	Count - Range 1-80
Total number of convictions offender has incurred	Count - Range 1-46
Total number of incarcerations offender has incurred	Count - Range 1-18
Current conviction for a violent offense	Dichotomous - Yes/No
Offender has current or prior conviction for violent offense	Dichotomous - Yes/No
Offender's age at time of first arrest	Count - Range 6-39 years
Offender has a current or prior history of gang affiliation	Dichotomous – Yes/No
Offender has current or prior history of domestic violence	Dichotomous – Yes/No
Offender has an arrest prior to age of 18	Dichotomous – Yes/No
Offender has a conviction prior to the age of 18	Dichotomous – Yes/No
Offender has current or prior felony conviction (adult only)	Dichotomous - Yes/No
Offender cited for institution infraction during current incarceration	Dichotomous – Yes/No
Offender has current or prior parole or probation violation	Dichotomous – Yes/No
Offender has previously participated in a halfway house intervention	Dichotomous – Yes/No
Offender has a prior correctional institution escape charge	Dichotomous – Yes/No

The second source of information on criminal risk comes from the Level of Service Inventory-Revised (LSI-R). Where the previous measures of criminal risk focus entirely on offenders' prior history, the LSI-R provides an assessment of the offenders' future risk of recidivism. The LSI-R provides summary measures of offenders' predicted risk of recidivism and ranks offenders' need areas on several

[6] Although not always considered with criminal risk, prior research has indicated that age can play a factor in predicting treatment effectiveness and criminal risk. Andrews, Bonta and Hoge's (1990) concept of specific responsivity would dictate that a matching typology should account for those demographic differences that will differentiate an offender's amenability to a given intervention and Moffit's life-course theory (2003) would suggest that age plays an important factor in desistance and persistence of criminal behavior. Age is identified as a potential moderator for a halfway house's impact on study outcomes. Some reports indicate that older participants typically have stronger responses to treatment (Festinger et al., 2002, Marlowe, Patapis and DeMatteo, 2003). Therefore, offender's age was also explored as an exploratory measure in the typological assessment.

domains. Although the LSI-R consists of dozens of items, only summary scale measures are available within the offender assessments; therefore, the study used only these summary measures in the creation of the matching typology. A description of the LSI-R measures is presented in Table 4.5.

Table 4.5 LSI-R Measures

Item/Scale	**Measurement Type/ Values**
LSI-R Total Score – 54 items	Count - Range 0-54
Overall LSI rank based on Total Score	Ordinal Scale (Range 7) / Very Low to Maximum
Subscale of all alcohol and drug items	Ordinal Scale (Range 7) / Very Low to Maximum
Subscale of all personal and emotional related items	Ordinal Scale (Range 7) / Very Low to Maximum
Subscale of all items related to offenders' attitudes and orientation	Ordinal Scale (Range 7) / Very Low to Maximum
Subscale of all educational and employment items	Ordinal Scale (Range 7) / Very Low to Maximum
Subscale of all items related to offenders previous companions	Ordinal Scale (Range 7) / Very Low to Maximum
Subscale of all items related to offenders criminal risk	Ordinal Scale (Range 7) / Very Low to Maximum
Subscale of all items related to offenders' accommodation	Ordinal Scale (Range 7) / Very Low to Maximum
Subscale of all family and marital items	Ordinal Scale (Range 7) / Very Low to Maximum
Subscale of all items related to offenders' financial needs	Ordinal Scale (Range 7) / Very Low to Maximum
LSI-R - Offender's assessed appropriateness for halfway house	Dichotomous – Yes/No
LSI-R - Offender's assessed probability of recidivism	Continuous - Range 0-1

Substance Use Severity

Offenders' substance use severity was measured and included as a part of the matching typology. Similar to criminal risk, the Andrews principles would predict that greater substance use severity should increase the probability of return (Andrews, Bonta, and Wormith, 2006). Furthermore, the intensity of the intervention should be matched to an offenders' substance use severity. Two sources of data were used to measure substance use severity. The first source was participants' substance use histories measures. These measures were collected through self-reported items

administered to the offender during the assessment interview as well as additional treatment variables obtained through official records. A list and description of the substance use history measures are presented in Table 4.6.

Table 4.6 Substance Use History Measures

Item/Scale	Measurement Type – Values
All substances used during offender's life time	Nominal - Cocaine, marijuana, heroin, ecstasy, PCP, barbiturates, methamphetamine, alcohol, other, etc.
Frequency of substances used at zenith of use career	Ordinal - Daily, 3-6 times a week, 1-2 times week, 1-3 times a month, occasional/ experimental
Age of first use of substance	Continuous - Range 7-50 years
Substance use in the 12 months prior to incarceration	Dichotomous – Yes/No
Previous number of treatments offender received prior to assessment	Count – Range 1-21
Does offender believe he will benefit from further treatment	Dichotomous – Yes/No
In-prison TC treatment facility in which offender participated	Nominal – Pier, First Step, Freshstart, No Return 1, No Return 2, NuWay, NuView, Bridge
Duration of in-prison TC treatment offender received	Continuous – Range 1-36 months

Additional substance use measures were gathered to identify the severity of the offender's substance use as it relates to the Diagnostic Statistical Manual (DSM IV) of substance use disorders. Administered upon prison admission, the Addiction Severity Index (ASI) identifies the need for treatment with regard to alcohol and/or drug abuse. Participants eligible for the NJDOC continuum of care are required to score five or greater on either the drug or alcohol composite scales. A score of five indicates a moderate problem and a need for treatment (www.tresearch.org). The ASI has been utilized for over 25 years and is one of the most common instruments for assessing substance abuse severity (McLellan et al., 2006). Empirical findings suggest that the results of this assessment are significantly correlated with the DSM IV diagnoses for drug and alcohol dependence (Rikoon et al., 2006).

The Substance Abuse Subtle Screening Inventory (SASSI) assessment was also administered to participants as a gauge of substance abuse/dependence and has shown to be an accurate predictor of dependency within criminal justice populations (Swartz, 1998). Administered during their stay at the assessment center, SASSI scores represent offenders' substance use abuse/dependence immediately proceeding halfway house entry. Within the offenders' assessments, summary measures of the SASSI results are provided. Descriptions of the SASSI measures are presented in Table 4.7.

Table 4.7 SASSI Summary Measures

Item/Scale	Measurement Type/ Values
ASI-Drug Score	Continuous – Range 0-9
ASI-Alcohol Score	Continuous – Range 0-9
The severity of the offender's dependence (SASSI Summary)	Ordinal/ Low probability, High probability, Severe Dependence

Medical/Psychiatric Measures

The medical and psychiatric status of offenders is also of value to the matching typology. As mentioned in Chapter 2, medical and psychiatric issues co-occurring with substance use can impact an offenders' treatment and thus, several items identifying mental health issues in the current sample were explored. A description of the medical and psychiatric measures is provided in Table 4.8.

Table 4.8 Medical/Psychiatric Measures

Item/Scale	Measurement Type/ Values
Offender current has a medical illness	Dichotomous – Yes/No
Offender received psychological or psychiatric counseling (lifetime)	Dichotomous – Yes/No
Offender ever hospitalized for psychiatric issue (lifetime)	Dichotomous – Yes/No
Offender ever prescribed psychiatric medication (lifetime)	Dichotomous – Yes/No
Offender ever diagnosed with a metal illness (lifetime)	Dichotomous – Yes/No
Offender has any history of suicide ideation and/or attempt(s) (lifetime)	Dichotomous – Yes/No

Employment Measures

Many of the halfway houses focus on vocational training and providing employment opportunities. Employment following the release from halfway houses is not only influential in preventing offenders' relapse and illegal activities but is a condition of parole. Having a history of employment and measures of occupational aptitude were included as factors in the matching typology. Several employment history measures were selected, as well as the Wonderlic Personnel Test (WPT) summary measure. A description of the employment measures are presented in Table 4.9.

Table 4.9 Employment Measures

Item/Scale	Measurement Type/ Values
Offender employed in 12 months prior to incarceration	Dichotomous - Yes/No
Offender ever collected unemployment, disability, or welfare	Dichotomous - Yes/No
Offender ever enlisted in the military	Dichotomous - Yes/No
Wonderlic Personnel Test Total Score	Continuous - Range 1-50

Education Measures

Related to employment are the educational needs of offenders. As mentioned in Chapter 2, offenders who lack education and basic skills may be prevented from obtaining specific occupations and low educational attainment limits overall job performance Therefore, measures of educational achievement and aptitude are included as part of the matching typology. For the current study several educational measures were explored and the description of each is presented in Table 4.10.

Table 4.10 Education Measures

Item/Scale	Measurement Type/ Values
Highest grade completed	Continuous/ NA
Completed General Education Diploma	Dichotomous -Yes/No
History of special education	Dichotomous -Yes/No
History of grade retention	Dichotomous -Yes/No
Wonderlic Basic Skills Test Composite Score (WBST)	Continuous – Range 5-13

Family Measures

Substance abuse and criminality often have strong roots in offenders' family history. An offender's ability to stay sober and prevent re-arrest can be inhibited by their family perception of legal norms. However, supportive family environments can also aid offenders' progress following halfway house release. Family histories and current family relationships are considered as part of the matching typology as they may suggest service needs. Table 4.11 describes the family history factors that were explored in the current study.

Table 4.11 Family Measures

Item/Scale	Measurement Type/ Values
Offender's family member(s) has prior incarceration	Dichotomous – Yes/No
Offender has history of family physical abuse	Dichotomous – Yes/No
Offender has history of family sexual abuse	Dichotomous – Yes/No
Offender's family member(s) has prior substance abuse problem	Dichotomous – Yes/No
Offender has children	Dichotomous – Yes/No

4.6 Single Summary Measure

Although discussed in greater detail in the analytic methods section, it is important to note that all the measures discussed in this section were used as part of the typological assessment. However, all items mentioned were *not* utilized in the final LCA analysis but merely represent all the measures that were available for inclusion in the typology. All items were first explored for their utility. Using previously identified theoretically relevant measures (e.g. job skills, criminal history and substance abuse severity) and examination of univariate descriptives, key measures deemed most appropriate and useful in the matching process were consolidated and/or selected. The chosen measures were utilized in the creation of the typological assessment by combining all measures into a single composite measure. That is, each measure used in the final analysis represents a component in the determination of the typology class

structure. The typology takes the form of a single nominal measure and represents the key moderator used in the final analysis.

4) Additional moderators

Additional moderators were also explored in the analysis. One intervention effect that should impact the overall effectiveness of the halfway house is the duration of participants' in-prison TC intervention. As mentioned, the participants may reside in the TC anywhere from 9 to 24 months. Research indicates that the longer an offender participates in programming the more likely that offender is to have favorable outcomes (National Institute on Drug Abuse, 1999). Recommendations of the National Institute on Drug Abuse indicate that, although the appropriate duration of time-in-treatment depends on the individual's problems and needs, three months is generally considered the minimum duration needed to identify positive effects of treatment. Butzin, Martin, and Inciardi (2005) found that program completion had a significant impact on participant outcomes but mere participation increased the odds of positive outcomes. However, it may also be true that retaining individuals past the point of program effectiveness could negatively impact outcomes allowing participants to backslide from progress made earlier in treatment. Therefore, the number of months an offender participates in in-prison TC treatment is included as a model covariate, representing a moderator of offender success.

4.7 Methodological Issues in the Current Study

There are several methodological issues of the current study which were considered. Methodological issues discussed include: a) use of public records, b)

construct validity, c) maturation, d) external validity, e) motivation of self-report measures and f) recall reliability.

Use of Public Records

The data for the current analysis were collected by assessment center staff and staff of the NJDOC. This type of data is referred to as *nonpublic agency records* (Maxfield and Babbie, 2006). One of the major issues with this type of data collection concerns the reliability of the outcome measures. In particular, new crimes committed during the parole follow-up period may not produce a reconviction. Often times a minor violation (i.e. public intoxication) does not automatically produce a revocation. Typically, revocation warrant decisions are left to the discretion of parole officers. Leniency can, and does, vary from parole officer to parole officer. Therefore, there is a certain amount of recidivism that does not trigger reconviction. Although there are flaws with the use of official records, the flaws are universal across all offenders. That is, there is no reason to expect that a bias is created by using official records; that is, one would not expect that a certain group of offenders within the sample are less likely to be arrested for a new crime despite committing the same amount of crime as those who are not rearrested. Therefore using official records for measures of recidivism to identify matched versus mismatched cases were not expected to disproportionately favor one type of offender over another; hence, their use in the current study represents only a minor methodological issue. Furthermore, additional analyses will explore the amount and reason for technical violations to identify whether a bias exists in the reporting of these types of recidivism measures.

Typology Operationalization and Construct Validity

Operationalization refers to the process of describing and defining the ways in which the study will measure its theoretical constructs (Maxfield and Babbie, 2006). The ability to represent abstract constructs though assignment of real world measurements determines the study's construct validity (Shadish, Cook and Campbell, 2002). The key theoretical construct to be examined in the current study is the created matching typology. The intent of the typology is to create classes of offenders, where each class possesses different intervention needs.

Discussed in greater detail in the analytic plan, the typology is created using latent variable modeling. The technique assumes there is an unobserved pattern of responses within the multiple assessment measures, where statistical methods create a set of classes that represents different offender types. Although the selection of indicators used to create the latent classes is theoretically derived from offenders' pre-intervention needs, the actual classes are created by a statistical method and, hence, not directly guided by theoretical assumptions.

Utilizing a statistical method to identify intervention classes represents a threat to construct validity as the study assumes the created classes are real and meaningful. That is, even though a set of classes can be created through latent variable modeling, the grouping of offenders may not directly represent classes of individuals with differing intervention needs. The main methodological issue created is that, although the selection of indicators for the latent classes are guided by theoretical assumptions of treatment needs and offender risks, the created typology is once removed from those theoretical assumptions and dependent on a mathematical categorization of the subjects.

Although construct validity is a concern of the study, the threat itself is also the intent of the project. That is, the ability of the statistical method to produce representative intervention classes is the ultimate test of the study. If the effect of the typology produces a significant moderating effect on the success of intervention(s) then one can assume the created typology represents intervention classes.

An additional study component that will aid in the evaluation of construct validity is the examination of class profiles. The latent model proposed has the ability to produce posterior probabilities of each indicator within each latent class. Table 4.12 represents a hypothetical and simplified ranking of class profiles.

Table 4.12 Hypothetical Profile of Classes Within A Proposed Typology

Class	Criminal Risk	Substance Abuse Risk	Psychiatric Need	Employment Need
1	High	High	High	High
2	Med	Med	Low	Med
3	Low	High	Low	Low
4	High	Low	Low	High

Although the study analysis will be represented by probabilities (not qualitative labels) the hypothesized class profiles illustrate how this study will combat threats to construct validity. These probabilities allow for the examination of classes profiles; where, within each class a prototypical offender can be identified. These class profiles can then be evaluated for face validity, that is each class profile can be examined as to whether or not they appear to represent groups of offenders that would need different (or matched) treatment interventions. The examination of the classes' face validity was guided by theoretical knowledge of the Andrew's group principles of risk, need and responsivity.

4.8 Methodological Threats

Maturation

One threat to internal validity is *maturation*, which refers to all possible influences that occurred during the study period affecting the outcome that are not a result of the treatment (Shadish, Cook and Campbell, 2002). One threat relevant to the current study occurs during the post-halfway house assessment of outcomes. The evaluation of prison returns begins upon participants' admission to the halfway house intervention and continues after release. It can be argued that parole may have an independent impact on the study outcomes (e.g. prison returns). The intent of the continuum would dictate that participation in parole supervision and other community-based services would add to the rehabilitative effects of the previous treatments received. Therefore, the use of parole as the final stage of the continuum should provide an additional rehabilitative mechanism. Similar to the halfway house interventions, parole supervision and the variations involved in each offender's parole experience may provide a differential impact on propensity for failure. It is possible the effect of parole may override, or moderate, the effect of the halfway house.

Measures of parole that may impact participants' returns are outside the scope of this study and were not controlled. However, the impact of the halfway house intervention should be observed above and beyond the potential confounding influences of parole. Furthermore, given the "quasi-random" assignment of offenders it is logical to assume that the potential confounding influence of parole is not systematic to the class structure or their halfway house placement.

Internal Validity

Internal validity relates to the study measures' ability to measure the behavior or event in question (Shadish, Cook and Campbell, 2002). Halfway house variations will be examined using data from two surveys. These surveys identify the current orientation, provisions of policies and services. Given that some sample subjects entered halfway houses as early as 2001, there was a probability that the programs' responses to these items at the time subjects participated in their interventions differ from the responses gathered in the current study. If the unmeasured item response differences (between earlier years and present day) has an impact on the outcome of the offenders and/or the matching strategy created, these differences ultimately impact the internal validity of the survey response used to gauge halfway house variations.

Treatment Diffusion

Treatment diffusion another threat to internal validity, as participants may receive some, or all, of the treatment of another treatment group (Shadish, Cook and Campbell, 2002). In the current study, offenders can be transferred from one halfway house to another. When examining the main effects of each halfway house, it is difficult to disentangle the effects when individuals participate in more than one halfway house program. The addition of the typology as a moderator further entangles the model's findings with regard participants of multiple houses. Specifically, additional analyses explored the effects of multiple halfway house participation examining models including and excluding offenders who were participants of multiple houses.

External Validity

External validity relates to the generalizability and refers to the ability of the study's findings to be applied when different samples, settings, interventions (Shadish, Cook and Campbell, 2002). There are several types of external validity, each examining a different part of the study design that may affect its generalizability, such as: measurement units, specificity of moderators, uniqueness of the treatment setting, constellation and/or variability of treatments. To avoid a lengthy description of the current study's relationship to each of the external validity threats, instead a shortened description of the general threat to external validity is provided.

External validity is *not* a recognized strength of the current study. As mentioned in Chapter 3, the settings, measurements and sample are very specific. The main objective of the study was not to create a treatment matching protocol that can be generalized to other states' correctional systems. It would be naive to assume that other states 1) have the same battery of assessment instruments, 2) would produce the same number or type of offender classes, 3) have a similar continuity of care provisions or 4) assign offenders to community treatment in the same way as the NJDOC. It is not the intent to rule out the potential for similarities to other states' rehabilitative systems, instead this study recognizes the uniqueness of the research problem, design and findings. Although it is important to find a treatment matching protocol for the NJDOC, it would be unwise to take the created matching protocol (as is) and apply it to another state's halfway house placement system without considering numerous variations in services, populations and policies.

Also mentioned in Chapter 3, the main utility of the current study's potential findings is not merely the created matching protocol (i.e. which class fits with a given

halfway house), but of the method used to create the matching protocol. More specifically, many correctional treatment systems struggle to create and adopt reliable and valid matching protocols, often creating an ad hoc procedure that relies on pieces of multiple instruments and a substantial amount of clinical discretion. The hope for the current study is that the *method* used to create the typology of intervention classes can be replicated by other states within different treatments, settings, populations and using different scales and measurements. The advantage of the current study design is that it provides a tailored treatment matching protocol that fits the need of the NJDOC; however, the price of that design advantage is that the technique, or process of creating the typology, is specified for the research problem presented and thus, reduces the external validity.

One factor that lessens the threat to external validity is the results from the DAPTI and PASCI. The findings of these instruments identify the general orientations and specifics of each program. If it can be identified that certain treatments and/or services within the sample of halfway house programs provide more effective treatments generally, or with specific offender classes, this will extend the generalizability of findings.

Motivation and Self-Report Measures

Much research has debated the reliability of self-report measures (Thornberry and Krohn, 2002). In the current study, the reliability of self-report measures is of particular importance as there were compelling reasons for offenders to misrepresent themselves. During the assessment, several self-report measures of substance use were collected. The offender is aware that the product of this assessment will influence the

intensity and amount of services he receives. Therefore, those wishing to enter a community corrections facility may exaggerate their drug use history and those wishing not to enter such facilities may underreport their prior use. Unfortunately, it is difficult to determine which offenders manipulate assessment responses and the direction in which the responses were altered.

Although it will remain a threat to the study's reliability, the threat is diminished by the use of multiple measurements. In addition to drug use history, the SASSI, ASI and the LSI Drug and Alcohol subscale were provided in the assessment report. The study explored the use of each measurement type as a potential construct for the typological assessment.

Recall and Reliability

A related threat was the ability of offenders to remember their drug use history accurately. In contrast to the previous threat, *recall* inaccuracies are not motivated by intent; that is, attempting to appear better (or worse) to evaluators. Recall inaccuracies suggest that participants will have greater difficulty remembering prior events as the time between the event and the current date increases. Depending on the age and sentence length of the offender, recall may affect the accuracy of the drug use history measures. Again, there was no direct fix to this reliability threat. However, the exploration and inclusion of multiple drug use severity measures should diminish the threat, triangulating the real measure of the concept thereby adjusting for potential effects of recall bias (Maxfield and Babbie, 2003).

4.9 Analytic Plan

The analytic strategy for the proposed study was completed in a series of stages. First, descriptive analyses were used to describe assessment items and each measure was evaluated for explanatory power and inclusion in the proposed typological assessment. Next, the typology was created. Using Latent Class Analysis, participant classes are identified, which represent intervention categories to be matched with the halfway house. The third stage of the analysis examines general responsivity through an evaluation of offenders' return outcomes based on halfway house membership. This analysis represents the study's main effects. Finally, the typology was introduced to the main effects models as a moderator, examining if specific intervention classes interact with halfway house membership.

Exploring Potential Constructs

The main focus of the first analysis stage was to describe the sample and the potential assessment measures to be used as constructs in the creation of the typology. Univariate and bivariate statistics for all assessment measures were examined to identify distributions and relationships among related measures. Due to model constraints, all collected measures could not be included in the latent class model. Items that were considered theoretically important and possessed an adequate distribution were selected in their original form. Items that represented theoretically important constructs but lack sufficient responses (high proportion of missing responses) or inadequate distributions, when appropriate, were combined or collapsed with similar measures. That is, constructs in which more than one measure has been collected (i.e.

substance use severity, criminal risk, education, etc.) composites were created to take advantage of joint explanatory power.

Latent Class Analysis

As referenced in Chapter 3, studies have found that when individual evaluators are given the responsibility to match an individual to treatment, the decisions are typically based, at least in some part, on discretion (Westerberg, Koele and Kools, 1998). The result is often idiosyncratic and inconsistent placement decisions (Gottfredson and Moriarty, 2006). Although several studies have made the argument for automation as a way of increasing the reliability of matching protocols, the specificity of created techniques have not been tailored to meet the needs of individual correctional systems or designed for any given level (or modality) of treatment. The current study attempts to increase the reliability and specificity of matching strategies with the creation of a typology. The typology ultimately served as a data reduction technique, combining several offender assessment measures across multiple risk/need domains. In the current conceptualization, automation was taken one step further, where neither the assessor or the instrument designer have an overt hand in matching offenders to the various halfway house facilities provided by the NJDOC.

Latent Variable Modeling

The logic behind the statistical technique (and latent variable modeling generally) is that the created measures of behavior are imperfect. Although one may use multiple measures in an attempt to understand a population's variability on a given dependent variable, each measure, on its surface, does not explain the observed

relationship. The logic behind the use of latent variable modeling is that there exists an unobserved pattern of participant responses that can be represented as a single (latent) variable, accounting for the covariation among each of the observed (or manifest) measures (McCutcheon, 1987). In simplest terms, each observed variable used to describe participant characteristics accounts for one piece of the relationship between the participant classes and the dependent variable. These pieces are thus combined to create a composite latent variable.

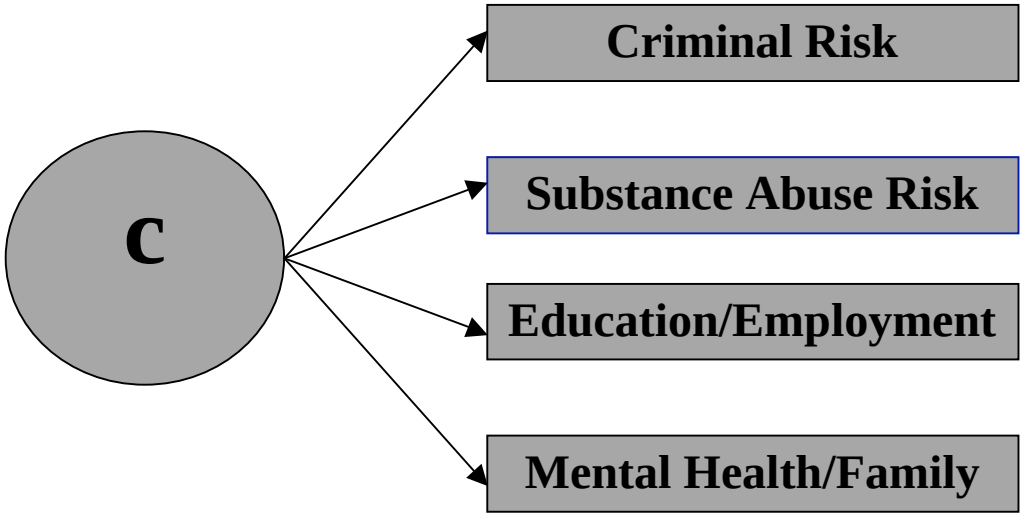
LCA and Matching

A statistical method Latent Class Analysis (LCA) was utilized to establish the intervention classes. LCA has been proposed as a way to statistically model a typology by constructing a combination of several observable measures (McCutcheon, 1987). Similar to an exploratory factor analysis (EFA), patterns of covariation among observed measures were identified in an effort to form a composite latent predictor. In EFA the intended result is a combination of observed measures into a single *continuous* measure, representing the variation of all observed measures. LCA's function is slightly different in that it identifies patterns of observed measures, but combines their variation into a single *categorical* measure where each category represents a latent class, identifying response patterns within a cross-tabulation of observed measures (McCutcheon, 1987). Therefore, in LCA, the response to observed indicators is assumed to be caused by their class membership in an unobserved latent variable. Class membership is defined by the probability of each subject's response pattern to a set of assessment items (Heinen, 1993). Originally established to identify response patterns of only categorical measures, recent software modifications provided through Mplus

allow for a “mixed” model examining patterns of both continuous and categorical measures.

In the current study, LCA takes a heterogeneous population of offenders, as defined by their responses to assessment measures, and groups them into a set of homogenous intervention classes. Figure 4.3 illustrates a hypothesized LCA model, where “c” represents the categorical latent variable, or a typology. Latent Class Analysis provides a statistical determination of the existence of and number of treatment classes identified, based on the study’s pre-treatment assessment of needs and risks. If the LCA model converges (identifying a multi-class structure and a solution identified through model fit indices) heterogeneity within the samples has then been identified. Identifying heterogeneity within the sample provides support for the use of latent class analysis and Hypothesis 1 (1-H_A).

Figure 4.4. Latent Class Analysis Conceptualization

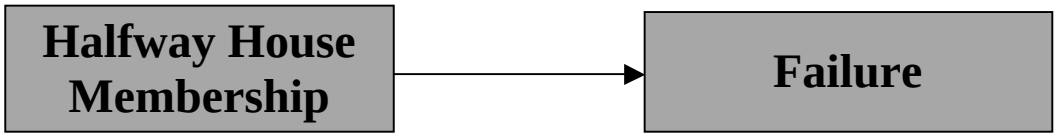


If successful, this procedure produces a typological assessment, which not only identifies offender “types” or classes, but also establishes a profile of characteristics within the class structures. Profiles are identified though measures of central tendencies of predicted class memberships known as posterior probabilities, which allow for the description of the “prototypical” offender within each latent class and displays the probable/mean response of each item for an individual within that class.

4.10 Main Effect of Halfway Houses

The third stage of the analytic plan is more typical of evaluation designs. It involves the head-to-head comparisons of the all halfway houses. This test represents the main effect of the final model. Simple bivariate comparisons of return outcomes for all study subjects were examined across the 16 different halfway houses. Cox regression analyses were also utilized to examine possible halfway house variations in participants’ days-to-failure. The regression analysis of the main effect of halfway house intervention was designed to test Hypothesis 2 (2-H_A) and is illustrated in Figure 4.5.

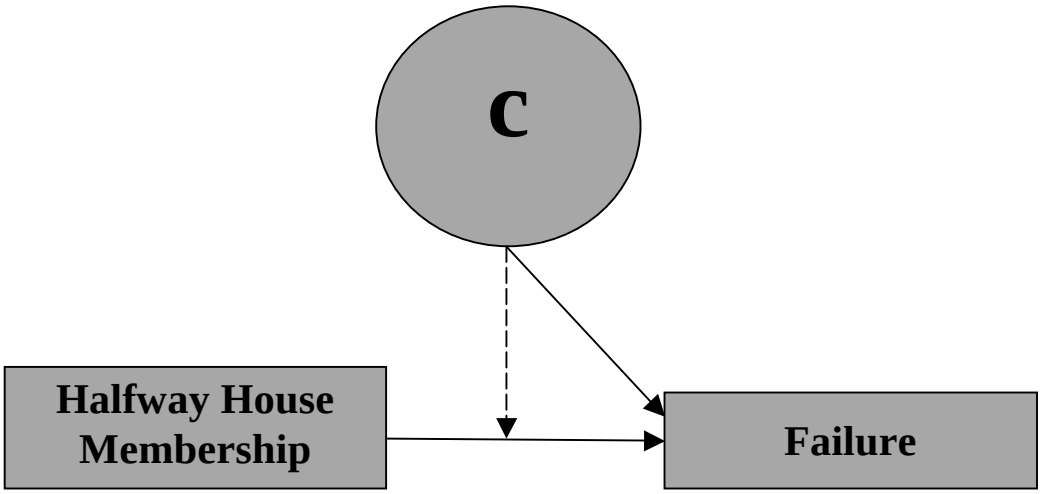
Figure 4.5 Main Effects Model



4.11 Typology as Moderator

Finally, the typology created in the second analytic stage was then added to the main effects models as a moderator. Moderators are variables that impact the strength, direction and/or nature of the relationship between the program and the ultimate outcome (Finney, 1995). As shown in Figure 4.6, offenders' membership in a given latent class to moderate the probability of an offender's propensity for failure (i.e. days-to-return). This final analysis was computed in a series of regression models. Each model includes an interaction term, representing the given class-halfway house combination evaluated. The result of these analyses determines if a given halfway house reduces a class of participants' propensity for failure. If halfway houses have differential effectiveness, Hypothesis 3 (3-H_A) is supported.

Figure 4.6 Full Model



4.12 Model Checks

Several model checks were also produced to evaluate the sensitivity, reliability and validity of the interaction model findings. These tests assist in the confirmation of the study findings and provide an initial sense of confidence regarding the potential

matching strategy created. The design and function of each test is discussed briefly here and then again, in greater detail, in Chapter 8.

Split Sample Sensitivity Test

To test the sensitivity of interaction model findings a split sample procedure was conducted. A random selection of 50 percent of sample subjects was selected and placed into two samples. Each interaction model utilized in the full sample is then repeated for each of the smaller samples. The direction and magnitude of the hazard ratios (i.e. propensity for failure) for the two smaller samples was then evaluated for consistency, comparing results to those found in the full sample. Identified consistencies, with regard to direction of effects, across the two samples reflect a greater sensitivity of the full sample findings.

Validity of Programs

Program variations identified by survey findings (DAPTI and PASCI) aid in the interpretation of halfway house moderating effect. Commonalities among programs orientations, policies and services were examined to identify effective programs and components. This additional description is necessary as it marries theory with practice; where black box effectiveness of individual programs can be deconstructed, highlighting conditions necessary for programs to be responsive to particular types of offenders.

Furthermore, issues of external validity and statistical power are diminished with the use of the DAPTI and PASCI survey results. It was foreseen that power restrictions would make it difficult to describe the interaction of each halfway house

with each offender class, as smaller facilities may not contain a large enough sample and therefore produce the necessary heterogeneity to support statistical testing.

Also, as previously described, it is difficult to generalize the findings of a matching strategy that covers what are conceivably 16 different halfway houses. Similar to the studies in which they were first utilized (Moos, Pettit, and Gruber, 1995; Timko, 1995) the DAPTI and PASCI have the ability to categorize facilities into a more manageable grouping of interventions. The study utilized the results of the PASCI and DAPTI as a guide for potential collapsing of halfway houses facilities into more easily interpretable categories. It was anticipated that many of the halfway houses would have similar programming, services and orientations, thus increasing external validity.

However, combining the effects of several facilities is only appropriate if the groupings created are valid. That is, a newly created measure of halfway house programs was expected to combine the effects of each halfway house into a larger "program" effect, where each facility within a program was expected to produce similar class-facility interaction effects. It was expected that the collapsing of facilities would not alter the interpretation of any one facility's effects but instead strengthen statistical power combining facilities with similar effects. There is a threat to internal validity of the program conceptualization if the effects for one, or a few, of the larger facilities dominate the overall effect of the program category, or type. Therefore the direction of facility effects, grouped into each program, was examined; where a consistent direction of effects indicates internal validity of the created measure.

Return Outcome

Event-history analysis is viewed as the most appropriate technique for analysis of participant failure. Given the multiple causes and timing of returns, it was hypothesized that stronger class-halfway house matches will reduce returns and increase the length of time to returns. Event history analysis has the flexibility to account for both the event and the timing of its occurrence. However, although accepted, it is a less than common procedure for evaluating prison returns and other forms of recidivism. To provide more generalizable results and give readers a sense of reliability of the findings, binary logistic regression models examining class-program interaction were also computed. Consistency between the Cox and logistic regression models were interpreted to provide support, or reliability, of subjects' return outcomes and program matches. Due to common mathematical principles both modeling types are expected to have similar findings; however, it is assumed that there will be slight differences as the event history analysis allows for a greater amount of outcome data to be included in the analyses due to the utilization of censored outcomes, preventing the loss of data through listwise deletion.

The key element of event history analysis is the censoring of time at risk. Censoring allows for cases to be compared with varying lengths follow-up assessment times. Two sensitivity tests of subjects' time at risk censoring were conducted and described further in Chapter 8.

4.13 Statistical Software

Two statistical software packages were utilized for the various analyses. SPSS (Version 15) was used for univariate and bivariate descriptions. The LCA modeling

was conducted using Mplus statistical software version 5.0 (Muthen and Muthen, 2007). Mplus provides a procedure where class probabilities and predicted class memberships of each class were saved and transferred into a variety of programs for additional statistical processing. Class measures were transferred to SPSS, to be used as covariates and interaction terms in the regression models.

4.14 Summary – The Proposed Matching Design

Creating matching strategies tailored to populations and settings are rarely attempted and undervalued by prior matching research efforts. The current study attempts a new methodology for creating matching strategies and utilizes a statistical technique (LCA) to group participant into intervention classes. This technique eliminates idiosyncrasies of prior matching attempts. The analytic strategy and procedure for producing the matching strategy has the ability to be easily implemented and replicated in other settings and populations.

The NJDOC lacks a matching strategy for offenders exiting prison and entering halfway houses. Their current procedure utilizes a quasi-random assignment, where offenders were placed in halfway houses based on bed space availability. This creates a unique opportunity to test the proposed technique with a naturalistic study design. Utilizing official records and assessment data collected by the NJDOC, a purposive sample of NJDOC treatment continuum offenders was collected. All participants of in-prison Therapeutic Communities given an assessment, placed in halfway house, and then placed under parole supervision were included in the study sample.

The study design utilized assessment and other pre-halfway house placement measures to create a typology of offenders. A unique feature of the study was the use of

a statistical procedure – Latent Class Analysis – to determine the classes of offenders and the creation of a typology. Given cited weaknesses of previous matching strategies, the current study created a matching design using primarily a statistical method, identifying unobserved patterns of pre-treatment responses and characteristics of offenders. The created classes of offenders are then explored for their ability to predict appropriate placements based on a post hoc evaluation of offender recidivism outcomes following halfway house admission.

Although the potential methodology is encouraging, the current design is not without its limitations. However, potential applications of findings are anticipated to not only fill a research need for the NJDOC, but also provide a replicable method for creating tailored matching strategies.

V. PRELIMINARY ANALYSIS

Prior to hypothesis testing, preliminary analyses were conducted to provide initial descriptive information on all measures gathered. This chapter presents the findings from those initial analyses. Univariate and bivariate statistics of subjects' assessment and prison return outcomes are presented. Findings from the two halfway house surveys are then described. The chapter concludes with a description of the collapsing procedure for grouping facilities into programs to be utilized in later analyses.

5.1 Sample Selection and Data Gathering

Participants

Based on criteria described in Chapter 4, a sample of 981 eligible subjects was identified. For each of the eligible subjects an attempt was made to gather all available assessment data from the assessment center in which they attended. A number of factors made the data gathering process difficult, including: organization and storage of said files, the high case volume of the assessment centers, and the difficulties of information transfer between the NJDOC and the assessment centers. As a result, a substantial amount of assessment files could not be located for the pool of eligible study subjects. All in all, 566 offender assessments were located and form the study sample in which further analyses were performed.

Although most likely not due to a systematic occurrence, it is possible that subjects in which assessment data were missing are, in some way, different from those in which assessment data could be gathered. To examine if any significant differences between these two groups existed bivariate analyses were performed on all measures

gathered from the Department of Corrections ITAG database; including: age, race, halfway house attended, prior parole episode and ASI score.

Bivariate findings, revealed only one significant difference between the groups of eligible subjects in which assessment data could be gathered. Subjects whom assessment data could be gathered more frequently indicated having a prior parole episode (33%) compared to subjects in which an assessment could not be located (20%) ($p<.001$). As prior parole episodes are associated with greater risk for reoffending, this finding indicates that the offenders to be included in the final models will have a greater risk for returning. Therefore, the generalizability of the results may be slightly biased, as study participants were predicted reoffend at a higher rate. However, there is no reason to believe that this effect was due to a systematic occurrence in the processing of offender assessments that would impact the final results dramatically. Based on this assumption, it was determined to be appropriate to move forward with the analysis using the smaller sample of offenders with full information.

Halfway House Facilities

Two surveys – DAPTI and PASCI – were administered to each facility's program director (or program manager). Responses to the survey items were scored and rated within the instrument's subscales. PASCI scales were converted to a percentage, where programs rating 100 percent identified closest to that domain. PASCI responses were used to confirm the DAPTI results and also provide additional descriptives of facility treatment and service variations. In addition to gathering program responses on scale items, capacity and staff-to-client ratio were also included as these measures were

suggested to be influential to participant outcomes as well as the PASCI scale items (Timko, 1995).

5.2 Descriptive Statistics and Bivariate Relationships

This section presents univariate and bivariate statistics for the key measures in this study. The section begins with a description of the univariate measures collected from subjects' assessments files. Some of the assessment measures reported were not utilized in the LCA modeling and final analyses, but are included here to describe the population, and provide a description of the distribution of individual measures that were used to create composite measures.

Demographics

Table 5.1 presents relevant demographic characteristics of the sample. Frequencies are presented for categorical variables and means, standard deviations, and ranges are presented for continuous variables. The mean age at the time of assessment is nearly 32. The vast majority of the sample is of a minority ethnicity, with African Americans accounting for 72 percent, Caucasian subjects are 16 percent of the sample and Hispanic/Latino accounting for nearly 12 percent. Over two-thirds of offenders indicated employment 12 months prior to the current conviction. With regard to the Woderlic Personnel Test (WPT) the largest category of offenders (43%) were scored in the lower 87th percentile, indicating low employability. Over half (59%) have obtained a GED or high school diploma; however, the average grade completed is between 10th and 11th.

Table 5.1 Univariate Descriptive Statistics – Demographics (N=566)

Item	% / Mean (sd)	% Missing
Age	31.9 (7.9)	0.0
Ethnicity		0.0
African American	72.3	
Caucasian	16.1	
Hispanic/Latino	11.6	
Employed in 12 months prior to conviction	68.1	8.7
Wonderlic Personnel Test		12.0
Lower 87th percentile	43.4	
75th percentile	27.9	
50th percentile	17.5	
Upper 41st percentile	11.2	
GED or high school diploma	58.6	9.5
History of special education	22.0	10.8
History of grade retention	35.5	14.8
Highest grade completed	10.5 (1.5)	6.7
Ever received government assistance*	36.8	8.7

*Indicates if participant ever collected unemployment insurance, disability, or welfare

Criminal history descriptives are presented in table 5.2. The mean number of arrests is near 12 and the mean age of first arrest is near 17. The average total number of convictions is slightly greater than seven and nearly 60 percent have a prior incarceration. Almost one-quarter of offenders report a history of domestic violence offenses and over half report juvenile arrests and convictions. Thus, these findings indicate a lengthy criminal history across the offender sample expected for population of incarcerated offenders.

A substantial portion of the sample has a prior history with the Department of Corrections. Over 27 percent have had a prior parole episode in New Jersey. Over 43 percent have participated in some form of community corrections (prior parole or halfway house participation). In addition, over 72 percent have had some form of community corrections violation (probation, parole, or escape).

With regard to the current incarceration, the vast majority were incarcerated for a drug offense (60%), followed by violent offenses (13.5%), corrections violation (12.8%), property offenses (9%) and finally, by other offenses (6.5%). A substantial majority (78.8%) received a mandatory minimum for a low level offense, typically a

drug offense. The mean minimum sentence was nearly two and half years and the mean maximum sentence were just over seven years, which, in New Jersey, are indicators of low-level and/or non-violent offender, typically for drug charges. Slightly under one half (46%) of offenders have committed an institutional infraction under department of corrections supervision and have a history of violent offending.

Table 5.2 Univariate Descriptive Statistics – Criminal History (N=566)

Item	% / Mean (sd)	% Missing
Total Number of Arrests	11.7 (8.3)	6.3
Age of 1st Arrest	16.7 (4.2)	7.6
Total Number of Convictions	7.3 (6.0)	7.4
Prior Prison Incarceration	59.5	12.3
History of Domestic Violence	24.8	9.5
Juvenile Arrest	57.2	7.1
Juvenile Conviction	58.7	18.2
Prior Community Corrections (composite)*	42.6	0.0
Community Corrections Violation History (composite)**	72.4	11.8
Primary Offense		0.0
Drug	60.0	
Property	9.0	
Violent	13.5	
Corrections Violation	12.8	
Other	6.5	
Mandatory Minimum	78.2	7.8
Minimum Sentence Length	2.4 (1.8)	7.4
Maximum Sentence Length	7.3 (3.9)	6.3
Any Institutional Infraction	46.0	8.1
History of Violent Offending (composite)***	50.4	12.3

*Prior Community Corrections is a composite of prior parole and prior halfway house participation
**Prior Community Corrections is a composite of prior parole, probating or escape
***History of Violent offending is a composite of violent primary offense and prior violent offense

Substance Use History descriptives are presented in Table 5.3. The mean ASI Alcohol or Drug mean score is six and the vast majority of participants (63%) rank as having a high probability of drug dependence on the SASSI scale. The mean age of first drug use is near 16 years and 57 percent have had only one prior treatment. Nearly 90 percent of offenders were using illegal substances 12 months prior to incarceration and nearly two-thirds of those offenders were using daily. The majority of offenders identify marijuana (46%) as their primary substance, followed by heroin (26%), alcohol

(15%) and cocaine (13%). Over half (53%) indicate that they would benefit from additional substance abuse treatment.

Table 5.3 Univariate Descriptive Statistics – Substance Use History (N=566)

Item	% / Mean (sd)	% Missing
ASI – Alcohol score (range 0-9)	3.6 (2.5)	0.0
ASI – Drug score (range 0-9)	5.9 (1.4)	0.0
ASI – Alcohol or Drug (range 0-9) (composite)*	6.0 (1.4)	0.0
SASSI – Drug Dependence Scale		6.2
Low probability of dependence	19.4	
High probability of dependence	63.1	
Severe dependence	17.5	
Number of different substance used in lifetime (not alcohol)	2.1 (1.2)	9.2
Age of first drug use	15.7 (3.0)	25.8
Number of prior treatments		0.1
One	57.0	
Two	25.0	
Three +	17.9	
Substance use in 12 months prior to incarceration	88.5	12.7
Substance use frequency 12 moths prior to incarceration		
Daily	65.2	
3-6 times a week	11.3	
1-2 times a week	11.4	
1-3 times a month	1.6	
Occasional to experimental use	7.5	
Primary drug prior to incarceration		0.0
Cocaine	12.9	
Heroin	26.4	
Marijuana	45.7	
Alcohol	15.1	
Other	12.8	
Typical route of substance transmission		10.8
Inhale	55.6	
Sniff	21.2	
Swallow	4.4	
Inject	4.2	
Multiple methods – (no prominent method disclosed)	14.7	
Participant indicates a benefit from additional treatment	52.8	4.6

***** ASI – Alcohol or Drug composite represents the highest value of the Drug or Alcohol ASI subscale

Table 5.4 provides sample descriptives on health and mental health measures. Under a quarter of participants (22%) indicated a current medical or psychiatric illness and 14 percent identified as having a history of mental health issues. For the PAI aggression or violence scale, 44 percent were rated as above average to significant.

Table 5.4 Univariate Descriptive Statistics – Health and Mental Health (N=566)

Item	% / Mean (sd)	% Missing
Medical or psychiatric illness	22.1	7.2
Any current suicide ideation	4.4	7.4
Ever attempted suicide	3.8	7.4
History of Mental Health Issue (composite)	14.2	7.2
PAI - Aggression Scale (above average to significant)	15.4	43.8
PAI - Violence Scale (above average to significant)	42.9	43.8
PAI – Aggression or Violence Scale (above average to significant)	44.4	43.8

*History of mental health issue if participant indicates a psychiatric hospitalization, ever taking psychiatric medication, previously or currently having a mental health diagnosis/problem.

Family history measures are presented in Table 5.5. A vast majority of offenders (78%) indicated having a family member that had either had a history of convictions or substance abuse and 12 percent indicated having been physically or sexually abused by a family member.

Table 5.5 Univariate Descriptive Statistics –Family History (N=566)

Item	% / Mean (sd)	% Missing
History of family convictions	65.2	16.8
History of family substance abuse	61.0	26.4
History of family substance abuse or convictions (composite)	78.3	16.8
History of family physical or sexual abuse	12.4	26.4

Table 5.6 describes the criminal risk measures administered by the assessment centers. Most offenders rank as “medium” risk on the LSI-R as a whole, however, as expected, three-quarters of offenders rate as “high-maximum” risk on the alcohol and drug abuse subscale. The LSI-R provides a scale measuring the probability of recidivism, most sample offenders (58%) rate as having a 61percent (or above) probability of recidivism. The LSI-R also provides a rating of offenders that are halfway house appropriate and the assessment centers provide their own measure of placement risk level. Only 7 percent of participants identified as being halfway house appropriate and 78 percent were rated as a high placement risk by the LSI-R, however, 89 percent were recommended for community placement by assessment center staff.

Table 5.6 Univariate Descriptive Statistics – Criminal Risk (N=566)

Item	% / Mean (sd)	% Missing
LSI-R Overall Rank		7.1
Low	13.5	
Medium	73.2	
High - Maximum	13.3	
LSI-R Crime Subscale		6.9
Low	25.2	
Medium	8.3	
High - Maximum	66.4	
LSI-R Emotional Subscale		6.9
Low	63.2	
Medium	12.5	
High - Maximum	24.3	
LSI-R Companions Subscale		7.1
Low	46.8	
Medium	17.3	
High - Maximum	35.9	
LSI-R Education Subscale		6.9
Low	34.3	
Medium	10.8	
High - Maximum	54.8	
LSI-R Attitude Orientation Subscale		7.1
Low	85.2	
Medium	7.4	
High - Maximum	7.4	
LSI-R Alcohol and Drug Subscale		7.1
Low	18.6	
Medium	7	
High – Maximum	74.3	
LSI-R Probability of Recidivism		7.2
Below 45%	7.4	
45 – 61 %	34.9	
Above 61%	57.7	
Community Placement Risk Level		11.5
Moderate to Low	14.4	
High to Very High	85.6	
LSI - Halfway House Appropriate	6.7	11.0
Placement Risk Level		13.2
Low-Medium	14.2	
High	78.2	
Very High	7.6	
Recommended for Community Release	89	9.9

Table 5.7 presents the univariate statistics for the interventions in which subjects' were participants. Prior to attending the halfway house all subjects were participants of a TC, will a mean duration of participation was 370 days. The average duration in which an offender participated in a halfway house intervention was 203 days. Over 91 percent of

participants were delivered only one halfway house intervention.[7] With regard to the halfway houses in which study subjects were participants, there is a notable uneven distribution; where the majority of offenders participated in House J (20.3%), followed by House N (13.8%) and House P (10.9%) and all other facilities represent less than 10% of the sample population.[8]

5.7 Univariate Descriptive Statistics – Participant Intervention Characteristics (N=566)

Item	% / Mean (sd)
Duration of TC treatment (in months)	12.5 (4.78)
Duration of Halfway House Intervention (in months)	6.66 (4.06)
Number of Halfway Houses participated in during current sentence	
One	91.3
Two	8.6
Three	0.2
Halfway House Facility Attended	
Facility A	3.2
Facility B	1.4
Facility C	2.6
Facility D	4.8
Facility E	0.7
Facility F	2.6
Facility G	7.3
Facility H	9.9
Facility I	2.1
Facility J	13.2
Facility K	20.3
Facility L	4.4
Facility M	1.4
Facility N	13.8
Facility O	1.4
Facility P	10.9

Table 5.8 presents the univariate statistics for the prison return outcome measures. As mentioned previously, the clock for evaluating returns begins upon admission to the halfway house, where a return was defined as any one of four types listed below. Therefore, there are multiple ways for and individual to return to prison and each was examined here as a dichotomous outcome. In addition, due to the length of time

[7] Treatment diffusion with regard to multiple halfway houses is an important issue and is discussed in greater detail in Chapter 7.
[8] To preserve confidentiality program names were stripped and replaced with letters.

specified to evaluate individuals following halfway house admission, there was variability with regard to how long an individual may be evaluated. That is, some individuals were released from prison early in 2001 and accumulated several years of follow-up data. Hence, a majority of offenders possessed follow-up data for five years (N=417) and 99 percent of the sample possessed at least four years of follow-up data. Due to issues related to the evaluation of prison returns, two outcome measurement types were examined – failure and days-to-failure. Discrete yearly returns for any reason (failure) were described and evaluated for the first four follow-up years, with outcome data collected on nearly all subjects (N=559). Censored return measures (days-to-failure) were utilized in many of the final models in an effort to maximize statistical and explanatory power of the sample data collected.[9] Even at the minimum range of time for follow-up eligibility (three years and four months), all subjects had ample time to complete the longest duration of halfway house programming (6.7 months) and still have sufficient post-intervention follow-up time (two years and 8.4 months) either on parole and/or free in the community, enabling an appropriate length of evaluation of participants retention in the halfway house and any lasting effects of the intervention once completed.

Among the sample offenders, 329 (or 60%) were returned (in some form) within the first four years following their admission to a halfway house. When offenders did return they averaged slightly less than 18 months before the return event occurred. Taking into account the average duration offenders spend in the halfway house (203.1 days), on average, participants return within in the first year following their release from the halfway house, when most offenders were on parole.

[9] Censored data are capped at year 5 to preserve the normality of the distribution of subjects' days-to-return.

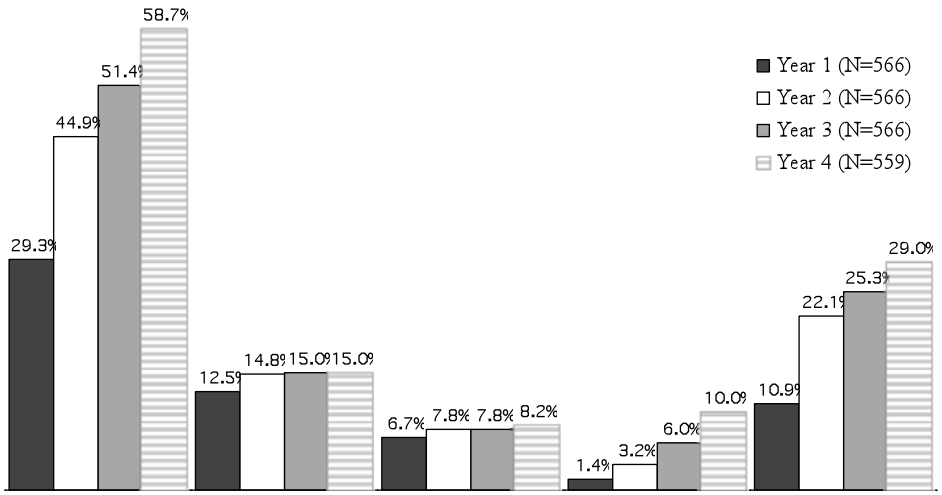
Within the first year over 29 percent of offenders returned to prison. The majority of these returns were for escapes from the halfway house facilities (12.5%), followed by parole violations (10.9%), halfway house violations (6.7%), and new crimes (1.4%). The low rate of new crimes in Year 1 is understandable given that offenders' average of over six and a half months in the halfway house and, hence, have little unsupervised time in the first year that would enable them to commit new crimes. By Year 2, 45 percent of the sample was returned to prison. In this year, parole violations were the major reason for return (22.1%), followed by escapes (14.8%), halfway house violations (7.8%) and new charges (3.2%). By Year 3 over half the sample had been returned to prison. Again, parole violations represent the majority of prison returns (25.3%), followed by escapes (15.0%), halfway house violations (7.8%) and new charges (6.0%). By Year 4 over 58 percent of the sample had retuned to prison. The proportion of returns remains relatively the same; where 29 percent were returned for parole violations, followed by escapes (15.0%), new charges (10.0%) and halfway house violations (8.2%).

Table 5.8 Univariate Descriptive Statistics – Returns to Prison Following Halfway House Admission (N=566)

Item	% / Mean (sd)
Days to Return (n=363)	588.7 (508.5)
Year 1 Return (n=566)	29.3
Parole violation	10.9
Escape	12.5
New Charge	1.4
Half way House Violation	6.7
Year 2 Returns (n=566)	44.9
Parole violation	22.1
Escape	14.8
New Charge	3.2
Half way House Violation	7.8
Year 3 Returns (n= 566)	51.4
Parole violation	25.3
Escape	15.0
New Charge	6.0
Half way House Violation	7.8
Year 4 Returns (n=559)	58.7
Parole violation	29.0
Escape	15.0
New Charge	10.0
Half way House Violation	8.2

Figure 5.1 displays the return trends by year presented in Table 7.8 descriptives. Looking across all five years it is apparent that the proportion of return type changes as the type of supervision changes. As an offender transitions from the halfway house to parole to no supervision, the risk of return type changes. An offender is more likely to have a halfway house violation or escape in the first two years, and was more likely to have a parole violation or a new charge in the last three years.

Figure 5.1 Prison Returns by Year



5.3 Halfway House Survey Descriptives

DAPTI

The descriptives of the DAPTI survey are presented in Table 5.9 below. Fifteen of sixteen halfway houses completed the survey. The results revealed four orientation patterns among the responding programs. As a reference, the DAPTI Mean Scores are provided from the Moos DAPTI instrument manual (2004), where mean scores represent prior instrument testing on a large sample (N=268) of community residential substance abuse treatment programs. It was expected that community residential programs would be conceptually similar and serve as a comparable frame of reference for the study sample of halfway house programs. It is important to note that, with the exception of Facility M, all primary orientations identified for each facility are above the mean reported by Moos (2004), which is a positive indication that those orientations

scoring below the mean for each facility are appropriately *not* identified as the facility's primary orientation.

1. Cognitive Behavioral

The DAPTI scores for each facility on the Cognitive-Behavioral (CB) Scale are presented in Table 5.9. Nearly all facilities scored highly on the DAPTI CB Scale. This finding is not only expected but positive. CB programs emphasize developing confidence and coping to help offenders diffuse or avoid high-risk situations for relapse, which is typically focused on improving communication, assertiveness and alternative responses to substance use. Prior reports by Andrew and colleagues (1990) suggests that cognitive behavioral treatments meet the principle of General Responsivity and the rehabilitative skill building and coping techniques provided by such treatments may be needed, at a minimum, for offender populations. Prior findings also indicate that these programs would be well suited for substance abusing offenders and would be effective for individuals ranking high in both criminal and substance abuse risk scales (Pearson et al., 2009; Pearson et al., 2002). As previously reported by Finney and colleagues (1998), cognitive behavioral treatments are often incorporated in many styles of substance abuse treatment. Therefore, it is not surprising that all substance abuse treatment of at least modest intensity would rate highly on the CB scale. Despite the high rates of many facilities, six facilities (B, D, H, J, M and O) identify closest with the Cognitive Behavioral orientation (i.e. only identify as having a CB orientation).

2. Rehabilitation

The DAPTI scores for each facility on the Rehabilitation (Rehab) Scale are presented in Table 5.9. Four programs (A, F, K and P) rate highest on the Rehabilitation scale. According to the DAPTI instrument manual, these programs focus on developing better work habits and assisting participants in acquiring new job skills. Facilities with this orientation likely utilize work release as a major component of programming. Comprehensive Rehabilitation programs pair moderate to lower intensity substance abuse programming with work release and vocational programming. This blending of orientations typically occurs in a progressive fashion with offenders graduating to different phases, receiving drug treatment first and then transitioning into the community to pursue employment (Martin et al., 1999). If the instrument's findings are correct, offenders with vocational needs should benefit most from these types of programs.

3. 12-step

The DAPTI scores for each facility on the 12-Step Scale are presented in Table 5.9. Three programs (C, G and N) score high on two orientations equally: Cognitive-Behavioral and 12-Step. Programs with a 12-step orientation, such as Alcoholics Anonymous (AA) and Narcotics Anonymous (NA), encouraged participants to "accept that they are powerless over the abused substance." 12-step programs also incorporate many of the same stimulus control and behavior management coping strategies cognitive behavioral treatments emphasize; these skill building techniques attempt to aide offenders' transition to the community and encourage participation in community programming (often AA or NA meetings) (Finney et al., 1998). Therefore, it is not

entirely unexpected that 12-step programs would rate highly on both orientations. As described by the creator of the DAPTI (Rudolf Moos), though the Cognitive-Behavioral perspective is important, it focuses mainly on goal issues; where the 12-step intervention model indicates an "overarching perspective on the organization of treatment in a facility in that it touches the relationship, goal and structure issues".[10] For the purposes of this study, facilities that rate high on both orientations will be defined as 12-step programs.

4. Therapeutic Community

The DAPTI scores for each facility on the Therapeutic Community (TC) Scale are presented in Table 5.9. Two facilities (I and L) identify closest with the Therapeutic Community orientation. A third facility (E) did not complete the DAPTI survey but identified itself as a Therapeutic Community program in a qualitative item of the PASCI survey, and was classified as such[11]. Several attempts were made to obtain DAPTI results for this facility; however, no response was obtained by the time analysis was concluded. Facilities with TC orientations place an emphasis on accepting personal responsibility for their prior decisions and actions. The concept of "community as method" is a key component to the program model where members self-regulate and provide support to and challenge other participants. Offenders are often assigned chores or duties and work together, within a hierarchy, helping each other to complete daily work and group sessions as a part of treatment. These programs typically provide a more holistic intervention, addressing the multiple need/risk domains of participants.

[10] This rationale for selecting primary program orientation between two closely closely specified orientations was provided through a personal conversation with Dr. Rudolf Moos on January, 30th 2010.
[11] Due to this unfortunate non-response, Table 5.10 displays N~16, indicating that facility E is a TC program based on PASCI findings.

TC programs are known for their high intensity intervention style and their effectiveness with high-risk, substance abusing offender populations (Mitchell, Wilson and Mackenzie 2006; Prendergast, 2009; Prendergast et al., 2002; Wexler et al., 1999). It should be noted that TC programs also rate high on the CB orientation. This is expected, as many of the program elements of Therapeutic Communities are based in cognitive behavioral teaching/philosophies (DeLeon, 2000). Furthermore, as was the rationale for classifying 12-step programs, the overarching perspective of the TC orientation should define the facilities primary orientation despite the possible overlap/specificity issues in DAPTI scoring on the CB scale. For the purposes of this study, facilities that rate high on both orientations will be defined as TC programs.

Additional DAPTI findings

It is also important to note these orientations that were not identified by facility respondents. Specifically, Psycho-Dynamic, Medical, Family, and DualDx scales were not identified as primary for any facility. This is consistent with prior literature for community corrections facilities and effective programs for offenders (Pearson, et al. 2002; Andrews et al, 1990). Community corrections programs are typically drug-free facilities, which often rule out programs with medical orientations such as methadone maintenance (Prendergast, 2009). Family and Psycho-Dynamic programs require the establishment of trust and individualized treatment of offenders. Halfway house programs typically operate in group setting and utilize more intensive behavioral programs that have found to be responsive with correctional populations (Andrews et al, 1990). Finally, offenders needing dual diagnosis interventions were not treated within the same continuum of care as the current sample; however, co-occurring

disorder specific halfway houses have since been created and are currently in operation in New Jersey.

5.9 Univariate Descriptive Statistics – DAPTI Orientation Scales (N~16)

Halfway House	12-Step	TC	Psycho-Dynamic	Rehab	Medical	Family	CB	DualDx
Facility A	5	19	6	**23**	4	6	13	0
Facility B	15	16	13	9	7	6	**21**	15
Facility C	**21**	20	17	16	18	19	**21**	17
Facility D	10	21	22	22	14	8	**23**	14
Facility E	--	**X**	--	--	--	--	--	--
Facility F	7	20	8	**23**	2	9	14	0
Facility G	**23**	22	21	22	17	21	**23**	11
Facility H	2	14	5	17	10	6	**23**	15
Facility I	12	**22**	21	20	17	16	21	19
Facility J	5	21	17	9	8	8	**22**	13
Facility K	7	19	17	**21**	9	5	**21**	12
Facility L	16	**20**	11	16	5	12	19	3
Facility M	9	16	14	10	17	3	**18**	15
Facility N	**23**	21	21	21	16	21	**23**	13
Facility O	10	17	18	21	13	5	**22**	17
Facility P	10	17	18	**23**	13	5	22	17
DAPTI Means+	18.3	16.8	15.0	13.4	10.9	9.6	18.3	9.2

Bolded figures represent the highest ranking scale(s) for each facility
+ DAPTI Means are taken from Moos (2004)

PASCI

As demonstrated in Table 5.9, DAPTI orientation scores are not absolute where cross-orientation identification is potential source of instrument specificity errors. To assist in confirmation of facility orientations, treatments and services known to be essential components to each orientation were examined. Similar to methods used by Moos, Petit and Gruber (1995), responses to key PASCI items were utilized to confirm DAPTI findings. Tables 5.10, 5.11 and 5.12 provide the descriptive statistics for the PASCI findings.[12] Table 5.10 describes the results for key treatment provision items contained in the PASCI scale "Availability of Health and Treatment Services". Generally, all programs provide three of the seven treatments listed. Furthermore,

[12] It should be noted that responses to two scales (Treatment Plan and Substance Abuse Regulations) are not presented, as they are only considered "preliminary" by the PASCI creator (Timko, 1995) and lacked substantial variability between the facilities.

psycho-education, self-help/mutual-help, work therapy or training and discharge planning are provided by a majority of the facilities. Finally, couples or family therapy is not a commonly provided treatment, which is expected given that participants are participating in a state sponsored correctional treatment and, thus, programming is not likely to incorporate additional non-incarcerated participants.

Facility treatment provision patterns generally follow their identified program orientations. Specifically, a key component of TC programs is “community as method,” where peer counseling is a major component (De Leon, 2000). All three TC facilities provide peer counseling. Although this treatment is also provided by other facilities, it is not consistently provided by any other orientation.

A major component of 12-step programs is participation in self-help/mutual-help. A majority of the facilities also provide self-help/mutual-help programming, however this finding was expected as attendance in Alcoholic Anonymous (AA) or Narcotics Anonymous (NA) meetings in the community is a method for maintaining participants’ progress/sobriety following the initial episode of program participation, and residential facilities often attempt to engage subjects in this treatment type prior to completion to foster a smoother transition (Finney, et al., 1998).

Rehabilitation programs generally do not provide an intensive regimen and therefore are not likely to have the ability to provide medications as part of their programming (Moos, 2004; Moos, Moos, Andrassy, 1999). Furthermore, the provision of lower intensity psycho-education is in line with this type of substance abuse programming. All four of the Rehabilitation facilities are consistent with the provision of psycho-education and the non-provision of medications.

Cognitive-Behavioral programs are thought to provide a moderate-to-intensive substance abuse treatment programming. Although techniques and principles utilized are centered on developing coping skills and changing thought patterns, the CB orientation represents a more generic catch-all for residential substance abuse treatment (Moos, 2004). Therefore, no single treatment listed in Table 5.10 is expected to be essential to facilities with this orientation and little consistency is expected with regard to the provision of PASCI Treatment Items.

5.10 Univariate Descriptive Statistics – PASCI Treatments Items (N=16)

Facility	DAPTI	Medication	Couple or Family	Psycho-Edu	Peer Coun	Self-Help Mutual-Help	Work Ther/ Train	Disch Plan
A	Rehab			X	X			X
B	CB	X	X			X	X	X
C	12-Step	X				X	X	
D	CB		X	X	X	X	X	X
E	TC	X	X	X	X	X	X	X
F	Rehab			X	X			X
G	12-Sep	X	X	X	X	X	X	X
H	CB	X		X		X	X	X
I	TC	X	X	X	X	X	X	X
J	CB		X	X	X	X		X
K	Rehab		X	X		X	X	X
L	TC	X	X		X	X	X	X
M	CB	X		X	X	X	X	X
N	12-Step	X	X	X	X	X	X	X
O	CB	X		X		X	X	X
P	Rehab		X	X	X	X	X	X

Table 5.11 describes the results for service provision items contained in the PASCI scale “Availability of Daily Living Services.” It should be noted that these are not the total array of services that facilities provide; the services below represent additional services that some programs make available. Two additional measures were included – counselor-to-client ratio and program capacity – as a part of this table. These measures are thought to represent the size of the program and assumed to relate closely to service provision (where smaller facilities are anticipated to have lower capacities and counselor-to-client ratios). Generally, facilities provide at least four of the fifteen

services. Most facilities provide medical services through either a doctor or nurse. Also, religious/spiritual counseling, HIV/AIDS screening, financial assistance, assisting in cleaning one's room and personal grooming services are provided by most programs. A few facilities provide legal advice, barber services, laundry and shopping assistance. As expected, smaller programs (capacity < 50) tend to provide fewer services (< or = 5), while larger programs (capacity > 50) provide more services (> or = 10).

Examining the variations in facility orientations, Rehabilitation facilities provide fewer services when compared to facilities with other orientations (mean = 4.8). This is consistent with the lower level of treatment intensity typically indicated for facilities with these orientations. In contrast, facilities with a Therapeutic Community orientation are expected to provide a greater amount of services, as their holistic style of programming would suggest more in-house service provision. The findings confirm this expectation, as Therapeutic Community facilities provide a greater amount of services (mean = 10.5). On average 12-step programs provided ten services; however, two of the three 12-step facilities (G and N) reported to provide a large amount of services, which was unexpected. These facilities are two of the largest facilities with regard to capacity and are operated by the same management agency, which should account for many of their similarities. However, prior research would suggest that residential 12-step programs are typically *not* known to be a provider of a wide array (i.e. large amount) of services, at least, compared to Therapeutic Communities. The two facilities in this study seem to provide more services than one would expect from this orientation (mean = 13), which may imply that the 12-step facilities in this study may not be representative of typical 12-step programs. Finally, there is variability with regard to the amount of services Cognitive-Behavioral facilities provide (mean = 9.2),

Facility H reports to provide all 15 services, while D does not provide any of the services. This is consistent with earlier findings, which suggest that this orientation is a very general grouping of many possible treatment styles, where service variations are not expected to be consistent across facilities within the orientation. Again the amount of services seems to relate closely with the capacity of the programs where larger programs have the ability to provide more services.

Table 5.11 presents findings from the remaining PASCI scales. Item scoring for each scale is computed and converted to a percentage, where programs rating 100 percent have the strongest indications of that scale. The DAPTI orientation for each program is included in the table to assist in the discussion of orientation commonalities. Sample means for each scale are provided. In addition, means for community-based substance abuse treatment programs in which the reliability of PASCI scales were tested (Timko, 1995), are provided as a reference.

Generally, program means are similar to other samples of community-based substance abuse treatment programs (Timko, 1995). Study programs report to provide a greater amount of social and recreational services (mean rating = 53%) when compared to Timko's substance abuse program sample (mean rating = 42%). Beyond this moderate difference, scale differences between study programs and Timko's sample of substance abuse programs were minor (range = 3-6%). Collectively these findings suggest that the study facilities are similar to community-based substance abuse treatment programs for which the PASCI was designed.

5.11 Univariate Descriptive Statistics – PASCI Service Items (N=16)

	Facility															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
DAPTI	Reh	CB	12	CB	TC	Reh	12	CB	TC	CB	Reh	TC	CB	12	CB	Reh
Capac.	29	25	39	117	120	31	150	175	105	85	345	71	150	315	75	164
Coun. to Client	3	8	5	15	12	3	25	10	12	22	22	5	12	25	14	22
Reg Dr. Visit		X			X		X	X	X	X		X	X	X	X	X
Dr. on Call							X	X	X			X	X	X	X	X
RN Hrs		X			X		X	X	X	X		X	X	X	X	
Psy on Call					X		X	X	X			X	X	X	X	X
Reg Psy Visit					X		X	X		X		X		X		X
Meds Assist		X					X	X	X			X	X	X	X	
Relig/ Spirit Coun	X	X			X	X	X	X	X	X	X	X	X	X	X	X
HIV/ AIDS Screen			X		X			X	X	X		X	X	X	X	
Legal Advice								X		X						X
Finan Assist	X	X	X			X	X	X	X	X	X	X	X	X	X	X
Clean Room Assist	X		X		X	X	X	X		X		X	X	X		X
Groom Assist	X		X		X	X	X	X		X		X	X	X		
Barber					X		X	X		X		X	X	X		
Laund Assist					X		X	X		X		X	X	X	X	
Shop Assist							X	X		X		X	X	X	X	X

Facilities, generally report greater levels of expectations and functioning (mean = 86%) and lower levels of acceptance of problem behavior (mean = 17%). The Expectations and Functioning Scale assesses the levels of physical and psychological functioning necessary for program participation. The Acceptance of Problem Behavior Scale assesses the extent to which non-compliant or disruptive participants are tolerated. There is a notable (but not surprising) inverse relationship between these two scales in that facilities with higher expectations and functioning of participants tend to have lower ratings on the acceptance of problem behavior scale. The ratings and relationships of facilities on these scales are not entirely the result of programming or treatment orientation, but to some extent the result of correctional policies requiring

facilities to limit leniency. This was expected given that no program identified as a dual diagnosis orientation and community corrections programs often incorporate community work, which would be difficult for persons with physical limitations. Study facilities have lower ratings on Policy Choice (mean = 36%) and Provision of Privacy (mean = 25%), a moderate amount of residential control (mean= 56), and rate high on policy clarity (mean= 76%); the mean ratings on these scales are expected given the mandated nature of correctional treatment, as ratings demonstrate that residents have greater supervision and little choice with regard to the types of treatments and services they are mandated to receive, however, the activities that subjects are expected to participate in are clearly defined. The Availability of Social and Recreational Services were expected to relate closely to the capacity of the program, where larger facilities should have the ability and resources to provide a greater number of services (Timko, 1995). However, this finding was not confirmed, as some of the smaller facilities (A and F) had scale rankings above the study mean (53), while some of the larger programs (D, H and K) ranked below the mean.

The scale patterns within facility orientations were also examined. With the exception of a slight elevation in expectations and functioning (mean = 89), Rehabilitation programs report scale means similar to study sample means. It was expected that the greater focus on work release and lower intensity programming of Rehabilitation programs would be reflected in larger scale rankings on Provision of Privacy and lower rankings on Availability of Social and Recreational Services, however study findings demonstrated moderate rankings. Both 12-step and Therapeutic Community facilities provided similar scale rankings, where facilities reported high values for expectations and function (means = 100% and 96%, respectively) and

availability of social services (means = 57% and 65%, respectively), while lower rankings were reported for Acceptance of Problem Behavior (means = 0% and 10%, respectively) and Provision of Privacy (means = 15% and 18%, respectively). These findings are consistent with the earlier findings where Therapeutic Community and 12-step programs reported a greater intensity of treatment and service provision when compared to other orientations. However, Therapeutic Community facilities ranked higher than other orientations on Policy Choice (mean = 41%) and Residential Control (mean = 79%). This is also consistent with the programming philosophies of this orientation as the intervention is typically delivered by both staff and senior residents, and residents are given more control over the treatment delivery when compared to other orientations (Moos et al., 2005; DeLeon, 2000). Examining Cognitive Behavioral facilities reveals a wide variation in scale rankings is observed, and like Rehabilitation facilities, no general pattern emerges when comparing across facility scale means. However, this was an expected finding for this orientation, as its overarching design is not as structured, compared to the other identified study orientations (e.g. TC or 12-step).

5.12 Univariate Descriptive Statistics – PASCI Scales (N=16)

Facility	DAPTI	Capac	Coun. to Client	Expect & Funct.	Accept .Prob. Beh.	Policy Choice	Res. Control	Policy Clarity	Prov. Privacy	Avail. of Social Rec. Activity
A	Rehab	29	3.4	89	0	35	68	73	33	65
B	CB	25	8.3	78	31	35	32	73	22	40
C	12-Step	39	4.8	100	0	67	44	70	0	40
D	CB	117	14.6	89	15	38	52	80	33	35
E	TC	120	12.0	100	31	37	88	64	22	80
F	Rehab	31	3.4	100	0	13	72	73	33	55
G	12-Step	150	25.0	100	0	20	64	82	22	60
H	CB	175	9.7	33	46	37	60	82	22	35
I	TC	105	12.0	100	0	40	76	64	11	50
J	CB	85	21.5	89	15	32	36	64	33	55
K	Rehab	345	21.5	81	24	43	62	76	22	40
L	TC	71	4.9	89	0	45	72	82	22	65
M	CB	150	12.0	67	62	14	28	64	33	65
N	12-Step	315	25.0	100	0	35	64	100	22	70
O	CB	75	14.3	100	15	37	40	91	56	25
P	Rehab	164	21.5	67	39	42	44	73	11	70
Mean	--	125	13.3	86	17	36	56	76	25	53
PASCI Prog Means	--	--	--	89	21	40	59	70	31	42

5.4 Collapsing Facilities

Although each facility will be examined independently, it was likely that low sample sizes in some facilities would prevent examination across all identified latent classes in the proposed final modes. Therefore it was necessary to collapse several facilities into larger groups. Grouping facilities based on programmatic similarities also provides an added level of generality to the study findings where common programmatic themes can be viewed more broadly as a representation of treatment modalities commonly described prior head-to-head program comparisons (Moos, Moos and Andrassy, 1999; Ethridge et al., 1999). For the purposes of this study, established facility groups were referred to as *programs*. The facilities that contained less than 5 percent of the sample, which include: A, B, C, D, E, F, I, L, M and O represent a threat to statistical power, and thus were collapsed.

Orientation

Orientation represents the key grouping measure facilities were collapsed around. Prior findings and testing of the DAPTI instrument have indicated the validity of combining results from facilities with similar orientations that have been associated with variations in treatment delivery and participant outcomes (Finney et al., 1998; Moos, Moos and Andrassy, 1999; Moos, Pettit and Gruber, 1995). This conceptualization for outlining potential program differences is logically consistent with the intent of the study, in particular, the testing of general responsivity (i.e. hypothesis H2)

Following the methodology used by Moos and colleagues (1999 and 1995), PASCI findings served to confirm many of the expected variations between orientation types, where many consistencies were observed within orientation with regard to treatments, services and scale rankings. Some unexpected inconsistencies were also observed within orientations, due in part to additional treatments and services provided by 12-step and Rehabilitation facilities. It should also be noted that some PASCI findings were not consistent with prior theoretical expectations of program orientations (Moos, 2004); however, a substantial amount of consistency was observed. Although the specificity of the program orientation may not represent the ideal grouping mechanism, based on the descriptions of facilities' commonalities within program orientation, enough evidence existed to proceed with the exploration of program orientation as a conceptual component that possess heuristic utility for further use in the creation of matching guidelines.

Program Construction

Based on the earlier discussion of orientation, the collapsing procedure was conducted and facilities were grouped into programs based on DAPTI orientations. Table 5.13 presents descriptives of the newly constructed program measure. Two additional study participant measures were included to further illustrate program variations. Four facilities were identified as Rehabilitation programs (A, F, P and K). Participants of this type of program, on average, completed seven months of intervention programming and nearly 37 percent of study subjects were found to have participated in this type of program. Cognitive-Behavioral programs were identified for six facilities (B, D, H, J, M and O). Participants of this style of programming, on average, completed the fewest months of programming (5.6) when compared to other programs and represent nearly one-third of the study sample (32.2%). Three facilities identified as providing a 12-step orientation. Participants of these programs completed, on average, more months of programming than participants of other programs, which is consistent with the earlier discussions with regard to unexpected intensity and service provisions for this orientation. Nearly one-quarter of the study sample (23.7%) were identified as participants of a facility providing 12-step programming. Finally, three facilities were found to provide Therapeutic Community programming. On average, these participants completed seven months of programming and this program represents the smallest percentage of study participants (7.2%).

Table 5.13 Halfway House Program Descriptives

Program	Facilities	Mean Halfway House Duration Mon. (sd)	% of Sample
Rehab	A, F, P, & K	7.1 (4.0)	36.9
CB	B, D, H, J, M, & O	5.6 (3.7)	32.2
12-step	C, G & N	7.4 (4.3)	23.7
TC	E, I, & L	7.0 (4.3)	7.2

5.5 Summary – Participant and Halfway House Descriptives

This chapter focused on the descriptive measures to be utilized in further analyses. The process of selection and data gathering techniques used for both participant and halfway house measures was provided. Univariate descriptives of the study sample demographics, assessment items and return outcomes illustrated participant characteristics. Halfway house administrators' responses to the two facility surveys (DAPTI and PASCI) were described to illustrate the variations and commonalities among the facilities in which participants attended. Following this description, the findings and logistical conceptualization of facility groupings were discussed operationlizing a new measure of halfway houses, where facilities are collapsed around their primary program orientation. The participant assessment measures described will be utilized in the next chapter when selected items are included as part of the Latent Class Analysis (LCA) and will serve as the basis for testing the first study hypothesis (*1-H*). Bivariate relationships of outcomes, facilities/programs and classes will also be presented.

VI. LATENT CLASS ANALYSIS - MODEL GENERATION AND POST-HOC COMPARISONS

Following the analysis of assessment items it was then appropriate to begin the creation of the typology, utilizing a latent class analysis procedure. Creating a latent class model is a multi-stage process. This chapter describes the 1) selection and construction of assessment indicators, 2) missing data procedures, 3) model fitting, and 4) post-hoc analysis of response patterns by class. A discussion of class profiles follows, where class variations are compared across assessment domains, providing a summary and interpretation of the latent class analysis findings.

6.1 Construction of Assessment Indicators

As mentioned in Chapter 4, a great deal of assessment information is recorded for each individual. Unfortunately, LCA models can reach a point where additional items decrease the likelihood of model convergence. Therefore every item recorded by the assessment centers could not be included as part of the latent class analysis. To create a parsimonious model, the most theoretically important items were selected and, where appropriate, composite measures were created and categories were collapsed to provide a better distribution of item findings. The following section describes alterations to original item coding.

Coding Modifications

To include the greatest number of potentially influential matching items, several items were combined into composite measures. A new composite measure “VIOLENT CRIMINAL HISTORY” was created to identify offenders who have any indications of a history of violence. The measure is coded 0 or 1, with a code of 1 indicating the

offender had a record of any of the following: a history of domestic violence, violent primary offense (i.e. manslaughter, assault, robbery, etc.) and if any recorded prior offense was violent. The composite "PRIOR COMMUNITY CORRECTIONS" is intended to identify prior attempts at some form of community corrections. The measure is coded 0 or 1, where code 1 identifies if an offender had previously participated in parole or a halfway house. The composite "COMMUNITY CORRECTIONS VIOLATION HISTORY" was used as an indicator of any violations of prior terms of community corrections. This measure is coded 0 or 1, with a code of 1 indicating if an offender had recoded any of the following: a prior escape, prior probation or parole violation[13]. The composite measure "FAMILY CONVICTIONS OR SUBSTANCE ABUSE HISTORY" was intended to identify a family criminal or drug abuse history. The measure is coded 0 or 1, where 1 represents an offender that had indicated a family member possessed either a prior convictions or a substance abuse issue.

To create a better distribution of possible item responses another group of measures were altered from their original form by collapsing categories. The measure "CONVICTED DRUG OFFENSE" was created from the original "Primary offense" measure and was coded 0 or 1, where a code of 1 indicates that the subject's primary offense was for a drug related crime, and 0 is the code for all other crimes. The measure "PRIOR TREATMENT" was created from the original "Number of prior treatments" measure and is coded 0 or 1, where a code of 1 indicates that the offender had a prior substance abuse treatment, and 0 is the code for no prior treatments. The measure

[13] The percentage of offenders indicating "community corrections violations history" is greater than that of offenders indicating "prior community corrections". This is because the measure for violations includes violations on probation and escapes from corrections programs other than halfway houses.

"DAILY USE" was created from the "Substance use frequency 12 moths prior to incarceration" item and is coded 0 or 1. Offenders with a code of 1 were daily users of substances prior to incarceration and all other offenders were coded as 0. The measure "WPT LOWER 87th PERCENTILE" was created from the original item "Wonderlic Personnel Test" and is coded 0 or 1; where a code of 1 represents *poor* vocational aptitude as these offenders scored in the lower 87th percentile on the Woderlic Personnel Test (WPT), which is a meaningful demarcation by the test's standards. Finally, the item "RECIDIVISM PROBABILITY 61% OR MORE" was taken from the original item "LSI-R Probability of Recidivism" and is coded 0 or 1. A code of 1 indicates that the individual is rated by the LSI-R to have at least a 61% probability of recidivating following release and a code of 0 is given to all individuals that fall below this mark.

Table 6.1 provides the descriptive statistics of the sample for all items utilized in the LCA model. Several items were left in original form as described in Chapter 5. Descriptives are presented for the newly created/modified items. The selected items to be included in the model represent measures that contained only small amounts of missing data and were viewed as theoretically pertinent to the heterogeneity of potential classes and relevant to possible matching designs.

Critical thought in the selection process was given to include measurements from all assessment domains described above, i.e. criminal risk, substance abuse risk, mental health and family history, education and employment. When selecting from a large pool of potential measures, one exercises discretion; selecting measures that are both theoretically relevant to the matching process and consistently reported among sample participants. Assessments items previously used with similar populations to

predict risk and need were examined (Andrews and Bonta, 1995; Andrews, Bonta and Wormith, 2006; Lownkamp and Letessa, 2005; Knight, Simpson, and Hiller, 2000), duplicate and tangentially relevant variables were eliminated where appropriate. As is the nature of assessment agencies, modifications to measures collected will vary from year to year as new instruments and items are introduced and others abandoned. Measures that were inconsistently collected revealed a substantial proportion of sample cases with missing data, making it difficult to determine the nature of the missingness (e.g. ignorable). Measures with substantial amounts of missing data were also eliminated from the LCA model.

Table 6.1 Univariate Descriptive Statistics – Items Selected for Latent Class Analysis (LCA) Modeling (N=566)

Item	Mean(SE)/ %
MEANS	
AGE	32(1.2)
MAX SENTENCE LENGTH	7(0.3)
AGE 1ST ARREST	17(0.7)
ASI SCORE	6(0.2)
AGE 1ST DRUG USE	16(0.6)
PERCENT WITH	
CONVICTED DRUG OFFENSE	60
PRIOR PRISON INCARCERATIONS	60
JUVENILE CONVICTION	59
INDICATED BENEFIT FROM SUBSTANCE ABUSE TREATMENT	55
PRIOR TREATMENT	53
DAILY USE	65
SUBSTANCE USE 12MONTHS PRIOR TO INCARCEARTION	89
EMPLOYED 12MON PRIOR	69
WPT LOWER 87th PERCENTILE	43
GED OR HS DIPLOMA	59
HISTORY OF MENTAL HEALTH ISSUES	14
RECIDIVISM PROBABILITY 61% OR MORE	57
MANDATORY MINIMUM	78
VIOLENT CRIMINAL HISTORY	50
COMMUNITY CORRECTIONS VIOLATION HISTORY	72
PRIOR COMMUNITY CORRECTIONS	43
PAI VIOLENT OR AGGRESSIVE	44
FAMILY CONVICTIONS OR SUBSTANCE ABUSE HISTORY	78
PRIMARY DRUG HEROIN	26
PRIMARY DRUG COCAINE/CRACK	13
PRIMARY DRUG MARIJUANA	46
PRIMARY DRUG ALCOHOL	15

6.2 LCA Model Construction

The selection of the study latent class model was a multi-stage procedure. First, missing data patterns were analyzed and modeling procedures were utilized to adjust for cases with missing items. Several LCA models were computed using Mplus software (Muthen and Muthen, 2009). The model that best reflects the sample data was selected through an evaluation of model fit indices and an examination of theoretical parsimony through posterior probability descriptives.

Missing Data Procedures

The descriptive tables presented in Chapter 5 listed each item percentage of missing responses. Although the coding modifications described above further decrease the amount of missing data contained for each item, to ensure that all 566 participants were included in the Latent Class Analysis, a Full Information Maximum Likelihood (FIML) procedure was utilized. First, patterns of missing data were examined. The MPlus programming procedure for missing data patterns were utilized and examined. Over 150 missing data patterns were idendtified and a careful examination revealed that missing data did not conform to a monotone pattern. Furthermore, the assessment procedures used to collect the data would negate assumptions that missing data patterns were due to an external factor or a single determinant of attrition. Therefore, it was concluded that the missing data were not of the non-ignorable type (MNAR) and most likely either missing at random (MAR) or missing completely at random (MCAR) type (Little and Rubin, 1987). According to Schafer and Graham (2002), unbiased estimates are provided with Maximum Likelihood (ML) procedures when missing data patterns are identified as MCAR or MAR.

Following this assessment, missing data were handled through FIML. As mentioned, FIML allows the LCA modeling procedure to use the full study sample, avoiding the restraints of listwise deletion. In this procedure, likelihood is produced for the observed data of each case's responses and then accumulated and maximized. The FIML estimate maximizes the likelihood of a model given the observed means and variances of the missing portions of a variable, given the observed portions of other measures. Using the FIML procedure, missing data patterns were iteratively solved for, creating a more robust model estimate through the inclusion of all cases.

LCA Model Fit

There are several methods to identify model fit in a LCA model. The most accepted method is to examine several indicators across several combinations of classes identifying the model that has the best fit across several indices while also taking into consideration the model's parsimony as it relates to the theoretical relevance of the created class structure. The model fit indices to be evaluated include 1) the Bayesian Information Criterion (BIC), where greater classification is indicated by lower values; 2) entropy that ranges from 0 to 1, where clearer delineation of classes are found with values closer to 1; 3) the Lo-Mendell-Ruben test and associated p values assess the fit of the current model versus one with one less class (k-1) where a low p-value indicates that the model with one less class is rejected in favor of the estimated model, 4) the Mean Latent Class Probabilities that range from 0 to 1 and measure subjects' probabilities of identifying with the response pattern of a given class, where a perfect classification (i.e. an identical response pattern for all class members) would have a mean probability equal to 1. Much like the determination of the number of factors in an

exploratory factor analysis, the final consideration for determining the appropriate number of classes is theoretically-based. If and additional class fits closer with preconceived notions of the class structure, that consideration should be applied along with the computed fit indices.

Table 6.2 provides a description of the model fit comparisons. Based on the low Bayesian Information Criterion (BIC) value the four-class model indicates the best fit. However the Entropy value and the significant Lo-Mendell-Rubin value indicate a better fit for the three-class model. All classes in the three- and four-class solutions have a mean probability above .85 (range = .855 to .980) which exceeds the 0.7 threshold recommended by Nagin (2005) for the calibration of distinct groups in a well fitting model. Similar to the examination of neighboring numbers of factor structures in and exploratory factor analysis, selecting the proper class solution ultimately involves an evaluation of parsimony examining the value added with an additional class. After an examination of the post-hoc descriptives of the 2, 3, 4, 5 and 6-class models, the four-class solution provided the best LCA model for the sample data based on study hypotheses.[14]

Table 6.2 LCA Model Fit Indices

Model	Likeli-hood	BIC	Entropy	LMR	LMR p value	Mean Class Latent Class Probabilities
2 Class	-12431.8	25231.5	0.770	547.3	**0**	.927, .938
3 Class	-12233.3	25013.1	**0.838**	394.9	**0**	.923, .918, .974
4 Class	-12118.5	**24947.5**	0.811	228.4	0.155	.858, .907 .980, .862
5 Class	-12036.6	24955.0	0.832	162.7	0.640	.875, .853, .891, .976, .949
6 Class	-11958.6	24970.4	0.851	155.0	0.033	.860, .883, .967, .866, .912, .945

[14] Based on the conflicting model fit indicies of the three- and four-class solutions, additional comparisons, introducing theoretical componenets of risk and need, were conducted and the determination of the most appropriate class-solution was based on these comparisons. A discussion of these comparisons and the determination of the four-class solution are provided in Appendix 4.

H1

Although described in greater detail in Chapter 9, the creation and confirmation of fit of the latent class model serves as confirmation of the first study hypothesis. That is, the intention of H1 was to establish if a class structure exists among substance abusing offenders entering New Jersey halfway house interventions. The fitting of a four class model to the sample data confirms a significant amount of heterogeneity exists and can be evaluated via a typological assessment (i.e. class profiles variations).

6.3 Post-Hoc Evaluation of Four-Class LCA Model

The Mplus software provides both the class probabilities of an individual being identified in a given class, where the largest (or modal) probability for a given class is considered the individual's predicted class membership. Predicted class memberships are useful in the initial conceptualization of the created class structure as a posterior probability of class means, and item endorsement can be produced and described, illustrating post hoc class differences. Table 6.3 presents the descriptive statistics from the post-hoc analysis of subjects' predicted class memberships. Classes varied in size, where Class 3 represents the largest class (45%), followed by Class 2 (26%), Class 4 (18%) and Class 1 (11%). To provide a more detailed illustration of class distributions within each assessment domain, the post-hoc analysis presented in Table 6.3 was broken out into graphical displays within the four main domains: Criminal, Substance Abuse, Education/Employment and Mental Health and Family History.

Table 6.3 Posterior Probability Prevalence and Means of Items of LCA Model (N=566)

Item	Class 1	Class 2	Class 3	Class 4	Total
CLASS N	62	149	254	105	566
PERCENT OF SAMPLE	11%	26%	45%	18%	100%
MEANS(S.E.)					
AGE	34(0.6)	36(1.9)	26(1.1)	38(1.0)	32(1.2)
MAX SENTENCE LENGTH	17(0.2)	6(0.3)	6(0.3)	6(0.4)	7(0.3)
AGE 1ST ARREST	17(0.2)	16(1.0)	15(0.7)	21(0.9)	17(0.7)
ASI SCORE	6(0.2)	7(0.2)	6(0.2)	6(0.2)	6(0.2)
AGE 1ST DRUG USE	15(0.3)	16(0.9)	15(0.5)	17(0.8)	16(0.6)
PERCENT WITH					
MANDATOR MINIMUM	76%	67%	81%	86%	78%
CONVICTED DRUG OFFENSE	33%	41%	66%	87%	60%
PRIOR INCARCERATIONS	48%	86%	42%	68%	59%
JUVENILE CONVICTIONS	63%	60%	72%	0%	55%
INDICATED BENEFIT FROM TREATMENT	60%	73%	41%	46%	53%
PRIOR TREATMENT	43%	64%	35%	33%	43%
DAILY USE	73%	83%	49%	71%	65%
SUBSTANCE USE 12 MONTHS PRIOR TO INCARCEARTION	91%	89%	83%	89%	89%
EMPLOYED 12MON PRIOR	71%	73%	65%	74%	69%
WPT LOWER 87th PERCENTILE	26%	44%	47%	42%	43%
GED OR HS DIPLOMA	72%	53%	57%	64%	59%
HISTORY OF MENTAL HEALTH ISSUES	24%	3%	9%	7%	14%
RECIDIVISM PROBABILITY 61% OR MORE	62%	74%	52%	43%	57%
VIOLENT CRIMINAL HISTORY	67%	61%	46%	36%	50%
COMMUNITY CORRECTIONS VIOLATION HISTORY	74%	89%	64%	66%	72%
PRIOR COMMUNITY CORRECTIONS	28%	64%	34%	42%	43%
PAI VIOLENT OR AGGRESSIVE	44%	55%	47%	21%	44%
FAMILY CONVICTIONS OR SUBSTANCE ABUSE HISTORY	92%	85%	79%	59%	78%
PRIMARY DRUG OF CHOICE					
HEROIN	27%	51%	1%	46%	26%
COCAINE/CRACK	19%	22%	3%	18%	13%
MARIJUANA	32%	3%	88%	22%	46%
DRUG ALCOHOL	23%	24%	7%	15%	14%

As shown in Table 6.3 a total of 23 predictor measures were used in the LCA model. All measures were used in the modeling procedure to identify response patterns among the four classes. Although each predictor may not contribute to the unique response pattern for every class it should contribute to the unique pattern (or identify a distinction) for at least one class. That is, for a measure to be important to the classification process it should provide significant between-class differences for at least

one pair of the identified classes. Items that contain no significant between-class comparisons introduce noise into the classification process and should not be included as part of the LCA model.

Table 6.4 presents alpha values (i.e. p values) of the post hoc comparisons of classes for each of the items utilized in the latent class analysis. For continuous items, mean comparisons were computed for predicted class memberships using Analysis of Variance (ANOVA) with Bonferroni pot hoc tests. For categorical items Mplus produces a pseudo-z score (Estimate/Standard Error) from comparisons of latent class odds ratios provided in the posterior probability.[15] The results from these comparisons indicate that all 23 items demonstrate at least one significant between-class difference. One item "SUBSTANCE USE 12 MONTHS PRIOR TO INCARCEARTION" presents as a borderline predictor, as five of the six comparisons do not reach significant levels and only one comparison "Class 1 Compared to Class 3" falls on the borderline of significance (p=.05). After an examination of post hoc test it was determined that all included items represent significant predictors for determining latent class response patterns and the model derived from these predictors is appropriate.

[15] Mplus does not yet provide a post hoc comparisons of continuous items used in an LCA "mixed" analysis. Another method for examining item's influences is to examine the significance of each item in posterior probability display. Similar between-class significance where found using this method.

Table 6.4 Alpha Values of Post Hoc Class Comparisons (N=566)

Item	Class 1 vs. Class 2	Class 1 vs. Class 3	Class 1 vs. Class 4	Class 2 vs. Class 3	Class 2 vs. Class 4	Class 3 vs. Class 4
MEANS						
AGE	.569	<.001	<.001	<.001	<.001	<.001
MAX SENTENCE LENGTH	<.001	<.001	<.001	1.000	1.000	1.000
AGE 1ST ARREST	.082	.003	<.001	1.00	<.001	<.001
ASI SCORE	.037	.569	1.00	.001	.003	.392
AGE 1ST DRUG USE	1.000	1.000	.014	1.000	.013	<.001
PERCENT WITH						
MANDATOR MINIMUM	.030	.012	.044	.007	.053	.021
CONVICTED DRUG OFFENSE	.027	.003	.165	.023	.136	.178
NUMBER OF INCARCERATIONS	.023	.002	.074	.016	.147	.071
JUVENILE CONVICTIONS	.130	.027	<.001	.192	<.001	<.001
INDICATED BENEFIT FROM TREATMENT	.011	.002	.032	.002	.028	.025
PRIOR TREATMENT	.007	<.001	.039	.002	.016	.039
DAILY USE	.026	.003	.087	.005	.155	.062
SUBSTANCE USE 12 MONTHS PRIOR TO INCARCEARTION	*1.00*	*.050*	*.182*	*1.00*	*1.00*	*.123*
EMPLOYED 12MON PRIOR	.007	.003	.014	<.001	.011	.003
WPT LOWER 87th PERCENTILE	.022	.006	.027	.003	.036	.006
GED OR HS DIPLOMA	.009	.004	.024	<.001	.017	.009
HISTORY OF MENTAL HEALTH ISSUES	.015	.016	.142	.018	.113	.146
RECIDIVISM PROBABILITY 61% OR MORE	.010	.004	.091	.003	.085	.112
VIOLENT CRIMINAL HISTORY	.007	.002	.039	<.001	.033	.026
COMMUNITY CORRECTIONS VIOLATION HISTORY	.057	.004	.057	.049	.059	.059
PRIOR COMMUNITY CORRECTIONS	.008	.002	.013	.002	.011	.005
PAI VIOLENT OR AGGRESSIVE	.017	.008	.151	.009	.106	.009
FAMILY CONVICTIONS OR SUBSTANCE ABUSE HISTORY	.105	.077	.126	.016	.041	.040
PRIMARY DRUG OF CHOICE						
HEROIN	.012	.262	.052	.251	.041	.281
COCAINE/CRACK	.013	.082	.090	.091	.097	.122
MARIJUANA	.018	.044	.079	.049	.075	.121
DRUG ALCOHOL (REF)	--	--	--	--	--	--

Criminal Domain

Class variations on criminal assessments items are presented in Figure 6.4 below. Class 1 is shown to have long history of incarceration and violations. This class of individuals shows the largest max sentence length (mean = 8 years), the most subjects with a violent criminal history (67%) and the fewest with drug convictions

(33%). This class also has the highest percentage of subjects with a community corrections violation (74%) while having the smallest percentage attending prior community corrections (28%), indicating a high risk of return.

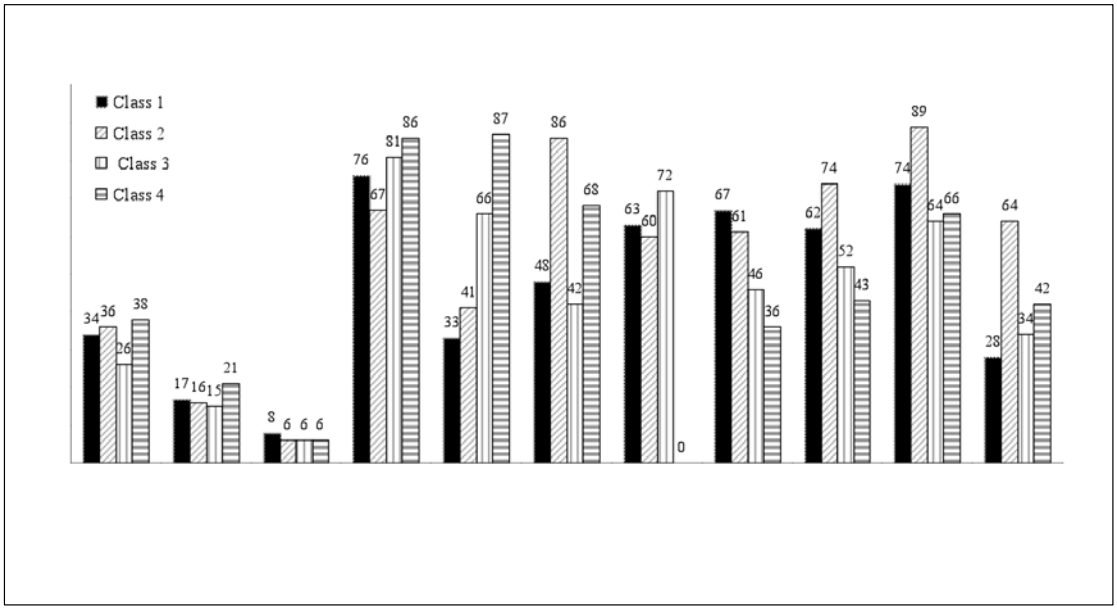
Class 2 rankings on criminal history measures show a profile of individuals that have been cycling in-and-out of incarceration. This Class was least likely to have a mandatory minimum (67%), less likely to have been incarcerated on a drug offense (41%) and have the most prior convictions (86%). A majority have a violent criminal history (61%), they are the most likely to recidivate according to the LSI-R (74%), and have the most community corrections violations (89%) as well as the greatest percentage with a prior community corrections attempt (64%), indicating a greater propensity for community corrections violations.

Class 3 shows the profile of an offender with a shorter adult criminal career. They are the youngest (mean = 26), have the youngest age of first arrest (15), and have a high percentage of members with both mandatory minimums (81%) and drug offense convictions (66%). However, this class shows the fewest prior adult incarcerations (42%) and the most members with juvenile convictions (72%). With regard to their relative inexperience they also rank low on prior violent offenses (46%), community corrections violations (64%), and prior community corrections (34%) when compared to the other three classes.

Members of Class 4 have similar criminal patters to Class 2 but seem to have started their criminal careers much later. These offenders are the oldest (mean = 38), with the oldest age of first arrest (mean = 21) and no juvenile convictions (0%). They may be those most likely to have been impacted by recent changes in drug offense sentencing as they have the highest percentage of mandatory minimums (86%) as well

as having been convicted for a drug offense (87%). They also rank at, or near, the bottom on prior violent offending (36%), LSI-R predicted recidivism (43%), and community corrections violations (66%).

Figure 6.4 Class Variation of Criminal Assessment Items (N=566)



Substance Abuse Domain

Substance abuse variations by class are illustrated in Figure 6.5. Class 1 shows some distinguishing qualities with regard to substance use. Members of this class have the highest percentage with substance use in the 12 months prior to incarceration (91%), indicating a need for substance abuse treatment. A majority of subjects in this class indicate a benefit from additional substance abuse treatment (60%); however, there is no single drug of choice that stands out among this class of offenders.

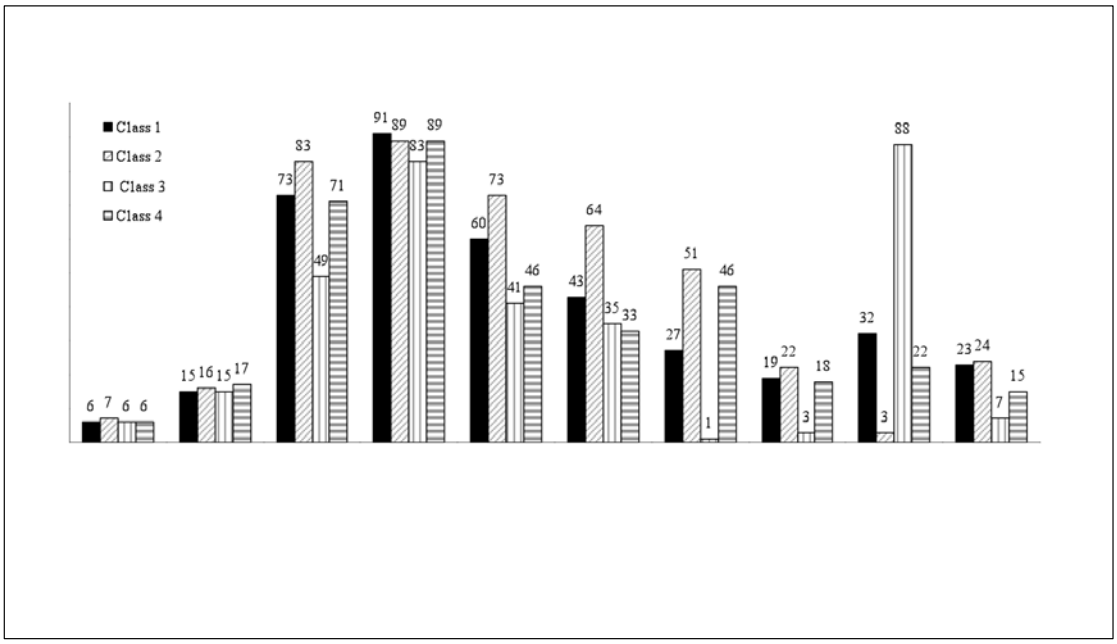
The profile of Class 2 shows a long heroin abuse career. Over half of the subjects of this class report heroin as their primary substance (51%) and nearly one-quarter use cocaine/crack, indicating a greater substance use severity when compared to other classes. These offenders also have the highest ASI ranking of substance abuse

severity (mean = 7), the highest rate of daily use (83%), and a vast majority indicate use 12 months prior to incarceration (89%). Members of this class show the highest percentage who indicate a prior substance abuse treatment episode (64%) and are the most likely to indicate the need for further treatment (79%).

Class 3 displays a lower risk of substance abuse. These offenders overwhelmingly indicated marijuana as their drug of choice (88%). In addition, members of this class were least likely to be using daily (49%), least likely to be using 12 months prior to incarceration (83%), least likely to indicate a benefit from further treatment (41%) and few endorsed receiving prior treatment (35%). Collectively these findings suggest a lower intensity of substance use severity and need for further treatment.

Class 4 indicates a moderate risk for further substance abuse. These individuals started their substance use careers later (mean = 17) when compared to the other classes. A minority indicated that they would benefit from further treatment (46%) and were the least likely to have had prior drug treatment (33%). However, this class prefers heroin (46%) over all other substances, indicating a greater preference of more addictive substances and thus a greater potential for relapse.

Figure 6.5 Class Variation of Substance Abuse Assessment Items (N=566)



Education and Vocation Domain

Class variations among the three education and vocational items are presented in Figure 7.3. Class 1 has the smallest percentage of individuals in the lower 87th percentile of the WPT (26%), indicating better vocational aptitude when compared to the other three classes. This class also has a high percentage of members that indicate having a GED or high school diploma (72%) indicating greater employability when compared to the other classes.

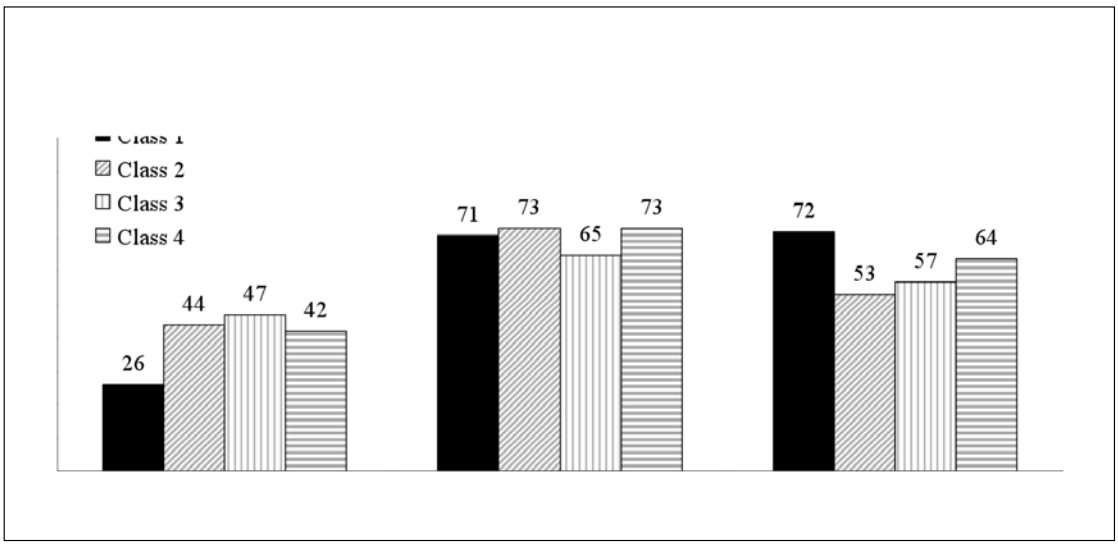
Class 2 shows a large percentage employed in the 12 months prior to incarceration, although this measure shows little variation across the top three groups. However, this class presents the lowest percentage of members with a GED or high school diploma (53%), which may be related to the constraints of their substantial criminal and substance abuse lifestyle.

Predicted members of Class 3 show relatively high employability deficits when compared to the other three classes. This class has the largest percentage in the lowest

WPT employability category (47%), the fewest employed in the 12 months prior to incarceration (65%) and just over half of these members indicate having a GED or high school diploma (57%). Collectively these ratings indicate a greater education and employment need for members of this class.

Class 4 does not have many notable employment and vocational variations. They rank equally high on employment in the 12 months prior to incarceration (73%), which indicates a low vocational need.

Figure 6.6 Class Variation of Edducational and Vocational Assessment Items (N=566)



Mental Health and Family History Domain

Mental health and family history variations by class are illustrated in Figure 6.7. Class 1 shows the highest percentage indicating a history of mental health history items (25%) and the highest percentage of individuals with a history of family convictions and/or substance abuse (92%). This class has the greatest needs with regard to mental health issues and increased risks due to family history indicators.

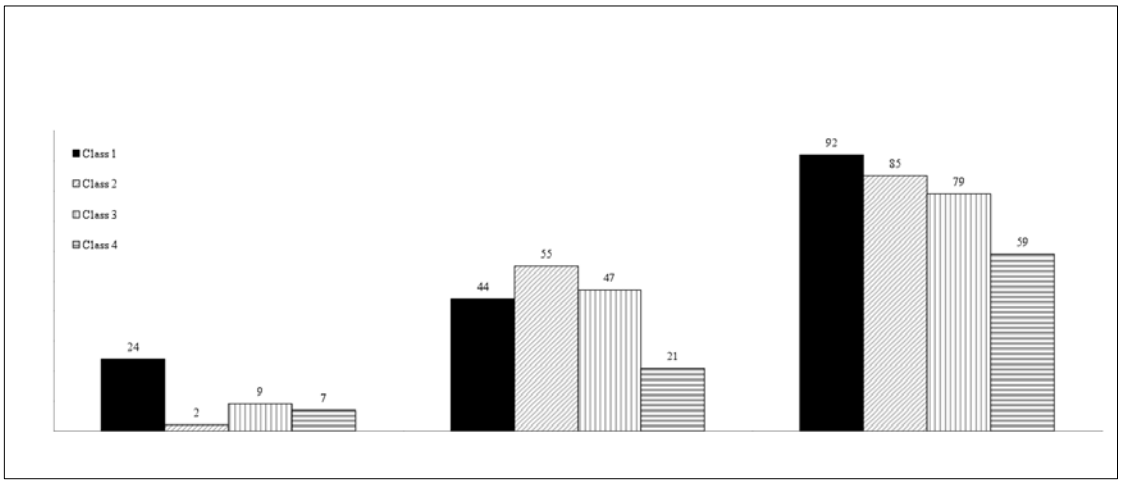
Class 2 shows a very small percentage of members with mental health issues (2%). However, the percentage ranking high on the PAI aggressive and/or violence

scale is the highest among the four groups (55%); while members also indicate a relatively high percentage of family convictions and/or substance abuse (85%).

Little distinction is found in the Mental Health and Family History domain for Class 3, where members do not rank particularly high or low on any of the domain items.

Class 4 has low levels of risk in the Mental Health and Family History domain. Members of this class have a negligible amount of members indicating a history of mental health issues (7%), the lowest amount of members indicating high levels of aggression and violence on the PAI (21%) and the lowest amount indicating a history of family convictions or substance abuse (59%).

Figure 6.7 Class Variation of Mental Health and Family History Assessment Items (N=566)



6.4 Summary of Class Profiles

Following the description of domains class summaries were created to identify the cumulative profile of each class. This profile will be useful in later chapters when interpreting the class variations in the return outcome models. This section presents a table of notable domain rankings for each class along with a brief descriptive summary of each profile. Suggested intervention needs accompany the profile description.

Descriptive Summary of Class 1 Profile

Based on response variations from the LCA analysis, Class 1 offenders are described as the *Multi-Domain Need - High Criminal Risk* Class. Key descriptive items are summarized in the table below. This Class is the smallest, with a predicted membership of 11 percent of the study sample. This class is most likely serving a long sentence as their mean max sentence is largest by comparison, and also contains the most members with a violent criminal history. Although they do use substances regularly, it is not clear that they use any one particular substance. These individuals are highly employable; however, their mental health and family history indicate a higher relative risk for this domain.

Intervention Needs of Class 1

Given the multiple domains of high risk (mental health, violence, and substance use), individuals with similar class profiles would be at high risk of returning to prison unless multiple domains of services can be delivered effectively. Given these recommended components one would expect this class of individuals to function best in an intensive intervention with a holistic approach to offenders' deficits/needs, such as a therapeutic community, or possibly a modified intervention for co-occurring disorders.

Class 1 – Multi-Domain Need - High Criminal Risk (11%)

Domain	Ranking
Criminal	1) Largest max sentence length 2) Fewest committing drug offense 3) Most with violent criminal history 4) 2nd highest community corrections violation history 5) Fewest with prior community corrections
Substance Abuse	1) Most use 12 months prior 2) Majority indicate benefit from treatment 3) No drug dominant
Education & Employment	1) Most with GED or Diploma 2) Least in lower 87th WPT
Mental & Family History	1) Highest with history of mental health issues 2) Most with family convictions or drug abuse history

Descriptive Summary of Class 2 Profile

LCA response variations for Class 2 are described as the *Substance Abuse Need – Violation Return Risk* Class. Key descriptive items are summarized in the table below. This class has been in-and-out of the correctional system for much of their lives, and as such, has had much time to attempt and fail in prior community corrections and treatment episodes. The cycling in-and-out of the system is expected to be, at least in part, a result of their addiction severity, which is typically heroin use. The psycho-pharmacolgical properties of heroin produce a greater intensity of effects and withdrawal, making abstinence more difficult and relapse more likely (when compared to the other study substances). Relapse, in turn, will increase the odds of a positive urine analysis, “failure to report” and other corrections mandates. The assessment profile shown here would indicate that relapse is more likely for this class and, hence, predicted to be at high risk for returns based on non-compliance (technical violations) for conditions such as absconding from treatment or parole, inability to maintain employment and failing urine analysis testing.

Intervention Needs

This offender type would most likely benefit form an intense substance abuse intervention. Given their previous failed attempts at treatment and community corrections, along with their high likelihood or relapse and recidivism, individuals with similar class profiles have a higher likelihood of violation and predicted to have a higher propensity for revocation, especially if enticed by drug use reoccurs upon return to the community. Therefore, a moderate to high intensity substance abuse-focused intervention should benefit these individuals, at least in the initial phases of community reentry.

Class 2 – Substance Abuse Need – Violation Return Risk (26%)

Domain	**Ranking**
Criminal	1) Fewest mandatory min. 2) Few convicted of drug offense 3) Most with prior incarceration 4) Majority with violent criminal history, 5) Most with 61+ recidivism probability, 6) Most community corrections violations, 7) Most with prior community corrections
Substance Abuse	1) Highest ASI score 2) Highest daily use 3) Most indicate benefit from treatment 4) Most primary heroin users 5) Negligible amount primary marijuana users
Education & Employment	1) Fewest GED or diploma
Mental & Family History	1) Fewest MH history 2) Most PAI 3) 2nd with family convictions or drug abuse history

Descriptive Summary of Class 3 Profile

Class 3 response variations from the LCA analysis are described as the *Employment and Habilitation Need* Class. Key descriptive items are summarized in the table below. Class 3 represents the largest class, with a predicted membership of 45 percent of the sample. In contrast to Class 2 and 4, this class is recent to the adult corrections world. Their relatively young age, early juvenile involvement and recent

criminal involvement would suggest that they may be at a critical point in their criminal career where a well matched intervention may prevent future involvement. Their low substance use severity, using primarily marijuana, would suggest that their use of substances is not as severe as the other classes. However, their early involvement in the juvenile and adult correctional system is most likely preventing their attainment of employable skills.

Intervention Needs

The profile of this class would suggest a less intensive substance abuse intervention is required. Individuals with similar class profiles will possibly benefit from a strengths-based approach that focuses on changing criminal thinking patterns and promoting education and vocational training. Furthermore, these offenders might be best suited in an intervention that focuses on youthful offenders, possibly selecting individuals in their early to mid-twenties.

Class 3 – Employment and Habilitation Need (45%)

Domain	**Ranking**
Criminal	1) Youngest 2) Youngest age first arrest 3) Fewest with prior incarceration 4) Most juvenile convictions 5) Fewest with community corrections violations 4) Few with prior community corrections
Substance Abuse	1) Fewest daily use 2) Fewest use 12 moths prior 3) Fewest indicate benefit from treatment 4) Fewest prior treatment 5) Most marijuana 6) Fewest all other drugs
Education & Employment	1) 3rd GED or diploma 2) Fewest employed 12 months 3) Most in lower 87th WPT
Mental & Family History	1) Nothing prominent

Descriptive Summary of Class 4 Profile

Class 4 response variations from the LCA analysis are described as the *Low Need – Low Return Risk* Class. Key descriptive items are summarized in the table below. Unlike Class 3, members of Class 4 are relatively late comers to the correctional system in terms of age, age of first arrest and age of first substance use. With a moderate-to-severe addiction history combined with a high rate of convictions for drug offenses one might conclude that their late introductions to the correctional system might be due to recent changes in dug offense sentencing mentioned in previous chapters. With low ranking on recidivism measures, use of community corrections and prior treatments these individuals might be described as possible moderate-to-high functioning substance users that is also reflected by their low-to-moderate rankings on employability measures and relatively low rankings on mental health and family history measures.

Intervention Needs

Despite low rankings on several risk domains, this class does present to need substance abuse treatment. Individuals with similar class profiles should benefit from a low-to-moderate intensity substance abuse treatment intervention; however, a holistic, multiple-dimension intervention may not be needed and possibly inefficient.

Class 4 – Low Need – Low Return Risk (18%)

Domain	Ranking
Criminal	1) Oldest 2) Oldest at first arrest 3) Most with mandatory minimum 4) Most convicted of drug offense 5) Majority with prior incarceration 6) None with juvenile convictions 7) Fewest with violent criminal history 8) Fewest with 61+ recidivism probability 9) Fewest prior community corrections
Substance Abuse	1) Minority indicate benefit from treatment 2) Fewest with prior treatment 3) Majority are heroin users
Education & Employment	1) Most employed 12 months prior
Mental & Family History	1) Fewest PAI 2) fewest with family convictions or drug abuse history

6.5 Summary – Latent Class Analysis

This chapter focused on the development of a latent class model, examining the existence of a class structure within the study sample. A four-class model was found to fit the data well, confirming the study hypothesis (1-H) identifying heterogeneity of substance abusing offender population. Class profiles were then explored using the predicted class memberships outlined by the LCA findings. These profiles will be readdressed in later chapters when interpreting the interactions of classes and halfway house programs on return outcomes. The bivariate relationships of measures to be included in the interaction models are discussed in the next chapter, setting up the creation and results of the final models.

VII. LATENT CLASS COMPARISONS BY PRISON RETURNS AND HALFWAY HOUSE PROGRAMS AND FACILITIES

Following the creation of the latent classes, predicted class memberships where further utilized, examining bivariate relationships among measures to be included in the final models. Specifically, class variations were examined by prison return measures (dichotomized failure/no failure as well as days-to-failure) and halfway house participation by facilities and programs. Potential moderator measures were also examined for class variations. This chapter describes the results of those analyses, setting up the creation of the final models to be described in Chapter 8.

7.1 Bivariate Results by Class

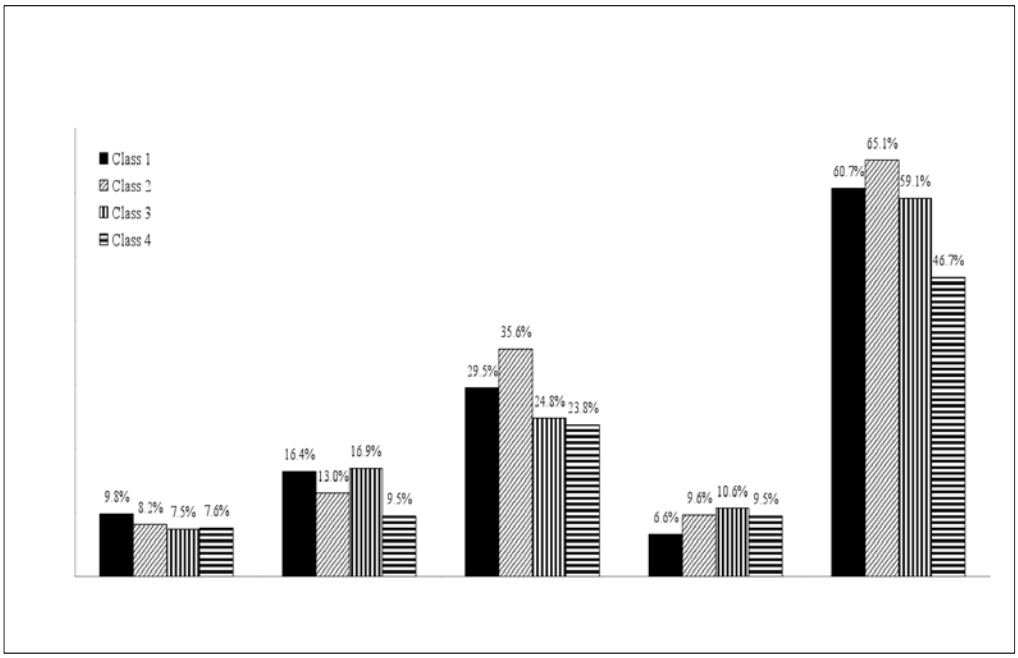
As described in Chapter 6, latent class analysis was computed using Mplus modeling software, where predicted class memberships and class probabilities could then be saved and exported to SPSS (Version 15) for additional analysis and modeling. The return measures described in Chapter 5 were then cross-tabulated using the predicted class memberships assigned to each study subject and chi-square tests of significance were computed. Mean days-to-failure were also compared across classes, an analysis of variance was utilized for comparisons by class membership and F test of significance were computed. The test statistics and significance (p-values) of all bivariate comparisons are reported in Table 7.1. Figure 7.1 illustrates class return variations. Class 2 was shown to have the greatest frequency of returns for technical violations by Year 4 (35.6%). Class 3 was found to have the greatest frequency of new commitments (10.6%) and escapes (16.9%). Class 1 demonstrated the highest

frequency of returns for halfway house violations (9.8%). However, none of the return type-class comparisons reached significance. With regard to any returns, or failure, class differences did reach significant levels (χ^2=8.902, p=.032). Class 4 presented to have the lowest level of any return (46.7%) where Class 2 was shown to have nearly two-thirds (65.1%) of offenders return by Year Four. Post hoc tests (not displayed) of any returns reveal significant differences of all classes compared to Class 4; where Class 4 compared to: Class 1 approaches significance (χ^2=3.443, p=.064), Class 2 produces the greatest difference (χ^2=8.016, p=.005) and Class 3 also reaches significance (χ^2=4.261, p=.039). When a return occurs, Class 4, on average, presents the most days-to-failure (1,054), followed by Class 1 (929), Class 3 (927), and Class 2 (857), however these variations did not reach significance.

Table 7.1 Class Variations by Prison Return Type 4 Years Post-Halfway House Admission (N=566)

	Class 1	**Class 2**	**Class 3**	**Class 4**	**F/χ^2**	**p value**
HWH Violation	9.8%	8.2%	7.5%	7.6%	0.379	.940
Escape	16.4%	13.0%	16.9%	9.5%	5.027	.170
Technical Violation	29.5%	35.6%	24.8%	23.8%	5.739	.125
New Commitment	6.6%	9.6%	10.6%	9.5%	2.084	.555
Any Return	60.7%	65.1%	59.1%	46.7%	8.902	.032
Mean Days-to-Return (sd)	929 (688)	857 (679)	927 (696)	1054 (741)	1.813	.144

Figure 7.1 Class Variation by Prison Return Type Four years Post-Halfway House Admission (N=566)



7.2 Survival Analysis

To further evaluate failure, survival analyses were explored for additional class variations. Using an event history outcome - "days-to-failure" - a Kaplan-Meier survival analysis was computed utilizing the predicted class memberships. A Cox-regression was also computed utilizing class probabilities as model predictors, as probabilities provide a more accurate prediction of class failure.[16] Although many cases (n=417) were eligible to be evaluated five years post-admission, these outcomes could not be included in the dichotomous failure analysis due to issues relating to listwise deletion. However, event history analyses provided additional flexibility as cases can be censored based on time at risk (i.e. the number of days from halfway house admission until analysis date), which allows for the inclusion of cases with outcomes

[16] The use and interpretation differnces of the class probabilities as a model predictor are discussed in greater detail in Chpater 8.

beyond four years without the constraints of listwise deletion for cases that were not eligible for a Year Five follow-up. Essentially the use of days-to-failure allows for the use of outcomes beyond Year Four to be included without losing cases or statistical power.

The results of the Kaplan-Meier analysis are presented in Table 7.27. Mean days-to-failure revealed that subjects predicted to be in Class 2 had the fewest estimated days-to-failure with just over two and a half years (930.9 days), followed by Class 1 (1002.0 days), Class 3 (1023.6 days), and Class 4 (1165.1). The Log-Rank chi-square test indicates that the classes differ significantly (χ^2=9.300, p=.026).

Table 7.2 Kaplan-Meier for Days-to-Failure on Predicted Class (N=566)

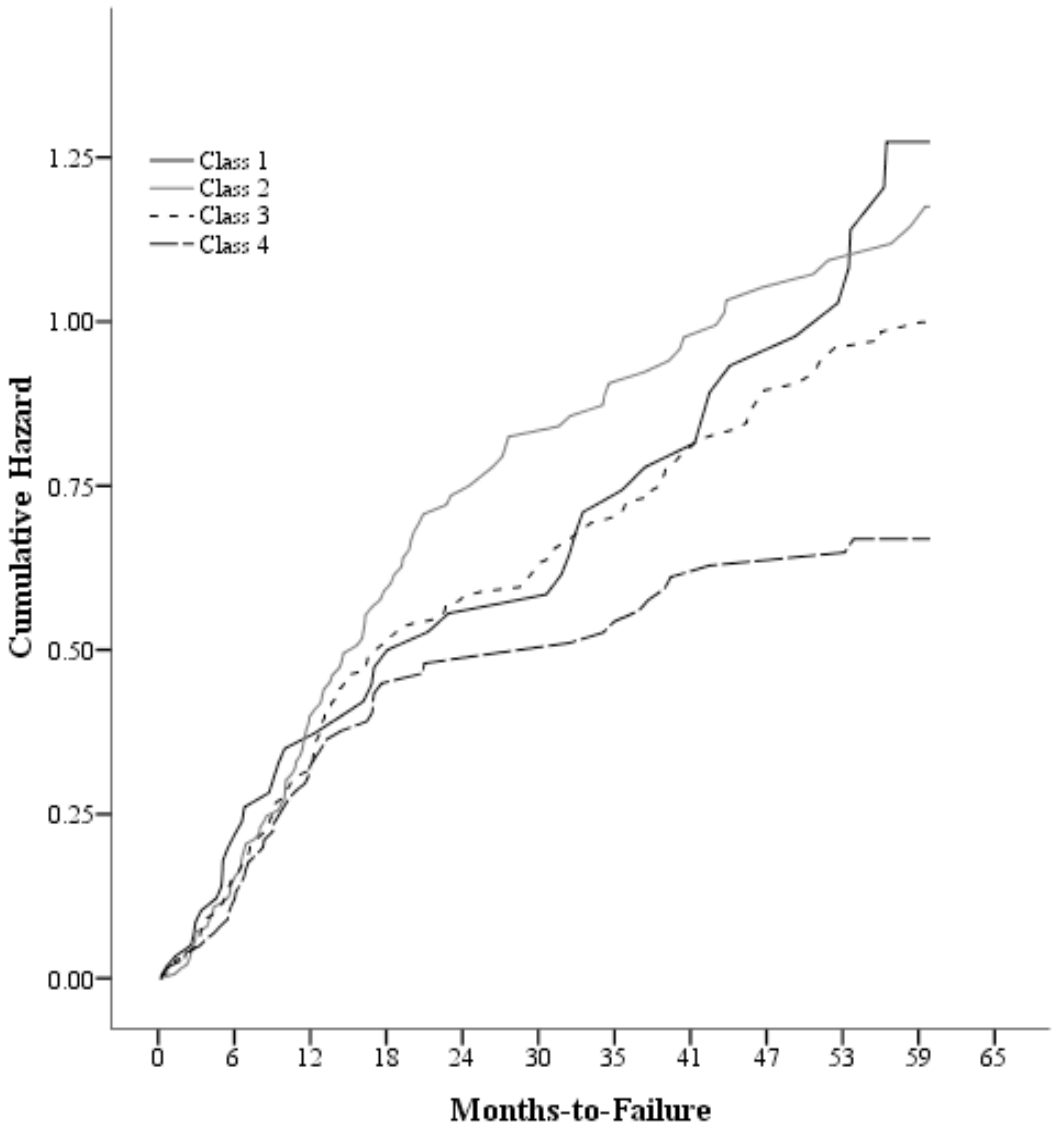
Predicted Class	**Mean Days-to-Failure Estimate(SE)**
Class 1	1002.0 (89.4)
Class 2	930.9 (58.0)
Class 3	1023.6 (44.7)
Class 4	1165.1 (71.5)
	Log-Rank
Model	9.300*

+p<.1 *p<.05 **p<.01 ***p<.001

The plot of the hazard curves from the Kaplan-Meier analysis is presented in Figure 7.2. This figure displays Cumulative hazard rates of classes' by months at risk. The figure demonstrates some interesting trends in terms of timing of return risks. Although Class 2 estimated mean indicates fewer days-to-failure compared to the other three classes, the hazard plot demonstrates that, overall, Class 1 has a higher cumulative hazard. This finding differs from the results presented in Table 7.1, which indicated that Class 2 possesses a higher overall failure rate. However, as mentioned, the Kaplan-Meier analysis utilized censored outcomes which allowed for the evaluation of cases up to five years following halfway house admission. The plot of hazard curves indicates that Class 1 predicts to have the highest failure rate when outcomes are projected to five years.

The plot also indicates times at which particular classes are at highest risk of failure. Specifically, Class 1 has the greatest risk for return in the first year of release, which was the time in which early violation types (escapes and halfway house violations) are likely to occur as subjects were still participating in halfway house interventions. Class 2 has the greatest risk for returns from months 12 to 53, which coincides with the time in which most subjects are on parole. This was consistent with earlier findings presented in Table 7.1, demonstrating Class 2's higher frequency of returns for technical violations when compared to other classes. However, Class 1 predicts to have the greatest propensity for failure by the end of evaluation period, when returns for new commitments are likely to occur. Class 3 demonstrates a moderate return risk but the hazard curve never surpasses Class 1 or 2 during any month. Also consistent with the findings presented in Table 7.1 Class 4 possessed the lowest level of failure throughout the follow-up period.

Figure 7.2 Kaplan-Meier Class Hazard Curves



For reasons that will be described in greater detail in Chapter 8, the class probabilities are viewed as a more appropriate LCA predictor measure. However, it is not feasible to calculate a Kaplan-Meier analysis for the continuous predictors as there are too many levels of the predictor to consider. The Cox proportional hazard model with continuous predictor was therefore selected to further examine differences among the classes' hazard curves. Table 7.28 presents the Cox regression model findings. The overall model chi-square change from the baseline -2 log

likelihood is significant (χ^2=9.737, p=.021), which indicated good model fit and that the class probabilities are significantly related to subjects days-to-failure. Consistent with the four-year dichotomous failure outcomes presented in Table 7.1, Hazard Ratio comparisons indicate Classes 1, 2, and 3 propensities' for failure differ significantly form Class 4. The direction and magnitude of the hazard ratios indicate that participants with a greater probability of being a member of Class 4 have the lowest propensity for failure (HR = 1.000), followed by Class 3 (HR = 1.408) and Class 1 (HR = 1.615), while participants in Class 2 pressured the greatest propensity for failure (HR = 1.644).

Table 7.3 Cox Proportional Hazard Model for Days-to-Failure on Class Probability (N=566)

	Logit	**Hazard Ratio**
Class 1 Probability	.479	1.615*
Class 2 Probability	.497	1.644**
Class 3 Probability	.342	1.408*
Class 4 Probability (ref)	--	1.000
	Baseline -2 Log Likelihood	**Chi-square Change**
Model	4180.321	9.737*

+p<.1 *p<.05 **p<.01 ***p<.001

7.3 Summary of Return Variations by Class

The post hoc analysis of the classes by return types produced some noteworthy findings. First, Class 1 was shown to have a greater risk for early return types, escapes and halfway house violations. The profile, presented in Chapter 6, suggested this class possessed multiple domains of need (mental health, criminal history and substance abuse) and, if not adequately addressed, posses a high risk of return. The bivariate findings buttress the profile description and also provide an initial indication that this class of offenders may be negatively impacted by certain intervention types as early frustration (demonstrated in halfway house violations and escapes) may be the result of

poor halfway house intervention matches. Furthermore, this class presents the highest risk of return overall, an early indication of need for a more intensive intervention.

The findings for Class 2 also indicate a high risk for failure. The Chapter 6 class profile suggested that this group possessed some of the highest substance abuse risks. Taking into consideration their higher LSI-R return risk and prior community corrections violations, one can make the assumption that this class has a greater risk of relapse, which prior findings indicate should result in a higher risk of returns (Andrews, Bonta and Wormith, 2006; Burke, 1997). The bivariate results provide some confirmation of this finding, where Class 2 demonstrated the highest risk of return in the months where offenders are typically in the community and on parole, when relapse is most likely to occur. The bivariate findings presented further suggest a high relapse risk, as testing positive for drug use is one of the largest contributors of returns for substance abusing offenders (Travis, 2003). Higher class return rates for technical violations while on parole may be the result of testing positive while under parole supervision. However, additional analyses would be needed to confirm this relationship.

Class 3 was found to have a moderate risk for failure and the highest rate of escapes and new commitments at Year 4. The defining characteristic for this class was their relative youth. By comparison to the other classes their criminal careers started earlier and their substance abuse either is not, or has yet to reach the severity of the other classes. Because of their early juvenile involvement in the justice system they have most likely missed out on the window when individuals most often acquire much the education and employment skills needed to begin a legitimate lifestyle (Moffit, 1993). Although Class 3 does not demonstrate a high return risk, if not provided with

an intervention that builds the skills necessary to obtain employment, they are at a greater risk for failure and returning to crime when returned to the community. The relatively higher rates of new commitments for this class suggest frustration and opportunities for new crimes represent a greater temptation for offenders with a Class 3 profile. Elevated rates of escapes are also consistent with literature documenting walk-aways/absconding by youthful offenders (Anson and Hartnett, 1983; Cambell, Proporino and Wevrick, 1985; Chard-Wierschem, 1995).

The Chapter 6 assessment profile presented for Class 4 demonstrated members that were moderate-high risk for relapse but a low risk for return when compared to the other classes. These offenders were older and late starters of criminal activity, indicating they might be closer to “aging out”. The findings of the bivariate failure analyses are consistent with this profile, where members of Class 4 rank lowest on overall returns as well as all return subtypes. Furthermore, their days-to-return suggest that this class presents a comparatively low risk of return through the halfway house intervention and in the community.

7.4 Bivariate Comparisons of Classes by Facilities and Programs

To further describe the measures to be included in the final models, predicted class memberships were examined for significant variations among halfway house facilities and programs. Based on anecdotal descriptions provided by Department of Drug Programs staff, it was assumed that offenders are placed in halfway house facilities in a quasi-random fashion based on bed space availability. Although it is assumed that those involved in the placement of offenders in halfway houses are not aware of the typology created by the study’s LCA model, if overt measures were being

taken to match subjects to particular facilities based on the assessment items one would expect to see significant class variations within halfway house facilities and programs. Chi-square tests of significance were utilized to examine if class proportions assigned within a given facility or program match the sample class proportions. If variations are not found to be significant within facilities or programs, one can assume that there is degree of randomness to assignment procedure.

Table 7.3 presents the class variations within each halfway house facility. Findings presented in Table 7.3 indicate that three houses (B, D and J) contain significant class variations ($p<.05$), indicating that sample class proportions differ within three of the 16 facilities. This provides some indication that the assignment of offenders to halfway houses facilities may not be entirely random. However, a certain amount of the significant findings may be due to irregularities within some facilities. For instance, some facilities have a low capacity and therefore, there is a smaller chance that these facilities were provided as placements for enough sample cases to attain an even distribution across class proportions. For example, five facilities (B, E, I, M and O) did not have any participants from one of the four classes. Although only Facility B indicated significant classes differences, low expected cell counts restricted the attainment of a reliable chi-square statistics for the remaining four facilities (E, I, M and O). Therefore, although significant class variations were found, it was difficult to ascertain how much of a factor low cell counts (i.e. power) played in individual facility assessments, where it is reasonable to assume that a larger sample (i.e. more cases collected for each facility) would diminish the significant effects for the facilities identified in Table 7.3. However, significant class differences were identified within one of the facilities with a large sample proportion (Facility J), which suggests that

there may be some matching considerations utilized for participants of this facility. Although, if matching considerations occurred (either overtly of inadvertently) within the placement procedures, this potential violation of study assumptions will not effect hypothesis testing and would only impact policy implications flowing from the matching strategy created; where adjustments to a quasi-random placement procedure would not be controversial.

Table 7.4 Class Variations by Halfway House Facility (N=566)

Halfway House	Class 1	Class 2	Class 3	Class 4	p value
Facility A	16.7%	22.2%	44.4%	16.7%	.865
Facility B	12.5%	62.5%	0.0%	25.0%	.044
Facility C	13.3%	33.3%	46.7%	6.7%	.650
Facility D	14.8%	7.4%	70.4%	7.4%	.017
Facility E	25.0%	25.0%	0.0%	50.0%	.197
Facility F	6.7%	33.3%	40.0%	20.0%	.879
Facility G	14.6%	39.0%	29.3%	17.1%	.108
Facility H	8.9%	17.9%	46.4%	26.8%	.271
Facility I	0.0%	25.0%	41.7%	33.3%	.431
Facility J	2.7%	32.0%	50.7%	14.7%	.046
Facility K	11.3%	24.3%	44.3%	20.0%	.962
Facility L	16.0%	16.0%	48.0%	20.0%	.633
Facility M	0.0%	50.0%	37.5%	12.5%	.393
Facility N	15.4%	24.4%	47.4%	12.8%	.299
Facility O	0.0%	50.0%	12.5%	37.5%	.105
Facility P	11.3%	19.4%	46.8%	22.6%	.627
Total	11.0%	26.0%	45.0%	18.0%	--

Table 7.4 presents the class variations within each halfway house program. Findings reveal no significant class variations. These results were expected, which, based on the study assumptions, class proportions should not vary by program type. That is, if there is a quasi-random procedure for halfway house program assignment, one would expect there would be an equally proportionate distribution of classes within each program.

Table 7.5 Class Variations by Halfway House Program (N=566)

Halfway House Program	Class 1	Class 2	Class 3	Class 4	p value
Rehabilitation	11.5%	23.4%	45.0%	21.1%	.732
Cognitive-Behavioral	6.6%	26.9%	47.8%	18.7%	.172
12-Step	14.9%	29.9%	41.8%	13.4%	.079
Therapeutic Community	12.2%	19.5%	41.5%	26.8%	.474
Total	11.0%	26.0%	45.0%	18.0%	--

Generally, class proportions do not differ by halfway house. Facility variations identified power issues among smaller programs and a few significant variations were identified. Although the distribution of classes is not perfectly proportionate, the significant variations do not raise flags of potential basis due to systematic assignment. Furthermore, the three significant findings presented in Table 7.3 all came from facilities with the same program orientation (Cognitive-Behavioral). When these classes were combined with other Cognitive-Behavioral facilities, the significant effects disappeared, as the findings in Table 7.4 reveal no significant class differences among the four programs. Taking these results collectively, the assumption that the current placement of individuals within halfway houses is not systematic (or based on a matching strategy) seems to hold, suggesting that participants are placed in a quasi-random fashion.

7.5 Bivariate Return Analysis – Halfway House Main Effect

A key stage of the analytic plan outlined in Chapter 4 was the examination of the main effect of halfway houses on prison returns. This involved a head-to-head comparison of all facilities on return outcomes. The main effect was first examined using cross-tabulations, where frequencies of offender return outcomes at Year 4 for all study subjects were compared among halfway house facilities. Chi-square assessments of significance were computed for each analysis. Several tests of significance were

conducted comparing facilities. A one-way analysis of variance examined differences in mean days-to-failure between facilities and Cox Regression analyses examined program variations. As in the examination of class differences, time-at-risk begins when subjects were admitted to the halfway house. Subjects that did not return to prison by the date of analysis were censored based on their days at risk (capped at 5 years).

Facilities

The four year facility return rates revealed several significant findings with regard to return types. Examining returns for halfway house violations revealed that subjects participating in Facility N was found to have greater rates of this type of return ($p<.05$). Examining returns for escapes revealed several significant findings. Specifically, facilities A, C and D demonstrated significantly greater rates of escapes when compared to the rest of the sample ($p< .01$, .05 and .05, respectively); however, Facilities G, K and N demonstrated significantly lower rates of escapes when compared to the rest of the sample ($p<.05$, .01, and .001, respectively). Parole violations differed significantly for four facilities, where subjects who participated in Facility P incurred fewer parole violation ($p<.05$) and Facilities G and K were found to have significantly greater rates of parole violations when compared to the rest of the sample ($p<.01$ and .05, respectively). Finally, no significant differences were observed between facilities on either new commitments or overall failure (Any Return). Though several significant variations were observed among three of the four failure types, the lack of findings with regard to overall failure indicates that differences among facilities were not observed

and, hence no one program is significantly better (or worse) at preventing failure when compared to the other sample facilities.

Table 7.6 Prison Return Type by Halfway House Facility at Year 4 (N=559)

Halfway House	% Halfway House Violations	% Escapes	% Parole Violations	% New Commitments	% Any Return
Facility A	0.0	41.2**	17.6	9.8	68.8
Facility B	0.0	25.0	0.0	12.5	37.5
Facility C	15.4	30.8*	19.2	3.8	80.0
Facility D	0.0	33.3*	33.3	13.3	61.5
Facility E	0.0	0.0	25.0	0.0	25.0
Facility F	13.3	26.7	20.0	6.7	60.0
Facility G	5.0	5.0*	47.5**	5.0	65.8
Facility H	7.5	17.0	20.8	13.2	60.0
Facility I	8.3	33.3+	25.0	8.3	75.0
Facility J	5.4	14.9	33.8	14.9	67.6
Facility K	5.2	6.1**	37.4*	8.7	56.5
Facility L	4.0	16.0	24.0	8.0	52.0
Facility M	25.0	37.5	37.5	0.0	87.5
Facility N	14.3*	2.6***	20.8	15.6	48.7
Facility O	0.0	0.0	50.0	0.0	50.0
Facility P	12.9	22.6	17.7*	4.8	51.6
Total	8.2	14.9	29.0	10.0	58.7

* p<.05 **p<.01 ***p<.001

To examine days-to-failure a one-way ANOVA was computed for facilities. This analysis compared group means, where non-failure cases were censored for days eligible. Similar to the dichotomous comparisons of failure presented in Figure 7.5, facility variations did not reach significance (F=1.458). These findings further illustrate that failures do not differ between halfway houses. Due to issues of power in a few of the facilities with smaller capacities, and the lack of significant ANOVA findings, Cox regression models were not produced for additional facility comparisons.

Table 7.7 Days-to-Failure by Facility (N=566)

Halfway House	Mean	Std. Error
Facility A	810.9	167.6
Facility B	1285.6	263.8
Facility C	815.1	167.8
Facility D	895.3	153.0
Facility E	1444.8	282.8
Facility F	1048.9	184.4
Facility G	953.3	102.2
Facility H	981.5	95.0
Facility I	700.9	194.9
Facility J	883.1	79.7
Facility K	1079.3	61.8
Facility L	1062.2	151.5
Facility M	569.0	216.6
Facility N	1185.9	75.5
Facility O	1177.4	253.1
Facility P	1073.3	94.9
Total	1014.8	29.4
	F value	**p value**
Model	1.485	.116

Programs

Using the program measure created in Chapter 5, main effects were examined for participants' days-to-failure utilizing a Kaplan-Meier analysis and results are presented in Table 7.7. Similar to the facilities comparison differences in program failure rates do not reach significance.

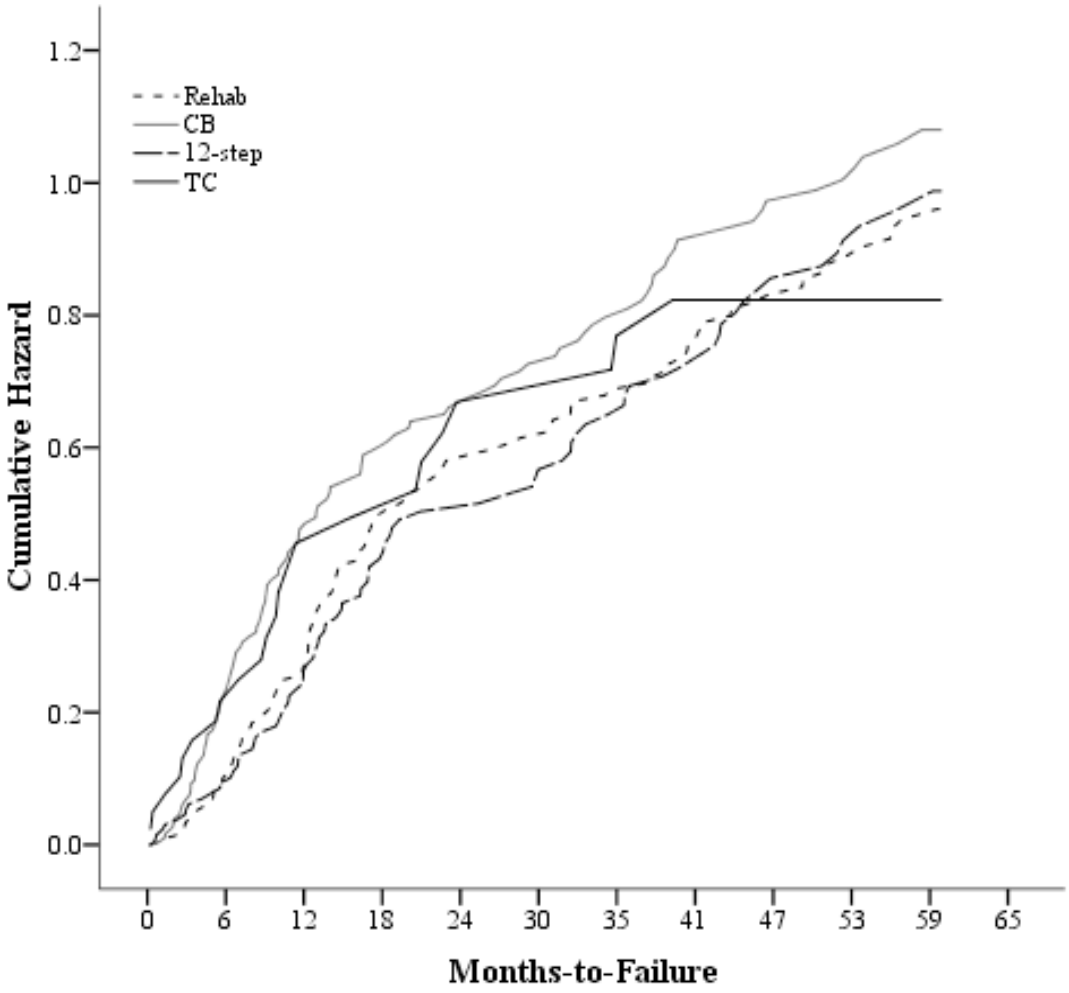
Table 7.8 Kaplan-Meier for Days-to-Failure on Program (N=566)

Program Orientation	Mean Days-to-Failure Estimate(SE)
Rehabilitation	1066.7 (48.7)
Cognitive-Behavioral	952.6 (54.4)
12-Step	1093.3 (59.3)
TC	1023.3 (118.0)
	Log-Rank
Model	3.021

*p<.05 **p<.01 ***p<.001

Figure 7.3 displays the hazard curves from the Kaplan-Meier analyses. Although variations are observed among the plotted hazard curves, the Kaplan-Meier analysis failed to reach significance (Log-Rank = 3.021). Collectively these findings indicate a back of main effects with regard to program type as a predictor of failure.

Figure 7.3 Kaplan-Meier Program Hazard Curves



7.6 Summary of Halfway House Bivariate Effects

Several patterns emerged in the examination of the bivariate analyses. First, an examination of returns by facility, significant variations were found among return subtypes but overall rates and days-to-failure differences did not reach significance. A greater sense of stability is provided through the examination of programs. Bivariate program comparisons revealed non-significant variations of days-to-failure. Therefore,

the most notable result to take away from this section of analyses was the general lack of findings. Collectively the head-to-comparison of halfway houses, at the bivariate level, do not indicate sufficient variation in failure to suggest that one, or a few facilities or programs, have proven to be more (or less) efficient at preventing failure following halfway house admission. Relating these findings to the testing of hypothesis *2-H*, the study presents insufficient evidence to claim differential general responsivity, failing to reject $2\text{-}H_0$.

7.7 Bivariate Correlations

Prior to the creation of proposed multivariate models, bivariate correlations were examined. These analyses provided an initial examination of model covariates potential interaction with facility and program measures. Furthermore, bivariate associations of all model covariates were needed to identify the potential existence of confounding relationships due to multicolinearity.

Moderators

Two additional measures were included as moderators in the multiple regression interaction models, presented in Chapter 8. These measures were not included in the LCA model configuration of classes as they did not pertain to the assessment of offenders' pre-intervention risk and needs but may have a potential influence on return outcomes in the final models. Race/Ethnicity is thought to indicate potential issues of cultural competency of correctional programming. One would hope that all facilities and programs posses a requisite amount of cultural competency and study expectations would reveal that no significant relationships with regard to race/ethnicity in the class-

facility/program interactions and return outcomes. In-prison Therapeutic Community duration is thought to influence the dosing effects of continuum of care programming, i.e. more days of in-prison programming were anticipated to provide an additive effect to community programming, and a greater combined duration was expected to decrease propensities for failure (Moos, Pettit and Gruber, 1995; Wexler et al., 1999).

Bivariate Correlation Findings

Bivariate correlations were examined to explore the existence of multicollinearity issues among measures to be included in the final models and findings are presented in Figure 7.9. The only relationship found to have a potential issue with multicolinearity is the association of black and white subjects. The Pearson r value of this relationship (-.708) raises concerns for multicolinearity, however, one of these measures will be omitted as a reference category in the Cox regression models and therefore, should not present an issue in the final models.

7.9 Bivariate Correlations of Multivariate Model Covariates

	Mon in TC	Class 1	Class 2	Class 3	Class 4	Whit	Hisp	Blac	Reh	CB	12-Step	TC	Day to Fail
Mon-in-TC	1	--	--	--	--	--	--	--	--	--	--	--	--
Class 1	.20	1	--	--	--	--	--	--	--	--	--	--	--
Class 2	-.12	-.22	1	--	--	--	--	--	--	--	--	--	--
Class 3	.01	-.34	-.53	1	--	--	--	--	--	--	--	--	--
Class 4	-.05	-.20	-.20	-.44	1	--	--	--	--	--	--	--	--
Whit	-.03	-.02	.11	-.07	-.02	1	--	--	--	--	--	--	--
Hisp	.02	-.06	.01	-.04	.10	-.15	1	--	--	--	--	--	--
Blac	.01	.06	-.10	.09	-.05	**-.71**	-.60	1	--	--	--	--	--
Reh	.06	.02	-.07	.01	.04	.06	.04	-.07	1	--	--	--	--
CB	-.04	-.09	.02	.04	.01	.02	-.02	-.01	-.53	1	--	--	--
12-Step	-.03	.07	.07	-.04	-.09	-.08	-.03	.08	-.43	-.38	1	--	--
TC	-.01	-.01	-.03	-.03	.07	-.01	.08	.00	-.21	-.19	-.15	1	--
Days-to-Fail	-.01	-.02	-.09	.01	.12	.04	.01	-.04	.04	-.08	.05	-.01	1

7.8 Summary - Bivariate Relationships

This chapter examined bivariate relationships of measures hypothesized to predict participant failure outcomes. Comparisons of classes by failures were examined and revealed differences in overall failure. Furthermore, event history analyses revealed significant class differences in days-to-failure. Return outcomes and their timing related closely with descriptive predictions of class profiles presented in Chapter 6.

Bivariate comparisons of classes by facilities and programs were compared to examine the randomness of the placement distribution of classes within halfway houses. Although notable variations were identified for facilities, inequality of class distributions can be attributed to sensitivity issues related to facility volume (or capacity). However, subject placements in study programs were not found to vary significantly. Therefore, there was a lack of sufficient evidence to suggest a systematic placement (or matching) strategy was utilized for the study population, providing evidence of the study assumption that participants were placed quasi-randomly (or without matched) by the NJDOC.

Study main effects test the existence of differential general responsivity in a head-to-head comparison of facilities and programs across several types of return outcomes. Findings revealed no significant facility or program variations for overall failure, which identified a lack of support for study hypothesis *2-H*, where participation in any one facility or program does not result in a significant increase or decrease in participants' propensity for failure.

Finally, bivariate correlations were examined to identify relationships between covariates to be used as part of the interaction models presented in Chapter 8. No issues of multicolinearity were identified through bivariate correlation analyses. Chapter 8 will present the final study regression models. Several models were used to examine facility, program, class and possible interaction effects. The results of these models provided evidence for the final study hypothesis (*3-H*). Identified interaction effects, define proposed matching guidelines.

VIII. INTERACTION EFFECTS

The final stage of the analysis examined the interaction effects observed between each participant's class and halfway house program membership using an event history outcome measure: days-to-prison return. Multivariate Cox regression analyses were used to examine the interaction modeling. This type of regression modeling is a standard method for time-to-event data that allows for the use of censored cases and has the flexibility to model the study's program-class interactions and control measures in a multivariate format. The findings of the Cox regression models provide an assessment of the potential good and poor program-class matches. Significant interaction effects identified how the various combinations of classes and programs influence days-to-prison return. Additional checks were also performed to examine sensitivity, reliability and validity of the interaction model findings.

8.1 Model Components and Considerations

Class Probability as a Covariate

Class probabilities are entered as continuous measures, where larger values indicate greater probability of membership in a given class. It is important to note, measures for predicted class membership utilized in the previous chapters cannot be used in the regression models described in this chapter. Although useful in describing the general assessment of class profiles, class memberships identified through the LCA model is based on a probabilistic structure where class membership is not the identification of an exact pattern of responses to assessment items but a probability of belonging to a latent class, based on the similarities of response patterns in relation to

other study subjects. The LCA model identified four patterns of subjects' assessment item responses. Each class has a prototypical response pattern (i.e. posterior probability). However, not all subjects fit exactly into the prototype pattern. Therefore, the LCA model provides class probabilities for each subject, which translates into the degree to which the participant responses match the prototypical pattern. Values closest to 1 indicate a high probability of belonging to each class (or having prototypical response pattern). Because of the non-absolute nature of the measure, many subjects possessed a non-zero probability of belonging to each of the four classes. Therefore, due to variance in the classification of response patterns within the identified classes, the study must account for this variability by utilizing the class probabilities rather than the predicted class membership[17].

Description and Interpretation of the Interaction Term

For interaction models, program measures were dichotomized, where contrasts reflect participation in a given program (1) versus *not* participating in that program (0). The result of this procedure was the creation of four program measures, one for each program. The interaction terms were created by multiplying each dichotomous program measure by each participant's associated class probability, producing four interaction terms for each participant. Interaction effects were modeled separately for each program-class interaction.

[17] Note – All models in this chapter were performed again using predicted classes and the results were very similar, although the Wald, alphas and hazard ratios were slightly lower.

Models were produced in three steps and model fit chi-squared changes were examined; each step was compared to assess the relative contribution of each of the added measures added to each step. The interaction term was added in the final step and when the chi-square change was found to be significant the interaction term estimate indicates a greater (or lesser) propensity for participant failure. The Hazard Ratios are then examined to determine direction and magnitude of the interaction term effect. The interpretation of the interaction effect was important, as the direction and magnitude of the interaction suggests a good or poor match of participant classes within programs.

However, class was analyzed based on probability of membership so the interpretation cannot be delivered in absolute terms (as it would if predicted probabilities could be utilized). Consistent with statistical procedures utilized by Agrawal and colleagues (2007), class probabilities were entered as continuous measures. When used as a continuous measure, larger class probabilities indicate if the participants' assessment response pattern is closer to the LCA identified prototype profile for that class; essentially measuring the *degree* to which an individual identifies with a given class. In this conceptualization, class probabilities act like weights, where participants' with larger values in a given class probability contributed greater influence with regard to the association of the class on days-to-return (and the opposite is true, where lower probabilities contributed less).

As the class probability refers to the degree to which an individual belongs to a given class, interpretation of the interaction effect is somewhat difficult to describe. The basic premise of the interaction term remains the same, where a Hazard Ratio

above 1 (or a positive Logit) indicates a poor match for the given program-class interaction, and values below 1 indicate a strong match. However, the description of this interaction is rooted in the probability structure of the class measures. An example interpretation of an interaction term is as follows: with a hazard ratio greater than 1, subjects with a larger Class 1 probability and who participated in a Rehabilitation program have a greater propensity for failure when compared to participants with lower probabilities of membership in Class 1 and/or were participants of other programs.

Control Measures

Two additional items – Race/Ethnicity and months of in-prison Therapeutic Community participation – were not directly measured by either the latent classes or the facility/program measures. As mentioned, interaction models are produced in three stages. The control measures are included in the first block. In the second block, the facility/program and the class probabilities are added. The final block includes the interaction term.

Event History Analysis

The regression models utilize an event history outcome: days-to-prison return. The decision to use event history was based on a joint consideration of the study research questions and the ways in which prison returns can occur. The ultimate goal of the study was to identify a matching strategy in a system of interventions. Several programmatic variations may impact the delivery of the intervention that may, in turn

influence the “match” of the offender to a given halfway house. Program variations may include, but are not limited to, intensity of supervision, violation leniency and program rules. The study identifies time-at-risk for prison return to begin when subjects was admitted to the halfway house. If programmatic factors interact with an offender’s characteristics, these interactions ultimately impact if and when an offender is returned. That is, poor program-class matches should result in earlier returns, or early failure, possibly while the subject is still participating in the halfway house intervention, which can occur either by halfway house rule violations or escapes. However, returns that occurred later in the continuum of care would be identified following program completion (i.e. parole violations or new commitments) and indicate lasting effects of the intervention. Therefore, the success of the match is determined through and examination of subjects’ days-to-return. Cox regression is an effective modeling technique for event history outcomes in a multivariate format, where classes, programs, interaction and control measures can be evaluated simultaneously.

8.2 Cox Regression Models

Multivariate Cox regression estimates were computed for base, omnibus and interaction models and the results are presented in Tables 8.1-8.19. The presentation of the Cox regression models includes the following: model fit indices (baseline and chi-square change), Logits, Hazard Ratios, and associated p values for each model covariate. Each measure is used to describe the covariate’s relationship with the hazard rate of the outcome – days-to-return. The Logit provides the direction and the

unit change in the hazard rate associated with a unit change of the covariate. The Hazard Ratio provides the magnitude of covariate effects and can be interpreted as an effect size or relative risk (Luke and Homan, 1998). Direction of the covariate effect is also indicated by the Hazard Ratio, as values below 1 indicate more days until return and values above 1 indicate the reverse. Furthermore, the Hazard Ratio's difference from 1 is interpreted as the percentage of unit change in the hazard rate associated with a percentage increase in the Logit, or the propensity for failure.

Base Models

As mentioned, the final models were run in three blocks. The initial block consists of a set of measures which may moderate the impact of halfway house program or class membership items. These measures represent Model 0 and are presented in Table 8.1 below. The model chi-square change was not significant (p=.832), indicating that the two control measures alone are not predictive of participants' days-to-return. To reduce redundancy of reporting, the additional models will not report the initial effects of Model 0 as a separate step.

Table 8.1 Cox Proportional Hazard Base Model for Days-to-Return (N=566)

	Model 0	
Covariate	**Logit**	**Hazard Ratio**
Months in TC	.002	1.002
Race/Ethnicity	--	--
Black (ref)	--	--
Hispanic	-.087	.917
White	-.125	.883
	Baseline -2 Log Likelihood	**Chi-Square Change**
Model Fit	4179.488	.873

+p<.1 *p<.05 **p<.01 ***p<.001

Omnibus Model

Before analyzing the interaction models, it is first necessary to examine two omnibus models – one examining facilities and another examining programs. These models identify the general effects of the classes and facilities/programs, which examined their ability to predict days-to-return, comparing their effects in a head-to-head format (i.e. simultaneously and without a control group). Table 8.2 describes the omnibus model utilizing individual facilities as covariates. The chi-square change from Model 0 is significant ($p<.01$), indicating that the addition of the class probabilities and facility measures increase the predictive power of the model. Class probability also predicts days-to-return as the chi-square change from Model 0 (not displayed) exceeds significance (χ^2 model change = 14.306, p=.002). An examination of the results for the class probabilities revealed that, compared to Class 4, all other classes have significantly fewer days-to-return (i.e. a negative Logit) and significantly greater propensities for failure (HR Class 1 = 2.087, Class 2 = 1.994, and Class 3 = 1.592). The hazard ratios confirm the bivariate findings presented in the previous chapters, which indicated Class 1 to have the highest risk of failure followed by Classes 2, 3 and 4. Overall, the facility covariate does not approach significance and the Wald for this covariate (not displayed) fails to reach significance (Wald = 22.292, p = .100). Significant variations between classes were also, however it is difficult to gauge how much importance one should give to the differences in facilities days-to-return, given that the larger measure failed to reach significance.

Table 8.2 Cox Proportional Hazard Omnibus Facility Model for Days-to-Return (N=566)

	Omnibus Model 1	
Covariate	**Logit**	**Hazard Ratio**
Months in TC	.001	.999
Race/Ethnicity	--	--
Black (ref)	--	1.000
Hispanic	.005	1.005
White	-.100	.904
Class Probability	--	--**
Class 1 Probability	.736	2.087**
Class 2 Probability	.690	1.994***
Class 3 Probability	.465	1.592*
Class 4 Probability (ref)	--	1.000
Facility	--	--
Facility A (ref)	--	1.000
Facility B	-1.029	.357
Facility C	-.081	.922
Facility D	-.320	.726
Facility E	-1.520	.219
Facility F	-.337	.714
Facility G	-.379	.684
Facility H	-.316	.729
Facility I	.259	1.295
Facility J	-.164	.848
Facility K	-.504	.604*
Facility L	-.609	.544
Facility M	.308	1.306
Facility N	-.711	.491*
Facility O	-.693	.500
Facility P	-.528	.590
	Baseline -2 Log Likelihood	**Chi-Square Change**
Model Fit	4142.338	37.110**

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.3 describes a second omnibus model, when program was utilized as a covariate. The chi-square change from Model 0 is significant (p<.01), indicating that the addition of the class probabilities and program measures increase the predictive power of the model. Class probabilities again predict days-to-return (p<.01). Examining the variations among the class probabilities reveals similar findings to the facility omnibus model, where Class 1 possessed the highest propensity for failure (HR=2.483), followed by Class 2 (HR=2.144), Class 3 (HR = 1.605) and Class 4

(HR=1.000). The program covariate did not reach significance, indicating program assignment overall did not predict days-to-return, which is consistent with the findings of the bivariate Cox regression program model. Examining the Hazard Ratios of the program measures, participants of 12-step programs have the lowest propensity for failure (HR=.922), followed by Rehabilitation (reference group or HR=1.000), Therapeutic Community (HR=1.029) and Cognitive Behavioral (HR=1.199). However, as in the facilities model, it is difficult to gauge how much importance one should give to the between program differences given that the larger measure failed to reach significance.

Table 8.3 Cox Proportional Hazard Omnibus Program Model for Days-to-Return (N=566)

	Omnibus Model 2	
Covariate	**Logit**	**Hazard Ratio**
Months in TC	.001	.999
Race	--	--
Black (ref)	--	1.000
Hispanic	-.016	.984
White	-.142	.867
Class Probability	--	--**
Class 1 Probability	.730	2.074***
Class 2 Probability	.760	2.137***
Class 3 Probability	.503	1.654**
Class 4 Probability (ref)	--	1.000
Program	--	--
Rehabilitation (ref)	--	1.000
Cognitive-Behavioral	.182	1.199
12-Step	-.081	.922
Therapeutic Community	.028	1.029
	Baseline -2 Log Likelihood	**Chi-Square Change**
Model Fit	4160.578	18.870**

+p<.1 *p<.05 **p<.01 ***p<.001

8.3 Summary of Omnibus Models

Several interesting findings were identified from the Omnibus models. Classes 1 and 2 have greater risks of failure compared to Classes 3 and 4. This is consistent

with the profiles described in Chapter 6. Specifically, the profile of Class 1 demonstrated the highest return risk, indicated by larger maximum sentence lengths, comparatively greater violent criminal history, greatest amount of subjects using substances in the year prior to incarceration and ranking higher than other classes on mental health and family history risk domains. The profile for Class 2 also demonstrated high return risk. In particular, compared to other classes, this class possesses the highest substance abuse risk, and the rate of prior correction violations and treatment attempts suggest a high likelihood of non-compliance with community corrections mandates (including halfway house mandates). In contrast, the Class 3 profile suggested a lower likelihood of return as criminal risks are moderate and substance abuse and other risk domains are low. The defining characteristics for Class 3 is their (relatively) younger mean age, primary substance (marijuana) and lack of vocational aptitude, suggesting less risks comparatively to Classes 1 and 2. Finally, the Class 4 profile suggests the lowest comparative risk of return, where, aside from their primary substance (heroin), this class ranks lower on nearly all other risk items/domains. All findings were consistent with bivariate return comparisons described in Chapter 7 with higher return rates and fewer days-to-return for Classes 1 and 2 compared to Classes 3 and 4.

Neither facility, nor program measure reached significance. The significant class probability and the non-significant facility/program findings provide initial evidence of the potential of the current study methodology. However, significant variations are identified with regard to offender class variations. This suggests that an investigation comparing only program/facility variations would have failed to identify

meaningful differences. Therefore, an examination of subgroups has the potential to disentangle program return variations. Furthermore, subgroups, represented here by class probabilities, accounted for a significant amount of variation in days-to-return. This is consistent with study hypothesis *3H* which proposed that offender subgroups interact with halfway house interventions.

8.4 Interaction Models

Following the examination of the omnibus models, interaction models were computed, for each class within each program. Unfortunately only a handful of facilities had requisite power to examine the interaction effects. Therefore, the study interaction models focused primarily on the program contrasts. To evaluate potential matches and maximize program contrasts, the four-category program item was converted to a dichotomous measure, where the program in question (1) was compared to all other programs (0). Interaction terms were created by multiplying each of the class probabilities by each of the four program measures. Each interaction term is tested in a separate model. A total of 16 models were evaluated, one for each program by class contrast. Program and class probability measures are entered in Model 1 and the interaction term is added in Model 2.

Rehabilitation Interaction Models

Table 8.4 presents the results of the Cox regression models which examined the interaction of Class 1 probability with subjects' participation in a Rehabilitation program. Assessing the impact of the program and class measures, the model chi-

square change from Model 0 was not significant, indicating the addition of the class and program measures alone did not improve the predictive power of the model. A significant model chi-square change was reported for Model 2 (p<.05), which indicated that the interaction term increases the predictive power of the model beyond what one might expect due to random chance. The interaction term was found to be a significant model covariate (p<.05), and the direction of the Logit and Hazard Ratio identifies a negative impact (i.e. fewer days-to-return) of Rehabilitation programs paired with Class 1 subjects. The direction of the Logit indicated that participants of Rehabilitation programs who have a greater probability of being in Class 1 are expected to have fewer days-to-return. The magnitude of the interaction effect was quite large, which signified subjects with high values on "Rehab-Class 1" have twice the propensity for failure (HR=2.227). The interaction of Class 1 and participation in Rehabilitation indicates a poor match, as this combination produces a higher propensity for failure when compared to the rest of the sample.

Table 8.4 Cox Proportional Hazard Model Rehab-Class 1 Interaction for Days-to-Return (N=566)

	Model 1		**Model 2**	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	-.001	.999	-.003	.997
Race	--	--	--	--
Black (ref)	--	1.00	--	1.00
Hispanic	-.069	.933	-.079	.924
White	-.019	.897	-.121	.866
Class 1 Probability	.205	1.227	-.106	.899
Rehab	-.081	.922	-.193	.825
Rehab * Class 1	--	--	.801	2.227*
	Baseline -2 Log Likelihood	**Chi-Square Change**	**Baseline -2 Log Likelihood**	**Chi-Square Change**
Model Fit	4177.427	2.021	4171.645	5.782*

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.5 describes the results of the Cox regression models examining the interaction of Class 2 probability with participation in a Rehabilitation program. Assessing the impact of the program and class measures, the model chi-square change approaches significance (p<.1). Class 2 probability was found to significantly predict days-to-return, where subjects with larger Class 2 probabilities are predicted to have a greater propensity for failure (HR=1.361). Evaluating the relative impact of the interaction term, the model chi-square change reported was not significant, which indicated that the interaction term does not increases the predictive power of the model beyond what one might expect due to chance.

Table 8.5 Cox Proportional Hazard Rehab-Class 2 Interaction for Days-to-Return (N=566)

	Model 1		**Model 2**	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.004	1.004	.004	1.004
Race	--	--	--	--
Black (ref)	--	1.00	--	1.00
Hispanic	-.089	.915	-.086	.917
White	-.154	.857	-.163	.850
Class 2 Probability	.308	1.361*	.223	1.249
Rehab	-.065	.937	-.134	.875
Rehab * Class 2	--	--	.260	1.297
	Baseline -2 Log Likelihood	**Chi-Square Change**	**Baseline -2 Log Likelihood**	**Chi-Square Change**
Model Fit	4174.209	5.239+	7.010	.786

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.6 describes the results of the Cox regression models examining the interaction of Class 3 probability with participation in a Rehabilitation program. The addition of the program and class measures failed to alter the Model 0 chi-square, indicating that the program and class measures alone do not improve the model's predictive power. However, when the interaction term is added, a significant model chi-square change was identified (p<.05), which indicated that the interaction term increased the predictive power of the model. The interaction term was found to be a

significant model covariate (p<.05). The direction of the Logit indicates that participants of Rehabilitation programs who have greater Class 3 probability predict to have more days-to-return, and the magnitude of the interaction effect indicated a smaller propensity for failure (HR=.590). This interaction indicates a positive match, as the combination produced a lower propensity for failure when compared to the rest of the sample.

Table 8.6 Cox Proportional Hazard Rehab-Class 3 Interaction for Days-to-Return (N=566)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.002	1.002	.001	1.001
Race	--	--	--	--
Black (ref)	--	1.00	--	1.00
Hispanic	-.083	.920	-.103	.902
White	-.119	.888	-.146	.864
Class 3 Probability	-.007	.993	.183	1.201
Rehab	-.084	.919	.146	1.157
Rehab * Class 3	--	--	-.528	.590*
	Baseline -2 Log Likelihood	**Chi-Square Change**	**Baseline -2 Log Likelihood**	**Chi-Square Change**
Model Fit	4178.859	.589	4174.329	4.530*

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.7 describes the results of the Cox regression model examining the interaction of Class 4 probability with participation in a Rehabilitation program. Assessing the impact of the program and class measures, there was a significant model chi-square change from Model 0 (p<.01). Class 4 as a model covariate was found to significantly predict days-to-return. Specifically, larger Class 4 probabilities predict more days-to-return. This finding is consistent with the omnibus program model, identifying lower overall Hazard Ratios for Class 4. Evaluating the relative impact of the interaction term, the model chi-square change reported failed to reach

significance, indicating that the interaction term did not increase the predictive power of the model.

Table 8.7 Cox Proportional Hazard Rehab-Class 4 Interaction for Days-to-Return (N=566)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.001	.999	.001	.999
Race	--	--	--	--
Black (ref)	--	1.00	--	1.00
Hispanic	-.015	.985	-.015	.985
White	-.106	.900	-.106	.900
Class 4 Probability	-.587	.556**	-.589	.922**
Rehab	-.081	.922	-.081	.922
Rehab * Class 4	--	--	.004	1.001
	Baseline -2 Log Likelihood	**Chi-Square Change**	**Baseline -2 Log Likelihood**	**Chi-Square Change**
Model Fit	4167.054	12.394**	4167.055	.001

+p<.1 *p<.05 **p<.01 ***p<.001

Cognitive-Behavioral Interaction Models

Table 8.8 describes the results of the Cox regression models examining the interaction of Class 1 probability with participation in a Cognitive-Behavioral program. The addition of the program and class measures provide a model chi-square change from Model 0 that approaches significance (p<.1). Greater probabilities for Class 1 were associated with fewer days-to-return, which predicts a greater propensity for failure (HR=1.244). Again, findings are consistent with the omnibus model where Class 1 shows a greater propensity for failure compared to the other three class probabilities. Evaluating the relative impact of the interaction term, the model chi-square change reported did not reach significance; hence, the addition of the interaction term did not increase the predictive power of the model.

Table 8.8 Cox Proportional Hazard Model CB-Class 1 Interaction for Days-to-Return (N=566)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	-.011	.999	.001	1.001
Race	--	--	--	--
Black (ref)	--	1.00	--	1.00
Hispanic	-.058	.944	-.055	.947
White	-.118	.889	-.114	.895
Class 1 Probability	.251	1.285	.119	1.126
CB	.218	1.244+	.159	1.172
CB * Class 1	--	--	.606	1.833
	Baseline -2 Log Likelihood	**Chi-Square Change**	**Baseline -2 Log Likelihood**	**Chi-Square Change**
Model Fit	4174.395	5.053+	4172.078	2.317

+p<.10 *p<.05 **p<.01 ***p<.001

Table 8.9 describes the results of the Cox regression models examining the interaction of Class 2 probability with participation in a Cognitive-Behavioral program. Assessing the contribution of the program and class measures, the Model 1 chi-square change was significance (p<.05), which indicated an improvement of the model's predictive power. Furthermore, subjects with larger Class 2 probabilities had a greater propensity for failure when compared to the rest of the sample.

Evaluating the relative impact of the interaction term, a significant model chi-square change is reported (p<.05), which indicated that the interaction term increased the predictive power of the model. The interaction term was found to be a significant predictor of days-to-return (p<.05), and the direction of the Logit and hazard ratio identifies a positive matching effect of Cognitive-Behavioral programs on Class 2. Specifically, the direction of the interaction indicated that participants of Cognitive-Behavioral programs who have larger Class 2 probabilities are predicted to have more days-to-return. The interaction of Class 2 and participation in Cognitive-Behavior

programs indicated a strong match, as this combination produces a lower propensity for failure when compared to the rest of the sample (HR=.496).

Table 8.9 Cox Proportional Hazard CB-Class 2 Interaction for Days-to-Return (N=566)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.005	1.005	.006	1.006
Race	--	--	--	--
Black (ref)	--	1.00	--	1.00
Hispanic	-.082	.921	-.079	.924
White	-.161	.851	-.180	.835
Class 2 Probability	.301	1.352*	.547	1.728***
CB	.182	1.200	.378	1.459**
CB * Class 2	--	--	-.700	.496*
	Baseline -2 Log Likelihood	**Chi-Square Change**	**Baseline -2 Log Likelihood**	**Chi-Square Change**
Model Fit	4172.016	7.432*	4166.310	5.706*

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.10 describes the results of the Cox regression models examining the interaction of Class 3 probability with participation in a Cognitive-Behavioral program. Assessing the impact of the program and class measures, the Model 1 chi-square change failed to reach significance, which indicated that the program and class measures alone do not improve the model's predictive power. Evaluating the relative impact of the interaction term, the model chi-square change reported is not significant, which indicated that the interaction term did not increase the predictive power of the model.

Table 8.10 Cox Proportional Hazard CB-Class 3 Interaction for Days-to-Return (N=566)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.002	1.002	.002	1.002
Race	--	--	--	--
Black (ref)	--	1.00	--	1.00
Hispanic	-.077	.962	-.077	.926
White	-.131	.878	-.129	.879
Class 3 Probability	-.018	.982	-.088	.916
CB	.197	1.218	.106	1.112
CB * Class 3	--	--	.203	1.225
	Baseline -2 Log Likelihood	**Chi-Square Change**	**Baseline -2 Log Likelihood**	**Chi-Square Change**
Model Fit	4176.466	2.983	4175.810	.656

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.11 describes the results of the Cox regression models examining the interaction of Class 4 probability with participation in a Cognitive-Behavioral program. The addition of the program and class measures produced a Model 1 chi-square change that reached significance (p<.001). Furthermore, subjects with larger Class 4 probabilities have a smaller propensity for failure compared to the rest of the sample (HR=.553, p<.001). Evaluating the relative impact of the interaction term, the model chi-square change reported was not significant; hence, the interaction term did not increase the predictive power of the model.

Table 8.11 Cox Proportional Hazard CB-Class 4 Interaction for Days-to-Return (N=566)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.001	1.001	.001	1.001
Race	--	--	--	--
Black (ref)	--	1.00	--	1.00
Hispanic	-.006	.994	-.002	.998
White	-.113	.893	-.119	.887
Class 4 Probability	-.593	.553***	-.701	.496
CB	.203	1.225+	.155	1.168
CB * Class 4	--	--	.299	1.348
	Baseline -2 Log Likelihood	**Chi-Square Change**	**Baseline -2 Log Likelihood**	**Chi-Square Change**
Model Fit	4164..433	15.015***	4163.790	.643

+p<.1 *p<.05 **p<.01 ***p<.001

12-Step Interaction Models

Table 8.12 describes the results of the Cox regression models examining the interaction of Class 1 probability with participation in a 12-Step program. Assessing the impact of the program and class measures, the model chi-square change from Model 0 did not reach significance. Evaluating the impact of the interaction term, a significant model chi-square change was reported (p<.01), which indicated that the interaction term increases the predictive power of the model. The interaction term was found to be significant (p<.01), and the direction of the Logit identified a beneficial impact of 12-Step programs on Class 1, where participants with larger Class 1 probabilities who participated in a 12-step program predict to have fewer days-to-return. The interaction of Class 1 and participation in 12-Step programs indicated a strong match, as this combination produces half the propensity for failure when compared to the rest of the sample (HR=.404).

Table 8.12 Cox Proportional Hazard Model 12-Step-Class 1 Interaction for Days-to-Return (N=566)

	Model 1		**Model 2**	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	-.001	.999	-.003	.997
Race	--	--	--	--
Black (ref)	--	1.00	--	1.00
Hispanic	-.076	.926	-.074	.928
White	-.126	.882	-.137	.872
Class 1 Probability	.233	1.263	.526**	1.692
12-Step	-.123	.844	.024	1.024
12-Step * Class 1	--	--	-.907*	.404*
	Baseline -2 Log Likelihood	**Chi-Square Change**	**Baseline -2 Log Likelihood**	**Chi-Square Change**
Model Fit	4177.020	.644	4170.660	6.359*

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.13 describes the results of the Cox regression model examining the interaction of Class 2 probability with participation in a 12-Step program. The addition of the program and class measures produced a model chi-square change from Model 0 that fails to reach significance. Examining the effects of the added covariates, subjects with a larger Class 2 probability had a greater propensity for failure; however the effect did not reach significance. In Model 2, the impact of the interaction term did not alter the model chi-square change significantly; therefore, the interaction term did not increase the predictive power of the model.

Table 8.13 Cox Proportional Hazard 12-Step-Class 2 Interaction for Days-to-Return (N=566)

	Model 1		**Model 2**	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.005	1.005	.005	1.005
Race	--	--	--	--
Black (ref)	--	1.00	--	1.00
Hispanic	-.097	.907	-.094	.911
White	-.172	.842	-.164	.849
Class 2 Probability	.322	1.380*	.231	1.260
12-Step	-.112	.894	-.217	.805
12-Step * Class 2	--	--	.344	1.410
	Baseline -2 Log Likelihood	**Chi-Square Change**	**Baseline -2 Log Likelihood**	**Chi-Square Change**
Model Fit	4173.757	5.691+	4172.557	1.199

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.14 describes the Cox regression model examining the interaction of Class 3 probability with participation in a 12-Step program. Assessing the impact of the program and class measures, the model chi-square change from Model 0 did not reach significance. The second model also lacks significance with regards to the model chi-square change; therefore the interaction term did not increase the predictive power of the model.

Table 8.14 Cox Proportional Hazard 12-Step-Class 3 Interaction for Days-to-Return (N=566)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.002	1.002	.002	1.002
Race	--	--	--	--
Black (ref)	--	1.00	--	1.00
Hispanic	-.092	.912	-.099	.906
White	-.136	.873	-.147	.863
Class 3 Probability	-.019	.982	-.057	.945
12-Step	-.100	.905	-.166	.847
12-Step * Class 3	--	--	.160	1.173
	Baseline -2 Log Likelihood	**Chi-Square Change**	**Baseline -2 Log Likelihood**	**Chi-Square Change**
Model Fit	4178.802	.646	4178.483	.572

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.15 describes the results of the Cox regression models examining the interaction of Class 4 probability with participation in a 12-Step program. Assessing the impact of the program and class measures, the Model 1 chi-square change reached significance (p<.01), which indicated that the addition of the program and class measures improved the model's predictive power. Furthermore, subjects with larger Class 4 probabilities have a lower propensity for failure compared to subjects with high values on other classes. An examination of Model 2 revealed the relative impact of the interaction term, was not significant, indicating that the interaction term did not increase the predictive power of the model.

Table 8.15 Cox Proportional Hazard 12-Step-Class 4 Interaction for Days-to-Return (N=566)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.001	1.001	.001	1.001
Race	--	--	--	--
Black (ref)	--	1.00	--	1.00
Hispanic	-.020	.981	-.021	.979
White	-.122	.885	-.127	.881
Class 4 Probability	-.602	.548***	-.559**	.572
12-Step	-.134	.875	-.101	.904
12-Step * Class 4	--	--	-.279	.756
	Baseline -2 Log Likelihood	**Chi-Square Change**	**Baseline -2 Log Likelihood**	**Chi-Square Change**
Model Fit	4166.440	13.008**	4166.131	.579

+p<.1 *p<.05 **p<.01 ***p<.001

Therapeutic Community Interaction Models

Table 8.16 describes the results of the Cox regression model examining the interaction of Class 1 probability with participation in a Therapeutic Community program. Assessing the impact of the program and class measures, there was a significant model chi-square change from Model 0 (p=.05). As in the previous Class 1 models, class probability is found to significantly predict fewer days-to-return.

Evaluating the impact of the interaction term, the model chi-square change was significance (p=.05); however, the interaction term as a model covariate did not reach significance levels. A likely reason for the lack of significance was the lower power of the Therapeutic Community program model, as only 41 subjects participated in this type of programming. Taking power issues into consideration, it seems appropriate to evaluate the effects of the interaction term. The Logit of the interaction indicated subjects with larger Class 1 probabilities, who participated in a Therapeutic Community program, predict to have more days-to-return. The Hazard Ratio indicated the strongest interaction magnitude of all models (HR=.253), where this program-class combination produced the lowest propensity for failure.

Table 8.16 Cox Proportional Hazard Model TC-Class 1 Interaction for Days-to-Return (N=566)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	-.001	.999	-.001	.999
Race	--	--	--	--
Black (ref)	--	1.00	--	1.00
Hispanic	-.071	.932	-.082	.921
White	-.115	.891	-.108	.898
Class 1 Probability	.209	1.233	2.70	1.310
TC	-.077	.926	.067	1.069
TC * Class 1	--	--	-1.373	*.253*
	Baseline -2 Log Likelihood	**Chi-Square Change**	**Baseline -2 Log Likelihood**	**Chi-Square Change**
Model Fit	4177.837	1.611	4175.120	2.717+

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.17 describes the results of the Cox regression model examining the interaction of Class 2 probability with participation in a Therapeutic Community program. Assessing the impact of the program and class measures, the Model 1 chi-square change approaches significance (p<.1), indicating that the addition of the program and class measures improved the model's predictive power. Furthermore, the Class 2 probability measure reached significance (p<.05), which indicated that subjects' with larger Class 2 probabilities had a greater propensity for failure. Evaluating the relative impact of the interaction term, the model chi-square change reported was not significant, which indicated the interaction term did not increase the predictive power of the model.

Table 8.17 Cox Proportional Hazard TC-Class 2 Interaction for Days-to-Return (N=566)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.004	1.004	.005	1.005
Race	--	--	--	--
Black (ref)	--	1.00	--	1.00
Hispanic	-.090	.914	-.104	.902
White	-.160	.852	-.172	.842
Class 2 Probability	.314	1.369*	.286	1.331*
TC	-.057	.944	-.195	.823
TC * Class 2	--	--	.536	1.708
	Baseline -2 Log Likelihood	**Chi-Square Change**	**Baseline -2 Log Likelihood**	**Chi-Square Change**
Model Fit	4174.485	4.963+	4173.678	.807

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.18 describes the results of the Cox regression models examining the interaction of Class 3 probability with participation in a Therapeutic Community program. Assessing the impact of the program and class measures, the Model 1 chi-square change did not reach significance, indicating that the addition of the program and class measures did not improve the model's predictive power. Evaluating the relative impact of the interaction term, the model chi-square change reported was not significant, which indicated that the interaction term did not increase the predictive power of the model.

Table 8.18 Cox Proportional Hazard TC-Class 3 Interaction for Days-to-Return (N=566)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.002	1.002	.003	1.003
Race	--	--	--	--
Black (ref)	--	1.00	--	1.00
Hispanic	-.086	.918	-.080	.923
White	-.126	.881	-.112	.894
Class 3 Probability	-.015	.985	-.060	.942
TC	-.073	.929	-.393	.675
TC * Class 3	--	--	.833	2.301
	Baseline -2 Log Likelihood	**Chi-Square Change**	**Baseline -2 Log Likelihood**	**Chi-Square Change**
Model Fit	4179.319	.964	4176.756	2.563

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.19 describes the results of the Cox regression models examining the interaction of Class 4 probability with participation in a Therapeutic Community program. Assessing the impact of the program and class measures, the Model 1 chi-square change reached significance (p<.01), indicating that the addition of the program and class measures improved the model's predictive power. Again, the Class 4 probability covariate also reached significance (p<.001), which found subjects that have larger Class 4 probabilities had nearly half the propensity for failure. Evaluating the relative impact of the interaction term, the model chi-square change reported was not significant; which indicated the interaction term did not increase the predictive power of the model.

Table 8.19 Cox Proportional Hazard TC-Class 4 Interaction for Days-to-Return (N=566)

	Model 1		**Model 2**	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.001	1.001	.001	1.001
Race	--	--	--	--
Black (ref)	--	1.00	--	1.00
Hispanic	-.018	.982	-.022	.978
White	-.112	.894	-.115	.891
Class 4 Probability	-.588	.556***	-.540	.583**
TC	-.002	.998	.118	1.125
TC * Class 4	--	--	-.539	.583
	Baseline -2 Log Likelihood	**Chi-Square Change**	**Baseline -2 Log Likelihood**	**Chi-Square Change**
Model Fit	4167.589	11.859**	4166.891	.698

+p<.1 *p<.05 **p<.01 ***p<.001

8.5 Summary of Interactions

A summary of the 16 program-class interaction effects are presented in Table 8.20, where bolded hazard ratios indicate significant model impact as a result of the included interaction term. The results of the interaction models revealed several

important findings. First, only one program-class interaction identified a negative program match, where participants with larger Class 1 probabilities, who participated in Rehabilitation programs, predict to have a greater propensity for failure (HR=2.227). All four programs were found to have a class interaction that predicted a lower propensity for failure, or positive program match. Specifically, Rehabilitation programs increased days-to-return for Class 3 subjects (HR=.590), Cognitive-Behavioral programs increased days-to-return for Class 2 subjects (HR=.496), and Therapeutic Community and 12-Step programs increased days-to-return for Class 1 subjects (HR=.253). Overall significant interaction effects were detected for all classes except for Class 4.

Table 8.20 Class-Program Interaction Summary Table

Interactions	Hazard Ratio
Rehabilitation	
Class 1 * Rehabilitation	**2.227***
Class 2 * Rehabilitation	1.297
Class 3 * Rehabilitation	**.590***
Class 4 * Rehabilitation	1.001
Cognitive-Behavioral	
Class 1 * Cognitive-Behavioral	1.833
Class 2 * Cognitive-Behavioral	**.496***
Class 3 * Cognitive-Behavioral	1.225
Class 4 * Cognitive-Behavioral	1.348
12-Step	
Class 1 * 12-Step	**.404***
Class 2 * 12-Step	1.410
Class 3 * 12-Step	1.173
Class 4 * 12-Step	.756
Therapeutic Community	
Class 1 * Therapeutic Community	**.253**
Class 2 * Therapeutic Community	1.708
Class 3 * Therapeutic Community	2.301
Class 4 * Therapeutic Community	.583

+p<.1 *p<.05 **p<.01 ***p<.001

8.6 Checks of Model Findings

The Cox regression interaction models provided the main study findings. To assess the relative stability of the identified effects, several checks of model findings were performed. A split sample procedure was used to examine the sensitivity of the Cox regression interaction model findings. Logistic regression models were computed to identify reliability of effects using a dichotomous outcome. Two checks of the event history censoring suggested by Paul Allison (1984) were also conducted.

Finally, Cox regression models were computed for facilities to examine validity of effects within the created program measures.

Split Sample

To identify the sensitivity of the interaction effects an attempt was made to cross-validate the findings of the study models. To provide initial evidence of study sensitivity, a split sample design was created; whereby the larger sample of 566 was randomly divided into two sets of 283 subjects. It is assumed that if similar interaction effects are observed across both of these smaller samples, the findings presented will demonstrate a sense of consistency within the current sample.

Given the relative small sample size, it was anticipated that statistical power issues will impact the split sample procedure. However, although reducing the sample size and the power limited the models ability to detect significance, the actual effect sizes (in this case the hazard ratio) should remain the same. There are two issues that are expected to impact power. First, there was a specific impact on the size of the programs evaluated, where a simple random sample may overload one of the smaller samples with one program and thus, limiting the study's ability to evaluate the program's effects in the other sample. This is especially true for the smallest program (TC), where only 41 subjects in the sample attended a program with this type of orientation. To adjust for this methodological issue the split sample procedure was stratified, taking a random sample of 50 percent of participants within each program.

The second issue was a more general limitation of power, restricting models' ability to detect significant program-class interactions. This limitation was somewhat

unavoidable and difficult to address methodologically. Therefore, it was assumed that the effects identified previously, using the entire sample, provide evidence of interactions' significance and the split sample procedure will simply examine the consistency of these findings; where the direction of the split sample effects (i.e. Hazard Ratios) resemble those found previously.

To create the two samples, a stratified random selection of 283 cases was performed in SPSS (Version 15.0). To test for equivalence, the two samples were compared on several theoretically important measures. Measures used to test equivalence include: halfway house facility, latent class membership, overall recidivism, escapes, halfway house violations, technical violations, new commitments, days in TC and halfway house and Race/Ethnicity. Bivariate tests of equality (chi-square and t-tests) revealed no significant differences between the two randomly selected groups. These findings indicated that the groups are not statistically different on any key independent or dependant measures, therefore no known selection bias should be observed in the split sample procedure.

The findings from the split sample modeling procedure are presented in Table 8.21. To prevent an excess of tables, a single summary table was created of the Hazard Ratios of 32 generated models. Each row displays the hazard ratio for each program-class interaction. A column is presented for each random sample and a third column displaying the interaction term hazard ratios from models described in Tables 8.4 through 8.19.

Table 8.21 Split Sample Cox Regression Summary of Program-Class Interactions (N=566)

Interactions	Sample 1 (n=283) Hazard Ratio	Sample 2 (n=283) Hazard Ratio	Full Sample Hazard Ratio
Rehab			
Class 1 * Rehab	1.121	**3.540****	**2.227***
Class 2 * Rehab	1.702	1.371	1.297
Class 3 * Rehab	.645	**.419***	**.590***
Class 4 * Rehab	.656	1.405	1.001
CB			
Class 1 * CB	**9.004****	1.099	1.833
Class 2 * CB	**.425***	.746	**.496***
Class 3 * CB	1.365	1.020	1.225
Class 4 * CB	1.924	1.133	1.348
12-Step			
Class 1 * 12-Step	.539	.609	**.404***
Class 2 * 12-Step	1.006	*.866*	1.410
Class 3 * 12-Step	1.162	1.718	1.173
Class 4 * 12-Step	.957	.572	.756
TC			
Class 1 * TC	*1.167*	**.019**	**.253**
Class 2 * TC	2.970	1.124	1.708
Class 3 * TC	1.151	**5.370***	2.301
Class 4 * TC	.518	.968	.583

Bolded ratios indicate that the addition of the interaction term created a significant change in the Cox regression overall model chi-square (p<.1).
+p<.1 *p<.05 **p<.01 ***p<.001 represent significance of the hazard ratios for the interaction covariates.

Overall, the findings produced from the split sample procedure support the main study findings. Although the differences across the samples appear to be minor, it is important that instability of the individual interaction effects is acknowledged and discussed. First, and most importantly, only one significant interaction identified in the full sample demonstrated inconsistency in the split sample models (Class1-TC in Sample 1); however, the magnitude of the Hazard Ratio in Sample 2 suggests that this inconsistency is most likely the result of an anomaly in the randomization procedure used in the creation of the split sample. Only one other interaction (Class 2-12-Step) produced a finding inconsistent with the direction of the interaction term found in the full model. These two inconsistent findings represents only six percent of the modeled interactions and thus, only slightly greater than what one might expect

due to random chance. Finally, two interactions were found to be significant in the two smaller samples that did not reach significance in the full sample (Class 1-CB and Class 3-TC), which, again, were mostly likely the result of an anomaly in the randomization procedure. Taking into consideration these minor inconsistencies, this procedure found initial evidence of sensitivity for the study findings.

Logistic Regression Interaction Models

As mentioned previously, an advantage of utilizing Cox regression models is that participants not eligible for a five-year follow-up could be included by censoring their time at risk. This allowed for an examination on all study cases (N=566) without the constraints of listwise deletion for cases that were not yet eligible for a Year 5 assessment of prison returns. To ensure that the pattern and direction of significant interactions was not the result of this censoring procedure the same analyses were performed using logistic regression models on participants outcomes at Year 4. Using the same covariates utilized in the Cox regression models, 16 binary multiple logistic regression models were computed. The dichotomous outcome used for the logistic regression models represents the cumulative returns occurring within the first four years following halfway house admission, where any return (1) is compared to no return (0). The results of the baseline, program and each of the 16 interaction logistic regression models are presented in Appendix 7. To provide a more concise presentation of the interaction model findings a summary table was produced. Comparable to the summary table of the Cox regression models, Table 8.22 presents

the summary statistics (odds ratios) for each interaction models. Bolded figures indicate the model was significant.

The direction and magnitude of the interaction effects are very similar to those of the Cox regression models. The one inconsistent, or non-significant, finding (Class 1-TC) was likely due to a combination of lower sample size for the TC program and the truncation of participant outcomes for logistic regression modeling. That is, the TC program contains roughly seven percent of sample subjects. Furthermore, Class 1 was shown to have a predicted class membership of only 11 percent. With the elimination of a few cases due to listwise deletion, model power is decreased making it difficult to identify a significant effect for this program-class interaction. In addition, to avoid substantial loss through listwise deletion the follow-up measure was truncated, using only four-year post-admission return outcomes. In contrast, the Cox regression models allowed for the censoring of cases, where cases with eligible outcomes up to five years were included. Therefore, although the Class 1-TC interaction term is shown to have the strongest magnitude of all the interactions analyzed (OR=.152), issues related to statistical power kept the model chi-square change levels below normally accepted levels of significance (p=.106).

Table 8.22 Logistic Regression 4 Year Post Halfway House Admission Program-Class Interactions (N=559)

Interactions	Odds Ratio
Rehab	
Class 1 * Rehab	**3.637***
Class 2 * Rehab	1.946
Class 3 * Rehab	**.405***
Class 4 * Rehab	1.128
CB	
Class 1 * CB	1.701
Class 2 * CB	**.287***
Class 3 * CB	1.700
Class 4 * CB	1.424
12-Step	
Class 1 * 12-Step	**.332+**
Class 2 * 12-Step	1.263
Class 3 * 12-Step	1.343
Class 4 * 12-Step	.626
TC	
Class 1 * TC	*.152*
Class 2 * TC	6.326
Class 3 * TC	2.082
Class 4 * TC	.545

Bolded figures indicate significant interaction models
+p<.1 *p<.05 **p<.01 ***p<.001

Event History Censoring

One of the key features of the event history analyses was the invariant study completion times of each subject accounted for through the censoring process. One of the leading instructors of event history analysis, Paul Allison, identified two ways to assess the sensitivity of the censoring process: A) recode censored cases as though they experienced the event immediately after their censoring time and B) change censor times to appear as though they occurred after the latest event time observed in the sample (1984). Both tests of sensitivity were conducted for the 16 interaction models and the results are presented in Table 8.23. Again, to avoid a lengthy presentation of 32 models, only a summary of the interaction hazard ratios are presented.

Generally the results indicate substantial model sensitivity. In particular, the direction of the model hazard ratios of sensitivity Tests A and B were consistent with those of the (original) full sample with only three exceptions (*Test A*-Class 4*CB, *Test A*-Class 4*TC, *Test B*-Class 4*Rehab); however, none of these exceptions were found in any of the five significant models found in the full sample, suggesting greater sensitivity of the main findings. Furthermore, the results from Test B are nearly identical to those of the full sample. This finding is not surprising, given that all censored cases in the full sample were capped at five years and nearly 75 percent of cases were eligible for five year censoring; therefore, of the remaining 25 percent of cases only a small portion of the cases (17 %) were recoded to a later censoring time under Sensitivity Test B.

Table 8.23 Event History Censoring Sensitivity of Program-Class Interactions (N=566)

Interactions	Allison Sensitivity Test A	Allison Sensitivity Test B	Full Sample Hazard Ratio
Rehab			
Class 1 * Rehab	**2.061***	**2.226***	**2.227***
Class 2 * Rehab	1.069	1.304	1.297
Class 3 * Rehab	.724+	**.591***	**.590***
Class 4 * Rehab	1.059	.995	1.001
CB			
Class 1 * CB	1.514	1.857	1.833
Class 2 * CB	.727	**.494***	**.496***
Class 3 * CB	1.120	1.219	1.225
Class 4 * CB	.983	1.362	1.348
12-Step			
Class 1 * 12-Step	**.473****	**.405***	**.404***
Class 2 * 12-Step	1.205	1.414	1.410
Class 3 * 12-Step	1.267	1.164	1.173
Class 4 * 12-Step	.891	.764	.756
TC			
Class 1 * TC	.612	**.246**	**.253**
Class 2 * TC	1.445	1.701	1.708
Class 3 * TC	1.199	2.372+	2.301
Class 4 * TC	1.025	.576	.583

Bolded ratios indicate that the addition of the interaction term created a significant change in the Cox regression overall model chi-square (p<.1).
+p<.1 *p<.05 **p<.01 ***p<.001 represent significance of the hazard ratios for the interaction covariates.

Assessing the Validity of the Program Measure

As mentioned previously, a detailed examination of each facility's interaction model was produced but not displayed, as power issues within several facilities limited the explanatory power of several models. Collapsing facilities into programs proved to be a useful endeavor, as significant model and covariate interactions were identified. It was assumed that the collapsing procedure was appropriate as it combined similar interaction effects across like facilities by increasing the statistical power (i.e. case volume) of the effects common to facilities with the same orientation.

To examine the validity of the created program measure, program findings were compared to interaction models run for each facility. A total of 64 models were computed. If the grouping of facilities was valid, the direction of interaction Hazard

Ratios should be consistent across all facilities grouped in a given program. Table 8.23 presents the Hazard Ratios for each facility-class interaction. The facilities Hazard Ratios for the two significant program interactions (Class 1 and 3) are generally consistent, with regard to direction of the effects. Specifically, all Class 1 Hazard Ratios of facilities grouped in the Rehabilitation program are above 1, indicating a greater propensity for failure. For Class 3 Hazard Ratios, all but one (Facility F) are below 1, indicating a lesser propensity for failure. This one inconsistency in direction of the Class 3 Hazard Ratios is found in the Rehabilitation facility with the smallest percentage of sample subjects, and hence, may be the result of irregularities related to the smaller case volume, where few cases within this facility have a non-zero Class 3 probability.

The direction of the facility Hazard Ratios were also found to be consistent for the significant interaction of Cognitive Behavioral-Class 2 interactions. Specifically, all but one Class 2 interaction model for Cognitive Behavioral facilities indicated a lesser propensity for failure. Again, the lone inconsistency (Facility B) is likely due to the small percentage of sample participants attending this facility with a non-zero Class 2 probability.

Examining the significant 12-step-Class 1 program interaction, no inconsistencies are found among the direction of hazard ratios for those facilities that identified as providing 12-step programs. All three facilities identified lower propensities for failure for participants with larger Class 1 probabilities.

The significant Therapeutic Community-Class 1 finding, identified in the program interaction models, were also found to be have consistent with regard to

facility Hazard Ratios; where participants of Therapeutic Community facilities with larger Class 1 probabilities were found to have a lower propensity for failure. However, the results were somewhat less stable, where two of the Therapeutic Community facilities (E and I) displayed Class 1 interaction models with poor model fit. Specifically, Facility E was found to have one case with a Class 1 probability (i.e. a non-zero value), and this subject was not returned during the study timeframe. Facility I was found to have no cases with a non-zero Class 1 probability. Therefore, the significant program-class interaction identified for facilities with Therapeutic Community orientations was driven, for the most part, by the association of Class 1 probabilities within Facility L (with a small additive impact of Facility E).

Table 8.23 Cox Regression Models Facility-Class Interaction Summary Table (N=566)

Interactions	Percent of Sample	Class 1 Hazard Ratio	Class 2 Hazard Ratio	Class 3 Hazard Ratio	Class 4 Hazard Ratio
*Rehab**Class Probability	*36.9*	***2.227****	*1.297*	***.590****	*1.001*
A*Class Probability	3.2	1.346	1.222	.376	3.341
F*Class Probability	2.6	6.195	1.255	2.040	.000
K*Class Probability	20.3	**2.194***	1.521	.554	.935
P*Class Probability	10.9	1.230	.764	.855	1.691
*CB**Class Probability	*32.2*	*1.833*	***.496****	*1.225*	*1.348*
B*Class Probability	1.4	.000	10.176	NA	.434
D*Class Probability	4.8	1.216	.491	.753	4.139
H*Class Probability	9.9	**3.439***	**.335+**	.895	1.788
J*Class Probability	13.2	**6.782****	.662	1.128	1.054
M*Class Probability	1.4	NA	.293	1.591	4.849
O*Class Probability	1.4	.000	.666	**467.482*****	.772
*12-Step**Class Probability	***23.7***	***.404****	*1.410*	*1.173*	*.756*
C*Class Probability	2.6	**.229**	1.016	1.576	2.231
G*Class Probability	7.3	**.174***	**2.915***	.861	1.103
N*Class Probability	13.8	.969	.734	1.319	.552
*TC**Class Probability	***7.2***	***.253***	*1.708*	*2.301*	*.583*
E*Class Probability	0.7	.000	NA	.000	.000
I*Class Probability	2.1	NA	.479	**9.171****	.242
L*Class Probability	4.4	.407	1.831	1.371	1.014

NA indicates that a model could not be generated due to an absence of facility participants with a non-zero class probability
Bolded ratios indicate that the addition of the interaction term created a significant change in the Cox regression overall model chi-square (p<.1) *p<.05 **p<.01 ***p<.001

The description of facility interaction model Hazard Ratios indicated a large degree of consistency with regard to the direction of interaction effects within programs. In particular, significant program-class interactions identified in the main study findings were generally supported in the facility models, where consistency in the direction of Hazard Ratios were identified for nearly all program facilities. The two inconsistencies identified were attributed to the of low sample volume for facility-class combination. Finally, the lack of model fit for two of the Therapeutic Community facilities raises flags regarding the relative contribution of each facility on the larger program-class interaction effect identified by in the main study findings.

Despite these minor inconsistencies, the description of facility interaction models suggests that the collapsing of facilities by program orientation was a valid procedure for increasing the power of study findings and provides additional evidence for the explanatory power of DAPTI survey findings.

Multiple Halfway House participation

As mentioned in Chapter 5, a small portion of subjects (8%) participated in more than one halfway house. The interaction models presented used the primary halfway house program attended, where subjects' halfway house membership was classified based on the program in which they spent the longest duration. This method for dealing with participants of multiple halfway houses provided a consistent measure of program attendance and allowed for all eligible cases to be included in the model. However, participation in multiple program models may provide a separate interaction effect for participants. To test for possible confounding effects of multiple halfway house participation, the program-class interaction models were computed, without the inclusion of subjects with multiple halfway house participation.

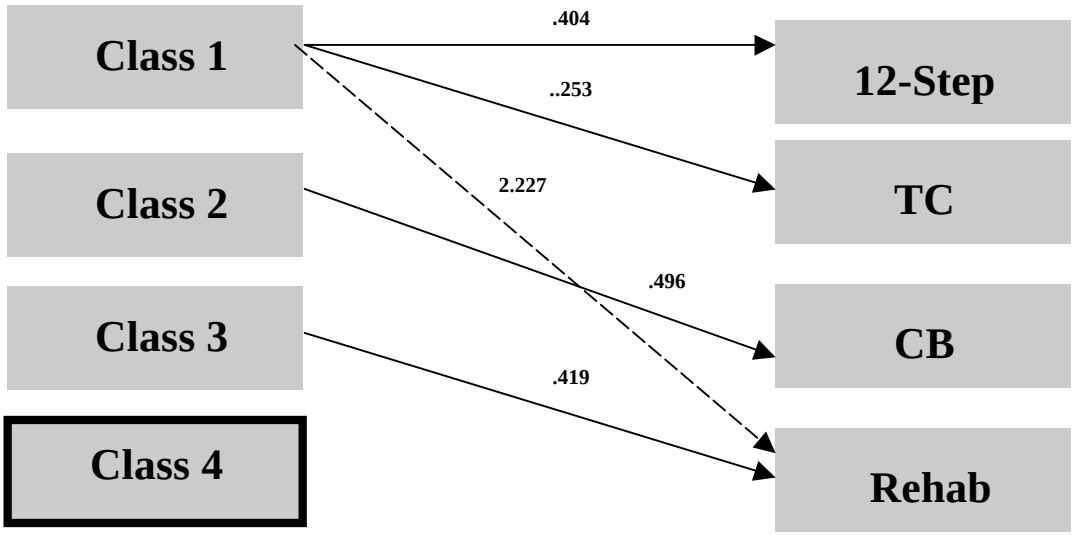
The findings of these models revealed no differences between models with or without the inclusion of participants of multiple halfway houses. All interaction models found to be significant in the original models maintained significance when multiple halfway house participants were excluded, and all parameter estimates (logits) were presented in the same direction and the magnitude of each interaction effect was similar (range of Hazard Ratio difference = .007 to .101). Finally, no interaction models became significant after the inclusion of multiple halfway house

subjects. Collectively these results support use of primary halfway house participation as an appropriate designation of subject assignment.

8.7 Proposed Matching Strategy

After a thorough consideration of the program-class interactions, a general matching strategy for substance abusing offenders entering halfway house interventions was established. The word *general* is emphasized, as power considerations limited the study's ability to produce a matching strategy for individual facilities. Therefore, matching considerations are only provided for the program type. Figure 8.1 illustrates the proposed matching design. Each line indicates a significant model interaction identified in Tables 8.4 through 8.19. Hazard Ratios for each figure line report the strength and direction of the interaction.

Figure 8.1 Proposed Matching Design



Proposed Program Matching Class 1

The current placement strategy used by the New Jersey Department of Corrections is quasi-random (i.e. based on bed space availability). The profiles presented in Chapter 6 indicated that subjects with a Class 1 profile rank highest on several criminal risk measures and present multiple domains of need and risk. Intervention needs proposed in Chapter 6 suggested this class is expected to function best in an intensive intervention with a holistic approach to offenders' deficits/needs, such as a Therapeutic Community or possibly a modified intervention for co-occurring disorders. Offender *risk* is hypothesized to influence the effectiveness of the correctional treatment (Andrews Bonta and Hoge, 1990); where offenders higher in criminal risk will require a greater intensity of correctional intervention to counteract that risk.

Interaction model findings indicated that subjects with an assessment response profile similar to the Class 1 (or a larger class probability) were predicted to have a lower propensity for failure if placed in either 12-Step or TC programming. Prior findings on Therapeutic Community treatment indicate that its greater program treatment intensity is best suited for substance abusing offenders who require more intensive residential services due to their extensive criminal, drug and other risks/needs (Mitchell, Wilson and Mackenzie, 2006; Prendergast et al., 2002). Mitchell, Wilson and Mackenzie's (2006) meta-analytic work examined effective interventions for substance abusing offenders and found Therapeutic Communities produced decreases in both drug use and recidivism.

They went further in their description of effectiveness, suggesting that programs with the ability to address the multiple needs/problems of substance abusing offenders will have greater effects. The results from the PASCI survey revealed that 12-Step programs in this sample also provide an intensive treatment including an extended amount of resources and services that can address the multiple needs of this offender class. Furthermore, these programs report a longer mean duration compared to the other sample programs. Prior findings also indicate that programs with a 12-Step orientation are often more successful in getting their members to continue their treatment after the initial intervention by encouraging members to participate, and affiliate, with 12-step/self-help groups in the community following program completion, which is associated with better substance use and other well-being outcomes (Finney et al., 1998; Moos, 2007). However, prior findings suggest that programs with 12-Step orientations are less consistent with regard to their intensity of service and treatment delivery compared to the other types of orientations and report a similarity to an “eclectic” style of treatment delivery (Finney et al., 1998). Therefore the interaction, and the proposed match, of the Class 1 and 12-Step programs may be partially due to the lasting effects of 12-Step programs (identified in prior research) and partially the result of the unique intensity of the 12-Step programs in this sample. Finally, facilities that provide a Rehabilitation program are a poor match for Class 1. Given the lower intensity of substance abuse treatment and other service provisions typically identified for Rehabilitation programming, the negative interaction reported in this study is consistent with program theory (Moos, Pettit and Gruber, 1995; Moos, Moos and Andrassy, 1999).

Proposed Program Matching Class 2

This class of individuals has been in and out of the correctional system for much of their lives and as such, has participated and failed more often in prior community corrections and treatment episodes. The profile of this class of subjects suggests a greater need for substance abuse services when compared to other classes: identifying primarily as heroin and cocaine/crack users, and having longer histories of prior drug treatment and community corrections. Given their comparative lack of risk/needs in other assessment domains, these subjects are likely to function best in a secure residential facility in which the primary focus of the intervention is almost exclusively substance abuse treatment.

Interaction model findings indicate that individuals with an assessment response profile similar to the Class 2 predict to have a lower propensity for failure if placed in facilities reporting a Cognitive-Behavior program orientation. Prior findings indicate that Cognitive-Behavior programs are an effective intervention for a wide range of substance abusing offender populations (Andrews et al., 1990, Carroll, 1996; Irvin et al., 1999; Pearson et al., 2009). Study findings suggest that Cognitive-Behavior programs provided a moderate-to intense substance abuse treatment intervention, which served an effective match for offenders whose primary issue is substance abuse, and who have fewer needs in other need/risk domains.

Proposed Program Matching Class 3

Subjects with an assessment response profile similar to the Class 3 predict are predicted to have a lower propensity for failure if placed in facilities with a Rehabilitation program orientation. The Class 3 profile indicates a lower substance use severity, using primarily marijuana. However, their early involvement in the juvenile and adult correctional system is likely preventing their attainment of employable skills. As indicated in Chapter 6, subjects with this class profile would likely benefit from a Strengths-Based approach that focuses on changing criminal thinking patterns and promoting education and vocational training. These programs typically demonstrate a lower level of substance abuse intervention intensity, providing fewer treatment options and services, and focusing primarily on work release and vocational development (Moos, 2004; Moos, Pettit and Gruber, 1995; Moos, Moos and Andrassy, 1999). It is likely that Rehabilitation programs provide an effective strategy for this class, as their addictions and criminal thinking patterns are not severe enough to require the intensity of programming as Classes 2 and 3. However, their education and vocational needs should benefit from a program that emphasizes employment in a work release environment. The results of the interaction models support this concept.

Proposed Program Matching Class 4

Individuals with an assessment response profile similar to Class 4 did not demonstrate interaction effects in any of the four sample programs. Consistent with the bivariate findings described in Chapter 7, subjects with a Class 4 profile possess

more positive return outcomes (compared to the other three classes) regardless of the type of program they are provided. The profile for this class of offenders includes being older with heroin as the drug of choice and their lack of risk in the other assessed domains would suggest less need for additional treatment and/or services compared to the other three class profiles. Suggested interventions for this class (described in Chapter 6) consist of moderate to intense substance abuse intervention; however, a holistic, multiple-dimension intervention may not be needed and possibly be inefficient or ineffective.

In recent years Moffitt expanded her typology to include a third class called "low-level chronics" (2003). These individuals are described to offend at a persistent but lower level rate when compared to the "life-course-persistent" class. Although they have similar childhood and family risks, they do not suffer from the cumulative negative outcomes common to persistent offenders. They are thought to have more employment skills/experience, fewer incarcerations, and fewer arrests but still have personal characteristics that isolate them from their social peer groups likely to commit crime. The "low need" class identified by this study resembles the "low-level chronic" class Moffitt described (2003). Although they have a long history of substance use and crime, it appears at a much lower rate than that of Class 1 or 2. In addition, their preference for substances with greater addictive properties (84% prefer heroin and cocaine/crack) may socially isolate them from criminal peer groups, keeping them from becoming persistent offenders. This may translate into a lower level of risk for this class and the lower rates of return witnessed for this class comparatively.

Furthermore, as mentioned in Chapter 4, prior findings indicate that older participants typically have stronger responses to treatment (Festinger et al., 2002, Marlowe, Patapis and Dematteo, 2003). Consistent with previously discussed bivariate findings, individuals with this class profile have comparatively better outcomes regardless of the halfway house program they are provided and study findings provide an initial rationale that this class of offenders may not require treatment beyond what they received in prison. Given their criminal risk factors are lower by comparison, and the fact that these offenders have already received Therapeutic Community treatment in prison, one could speculate that these offenders either do not require substance abuse treatment, or possibly do not require additional treatment in the halfway house to prevent returns.

8.8 Summary - Interactions

Chapter findings identified significant program-class interactions. These findings were tested for sensitivity, reliability and validity. Findings from these tests were generally positive and suggest stability of the significant program-class interactions. General matching strategy guidelines are presented for New Jersey substance abusing offenders entering halfway house interventions. Chapter 9 will relate these findings to the study hypotheses presented in Chapter 4 and a further discussion of study limitations, future research and policy implications will follow.

IX. DISCUSSION

This chapter presents a more detailed discussion of the results provided in Chapters 6, 7 and 8. The chapter begins with a discussion of the study sample and halfway house descriptives, which will lay the groundwork for policy recommendations to be introduced in later sections. The chapter proceeds with a review of the Latent Class Analysis model construction and its performance. Bivariate findings using latent class and program measures are then described followed by a review of the interaction model findings. The research questions and hypotheses presented in Chapter 4 are revisited and answered. The chapter concludes with a discussion of the methodological limitations of the current study, providing the basis for a discussion of policy and future research recommendations in later sections.

9.1 Study Sample and Halfway House Descriptives

Halfway Houses

Although residential substance abuse treatment facilities have been described (Moos and Finney, 1995; Moos et al., 2007; Moo, Moos, Andrassy, 1999), previous studies have not concentrated on offender populations or, more specifically, those programs contracted by a states' Department of Corrections to treat reentering offenders. This study described the variations of the halfway house programs used by the State of New Jersey Department of Corrections to treat offenders reentering from prison and in need of substance abuse treatment.

A total of 16 male halfway houses were included in the study sample. Each facility provided a substance abuse intervention in some form; however, the

variations of intervention styles, availability and service components varied greatly among the facilities surveyed. In addition, large variations were observed among facilities' capacities and it was assumed that these variations resulted in the uneven sample distribution of participants placed within each facility. The sample distribution ultimately led to an issue of statistical power, making it difficult to produce comparisons of each sample facility. However, several treatment and service commonalities were observed among facilities identifying the same DAPTI program orientation.

A decision was made to collapse the facility measure, grouping them by program orientation. Collapsing facilities based on orientation eliminated many of the issues of statistical power and improved the generalizability of study findings. Four program treatment orientations were identified: Rehabilitation, Cognitive-Behavioral, 12-Step and Therapeutic Community. Each orientation differs in philosophy of programming and PASCI survey findings confirmed the consistent delivery of key treatment provisions for each facility within each program orientation. Facilities identified as having a Rehabilitation orientation provided fewer treatments and services by comparison to the other orientations and previous findings would indicate a lower intensity substance abuse treatment and a greater emphasis on the use of work release and building participants vocational skills (Moos, 2004). Facilities identifying as having a Cognitive-Behavioral orientation possessed a wide variation in the range of treatments and services provided. Cognitive-Behavioral programs are thought to provide a moderate-to-intensive substance abuse treatment programming (Carroll, 1996; Finney et al., 1998; Irvin et al., 1999; Moos, 2004) and this orientation,

particularly in corrections, is thought to represent a more generic catch-all for residential substance abuse treatment. Facilities identified as 12-step programs all provided self-help/mutual-help treatments, a major component of this orientation. However, two of the three 12-step facilities provided a wide array of treatments and services, more than expected based on previous findings of programs with a 12-step orientation (Finney et al., 1998). It was assumed that, although delivered with a common 12-step philosophy or style, these facilities provide a more intensive intervention and may not be representative of 12-step programs globally. Finally, facilities identified as Therapeutic Communities programs were also found to provide a wide array of treatments and services, with all identifying the common provision of peer counseling. As expected these facilities were found to provide the most holistic intervention style, addressing a greater amount of participants' risk/need domains when compared to other program orientations (De Leon, 2000). Despite the increase in sample size resulting from the collapsing procedure, few study participants participated in the Therapeutic Community orientation (7.2%), which was anticipated to impact the power of future modeling efforts.

Study Sample

The study sample was composed of substance abusing offenders that have been deemed by the New Jersey Department of Corrections as in-need of drug treatment. All subjects have received similar in-prison Therapeutic Community treatment and were provided an extensive assessment prior to halfway house participation. The profile of the larger sample presented in Chapter 5 displays a group

of offenders that rank high in several risk/need dimensions. Although some readers may view this as a slightly specialized population, the profiles of substance abusing offenders entering community corrections is not typically reported and rarely are sample descriptives provided with the amount of detail as described in this study. Therefore, this study may be one of the only known reports describing a full spectrum of psycho-social and offender history characteristics of an entire state's population of reentering substance abusing offenders. However, because of the unique aspects of the state's delivery and provision of substance abuse treatment (i.e. the continuum of care) it is difficult to ascertain the generalizability of the overall sample.

On average, sampled offenders were in their early thirties, were previously in prison, were convicted as a juvenile, have a history of community corrections violations, and were arrested on a drug offense. Overall offenders began their drug use before age 16, had been using in the 12 months prior to incarceration, primarily use marijuana, and feel they will benefit from further treatment. These general descriptives, reported for the total sample, highlight the intensity of both the criminal and substance abuse risk factors that these offenders possess. However, study hypotheses suggest that a single profile of this population may not provide the detail needed to suggest policy implications or intervention provisions. That is, subtypes or classes of participants may exist within the larger substance abusing population that can be utilized to more effectively match participants to halfway house interventions.

9.2 Latent Class Analysis Model and Construction

A latent class analyses was performed utilizing selected and created assessment items gathered prior to admission to halfway house interventions. Model fit was examined among several class solutions. A four-class model was identified to provide the best fit and a post-hoc evaluation of the classes' posterior probability revealed a parsimonious model. The posterior probability for each class was then described utilizing the means and modal frequencies of class members based on subjects' predicted class assignment. These class descriptives revealed distinct profiles and class labels were provided as a summary description of the class profiles.

The "multi-domain need" class (Class 1) identified to have higher criminal risks based on the severity of prior offenses and their length of prior incarcerations. This class also demonstrated high risks/needs in the substance abuse domain and the metal health and family history domains. The "substance abuse treatment need" class (Class 2) also rated highly on several criminal history items though the profile for this class indicated a greater risk for violations within community corrections. These individuals were also shown to have more prior incarcerations, prior community corrections attempts, and prior community corrections violations. Much of their criminal (violation) risks are thought to stem from their substance abuse as this class has the highest ratings on many of the substance abuse risk measures and indicate a greater preference for heroin, cocaine and/or crack. The "employment and habilitation need" class (Class 3) rated low to moderate on many of the risk/need domains. This class is notably younger (mean age = 26) and has had less time to develop the characteristics witnessed in the profiles of the other classes. Individuals identifying

closely with this class profile may be on the verge of attaining the attribute of what Moffit terms a “life-course-persistent” (Moffitt, 2003). There is a distinct lack of substance abuse issues among this class profile, and individuals rank lowest on nearly all of the substance abuse risk items and overwhelmingly identify marijuana (88%) as their primary substance of choice. However, due to their early deviant and criminal involvement they have yet to develop legitimate work skills and experience, identifying a high need for vocational services. Finally, the “low need” class (Class 4) demonstrated comparatively fewer risks/needs across all four domains. Aside from a moderate need for substance abuse treatment (demonstrated by a preference for heroin) individuals identifying closely with this class profile are predicted to have the lowest rates of returns based on their need/risk profiles.

9.3 Bivariate Returns

After examining the descriptive profiles of programs and classes it was then necessary to identify the relative impact of class and program membership with regard to the study outcome – returns to prison. Several return types are identified, each presenting a different time at risk for halfway house program participants. Halfway house violations and escapes from the facilities occur early in the community corrections process, while technical violation of parole conditions and commitments for new crimes occur after participants have completed the intervention. Ultimately all four types are combined into a single measure of returns; however, due to the time sensitive nature of each return type, event history analyses

were performed to capture class and program variations as they pertain to days-to-return.

Class Variations

Class variations were identified for overall returns by type and days-at-risk. Variations generally followed prior findings that related to classes pre-intervention profiles, where the “multi-domain need” class (Class 1) demonstrated the highest risks of returns overall and the “substance abuse treatment need” class (Class 2) demonstrated a higher risk for technical violations while on parole. The “employment and habilitation need” class (Class 3) demonstrated lower rates of returns overall but their relative younger age predicted the identified high rates of returns for escapes. Finally, the “low need” class (Class 4) demonstrated lower return rates overall, by type and across days-at-risk. These return variations extend the argument that the substance abusing population possesses heterogeneity. This heterogeneity can be attributed to variations in needs and risk.

Halfway House Variations

Similar analyses were preformed to examine return variations by halfway house. Two sets of analyses were computed for both halfway house facilities and program types. Some return types revealed differences between facilities; however, sample power within facilities limited the study’s ability to compare across all sixteen facilities. Examining overall returns between programs and facilities revealed no significant variations. Although early variations were identified, group hazard differences failed to reach significance. These findings suggest little evidence to

identify a single program possessing a greater (or lesser) effectiveness for all substance abusing offenders.

9.4 Halfway House Interactions

To identify the specific responsiveness of each program, interaction models were produced. Again, due to the uneven distribution of participants within facilities, only program interaction models were interpreted as part of the matching strategy. A total of 16 models were produced, identifying five significant interactions. Significant interactions were consistent with class profiles and their predicted intervention needs identified prior to any evaluation of participant outcomes.

Participants identifying closest to the “multi-domain need” class (Class 1) had the positive matching effects when they were participants in either a Therapeutic Community program that is designed to address multiple domains or in a 12-Step program that, in this sample, provided a wide array of treatments and services. However, this class had replacing matching effects when participating in a Rehabilitation program, which provide lower intensity substance abuse intervention and fewer treatments and services overall. Those identifying closest with the “substance abuse treatment need” class (Class 2) had the positive matching effects when participating in a Cognitive Behavioral program, which are designed to provide a moderate to intense substance abuse intervention. Those identifying closest with the “employment and habilitation need” class (Class 3) had the positive matching effects when participating in a Rehabilitation program, which focus mainly on the provision of vocational skills and work release. Finally, those identifying closest with the

"lower need" class (Class 4) identified no significant interactions. However, the bivariate results identified that this class outperformed the other three classes, an initial indication of this class' amenability to all treatment styles.

9.5 Hypothesis Testing

1-H

Three research questions and hypotheses were created to examine differences in subjects, programs, and the interactions of subjects within programs. The first question was:

- *Can an empirically and statistically derived typological assessment be created within a population of offenders?*

There were two related attempts to examine this research question. The first was the creation of the Latent Class Analysis model. The analysis of class differences were presented in a hypothesized relationship and restated here:

- *1-H_0: The null hypothesis is that a single class structure (or no classes) exists within the current sample of substance-abusing offenders, indicating that a statistically significant amount of heterogeneity cannot be determined by the pre-halfway house assessment characteristics of the sample.*

- *1-H_A: A class structure exists among the current sample of substance-abusing offenders, where a statistically significant amount of heterogeneity can be determined by pre-halfway house assessment characteristics of the sample.*

The assessment data was placed within several latent class analysis model solutions. A four-class model was selected as the best fit for the sample. The examination of the post-hoc descriptives revealed distinct offender profiles, where between-class variations were both statistically significant and theoretically substantial. Class differences were further examined through cross tabulations of dichotomous

outcomes and Cox regression analyses for days-to-return. Significant differences were found between-classes on overall returns and days-to-returns. The culmination of these findings (i.e. class creation and post-admission differences) provided sufficient evidence to reject the null hypothesis ($1\text{-}H_0$) in favor of the alternative hypotheses ($1\text{-}H_A$), where a statistically significant amount of heterogeneity can be determined by pre-halfway house assessment characteristics. This indicates that there is enough heterogeneity within the larger sample to identify sub-types of substance-abusing offenders.

The establishment of participants' heterogeneity was a necessary first step in this study. Given that the items used to establish the classes were measures presumed to identify subjects' risk and intervention need variations, classes identified by the latent class analysis were assumed to represent intervention classes. Identifying these variations was critical to the study methodology, as the establishment assumption provides the initial rationale to create a matching strategy and a basis for testing hypothesis 3-H (or specific responsivity).

It was also necessary to identify class differences with regard to subject outcomes, or prison returns. It was assumed that there are variations in intervention needs. It was also known that these classes participated in varying types of halfway house interventions that may or may not have addressed these needs. However, if, even after attending these programs, classes do not vary on return outcomes then the establishment of a matching strategy under the current study design would likely not identify significant program-class interactions or provide evidence for a proposed matching strategy.

2-H

The study then sought to identify differences among halfway houses, testing general responsivity. Return outcomes were examined to identify possible variations though participation in a given halfway house. The second research question addressed these differences:

- *Are there pieces within the system (i.e. halfway house facilities or programs) that are more or less effective at meeting rehabilitative goals of substance abusing offenders?*

  To test for differences among halfway houses the following hypothesis was established:

- *2-H_0: All programs provide equally responsive interventions with regard to participant's prison returns post-halfway house admission.*

- *2-H_A: A statistically significant amount of variation exists among participants return rates dependent on the halfway house in which they participated.*

Two sets of bivariate analyses (for facilities and programs) were produced to compare returns between halfway houses. The results from the facilities analyses revealed inconclusive evidence and which revealed no significant differences in participant failure. Based on the stated hypothesis, the study fails to reject the null hypothesis ($2H_0$) that all programs provide equally responsive interventions with regard to participant's prison returns post-halfway house admission. The results suggest that when one examines the programs broadly, no one program is found to be better (or worse) at preventing failure for the entire sample population. Therefore, by treating the sample as though they represent a homogenous population, with a single intervention need, one would find no differences between program styles. This suggests that if one is to try to identify the most effective program style, without

accounting for participant differences, the effort would be unsuccessful as program styles were identified here as equally responsive.

3-H

The final research question and hypothesis combines the first two and examined the effects of subject differences within halfway houses. That is, the classes created to test the first hypothesis were utilized to examine return differences among subjects placed within each of the halfway houses. The testing of this hypothesis ultimately impacted the ability to identify a proposed matching strategy; where insufficient evidence would negate the creation of a matching strategy. The third research question presented was:

- *Can a typological assessment be utilized to match offenders to halfway house interventions?*

To test the ability of the typology to identify halfway house differences the following hypothesis was created:

- *3-H_0: All halfway houses and programs are equally effective for all participant classes with regard to prison returns following halfway house admission.*
- *3-H_A: Significant variations will be identified among the halfway house-class interactions, where variations in prison returns will be identified when each participant class is examined within each halfway house.*

Again, due to issues of statistical power only program interaction models were interpreted. A total of 16 interaction models were produced, which revealed five significant interactions. Each program possessed at least one class interaction and one class was found to have no interactions. The culmination of these findings was then interpreted and developed into a proposed matching strategy. Based on significant

interaction model findings, sufficient evidence is provided to reject the null hypothesis (*3-H_0*) in favor of the alternative hypotheses (3-H_A); where variations in prison returns were identified among participant classes within each halfway house program. These findings also identify the presence of specific responsivity, where halfway house program styles can be "matched with the personality, motivation, ability and offender demographics such as age, gender, and ethnicity" (Andrews, Bonta and Wormith, 2006: 7). In the current study, the "matched with" characteristics are represented by the empirically identified latent classes.

9.6 Theoretical Impact

Matching strategies, either overtly or inadvertently, make use of Andrews and colleagues (1990) principles of Risk, Need and Responsivity. Risk and Need are the easiest principles to apply as they can be more or less quantified through assessment and screening of subjects prior to the delivery of an intervention. In this study Risk and Need are measured for each subject at one of two assessment centers in New Jersey. However, responsivity is more difficult to assess as this principle relates to an assessment of program factors that influence effective treatment. The current study utilized assessments of risk and need to identify heterogeneity in the participant sample and combined these efforts with and assessment of program variations to test both general and specific responsivity.

Hypothesis testing indicated little evidence of differential general responsivity of any one program orientation. Although not directly defined as such, orientations correspond closely with treatment modality. Prior findings comparing across

modality, reveal no single modality to be superior to others for all drug users (Gerstein and Harwood, 1990; Institute of Medicine, 1990; Prendergast et al., 2002). However, general responsivity may have alternate interpretations. That is, one could argue that a program is generally responsive when it is deemed effective for all types of offenders, despite the differing risks and needs of participants. Interaction models did indicate one program, Rehabilitation, was not responsive for the "multi-domain need" class (Class 1), where participants were found to have a higher propensity for failure when placed within this program style. Prior findings and descriptions of Rehabilitation programs would suggest that this style of intervention is inadequate for this class of offenders (Moos, 2004; Moos, Moos and Andrassy, 1999) and, thus, the greater propensity for failure is logically consistent with program theory. Given that all substance-abusing offenders deemed in need of substance abuse treatment by the NJDOC did not benefit from this style of treatment, initial evidence suggests a lack of general responsivity for this style of programming for substance abusing offenders. However additional testing using experimental methods may provide a more accurate assessment of the program's true level of general responsivity.

However, the results do confirm some previous assumptions of general responsivity. Andrews and colleagues (1990) state that correctional rehabilitation programs providing Cognitive-Behavioral programs are generally responsive to the risk and needs of correctional offenders. Additional studies have had moderate success confirming the responsivity of this program style. The results of this study further confirm the general responsivity of Cognitive-Behavioral programs. As mentioned the 12-step and TC programs all provide some form of Cognitive-

Behavioral intervention style but may deliver additional treatments and services. All three programs styles' (CB, 12-step and TC) either decreased propensity for failure or recorded no significant difference when interaction models of all class types were examined. Furthermore, no increases in propensity for failure were found among the interaction models of these programs. This suggests that programs that provide some form of cognitive behavioral treatment are generally responsive, or at the very least, are not inappropriate for all substance abusing offender types.

Finally, testing for the existence, and exploring the use, of specific responsivity was the primary focus of this study. The introductory chapter began by citing Prendergast and colleagues (2002) meta-analytic work, which concludes by stating,

"…it would seem appropriate to cease asking whether treatment for drug abuse is effective and begin asking instead how treatment can be improved and how it can be tailored to the needs of different types of clients…and take into account the diversity of drug-abusing populations" (p.66-67).

This task set forth by Prendergast and colleagues invokes a shove at the back of those working in the field to seek out new ways to investigate specific responsivity in an effort to further improve the delivery of treatment. Specific responsivity was supported by the study findings; where initial indications are that classes can be matched with program types which will reduce prison returns and/or increase days until return. Although rarely studied, an assessment of specific responsivity is *the* critical element for creating a matching strategy. The study methodology provides an innovative method for testing specific responsivity. Although still considered exploratory, this method has the ability to be applied to other settings, populations

and correctional systems, furthering the assessment of a rarely studied principle of correctional treatment.

9.7 Study Limitations

In Chapter 3 the limitations of previous research were discussed and Chapter 4 described the potential methodological difficulties of this study. The following section will review those issues as well as new issues that arose during the course of the study. An attempt is made to identify where this study succeeded (and failed) to address the issues listed in Chapter 4. To review, the main limitations of prior treatment matching research included 1) idiosyncratic ad-hoc designs and 2) single item examination. The potential methodological difficulties of the current study included 1) maturation of offenders in the continuum, 2) treatment diffusion from administrative transfers, 3) internal validity of the halfway house assessments, 4) external validity of study sample findings, 5) motivation and self-report measures, and 6) recall and reliability.

Prior Study Weaknesses

With regard to the weakness of previous matching designs the current study has performed relatively well. Although this study was couched as an exploratory examination of a matching strategy, the creation of the strategy was comprised entirely through a quantitative configuration. If utilized properly, this should make advancement from previous matching designs, which typically rely on the often idiosyncratic nature of clinicians' creation, and utilization, of assessment item

findings. The current study utilized several theoretically important scales and items among several domains in the configuration of a typology. The result was a statistically created typology that could then be used as part of a matching strategy. Although this is only an initial “proposed” matching strategy that requires replication and further testing, the creation method relied on all available assessment data stressing equality of importance for all included measures, producing a class typology in an automated fashion. This avoids the caveats of previously cited idiosyncratic ad-hoc designs. If this proposed matching strategy is applied it will provide a more objective examination of offenders’ needs and the interventions in which they are most likely to succeed, letting prior response patterns and failures dictate future placements.

A second stated issue within prior findings was the identification of only single predictors of offender outcomes. Typically regression or bivariate analyses are used to examine which factors predict participant behavior, identifying the relative impact of a single predictor with respect to other relevant measures. However, rarely is it the case that a single predictor provides all, or even a majority, of the variations in the prediction of subject outcomes. As described in previous chapters, substance-abusing offenders often possess variant levels of risks and needs on several behavioral dimensions. These variant levels are assumed to have a cumulative impact on the offenders’ outcomes post-intervention. The use of Latent Class Analysis in the current study makes advances within the prediction process, as it provides an examination of need and risk levels across several domains simultaneously. This allowed for the description of substance-abusing offender profiles and the bivariate

analyses described in Chapter 6 demonstrated how the use of the latent class typology can be used as a predictor of prison return. The use of offender typologies/profiles allows for a more holistic interpretation of subject predictors of recidivism and provides a better interpretation of the cumulative impact of all subject pre-intervention characteristics.

Maturation within the Continuum

The logic for the continuum of care is to provide a series of interventions each having a partial positive impact on participants' outcomes. Participants within this continuum take part in three interventions: in-prison therapeutic community, halfway house, and parole. It was assumed that the in-prison therapeutic community's influence was consistent, as the programming is delivered similarly for all participants. In the next stage of the continuum the study hypothesized that variations exist among participants' halfway house interventions and outlined several characteristics that may vary in the type of intervention a subject may have received. However, several characteristics related to a subject's parole may also impact their return outcomes, including parole officer, where the parole term is served, and services received and mandated by parole. It was beyond the scope of this study to identify the impact of the offenders' parole on study outcomes. It was assumed that if the halfway house was to have an impact it would be observed despite these variations. The study found significant program-class interactions despite the potential variations that occurred while on parole. However, it was beyond the scope of this study to gather data on potential interactions from participants' parole

supervision. Future analyses should attempt to control for maturation and other interaction effects that occurred on parole or elsewhere within the rehabilitation process.

Treatment Diffusion of Multiple Halfway House Interventions

The issue of treatment diffusion may have occurred for a small portion of the current sample. Just under 91 percent of the study sample received only one halfway house intervention, the remaining subjects received more than one (0.2 received three). Bivariate analyses revealed that those subjects who received multiple halfway house interventions did not differ greatly from subjects that received only one intervention. Furthermore, of those that did participate in more than one house, over 91 percent were participants of a single house for greater than 85 percent of halfway house participation time. Finally, models testing the interaction effects examined with, and without participants who received multiple halfway house interventions, revealed no significant differences and the overall effects did not change when considering both types of models. It is the conclusion of this study that if a bias exists for subjects that received multiple interventions, it is minor and did not impact the overall findings.

Validity of Halfway House Assessments

To identify and follow study subjects from prison, to halfway house, to follow-up it was necessary to retrospectively gather eligible prisoners from as far back as 2001. The facility Directors completed the halfway house surveys in 2009. Certain core program characteristics have probably remained unchanged, such as program orientation. However, it is probable that several treatment and service changes have taken place during the evaluation time frame, such as availability of ancillary services, staff-to-client ratio and even program capacity. If these characteristics are influential in the matching process, and have changed significantly over the years, then the measures used to evaluate those programs may not be valid. However, it was beyond the scope of this study, and possibly quite difficult generally, to identify how the programs would rate on each of the halfway house measures at the time an offender was a participant. In the end, the data gathered was the best representation of the halfway houses to date but that representation may not be an accurate depiction of the intervention that all subjects received when attending a given intervention. It is probable that programming changes for all facilities occurred gradually and that these adjustments were not significant enough to change the relative impact of a given program when compared to the other programs in the sample. However, if this type of research is extended, efforts should be taken to investigate the effect of program variations across time and their impact on the creation of matching guidelines and strategies.

Specificity Errors in Halfway House Program Configuration

Due to issues of statistical power in some of the smaller facilities, it was not possible to examine the effect of each halfway house individually. To compensate for power limitations, facilities were collapsed into program types based on self-identified DAPTI orientations. This method makes the assumption that participants received similar programming within common orientations but in different facilities and that the variations observed in returns were due to program types and not the specific facility attended. However, the potential specificity errors that may have occurred as a result of the collapsing method should not be ignored. More specifically, this method generalizes across facilities, ignoring the impact of individual intervention factors, such as: counseling team, organizational structure, geographic location and other contextual factors. However, great care was taken to provide the most accurate grouping of facility types. In an effort to reduce specificity errors, multiple items and scales were used to create program types that were consistent with prior methods used to identify differences in residential substance abuse treatment interventions (Moos, 2004). Every effort was made to assure the original intent of the DAPTI instrument was upheld and interpreted correctly, including direct consultations with its creator, Dr. Rudolf Moos. Furthermore, facility interaction few within program differences were analyzed, revealing a large degree of consistency with regard to the direction of interaction effects of facilities within programs.

Readers should be cautioned that this is a first attempt and an exploratory endeavor utilizing a newly created methodology. The original intent was to produce a

matching strategy that would guide the placement of individuals to specific facilities. Although grouping facilities by program orientation provided an initial guide for matching, collapsing facilities ultimately introduces a certain amount of error into the matching design. Furthermore, several alternative facility groupings can be proposed. For example, grouping facilities based on the amount and/or frequency of treatments and services provided might serve as a better matching mechanism. Future analyses should examine potential biases when generalizing by program orientation and attempt to examine individual facilities as the unit of analysis as well as additional facility grouping measures.

Motivation and Self-Report Measures

As discussed in Chapter 4, offenders were most likely aware that assessments would impact the rehabilitative programming they receive. Offenders that wish to receive substance abuse treatment, instead of traditional correctional programming, may inflate their responses to addiction severity items. This “motivation” in responding to self-report items is a bias that is difficult to identify or adjust for in any study design. The use of multiple items to examine offenders’ substance abuse severity was one method used in this study to limit the impact of this potential bias. For example multiple used assess addiction severity included: ASI score, age of first drug use, use twelve months prior to incarceration, daily use, prior treatment, benefit from treatment, and primary drug used. Using of a range of items, examining different aspects of the addiction domain, limits the effects of a subjects’ inflation/deflation of severity ratings, thus triangulating the subjects’ true severity.

However, due to the fact that different record types (i.e. official or observational) could not be obtained to ensure accuracy of responses, readers should temper their interpretations of the study findings until consistency of results are identified through replications in future analyses.

Recall and Reliability

Another potential bias affecting the reliability of substance abuse assessments is the issue of recall. Here a bias may be introduced by measures which ask offenders to recall their early events of substance abuse and behavior that occurred prior to their incarceration. For older offenders and/or those offenders incarcerated for longer sentences, it may be difficult to recall substance use events with great accuracy. Again, multiple substance abuse severity measures were used to limit the effect of this potential bias. Furthermore, the results of the latent class analysis were found to center on age, where two classes in particular (Classes 3 and 4) indicated age related patterns among substance use and other domain indicators. This finding would suggest that if a recall bias was present, it was not systematic enough to impact the identification of age related patterns within the data.

Naming and Reification

In a recent and increasingly infamous article discussing developmental trajectory paths, Nagin and Tremblay (2005) warn consumers of faulty assumptions when interpreting findings of research utilizing group-based statistical methodologies. Their article began as an initial response to Laub and Sampson's 2003 book *Shared*

Beginnings, Divergent Lives, where it was argued that trajectory class analysis does not aid in the prediction of criminal behavior. Nagin and Tremblay agree, to an extent, cautioning against hastily made assumptions that individuals actually "belong" to the group they have been assigned. Furthermore, the number of groups may change if, and when, study factors change and individuals within each group are not destined to follow the same outcome path identified for their given group (p.898). Their study specifically addressed the use of latent class trajectory analysis, which is technically different from latent class analysis techniques used in this study; however, the cautioning principles are still valid and represent what previous studies have deemed "usage errors" of Naming and Reification (Klien, 2005; Reid and Sullivan, 2009).

The naming fallacy occurs when an assumption is made that the name given to the latent class accurately reflects the hypothetical construct. In this study, latent class profiles were examined for each class and names were given to each class which represented the possible intervention needs of each class. Although it appears as though the name given to the "multi-domain need" class accurately reflects their profile of needs across multiple dimensions, the name created for this group may not accurately reflect the true needs of this group and the description of this group may change if additional assessment indicators are used and/or a better description of the class needs are identified in future analyses.

Reification is a greater threat to the interpretation of study findings and is central to Nagin and Trembaly's (2005) cautioning principles. This threat impacts the usage of findings when readers interpret classes as if they were real and correspond to true and measurable quality of the subjects. Latent Class Analysis is derived from a

probabilistic structure and in this study was derived from response patterns on several scales and assessment items, each with an unidentified amount of measurement error contained within. Several attempts were made to utilize the class structure appropriately in the prediction of prison returns, such as the use of class probabilities instead of predicted membership in regression analyses. However, classes created are a heuristic technique derived from a statistical analysis of a single sample and do not yet possess the validity and reliability of other known typologies used in classification of subjects and treatment needs (i.e. the DSM). Readers should *not* begin classifying individual substance abusing offenders into the four created classes and assigning subjects to interventions based on the findings of the current analysis alone. Replication and further testing of study findings is needed to quell concerns and increase the reliability of the classes' diagnostic ability.

9.8 Summary - Discussion

The chapter outlined the key results of the study. The findings were generally positive and provided ample evidence to test the study hypotheses. The results revealed a statistically significant amount of heterogeneity in the sample, concluding a rejection of the concept that the NJDOC substance abusing offender population is homogenous and posses a single intervention need. However, the test of general responsivity revealed insufficient evidence to reject the notion that all halfway house programs provide comparatively equal responsiveness with regard to the prevention of returns to prison. This suggests that a global look at the delivery of halfway house interventions to substance abusing offenders identifies no differences, when

participant characteristics are not taken into consideration. Theoretical applications of the findings reflect the hypotheses tested. Although differential general responsivity as defined by 2-*H* was not identified, initial indications reveal that Rehabilitation programs may not be generally responsive. When examining the specific responsivity, a sufficient amount of evidence was found; indicating that when certain classes were placed within particular halfway house programs, variations in prison returns were observed. The significant program-class interactions provided evidence of specific responsivity and a proposed matching strategy was created. However, the study and the proposed strategy created is only part of an initial exploratory evaluation of the programs. Readers are cautioned to interpret the findings as validated diagnostic categories or to begin to place offenders based solely on the findings of this study. A discussion of study limitations followed and, where appropriate, concessions were made regarding immediate implications of results and avenues for further research were indicated. The chapter to follow will discuss the current study implications and detail issues for further research.

X. IMPLICATIONS AND ISSUES FOR FURTHER RESEARCH

This chapter focuses on the implications that flow from the study findings as well as the future research needed to confirm the initial results presented. The first section will begin with policy implications, discussing the impact of these findings on the current matching strategy utilized by the NJDOC and additional applications of the study method for exploring the use of a matching. Finally, future replication of the study findings and areas of needed matching research will be discussed.

10.1 Policy Implications

NJDOC Matching Strategy

The most logical policy implication that can flow from this research is the creation of the matching strategy. Although further testing and refinement is needed, the proposed strategy has the potential to be used as part of a set of matching guidelines utilized by placement officials. Currently substance-abusing offenders receive an assessment at one of two assessment centers. As described previously, participants are held in the assessment center until a bed opens up in any of the available halfway houses. Participants are then placed in a halfway house when a bed becomes available in one of the sixteen available facilities.[18]

This placement process provides for a relatively easy implementation of the proposed matching strategy. Essentially, participants receive their assessment and a determination of the strongest program match can be made based on assessment

[18] The total amount of facilities has increased since the creation of the study sample.

findings, where the assessment profile of each participant can be compared to the class profiles to identify the class that most closely represents the characteristics of the offender. As the typology is based on a probabilistic structure, and only provides guidelines for program selection, it should not be utilized as single determinant of placement but instead as part of a larger matching guideline system in which additional clinical assessment scales, items and oversight are used to identify the most effective halfway house match for each participant.

After the determination is made, participants may then wait in the assessment center until a bed becomes available in the halfway house that has been determined to be the strongest match for that individual. The implementation process of this new placement system is similar to the one that is currently in use in the NJDOC and should cause, at most, only a minor disruption/alteration to the present placement procedures. However, one could foresee ethical issues and possible negative impacts if delays in placement extend beyond acceptable timelines. If an offender is asked to wait several months for a “matched bed” to become available, this will ultimately delay their transition into the community and possibly extend their time under Department of Corrections supervision (as their halfway house completion time will also be delayed as a result). If implemented, sufficient failsafe policies must be written so that participants’ transition into the community are not obstructed and/or their term of supervision is not disproportionately extended as a consequence of matching guidelines. Although further analysis of the proposed matching strategy is needed, the implementation of the said strategy represents a simple, cost-efficient way to improve treatment delivery and decrease propensity for failure.

Over-Treatment

A more general policy question derived from the study findings is: How much treatment is too much treatment? Currently the NJDOC identifies offenders in need of the continuum of care if they score 5 or higher on the Addiction Severity Index at the time of incarceration. Offenders are then placed in a series of treatments where they receive nine to thirty moths of in-prison Therapeutic Community treatment, followed by six to eighteen months of halfway house treatment. At the lower bound participants receive a minimum of fifteen months and at the higher end receive 48 months of treatment. Two classes (Classes 3 and 4) were found to have moderate-low substance abuse treatment needs and represented 63 percent of the sample. Class 3 was found to have positive matching effects for programs that provided a Rehabilitation orientation, which are known to provide a less intensive substance abuse treatment. Furthermore, Class 4 seems to out perform the other three classes regardless of the program they attended.

Given the lower substance abuse treatment need of these two groups, a logical inquiry would be: Is two to four years of substance abuse treatment needed for offenders with a low level of substance use severity? Utilizing a continuum of care assures that offenders receive a sufficient amount of treatment but how much is too much for some individuals? It appears for individuals who primarily use marijuana and/or are not daily users, an extensive system of treatment provided by the continuum of care may represent overkill. That is not to say that individuals should not be provided other rehabilitative services to address other domain needs (i.e. vocational skills), but three years of drug treatment would seem to be a waste of

resources for individuals who do not appear (based on multiple assessment items) to have a serious addiction.

Finally, the use of the continuum of care should be reassessed at each stage. Offenders are placed on the continuum after a single ASI assessment that occurs fairly early in their term of incarceration. That means that the delivery of years of treatment services is determined by a single assessment. It would appear that a better use of the treatment system and the continuum of care would be to make use of multiple assessments during the course of treatment delivery so that the delivery of treatments and services can be adjusted (upward or downward) to suit the immediate needs of the participant.

Treatment Types and Proportion of Need

One of the benefits of the current methodology was not only a description of the intervention needs of sample participants but also a description of the halfway houses and their resources. This allows for a discussion of the allocation of halfway house resources and their use within the current population. The findings identified four program-class interactions that indicated a strong match for participants. Two programs (TC and 12-step) represented six facilities and were a proposed match for a single class (Class 1) that represented only 11 percent of the study sample. In contrast, four facilities provided Rehabilitation programming and were found to be a match for Class 3, which represents 45 percent of the sample population. Although not an initial intent of the study, matching considerations will ultimately lead to discussions of resource allocations. That is, if more participants are identified to

require a lower intensity of treatment, a greater proportion of cases will need to be sent to this type of intervention. Therefore offenders will either have to wait longer in the assessment center for space to become available in the current system of halfway houses, or more of the needed programs should be built or expanded. If the matching strategy is put into practice, policy makers will need to adjust the size of the facilities proportionate to class sizes so that the needed program types are readily available.

10.2 Future Research

It is important to note that the effect of the matching strategy cannot be thoroughly evaluated in the current study design. The present study findings were intended to be exploratory, and therefore, represent only the first stage in the identification and development of a typology. The typology itself represents a post-hoc examination of the differential effectiveness of the halfway houses. In fact, the conceptualization of "matched" offenders is defined by, and not predicted by, the measured outcomes. Therefore, the typology's effectiveness in predicting successful outcomes cannot be fully addressed in the current analysis. Further analyses, utilizing the created typology in the proper causal time order, will be needed to examine its predictive validity with regard to placement matching success.

Replication and Staged Design

The continuing research agenda would begin with a replication of the study findings, preferably utilizing a larger sample. An additional latent class analysis with a new sample would identify the consistency among the current identified classes. If

the same or similar classes are again identified it would serve to validate the existence of the classes and decrease issues of reification. If the significant program-class interactions were again identified, this would provide predictive validity and sufficient evidence to proceed with a matching strategy for the NJDOC substance-abusing offender population. Finally, a major limitation of the current study was the lack of findings with regard to facility differences. An additional sample would hopefully be large enough to provide an adequate distribution of cases to draw reasonable comparisons among facilities and have enough statistical power to provide interaction models across all class types.

The next stage of a research agenda would involve implementation of the proposed matching strategy, pilot testing its effects using an experimental design evaluating outcomes in a prospective fashion. The study would examine a group of individuals that are placed in halfway house interventions utilizing the same quasi-random placement and compare it to a group whose placements guided by the created matching strategy. The combination of these two studies would comprise a *staged design,* making use of a retrospective analysis to identify characteristics influential to matching; then creating a protocol around those findings; and finally testing the protocol using a prospective methodology (McLellan et al., 1993; McLellan et al., 1997). If offenders matched using the created protocol are found to have a lower propensity for failure, sufficient empirical evidence has been identified and the matching strategy can then be taken to scale and be implemented widely in the NJDOC continuum of care.

Additional Settings

As the matching strategy (and the methodology for its creation) were explored here for the first time, replication is essential to test the strategy's sensitivity. To further examine the utility of the study methodology, further attempts should be made to identify new (and possibly different matching strategies) in additional correctional systems, using a different set assessment instruments. Although it is assumed that the rehabilitative system of other states are likely different than the NJDOC (and may not provide the same continuum of care), one can assume that substance abusing offenders in need of treatment are identified in a similar way (i.e. a formal screening), and a full assessment of offender needs may also be a part of the rehabilitative process. However, it is likely that the set of offender history and assessment tools differ. Future studies should replicate the current study methodology attempting to create a similar typology for substance abusing offenders within different correctional systems. One would hope that even with the use of differing instruments and scales that the same or similar class profiles will be identified, confirming the existence of the underlying hypothetical class structure identified in the current study. However, as suggested by Nagin and Tremblay (2005) further replications also have the potential to uncover a different number of classes and/or differing class profiles discovered here, possibly falsifying assumptions of specific responsivity and generalizability of current study findings.

Alternate Outcomes

The study methodology was only able to evaluate subjects' success/failure in terms of prison return outcomes. Although this outcome type is most relevant to NJDOC policy makers, it may not represent the totality of the halfway house treatment effect. Future analyses making use of substance abuse, mental health and employment indicators should provide a more robust description of treatment effects and additional benefits of matching. Furthermore, records of arrests or self-report measures of criminal activity during community supervision may provide a better description of subjects' negative outcomes post-intervention. Longitudinal evaluations of these types of behavioral changes would also lead to more sophisticated evaluations of participant outcomes over time, lending itself to trajectory or growth curve analyses, tracking participants as they progressed through the continuum of care.

Treatment and Service Provisions in the Prediction of Successful Outcomes

The current study used broad strokes to identify a matching strategy for substance abusing offenders. Surveys were used to group facilities into programs based on identified orientations, and the responses to treatment and service provision items served to confirm these groupings. However, a key ingredient to subjects' matches may have been the types and amount of treatments and services they received and *not* the orientation of the program in which they participated. In particular, drug testing would be an important measure to consider. If a participant was tested more frequently, they are more likely to get caught and sent back than

someone who is tested less frequently; therefore, their return may have nothing to do with the type of program orientation the facility delivers but instead the amount of tests conducted to identify halfway house violations.

Furthermore, facilities may already be tailoring treatments and services to meet the needs of participants with the facility, thereby providing a more individualized type of treatment "matching". It is possible that participants who receive more of this individualized style of matching have greater success regardless of the program orientation they are placed within. Unfortunately, this study did not gather data regarding subjects' receipt of treatments and services. Future analyses should attempt to gather measures of this sort and incorporate them as possible moderators in tests of specific responsivity.

Return Types in Community Corrections

The analyses made use of a single measure – prison returns – as the outcome of interest. This measure was comprised of four return types: halfway house violations, escapes, technical violations and new commitments. The study conceptualized a stronger match as one that increased the days of duration in the continuum without invoking a return to prison. Because of this conceptualization, it was necessary to start the outcome evaluation clock when subjects began their participation in the halfway house. However, this is not a typical conceptualization of outcomes for correctional programming; specifically, halfway house violations and escapes are rarely utilized as outcomes for participants. Although this new use of outcome data served a logical purpose within the current study methodology, the use

of these additional outcome types are still novel and need further analyses. Future studies should evaluate the competing risks of each outcome type in greater detail to examine when, and if, it is appropriate to use these early return types for the evaluation of community corrections participants.

10.3 Summary – Implications and Future Research

This chapter began by providing policy implications. Currently there are no formal guidelines for placing substance-abusing offenders within halfway house interventions in New Jersey. The NJDOC identified a need to develop a matching strategy that can guide placement decisions. The findings of the current study takes a big first step in developing these guidelines by identifying a set of intervention groups and proposing the program orientations that maximize interventions' impact and predict a lower failure propensity for halfway house participants. Although results are still considered exploratory, policy implications described set in motion the matching product created here and described how findings might be implemented within the NJDOC continuum of care. If the created matching strategy is utilized as part of a new placement strategy, additional policy considerations should be given to the use and allocation of substance abuse and other intervention services. As indicated by Marlowe and colleagues (2006), mandating intensive interventions for individuals with a lower substance abuse severity may be a waste of resources and even create unintended negative effects. Policy makers should be cautioned that, although innovative and comprehensive, a full continuum of care may not be necessary for all substance-abusing offenders. Finally, a progressive research agenda was proposed

suggesting further investigations to advance the use of the proposed matching strategy. Next steps include further replication and use of experimental methods, testing the created strategy against the current NJDOC placement process. Ultimately, the results suggest promise, not only for the creation of matching strategies generally, but for the use of the study methodology as a novel way to objectively identify intervention groups and propose placements through an empirically derived categorization procedure.

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Appendix 1. NJDOC Continuity of Care Programming and Services

Bidder Qualifications, Experience and Background
The NJDOC associates the qualifications, experience and background of the bidder in the area of substance use disorder treatment and in-prison programming implementation as a critical indicator of ability to provide the services specified under this RFP solicitation. The bidder shall demonstrate its ability to fully and successfully provide the services outlined in Section 3 – Scope of Work.

Therapeutic Community

Introduction

The NJDOC has adopted the nationally recognized and research supported 'continuum of care' strategy to address offender addiction for those who present the more serious treatment needs. The primary goal of this approach is to effectively identify, assess and treat these offenders by way of the comprehensive continuum of care system including the in-prison Therapeutic Community phase followed by community placement, first in an Assessment and Treatment Center and then a halfway house. The provision of the in-prison Therapeutic Community portion of the continuum of care is the focus Section 3.2.

Contract Locations

The bidder shall provide the in-prison Therapeutic Community in the locations as specified by the NJDOC. Currently, the NJDOC has allocated 1,414 treatment beds for this purpose distributed as follows:

Edna Mahan Correctional Facility for Women Clinton, New Jersey Minimum custody level.	60 Beds (female)
Garden State Youth Correctional Facility Yardville, New Jersey Medium custody level.	320 Beds (two units, 160 each, male, ages 18 to 26)
Mountainview Youth Correctional Facility Annandale, New Jersey Medium custody level.	83 Beds (male, ages 18 to 26)
Northern State Prison Newark, New Jersey Minimum custody level.	96 Beds (male)
Riverfront State Prison Camden, New Jersey Medium custody level.	117 Beds (male)
South Woods State Prison	248 Beds (two units, 124

each,
Bridgeton, New Jersey male)
Medium custody level.

Southern State Correctional Facility 352 Beds (two units at 86
Delmont, New Jersey and two units at 90, all
male)
Minimum custody level.

Note: The proposal for treatment services must cover all programs – no partial contracts will be awarded.

Caution: this represents the current bed complement/locations of the NJDOC Therapeutic Community treatment program. The NJDOC reserves the right to shift program beds and/or locations without incurring additional cost to the award unless those changes represent an increase or decrease in bed complement of such significance that staffing patterns and related costs are impacted (see Section 5.22 Additional Work and/or Special Projects).

Therapeutic Community Model - General

The bidder shall provide Therapeutic Community treatment services as prescribed under the evidenced based model and shall document its ability to implement the model fully and successfully. The NJDOC is requiring that the provision of Therapeutic Community services be in accordance with the model components and requirements as outlined in recognized authorities on the subject as well as promulgated standards. These include but are not limited to:

Performance-Based Standards for Therapeutic Communities, 1st Edition, American Correctional Association, August 2005.

Bodies of professional literature generally recognized as the standard for model history, theory, etc. For example: *The Therapeutic Community – Theory, Model and Method*, George DeLeon, Springer Publishing Company, NY, 2000.

Emerging Therapeutic Community concepts and strategies as distributed by correctional treatment associations, and leading academic centers for alcohol and drug studies, institutes etc. For example: Therapeutic Communities of America, University of Delaware's Center for Alcohol and Drug Studies, Texas Christian University, Center for Therapeutic Community Research.

Treatment Duration – Continuum of Care

According to research, in order to maximize the effects of the treatment, participants shall be involved in the in-prison portion of the treatment continuum for a period of nine to 12 months. The community release component shall be a maximum of an additional 12 to 18 months under current NJDOC policies and procedures. The first two to three of these months in the community release component shall be in an Assessment and Treatment Center with the balance at a halfway house. Those offenders who successfully completed a minimum of nine months and have demonstrated the appropriate progress in treatment (see Section xx – assessments) will be granted a completion of the Therapeutic Community phase. In those

cases, the bidder shall certify completion via a 'Certificate of Completion' generated by the bidder.

In cases where the offender has less than the required program dosage but has demonstrated sufficient progress to merit consideration for a designation of program participation, the bidder shall certify participation via a 'Letter of Participation' as generated by the bidder.

Note that the contractor shall be responsible for the in-prison treatment phase only. The maintenance of contracts with aftercare providers will remain with the NJDOC, as will the assignment of inmates to particular community facilities.

The NJDOC will maintain the primary responsibility of identifying, referring and placing appropriate, eligible offenders (see NJAC 10A). The bidder shall assist in this responsibility as outlined in Section xx ___name___. Therefore, the placement of offenders who do not meet time eligibility criterion falls under the concern of the NJDOC. In addition, there are certain institutional/administrative reasons that an offender may be removed from the program prior to completion. The bidder, however, shall have responsibility of motivating, engaging and retaining appropriately referred and placed offenders to maintain the treatment course to completion.

Participant Selection Process/Eligibility Requirements

The eligibility criteria for Therapeutic Community placement are based on research and standards. NJDOC NJAC sets forth the eligibility criteria as follows:
10A:24-2.5 Therapeutic Community Program

(b) The criteria for initial referral and/or assignment to a T.C. program require inmates to:

1. Have an A.S.I. evaluation score of five or above, or similar results from an equivalent clinical screening and assessment instrument, or have been determined to be appropriate for placement as a result of the file review assessment process;

2. Have sufficient time, at the time of placement, to complete the T.C. program, which is a minimum of nine months to a maximum of 40 months prior to his or her parole eligibility date or earliest release date; and

3. Be currently classified as full minimum custody status or be within one year of eligibility for full minimum custody status pursuant to 10A:9-4, Eligibility criteria for reduced custody consideration.

Note that all eligible participants are those sentenced to state prison and are primarily at least 18 years of age.

Again, the identification, referral and placement of offenders in programming are the responsibility of the NJDOC as guided by NJAC 10A:24. The bidder shall assist the NJDOC in the identification of clinically appropriate candidates as outlined in Section __**_____. The bidder shall also be required to track and maintain record of the category of offenders placed in and discharged from the program including appropriate

referrals, administrative discharges, behavioral discharges, withdrawals, etc. (see Section __**_____).

Participant Participation/Exclusions/Removals

An offender who declines to accept assignment to the Therapeutic Community treatment program will not be subject to disciplinary action. NJDOC NJAC sets forth the protocol in this area as follows:

10A:24-2.5 Therapeutic Community Program

(c) Discharge from a T.C. program for behavioral maladjustment or refusal to participate shall result in:

1. Removal from the program; and

2. Mandatory loss of reduced custody status via application of the objective classification scoring instrument "I-1" override code (see 10A:9-2.12), and the inmate shall remain ineligible for consideration for any custody status lower than medium custody until after a T.C. program is successfully completed.

(d) Inmates discharged from a T.C. program due to behavioral maladjustment or a refusal to participate shall be permitted to apply for program reconsideration after a minimum of 30 calendar days have elapsed from the date of discharge.

It is the bidder's responsibility to act with the NJDOC in the removal of Therapeutic Community placed offenders who are not in comport with program 'cardinal rules' or display behaviors or is involved in activities that are disruptive to program operations, or engages in prohibited acts as defined in NJAC 10A: 4 Inmate Discipline.

Matters of program related discipline shall be handled by the bidder through the program design; however, those areas that represent violations of NJDOC inmate rules and regulations are to comply with NJDOC policies and procedures for the issuance of inmate charges. In the latter case, the bidder shall prepare and submit the appropriate inmate charge documentation in compliance with NJDOC policies and in coordination with NJDOC prison administration and custody.

The bidder shall track program refusal, withdrawals and behavioral discharges for the purpose of re-engaging the client after a set period of time has elapsed, currently 30 days.

Institutional Setting/Segregation

For all institutional settings, every effort will be made by the NJDOC to provide a distinct space for the program to keep Therapeutic Community participants separate from the general population as prescribed by research and standard. This includes housing, meals, recreation and vocational/educational training.

The bidder shall monitor the segregation issue and communicate with the NJDOC any concerns in this area. The bidder shall additionally work through the Office of Drug Programs in the resolution of areas where segregation is not occurring.

Required Model Components

All program activities are opportunities for clinical intervention. The bidder shall include the following essential programmatic components in its operation of the prison-based Therapeutic Community (note: the proposal shall address each of these issues and document the approach to be taken as outlined in Section 4.2):

Program Phases

The literature clearly indicates that maximum effectiveness occurs when the participant is exposed to Therapeutic Community treatment for a period of nine to twelve months. During this duration, the bidder shall ensure that the program participants are provided the opportunity to progress through three stages of treatment – orientation, primary treatment and residential re-entry. The bidder shall track progress in treatment and employ testing and other measures to ensure proper phase progression.

Programming Hours

The contractor shall offer programming during the hours of 7:00 am and 9:00pm weekdays and 7:00 am to 5:00pm weekends, (within institutional restrictions).

Treatment Planning

The bidder shall implement the treatment planning process within seven (7) calendar days of the receipt of a new participant including the development of an initial treatment plan. The bidder shall also complete the master treatment plan within ten (10) calendar days of the completion of the orientation phase.

Progress in Treatment

The bidder shall utilize the clinical assessments, Therapeutic Community Client Assessment Inventory, Client Assessment Summary and Staff Assessment Summary based on the fourteen domains of behavior/attitudes to track and measure clinical progress in treatment (see - - *Measuring Client Clinical Progress in Therapeutic Community Treatment – The Therapeutic Community Client Assessment Inventory, Client Assessment Summary and Staff Assessment Summary*, Kressel, De Leon, Palij & Rubin, Journal of Substance Abuse Treatment, Vol. 19 – no. 3, October 2000).

The bidder shall administer the first set of such measures as a baseline within seven (7) calendar days of program admission and every month thereafter while the offender is participating in the program. The bidder shall maintain the documentation as part of the clinical file.

Other Clinical Assessments

The bidder shall implement other clinical assessments to ensure that participant treatment needs are identified and met. These are as identified by the bidder and shall include for example, motivation, stages or recovery, etc.

Critical Program Activities

All activities and interventions of the Therapeutic Community are structured to address a multitude of socialization and psychological needs of the program participant and to further their process of recovery. The bidder shall provide the model based critical programmatic/clinical activities including:

Highly structured and pre-planned daily morning meetings to energize/motivate the community. Run by a senior participant, the meeting shall include (but not be limited to) a thought/word for the day for participant input/reflection, songs, jokes or skits and other activities to promote positive feelings and identify negative behaviors.

For the morning meeting, as well as all other meetings, seminars, groups, etc., the bidder shall ensure that all who attend can see and hear the information to maximize participation.

House meetings held in the evening for the conducting of the business of the Therapeutic Community (residents and staff to attend).

General meetings attended by program participants and staff to address behavior issues or other incidents that threaten the community as a whole.

Daily interaction (meals, recreations, holiday observances, etc.) to cultivate a sense of community mission. These interactions will foster self/mutual help to effectuate change.

Daily seminars conducted by participants, staff and guests covering material such as clinical/life skills issues (anger management, decision making, conflict resolution, physical/mental health services), current events, academic and current culture topics, special population themes (HIV, parenting, ethnic specific), etc. The participant run seminars should be conducted on the “act as if” concept to develop a positive attitude.

Appropriate educational and vocational services provided by NJDOC based on the assessment of participant needs in this area (the treatment contractor will coordinate with the NJDOC to work with the institutional programs to provide these necessary skills). To enhance job readiness, the programs should strive for the achievement of a minimum of a GED education upon completion. At a minimum, each participant should have competent job skills in order to achieve proper employment.

Community groups and probes in the Therapeutic Community context. The primary community group is the encounter group. The contractor shall implement the encounter group in a way that encourages maximum participation and allow for the healthy expression of feelings by participants. Multiple groups can occur at the same time to limit the size taking into account location and scheduling issues. All groups are to have a staff member in attendance at all times. The group may be led, facilitated or at least observed by staff with assistance from senior participants where appropriate.
Individual counseling sessions for every participant to address issues of treatment planning, program adjustment, stress or personal issues concerning outside affairs or problems with disclosure of especially sensitive information.

Minimum Service Hours

The bidder shall provide a minimum of 20 hours per week per participant in direct treatment services inclusive of the program activities listed within Section 3.2.8.6 Critical Programming Activities. The bidder shall maintain proper documentation of the services required in this section.

House Structure

Each program participant will be required to have a job function within the community. All job functions are to serve a clinical purpose of developing appropriate attitudes and belief systems.
The status of the function will be based on progress within treatment. The hierarchy of job functions and responsibilities including, house chores, clerical duties, expediting, etc is the foundation of the program's community structure. The bidder shall ensure that the structure is properly assigned, managed and maintained.

Visual Representation of the Program

As indicated in the above section, there shall exist within the Therapeutic Community, a. The bidder shall display in a prominent location a "structure board" indicating all of the participants' level within the program structure

Therapeutic Community sayings/slogans promoting pro-social values and behavior including personal and community responsibility, peer support, honesty, self esteem and all other forms of right living shall also be displayed by the bidder in the program area.

Participant and Staff Roles

Program participants must actively participate in all program activities. The bidder shall ensure program participation and take necessary action to remedy limited or failure to participate of assigned offenders. The bidder shall make it clear to residents that they are actively participating in their treatment not passively 'being treated'. This will enhance participant confidence in their ability to manifest change.

Residents, especially those with more senior status, should engage in positive peer pressure, including confrontation and feedback, to bring about behavior change. In addition, program participants should be aware of other participants' treatment goals to foster the practice of mutual self help within the community. The bidder shall facilitate this process.

While bidder staff shall maintain the highest authority in the program setting, some control should be given to the participants to allow a sense of ownership in the program. This must occur within the boundaries of the NJDOC and the treatment program rule structure.

The bidder staff shall encourage participants to utilize the "Therapeutic Community tools" learned through the treatment process. Staff members are to act as role models as well as authorities and interact both formally and informally with the participants. Participant self-disclosure of personal issues and observations about the community shall be encouraged.

Negative behaviors will be addressed immediately by peers. However, staff, supervisors and program participants should be involved in remedial actions as well as distribution of privileges.

Clinical Documentation

Staff shall maintain a detailed case file including group and progress notes. The documentation shall be consistent with treatment standards, and reviewed and approved by clinical supervision. The records need to be clear in the treatment activity and/or assessment, well organized and current in information. The bidder shall additionally safeguard all clinical files in compliance with any and all confidentiality laws, regulations and/or guidelines.

At no time shall the bidder distribute or otherwise grant access to the clinical documentation for any purpose without formally notifying, requesting and justifying the access through the NJDOC, Office of Drug Programs. Although the records are under the supervision of the bidder, all program generated documents including the clinical documentation referenced in this section are the property of the NJDOC.

The bidder shall retain all records on site, those of current residents as well as program discharges of participants while programming under the awarded contract unless otherwise instructed by the NJDOC.

Transition to Continuum

The in-prison Therapeutic Community is the first phase of the NJDOC continuum of care. As such all program completions should be eligible for and be placed in community corrections at the completion of the program. The bidder shall facilitate the movement of the offender to the next phase.

In this regard, the bidder shall:

1. Identify any outstanding legal issues (detainers) and assist the offender in resolution prior to community release;

2. Assist in the preparation of the community release application package and work with the institutional community release coordinator in the resolution of issues;

3. Time the submission of the application in order to move the offender to the next continuum phase as close to in-prison program completion within departmental and institutional constraints;

4. Track the status of the completed application packages and report the information to the Office of Drug Programs on a periodic basis (see Section 3.xx Data Requirements);

Program Discharge - Completions

The bidder shall prepare individualized discharge documentation including a clear and supported description of the progress in treatment and the remaining issues needing further address as the offender moves to the next continuum phase. The documentation shall also make recommendation for the level of continued care identified for the specific case. The bidder as represented by the clinical supervision of the program (Program Director or Clinical Supervisor) shall certify the discharge documentation.

Staffing/Personnel Matters

It is critical that the bidder ensures that all staff hired under the contract present the requisite experience, knowledge, training and education in order to fulfill the requirements contained within. Staff shall embrace the Therapeutic Community philosophy and understand the role model, facilitator, counselor, community manager and authority functions.

Staff Complement

There are two key elements of proper program staffing as follows:

1. Staff to Client Ratio. The model requires a minimum of one clinical staff for every 20 participating clients. The full staffing complement shall be constructed to ensure this minimum coverage. The caseloads shall reflect the minimum ratio and be the primary responsibility of the line counselor staff as opposed to program supervisors. The bidder shall, however, utilize all clinical staff including supervisory staff to meet the minimum ratio should the program experience counselor vacancies.

2. Structure. Each institutional location shall have one Program Director to oversee and manage the program and one Administrative Assistant to provide administrative support. The bidder shall additionally assign one Clinical Supervisor to each sub-unit within the institution. The counseling staff shall be comprised of two hierarchical levels (Counselor I and II), approximately half of each related to the caseload requirement. The final position shall be the Counselor Trainee. The trainee position will be assigned to each institutional sub-unit and shall be under the supervision of unit management. At all times the Counselor Trainee is to be closely supervised and have a reduced caseload.

Appendix A provides the required staffing matrix based on the current NJDOC complement of programs and bed space.

The bidder is also encouraged to develop internship relationships with the area colleges and universities to build a potential staffing pool. As with the trainee positions, all interns must be highly supervised in their work activities related to the program.

Coverage/Schedule

As outlined in 3.2.8.2 Programming Hours: The contractor shall offer programming during the hours of 7:00 am and 9:00pm weekdays and 7:00 am to 5:00pm weekends, (within institutional restrictions). Staff schedules shall be configured to meet this requirement.

All full time contractual staff shall be on-site for a period of at least 40 hours per week excluding a meal period. Part time staffing will only be temporarily allowed if proper justification is provided and approval is granted by the NJDOC. On-call staff (24 hours per day) shall also be available in emergency situations.

Any leave outside of the annual allotment of sick time or vacation must be approved by the NJDOC prior to the leave taking place (example: training, conferences, etc.). In all cases, program coverage and the direct delivery of services to participants as specified within this document is the priority of the bidder.

In addition, program coverage similar to that of weekends is required on State of New Jersey holidays. Should the state close business offices for weather or other emergency situations, or institutional priorities require limit or no access to the program location, the bidder will be permitted to seek reimbursement for employees scheduled to report for duty on those days. In the case of a budget shutdown or other similar financial event, the bidder will not be reimbursed for any related missed days.

Appendix 2. Talbot Hall Assessment Report Sample

Name: State #:

D.O.B: Unit:
Admission Date: Room:
A-304:

Note: The assessment data presented below should not be considered in isolation from other information. The background material on the resident's family and other historical information are based on a combination of interview answers, reports from the resident's counselor, and file review. The LSI-R and SASSI results are actuarial and expert predictions based upon the results of the tests. The SASSI and LSI-R results reflect characteristics of people who have provided test response patterns similar to those of the current individual. The SASSI and LSI-R results are presented in an affirmative manner, but they are probabilistic. The reader should examine all the data presented in the assessment summary and look for general trends and put limited weight on any one statement.

INTRODUCTION:

MR. XXX IS A 22 YEAR-OLD AFRICAN-AMERICAN MALE WHO IS SERVING A XXX. HE PLANS TO SEEK PLACEMENT IN THE XXX COUNTY AREA UPON HIS RELEASE.

CRIMINAL HISTORY:

The criminal history includes an overall summary of the resident's juvenile (if available/applicable) and adult record.

AS AN ADULT, HE HAS XX ARRESTS AND X CONVICTIONS. HE HAS XX PREVIOUS ADULT CRIMINAL CONVICTIONS. RESIDENT HAS X PROBATION VIOLATION (SEE INTERVIEW FOR FURTHER DETAILS). RESIDENT HAS XX PAROLE VIOLATIONS THE PRESENT STATE TERM OF INCARCERATION REPRESENTS HIS XthAS AN ADULT.

HE REPORTS THAT HE HAS NEVER/BEEN IN A COMMUNITY RELEASE PROGRAM. RESIDENT HAS/NO DOMESTIC VIOLENCE HISTORY. RESIDENT HAS/NO ESCAPE HISTORY. RESIDENT HAS/NO A JUVENILE RECORD (SEE INTERVIEW FOR FURTHER DETAILS).

RISK ASSESSMENT SUMMARY:

As part of the assessment process, the resident is administered a risk assessment tool to evaluate the resident's potential for recidivism, and the data can be used for treatment planning for the resident.

Level of Service Inventory-Revised: (LSI-R)

The LSI-R is a broad-based assessment covering a multidimensional set of well known criminogenic factors. The LSI-R yields an overall score that corresponds to the respondent's level of recidivism. The results of the LSI-R are separated into categories that include educational/vocational subscale, criminal history, and attitudes. The results of the LSI-R can be used for classification purposes and for treatment planning.

LSI-R Summary:

ON THE LSI-R TOTAL SCORE, MR. XXX EARNED A XX, WHICH PLACES HIM IN THE XXX RANGE FOR RECIDIVISM. HE WAS FOUND TO BE/NOT APPROPRIATE FOR HALFWAY HOUSE PLACEMENT HIS RISK OF RECIDIVISM WAS ESTIMATED AT XX%. ON THE LSI-R SUBCOMPONENTS, HE SCORED XX FOR CRIMINAL HISTORY, ALCOHOL/DRUG PROBLEM AND EMOTIONAL/PERSONAL.

SUBSTANCE ABUSE HISTORY AND SUMMARY OF THE SASSI RESULTS:

Substance Abuse Subtle Screening Inventory: (SASSI)

The SASSI is an effective instrument for detecting a substance abuse problem. Subscales measure the risk for legal and disciplinary problems and include measures of the degree of defensiveness and a validity check. Test items focus on related emotional, interpersonal, cognitive, social and psychological areas corresponding to different components of the disease of addiction.

SASSI Summary:

SASSI SCORES INDICATE A XXX PROBABILITY OF SUBSTANCE DEPENDENCE, A XXX RISK OF ACTING OUT, XXX EVIDENCE OF EMOTIONAL PAIN, XXX CLINICAL ISSUE OF DEFENSIVENESS, AND XXX EVIDENCE OF RANDOM RESPONDING.

Substance Abuse History:

MR. XXX ADMITS TO HAVING A SUBSTANCE ABUSE PROBLEM. HE REPORTS DRINKING ALCOHOL XXX FROM AGE XX TO X MONTHS BEFORE ARREST. SMOKING MARIJUANA X FROM AGE X TO X MONTHS PRIOR TO ARREST.
HIS CRIMINAL JACKET INDICATES SAME AS ABOVE, AS WELL AS SMOKING COCAINE X FROM AGE X TO X MONTHS PRIOR TO ARREST. RESIDENT ALSO REPORTS SNIFFING HEROIN OCCASIONALLY FROM AGE XX. FURTHERMORE, HE REPORTS COMPLETING XX MONTHS OF NU-VIEW THERAPEUTIC COMMUNITY PROGRAM WHILE IN ANADALE STATE PRISON IN XXXX.

MEDICAL/PSYCHIATRIC SUMMARY:

The medical/psychiatric history is based on a thorough file review and the resident's self-report. This section includes any overall significant medical problems they may have as well as any medications they are currently taking. In addition, the psychiatric history includes the following: psychiatric/psychological counseling, psychiatric hospitalizations, psychiatric medication, mental illness diagnosis and suicide attempts.

Medical/Psychiatric History:

MR. XXX DENIES ANY PAST OR PRESENT MEDICAL OR PSYCHIATRIC HISTORY. HIS CRIMINAL JACKET INDICATES THE SAME.

FAMILY LIFE SUMMARY:

As part of the structured interview and review of the file, data is gathered about the resident's family life including information about his family-of-origin and his current family configuration. The family life history includes information about the resident's family support systems and any obstacles to the resident's recovery including a family history of substance abuse and criminality. The family system is represented by the use of a genogram, which is a schematic representation of the dynamic and static forces in effect as they pertain to an individual's family and other meaningful relationships.

Family history:

MR. XXX IS THE X BORN OF X CHILDREN. HIS PARENTS HAVE NEVER/BEEN MARRIED OR LIVED TOGETHER. HE REPORTS A NO/HISTORY OF SUBSTANCE ABUSE, AND A/NO HISTORY OF CRIMINALITY, DOMESTIC VIOLENCE OR SEXUAL ABUSE WITHIN HIS

FAMILY. MR. XXX REPORTS THAT HE HAS NEVER/BEEN MARRIED AND THAT HE HAS X CHILDREN FROM X PREVIOUS RELATIONSHIPS.

VOCATIONAL INTEREST SUMMARY:

The vocational summary information is derived from the results of the Wonderlic Personnel Test. The Personnel Test (WPT) is a brief, timed (12 minutes), self-administered test that measures an individual's ability to learn, understand instructions, and solve problems. The results of the WPT can be interpreted to help understand the person's cognitive abilities relative to the tasks of an occupation. For example, the WPT results can be used to discover if a person can utilize written instructions at a job. The Self-Directed Search (SDS) is a self-administered and a non-timed instrument. It is a self-scored career inventory that utilizes Dr. Holland's six-factor personality theory as the basis of its scoring and interpretation.

The vocational interest summary also includes the resident's work history and intended employment after his release.

Wonderlic Personnel Test: (WPT)

MR. XXX WAS ADMINISTERED THE WONDERLIC PERSONNEL TEST ON XX/XX/XXXX. HE EARNED A TOTAL SCORE OF XX POINTS OUT OF A POSSIBLE XX POINTS. FOR HIS JOB POTENTIAL, THIS SCORE INDICATES XX. FOR HIS TRAINING POTENTIAL, THIS SCORE INDICATES THAT HE NEEDS TO BE XX. SOME OCCUPATIONAL SUGGESTIONS ARE A XX AND XX.

Self-Directed Search: (SDS)

MR. XXX OBTAINED THE CODE TYPE **XX**. THIS CODE TYPE INDICATES THAT HE HAS XX. SOME OCCUPATIONAL SUGGESTIONS ARE XX.

MR. XXX REPORTS THAT THE LAST JOB THAT HE HELD WAS AS A XXX. IN ADDITION, HE HAS WORKED AS A XXX, XXX AND AS A XXX. HE PLANS TO WORK AS A XXX IN XXX, NJ UPON HIS RELEASE.

EDUCATIONAL SUMMARY:

The educational summary information is derived from the results of the Wonderlic Personnel and Basic Skills Tests. The Basic Skills Test (WBST) is a brief, timed instrument that measures the individual's job-related math and language skills. A rough grade point level is derived from the scores.
The educational summary also provides information about the individual's last grade completed, any special education experience, and grade retention.

Wonderlic Basic Skills Test : (WBST)

MR. XXX WAS ADMINISTERED THE WONDERLIC BASIC SKILLS TEST ON XX/XX/XXXX. HIS VERBAL SKILLS TEST RESULTS INDICATE THAT HE ACHIEVED A X GRADE LEVEL AND HIS QUANTITATIVE SKILLS TEST RESULTS INDICATE THAT HE ACHIEVED A >X

GRADE LEVEL. IN ADDITION, HIS SKILLS COMPOSITE TOTAL SCORE INDICATES THAT HE ACHIEVED A X GRADE LEVEL.

MR. XXX REPORTS THAT HE COMPLETED THE X GRADE, BUT OBTAINED HIS GED INXXXX AND HAS XX COLLEGE CREDITS. HE REPORTS NO/HISTORY OF SPECIAL EDUCATION, NO/HISTORY OF GRADE RETENTION (SEE INTERVIEW FOR FURTHER details). HE PLANS TO XX UPON HIS RELEASE.

Behavior and Unit Performance Evaluation:

A Talbot Hall resident's behavior, attitude, and work competency is carefully monitored and evaluated. Merits are given for exceptional behavior and performance. Inappropriate behaviors may result in demerits. Senior counselors, the assessment team, and facility staff participate in continuous case review, which includes:

A. THERAPEUTIC ISSUES
-ability/merits and inability/demerits to follow rules and regulations
-attitude towards residents, facility staff, clinical/educational personnel, and family or visitors
B. WORK EVALUATION
-resident work performance rating results-as recorded by senior counselors
-competence/understanding
-productivity/efficient
-attitude towards employment, co-workers, and supervisors

BEHAVIORAL SUMMARY:

MR. XXX'S 1-MONTH BEHAVIORAL EVALUATION WAS RATED AS ABOVE AVERAGE. MR. XXX 2-MONTH BEHAVIORAL EVALUATION WAS RATED AS ABOVE AVERAGE AS WELL.

MR. XXX HAS 3 INSTITUTIONAL INFRACTIONS NOTED WITHIN HIS CRIMINAL JACKET. (PLEASE SEE INTERVIEW FOR FURTHER INFORMATION).

MR. XXX WAS COOPERATIVE THROUGHOUT THE ASSESSMENT INTERVIEW. HE PRESENTED HIMSELF IN AN APPROPRIATE MANNER. MR. XXX MAINTAINED DIRECT EYE CONTACT. HE WAS WELL GROOMED. HIS AFFECT WAS APPROPRIATE WHEN DESCRIBING HIS CURRENT CHARGES. FURTHERMORE, MR. XXX DID NOT MINIMIZE HIS CRIMINAL CHARGES, AND TOOK RESPONSIBILITY FOR HIS CRIMINAL ACTIVITIES.

PERSONALITY ASSESSMENT INVENTORY :

The Personality Assessment Inventory (PAI) is a self-administered, objective inventory of adult personality designed to provide information on critical clinical variables. The PAI contains 344 items which comprise 22 nonoverlapping full scales : 4 validity, 11 clinical, 5 treatment consideration, and 2 interpersonal scales. The PAI was developed and standardized for use in the clinical assessment of the individuals in the age range of 18 through adulthood. The PAI full-scale profile includes an

Aggression Treatment Scale that focuses on characteristics and attitudes related to anger, hostility, and aggression. In addition, the supplemental PAI indexes include a Violence Potential Index.

PAI Summary:

MR. XXX WAS ADMINISTERED THE PAI ON XX/XX/XXXX. THE VALIDITY SCALES OF THE TEST RESULTS INDICATES THAT THE TEST IS VALID. HIS AGGRESSION TREATMENT FULL SCALE WAS WITHIN THE XX RANGE. HIS VIOLENCE POTENTIAL INDEX WAS WITHIN THE XX RANGE AS WELL. FURTHERMORE, HIS RESPONSES SUGGESTS NO/EVIDENCE THAT HE MOTIVATED TO PORTRAY HIMSELF AS XX. THIS TEST SHOULD BE VIEWED WITH CAUTION.

PLACEMENT AND TREATMENT RECOMMENDATIONS:

THE COLLECTIVE INFORMATION FROM THE ASSESSMENT FINDINGS INDICATES THAT MR. XXX IS/NOT AN APPROPRIATE CANDIDATE FOR A COMMUNITY RELEASE PROGRAM. THE DATA FROM HIS ASSESSMENT SUGGEST THAT HE SHOULD BE CONSIDERED A **XX RISK** CASE FOR THE FOLLOWING REASONS: HIS XX SUBCOMPONENT SCORES ON LSI-R, HIS HIGH SASSI SCORE AND XX PERFORMANCE WHILE ON PROBATION. IN ADDITION, MR. XXX HAS A NO/HISTORY OF VIOLENCE THAT NEEDS TO BE CONSIDERED WHEN HE IS BEING PLACED.

HIS POSITIVE FACTORS INCLUDE THE FOLLOWING: XX, MR. XXX APPEARS TO BE MAKING XX HERE AT THE FACILITY. RESIDENT STATES THAT HE HAS/NOT OBTAINED HIS GED, HAS/DOES NOT HAVE EMPLOYMENT AWAITING HIM UPON HIS RELEASE AND SHOWED/ DID NOT SHOW INSIGHT INTO CRIMINAL BEHAVIOR.

GIVEN THE ASSESSMENT FINDINGS, IT IS RECOMMENDED THAT MR. XXX RECEIVE THE FOLLOWING SERVICES AT THE COMMUNITY RELEASE PLACEMENT:

1. A XX LEVEL OF SUBSTANCE ABUSE TREATMENT IS RECOMMENDED TO ADDRESS MR. XXX'S TREATMENT NEEDS. AFTER HE HAS COMPLETED THE TREATMENT PHASE, XX TREATMENT WOULD BE BENEFICIAL.

RECOMMENDATION FOR OTHER SERVICES:

1. VOCATIONAL TRAINING AND JOB PLACEMENT ARE/NOT NEEDED TO ADDRESS MR. XXX'S EMPLOYMENT NEEDS.

2. ANGER MANAGEMENT COUNSELING TO ADDRESS HIS HISTORY OF VIOLENCE ARE/NOT NEEDED.

3. INDIVIDUAL/GROUP COUNSELING TO ASSIST MR. XXX IN CHANGING PEOPLE, PLACES AND THINGS ARE/NOT NEEDED

4. COGNITIVE BEHAVIORAL THERAPY TO ADDRESS MR. XXX'S PAST AND PRESENT CRIMINAL CONVICTIONS ARE/NOT NEEDED.

Appendix 3. Talbot Hall Resident Assessment Interview Sample

D= Resident denies
NF= No Information was found within the criminal file
N/A= Non-applicable

IDENTIFYING INFORMATION

Name: State I.D. #:

D.O.B.: Unit/Room#/Bed:

Date of Entry to Talbot Hall: XX/XX/XX

A-304 (Y/N):

Age: Social Security #:

Marital status: Ethnicity/Race:

Release address and release phone #:

With whom and relationship to the resident: N/A

Does the person(s) residing at the release address have a Criminal and/or substance abuse history (If Yes, specify which one or both): N/A

C4?, If yes, where from, length of stay, reason for return and outcome (guilty or not guilty): D

CRIMINAL BACKGROUND

Present Offenses (specify type, degree and the year the sentence began): 2ND DEGREE ELUDING, 4TH DEGREE RESISTING ARREST, 3RD DEGREE DRUG POSSESSION, MONETARY OBLIGATION, 3RD DEGREE THEFT, 4TH DEGREE AGGRAVATED ASSAULT, 3RD DEGREE UNLAWFUL WEAPONS POSSESSION, 3RD DEGREE RECEIVING STOLEN PROPERTY. 3/23/01

Maximum and minimum length of sentence: 12Y, 2Y MIN.

Resident's version of the Present Offenses, only if they are assaultive felonies and/or domestic violence offenses: Indicate weather or not the resident takes responsibility for the crime(s), does he display remorse and guilt, etc.?:

Give a brief summary of the crime report only if the offenses are assaultive felonies/violent and or domestic violent offensive:

ADULT CRIMINAL HISTORY *ONLY*

Number of total arrests: Number of total convictions:

List previous types of convictions:

Number of State Prison Incarcerations (if multi-state terms, please specify # and state, also note any federal terms):

Any detainers currently in effect?, If yes, how many and what for?

Age of first arrest ever (include juvenile if applicable):

Aliases noted in criminal jacket, yes or no?

Does the resident or the criminal jacket indicate any present or past gang affiliation, If yes, provide details:

Is there a history of domestic violence? If yes, provide details:

JUVENILE *AND* ADULT CRIMINAL HISTORY

Is there a juvenile record found within the criminal jacket, yes or no?

If yes, provide total number of arrests and convictions (if available) and note violent arrests:

Number of total arrests: Number of total convictions:

Number of total Assaultive Felony arrests: Number of total Assaultive Felony convictions:

Number of total institutional infractions and list actual charges:

Has the resident participated in any institutional programming/classes? If yes, provide details:

Number of total violations of probation: Number of total violations of parole:

Any technical violations? If yes, what for and when?

Ever arrested for a new crime while on probation and/or parole, yes or no?

Previous halfway house?, If yes, where, length of stay, and Outcome (i.e. paroled, returned etc., be specific):

Is there an escape history? If Yes provide details?

Any previous arrests or convictions for sexually related offences? If yes, provide resident/file details:

SUBSTANCE ABUSE/DEPENDENCE HISTORY

Resident admits/denies *Ever* having a substance abuse/dependence problem?
Substance(s) of choice, route, duration, and frequency:

Does the resident believe he would benefit from further substance abuse treatment?
Criminal jacket (pre-sentence investigation, psychological report, etc.) indicates the following documented substance abuse/dependence history:
Any substance abuse during 12 months *prior* to the current incarceration?, If yes, list substance(s) of choice, route, duration, and frequency:
Previous treatment(s)?, If yes, please specify the following: which program and which prison/jail, Length of treatment and which year(s), and the Outcome (i.e. completed, certificate, failed-why?):

MEDICAL AND PSYCHIATRIC BACKGROUND

Any present serious illness, If yes, type of illness and duration:
Taking any presently prescribed medication, If yes, what type:

Any history of serious illness or injury, If yes, what type:
Ever sustained a serious head injury, (i.e. concussion, etc.), If yes, explain:
Ever received any psychological or psychiatric counseling, If yes, where, when and reason:
Psychiatric hospitalizations, If yes, where, when, and length of stay, reason for hospitalization:
Prescribed psychiatric medication ever? If yes, type, duration and reason:
Ever been diagnosed with a mental illness? If yes, which diagnosis and duration of illness:
Any history of suicide attempts? If yes, number of attempts, year (s) and method:

FAMILY HISTORY

Does the resident report a history of domestic violence between his parents?
Has anyone in his family ever been incarcerated?
Is there a history of sexual abuse within his family?
Is there a history of physical abuse within his family?

Is there a history of substance abuse within his family?

Does the resident receive any visits from his family? If yes, from whom and how often:

EMPLOYMENT HISTORY

Employed at all during the 12 months *prior* to the current incarceration?, If yes, how many months and which type of employment?
If not employed, how long unemployed:
Ever collected unemployment, disability or welfare as an adult, yes or no?
Ever fired from a job?, If yes, how many times and why:
List previous types jobs while out in the community and any job skills the resident possesses:
Work planned after release, If yes, position and where:

Ever enlisted in the military? If yes, which branch, duration and type of discharge:

EDUCATION HISTORY

Highest grade *completed* (include college and vocational training, if applicable):
*G*ED, If yes, obtained which year?
Special education history, yes or no?
Grade retention, If yes, what grade(s) and reason(s):
If quit or expelled from school, list reason(s):
Elementary school maladjustment, If yes, types of problems:
Any future educational plans?, If yes, please describe:

CURRENT SITUATION AT TALBOT HALL

Senior counselor: Structured job?, If yes, position held:
Demerits, If yes, how many?
Merits, If yes, how many?
Does resident feel they should have been classified to Talbot Hall and/or do they feel they have benefited since they have been here? If yes, how benefited?

RELIGION

Resident claims a specific religion?, If yes, which religion:
Attend services at Talbot hall, If yes, how often:
Does the resident plan to attend services while NOT incarcerated, If yes, how often:

LEISURE/RECREATIONAL ACTIVITIES/PEERS

Participation in organized leisure/recreational activities during 12 months *prior* to the current incarceration?, If yes, list type and frequency of activities:
Does the resident feel that he could make better use of their time while out in the community, yes or no?:
List the resident's support system when they are NOT incarcerated (also include outside of family):
BEHAVIORAL SUMMARY

Presenting appearance (basic grooming and hygiene):
Manner and approach to assessment (open, cooperative, candid, evasive, defensive, hostile, etc.):
Eye contact (appropriate, avoidant, etc.):
Thought process (alert, coherent, presence or absence of insight, remorse, intellectual ability/functioning, etc.):
Insight/Responsibility/Remorse into overall criminal behavior:
Mood and affect (appropriate, elevated, depressed, anxious, etc.):
Rapport (easy to establish, initially difficult but easier over time, difficult to establish, tenuous, easily upset, etc.):

Interviewer: Date of Interview: XX/XX/XX

Note: The preceding information was obtained through collateral review which included the resident's self-report and information within the criminal jacket.

Appendix 4. Theoretical Considerations for the Four-Class Solution

Table A-4.1 illustrates the shared cases of each class associated with the two potential class solutions. The three- and four-class solutions both presented strong possible model options across the main fit indices (i.e. the BIC and the LMR). When comparing the value added of an additional class, a first step in that process is to compare the shared cases across the differing class solutions. Table A-4.1 presents a cross-tabulation of the three- versus the four-class solution based on subjects' predicted probability. It is apparent that, (with some minor percentage deviations) both solutions consistently identified cases into Classes 1 and 3. The addition of the four-class solution provided a near 60-40 split of the three-class solution's Class 2.

A-4.1 Shared Cases of Three versus Four-Class Solution (N=566)

		Three-Class Solution			Total
		Class 1	Class 2	Class 3	
Four-Class Solution	Class 1	**97%**	0%	0%	11%
	Class 2	3%	**59%**	4%	26%
	Class 3	0%	2%	**91%**	45%
	Class 4	0%	**39%**	5%	18%
Total (count)		62	228	276	566

When examining between-class differences of these two classes (see Table 6.4), there were several commonalities among Classes 2 and 4. Specifically, common rankings of these classes include: Maximum Sentence Length, Mandatory Minimum, Convicted of Drug Offense, Prior Incarceration, Daily Use, Substance Use in 12 Months Prior to Incarceration, History of Mental Health Issues, LSI-R Recidivism Probability, Community Corrections Violation History, and the PAI – Violent/Aggressive Ranking. However, several significant between-class differences were identified, namely: Age, Age of First Arrest, ASI Score, Age of First Drug Use,

Juvenile Convictions, Indicated Benefit from Further Treatment, Prior Treatment, Employed in 12 Months Prior to Incarceration, WPT 87th Percentile, GED/high School Diploma, Violent Criminal History, Prior Community Corrections Attempts, Family Convictions or Substance Abuse History.

After comparing the between-class differences it was found that item dissimilarities not only out number the similarities but those dissimilarities are also thought to predict return outcomes and are conceptually distinctive in the matching process. In particular, based on *Central Eight* risk predictor domains outlined by Andrews, Bonta and Wormith (2006), Class 2 is predicted to have a high return risk while Class 4 should have a lower risk of failure. Table A-4.2 further illustrates class differences based on the Central Eight risk domains. The domains and corresponding risk descriptions were taken from Andrews Bonta and Wormith (2006, p.11). The study associated items are those measures included in the LCA which correspond to the Central Eight risk domains and descriptions. The column "Class 2 vs. 4 Significant Difference" represent those items in which Classes 2 and 4 significantly differ and the last column "Class Predicted Higher Risk" identifies which class rates as higher risk on the items in which the two classes were significantly different. Nearly 77 percent of the items associated with the risk domains are found to significantly differ between Classes 2 and 4. Furthermore, all items in which the two classes differed significantly indicated higher risk for Class 2 (or a lower risk for Class 4).

A-4.2 Central Eight Table Major Risk Factors
Andrews, Bonta and Wormith, 2006 (p.11)

Risk Domain	Risk Description	Study Associated Item	Class 2 vs. 4 Significant Difference	Class Predicted Higher Risk
History of Antisocial Behavior	Early and continuing involvement in a number and variety of antisocial acts in a variety of settings	1. AGE 1ST ARREST 2. JUVENILE CONVICTIONS 3. PRIOR INCARCERATIONS 4. PRIOR COMMUNITY CORRECTIONS 5. VIOLATION HX	1. AGE 1ST ARREST 2. JUVENILE CONVICTIONS 3. PRIOR INCARCERATIONS 4. PRIOR COMMUNITY CORRECTIONS	1. Class 2 2. Class 2 3. Class 2 4. Class 2
Antisocial Personality Pattern	Adventurous pleasure seeking, weak self-control, relentless aggressive	1. VIOLENT CRIMINAL HX 2. PAI VIOLENT OR AGGRESSIVE	1. VIOLENT CRIMINAL HX	1. Class 2
Antisocial Cognition	Attitudes, values, beliefs and rationalizations supportive of crime; cognitive emotional states of anger, resentment and defiance; criminal verses reformed identity; criminal versus anticriminal identity	1. INDICATED BENEFIT FROM TREATMENT	1. INDICATED BENEFIT FROM TREATMENT	1. Class 2
Antisocial Associates	Close association with criminal others and relative isolation from anticriminal others; immediate social support for crime	1. FAMILY CONVICTIONS OR SUBSTANCE ABUSE HISTORY	1. FAMILY CONVICTIONS OR SUBSTANCE ABUSE HISTORY	1. Class 2
Family and/or marital	Two key elements are nurturance and/or caring and monitoring and/or supervision	NO MEASURES	NA	NA
School and/or Work	Low levels of performance and satisfactions in school and/or work	1. EMPLOYED 12MON PRIOR 2. WPT LOWER 87th PERCENTILE 3. GED OR HS DIPLOMA	1. EMPLOYED 12MON PRIOR 2. WPT LOWER 87th PERCENTILE 3. GED OR HS DIPLOMA	1. Class 2 2. Class 2 3. Class 2
Leisure and/or Recreation	Low levels of involvement or satisfactions in anticriminal leisure pursuits	NO MEASURES	NA	
Substance Abuse	Abuse of alcohol and/or other drugs	1. AGE 1ST DRUG USE 2. ASI SCORE 3. PRIOR TREATMENT 4. DAILY USE 5. SUBSTANCE USE 12 MON PRIOR TO INCARCEARTION	1. AGE 1ST DRUG USE 2. ASI SCORE 3. PRIOR TREATMENT	1. Class 2 2. Class 2 3. Class 2

To further understand the differences in the three versus four-class solution comparisons of the interaction terms used to identify the matching guidelines were examined. Table A-4.3 displays the results of the comparisons. Hazard ratios for Classes 1 and 3 are nearly identical, which was expected given the shared cases of these

classes demonstrated in Table A-4.1. The biggest difference in hazard ratios is observed in Class 2, specifically the “Class 2 * Cognitive-Behavioral” interaction term; where a positive match effect, indicated by a significantly small hazard ratio, was observed in the four-class solution. This effect is reversed in the three-class solution. Given the negative matching effect shown for the “Class 4 * Cognitive-Behavioral” interaction term, one can assume that this reversal of effect for the three-class solution’s “Class 2 * Cognitive-Behavioral” interaction is due to the merging of Classes 2 and 4 (demonstrated in Table A-4.1). As shown in Figure 6.5, Class 2, in the four-class solution, presents a greater need for substance abuse treatment than Class 4. This need is ameliorated by its combination with Class 4 in the three-class solution, as its positive match to CB interventions is not only removed but reversed. This finding further indicates the theoretically confounding properties of the three-class solution. In light of the theoretical implications with regard to the conceptually distinct return risk, need and matching findings associated with Classes 2 and 4, the four-class solution was selected over the three-class solution.

A-4.3 Three versus Four-Class Solution Interaction Summary Table

Interactions	4-Class Model Hazard Ratio	3-Class Model Hazard Ratio
Rehabilitation		
Class 1 * Rehabilitation	**2.227***	**2.216***
Class 2 * Rehabilitation	1.297	1.235
Class 3 * Rehabilitation	**.590***	**.542***
Class 4 * Rehabilitation	1.001	--
Cognitive-Behavioral		
Class 1 * Cognitive-Behavioral	1.833	1.612
Class 2 * Cognitive-Behavioral	**.496***	**1.477+**
Class 3 * Cognitive-Behavioral	1.225	1.424
Class 4 * Cognitive-Behavioral	1.348	--
12-Step		
Class 1 * 12-Step	**.404***	**.460***
Class 2 * 12-Step	1.410	1.220
Class 3 * 12-Step	1.173	1.240
Class 4 * 12-Step	.756	--
Therapeutic Community		
Class 1 * Therapeutic Community	**.253**	**.255**
Class 2 * Therapeutic Community	1.708	1.180
Class 3 * Therapeutic Community	2.301	1.458
Class 4 * Therapeutic Community	.583	--

Bolded ratios indicate that the addition of the interaction term created a significant change in the Cox regression overall model chi-square (p<.1).
+p<.1 *p<.05 **p<.01 ***p<.001

Appendix 5. Drug and Alcohol Program Treatment Inventory (DAPTI)

The Drug and Alcohol Program Treatment Inventory

This Inventory focuses on substance abuse programs' treatment orientations. The following questions ask about your program's (1) treatment goals and (2) treatment activities. The word "patients" is used throughout the form; it refers to patients, clients, or members in the program (that is, not to staff).

Please answer each question about your program as best you can. Thank you for your help.

Please fill in the information below.

Date: _____

Name of program: _____

Types of problems treated in program
(e.g. substance abuse, schizophrenia) _____

How long has this program been in operation? _____

Sponsoring agency or name of corporation (if any): _____

Your name: _____

Your program's phone number: _____

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(For more information, contact Rudolf H. Moos, Ph.D.)

DAPTI.INV.doc
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Part I: TREATMENT GOALS

Please indicate your program's **emphasis** on the following treatment goals (a treatment goal is a short-term, targeted outcome of treatment). Please use the following categories:

1.	None or very little:	Very little or no attention is paid to this goal.
2.	Somewhat, but not specific focus:	This may be a beneficial goal, but staff do not specifically focus on it in treatment.
3.	Considerable, a focus of treatment:	An important goal that is emphasized in treatment.
4.	A major goal, primary focus of treatment:	Primary focus of treatment, our program strongly emphasizes this goal.

Please respond to each item as it applies to your program. For example, if you find a goal that is desirable, but your program does not have a defined activity that directly targets that outcome, please rate it "0" (None or Very Little). Or, if only a subcomponent or ancillary service is addressed to a goal, the appropriate rating is "1" (Somewhat, but Not Specific Focus).

Treatment is Designed to Help Patients:	None or Very Little 0	Somewhat, But Not Specific 1	Considerable, a Focus of Treatment 2	Primary Focus of Treatment 3
1. Accept that they are powerless over the abused substance	☐	☐	☐	☐
2. Gain a clearer sense of their own values	☐	☐	☐	☐
3. Learn strategies to cope with a slip or relapse	☐	☐	☐	☐
4. Gain new insight into personal relationships	☐	☐	☐	☐
5. Develop better work habits	☐	☐	☐	☐
6. Identify and monitor effects of major psychotropic medications	☐	☐	☐	☐

DAPTI - A3

Treatment is Designed to Help Patients:	None or Very Little 0	Somewhat, But Not Specific 1	Considerable, a Focus of Treatment 2	Primary Focus of Treatment 3	
7. Decrease withdrawal symptoms	☐	☐	☐	☐	7
8. Strengthen marital and family relationships	☐	☐	☐	☐	
9. Turn their lives over to a higher power to achieve or maintain sobriety	☐	☐	☐	☐	
10. Strengthen their sense of self-worth and trust in others	☐	☐	☐	☐	10
11. Develop more confidence in coping with high-risk situations for relapse	☐	☐	☐	☐	
12. Become aware of hidden conflicts and desires that underlie substance abuse problems	☐	☐	☐	☐	
13. Learn to structure their time more effectively	☐	☐	☐	☐	
14. Accept that they suffer from both substance dependence and a psychiatric illness, if they are diagnosed as such	☐	☐	☐	☐	
15. Stabilize physiological	☐	☐	☐	☐	15
16. Help spouse and family members to support patients' efforts to change	☐	☐	☐	☐	
17. Establish/strengthen their relationship with God (as defined by the patient)	☐	☐	☐	☐	
18. Accept personal responsibility for their decisions and actions	☐	☐	☐	☐	18

DAPTI - A4

Treatment is Designed to Help Patients:	None or Very Little 0	Somewhat, But Not Specific 1	Considerable, a Focus of Treatment 2	Primary Focus of Treatment 3	
19. Improve communication and interpersonal skills	☐	☐	☐	☐	19
20. Understand how substance dependencies develop	☐	☐	☐	☐	20
21. Acquire new job skills	☐	☐	☐	☐	
22. Comply with a prescribed medication regimen	☐	☐	☐	☐	
23. Learn about the effects of different chemicals on the body	☐	☐	☐	☐	
24. Work with spouse or family to identify and change situations that trigger substance use	☐	☐	☐	☐	
25. Develop their spiritual self	☐	☐	☐	☐	25
26. Adopt a more disciplined life-style	☐	☐	☐	☐	
27. Improve social skills such as making requests, disagreeing with another's opinions, or denying unreasonable requests	☐	☐	☐	☐	
28. Understand the important role of childhood events in the development of substance dependence	☐	☐	☐	☐	
29. Obtain part- or full-time employment	☐	☐	☐	☐	
30. Discriminate between prescribed psychotropic medications and alcohol or drugs	☐	☐	☐	☐	30

DAPTI - A5

Treatment is Designed to Help Patients:	None or Very Little 0	Somewhat. But Not Specific 1	Considerable, a Focus of Treatment 2	Primary Focus of Treatment 3	
31. Improve their physical health and well being	☐	☐	☐	☐	31
32. Alter marital patterns in a way that encourages sobriety	☐	☐	☐	☐	
33. Be more aware of and better able to express their current feelings	☐	☐	☐	☐	
34. React to social confrontation more appropriately	☐	☐	☐	☐	
35. Appreciate the importance of regular participation in 12-step meetings	☐	☐	☐	☐	35
36. Cope with urges and cravings without using alcohol or drugs	☐	☐	☐	☐	
37. Accept that recovery is a life-long process	☐	☐	☐	☐	
38. Identify situations that put them at high risk for relapse	☐	☐	☐	☐	
39. Develop specific plans to cope with high-risk situations	☐	☐	☐	☐	
40. Abstain completely from drugs and alcohol	☐	☐	☐	☐	40

71-78 TG
79-80 01

Part II. TREATMENT ACTIVITIES AND APPROACHES

Please indicate how descriptive each statement is of the treatment activities in your program:

1. Not at all like our program:	This activity or approach is rarely, if ever, part of treatment in our program.
2. Somewhat like our program:	This activity or approach is an occasional or supplementary part of treatment in our program.
3. A lot like our program:	This activity or approach is an important part of treatment in our program.
4. Major feature of our program:	This activity or approach is essential; our staff devote much of their effort to it.

Many of the activities listed here may seem generally applicable to your program. However, please think about the extent to which the activity is specifically a part of your treatment program.

In this program:	Not At All Like Our Program 0	Somewhat, Like Our Program 1	A Lot Like Our Program 2	Major Feature of Our Program 3	
1. Patients discuss topics such as acceptance or turning over to a higher power	☐	☐	☐	☐	1
2. Patients participate in daily physical exercise, if able	☐	☐	☐	☐	
3. Staff help patients identify alternative responses to using drugs or alcohol	☐	☐	☐	☐	
4. Staff help patients identify the unconscious meaning of their thoughts and feelings	☐	☐	☐	☐	4

DAPTI - A7

In this program:

		Not At All Like Our Program 0	Somewhat, Like Our Program 1	A Lot Like Our Program 2	Major Feature of Our Program 3	
5.	Patients practice writing resumes and/or job interviews	☐	☐	☐	☐	5
6.	Patients with a psychiatric illness are exposed to less confrontation and increased social support	☐	☐	☐	☐	
7.	A psychiatrist evaluates new patients	☐	☐	☐	☐	
8.	Spouses or family members participate in counseling	☐	☐	☐	☐	
9.	Staff and patients discuss ways of making contact with one's higher power	☐	☐	☐	☐	
10.	Patients are assigned chores or duties as part of treatment	☐	☐	☐	☐	10
11.	Patients identify specific situations and emotional states when they are likely to use drugs or alcohol	☐	☐	☐	☐	
12.	Patients are encouraged to discuss difficulties related to family and friends	☐	☐	☐	☐	
13.	Staff teach patients skills like menu planning, shopping, and cooking	☐	☐	☐	☐	
14.	Staff are more tolerant of relapses among patients who also have a psychiatric illness	☐	☐	☐	☐	14

DAPTI - A8

In this program:	Not At All Like Our Program 0	Somewhat, Like Our Program 1	A Lot Like Our Program 2	Major Feature of Our Program 3	
15. Staff primarily treat the adverse physical consequences of drug and alcohol abuse	☐	☐	☐	☐	15
16. Patients' families attend educational classes about substance abuse	☐	☐	☐	☐	
17. Patients read from the Big Book of AA	☐	☐	☐	☐	
18. Patients receive demerits or punishment as a consequence for problem behavior	☐	☐	☐	☐	
19. Staff help patients rehearse assertiveness or communication skills	☐	☐	☐	☐	
20. Staff emphasize working through repressed experiences or traumas	☐	☐	☐	☐	20
21. Patients who need it are provided job readiness counseling	☐	☐	☐	☐	
22. Staff encourage patients who also have a psychiatric illness to develop strategies for managing both of their disorders	☐	☐	☐	☐	
23. Staff base treatment plans on DSM-IIIR diagnoses	☐	☐	☐	☐	
24. Spouses or other family members are involved in treatment decisions	☐	☐	☐	☐	24

DAPTI - A9

In this program:	Not At All Like Our Program 0	Somewhat, Like Our Program 1	A Lot Like Our Program 2	Major Feature of Our Program 3	
25. Patients work through the 12-steps of AA/NA	☐	☐	☐	☐	25
26. Patients receive privileges for taking more responsibility in the program	☐	☐	☐	☐	
27. Patients plan and rehearse alternative responses to situations in which there is a high risk of relapse	☐	☐	☐	☐	
28. Staff examine patients' life histories for evidence of loss of, or damage to, an important relationship	☐	☐	☐	☐	
29. Staff assess patients' job skills	☐	☐	☐	☐	
30. Psychotropic medications are used to manage psychiatric symptoms associated with substance abuse	☐	☐	☐	☐	30
31. Staff emphasize the physiological basis of substance abuse	☐	☐	☐	☐	
32. Patient's spouses or other family members are involved in treatment	☐	☐	☐	☐	
33. Staff teach patients methods for managing anger	☐	☐	☐	☐	
34. Patients set and pursue specific goals for learning new social skills	☐	☐	☐	☐	34

DAPTI - A10

In this program:	Not At All Like Our Program 0	Somewhat, Like Our Program 1	A Lot Like Our Program 2	Major Feature of Our Program 3	
35. Patients practice active listening (e.g. repeat, rephrase, and reflect communications)	☐	☐	☐	☐	35
36. Staff arrange classes or seminars on drug and/or alcohol abuse	☐	☐	☐	☐	
37. Patients read books and written materials about drug and/or alcohol abuse	☐	☐	☐	☐	
38. Staff provide education on substance abuse in a lecture or classroom format	☐	☐	☐	☐	
39. Staff teach patients about substance abuse	☐	☐	☐	☐	
40. Patients often lead groups	☐	☐	☐	☐	
41. Patients watch films and videotapes about drug and/or alcohol abuse	☐	☐	☐	☐	41

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Appendix 6. Policy and Services Characteristics Inventory (PASCI)

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Department of Veterans Affairs Health Care System, Palo Alto, CA 94304
(for more information, contact Christine Timko, Ph.D.)

This form is one part of the Residential Substance Abuse and Psychiatric Programs Inventory (RESPPI) for describing inpatient and residential substance abuse and psychiatric treatment programs. It should be used with the RESPPI Handbook for Users, which provides an overview of the five parts of the RESPPI, instructions for organizing data collection, and item definitions. The term "resident" refers to patients or clients who live in the program (i.e., not to live-in staff).

The following questions ask about (1) the financial and entrance arrangements, (2) the types of rooms in the program, (3) the way in which the program is organized, and (4) the services provided for residents. Please fill in the information requested about the program. Answer the questions as fully as possible, making additional comments as necessary.

Please fill in the information below

Date: _____

Name of program:
_____

Type of treatment program (check one): _____ Substance abuse
_____ Psychiatric
_____ Both substance abuse and psychiatric

How long has this program been in operation?
_____

Name of facility in which program is located
(if applicable):
_____

Type of facility (e.g., general hospital,
psychiatric hospital, group home):
_____

Sponsoring agency or name of corporation:
_____

Your name: _____

SECTION I: FINANCIAL AND ENTRANCE ARRANGEMENTS

1. What is the minimum per diem fee
(i.e., the lowest daily fee you will
accept)?……_____

2. What is the maximum per diem fee
(i.e., the highest daily fee that you can
charge)?……_____

3. What is the average per diem
fee?…….._____

1

2

4. Are fees set on a sliding scale based on residents' ability to pay?……
Yes No

5. Must an individual be ambulatory to be admitted as a resident?…….
Yes No

6. Is there a minimum age requirement?……..
Yes No

6a. If so, what is
it?……_____

7. Is there a maximum age limit?…….
Yes No

7a. If so, what is
it?……_____

8. Does this program accept:

8a. Men?……
Yes No

8b. Women?……..
Yes No

9. Is there a waiting list for this program at the present time?……...
Yes No

9a. If so, about how many people are on it?……_____

9b. On average, about how long do residents have to wait to get into the program?……._____

10. What is the total capacity of the program (i.e., how many residents can live here)?……..._____

11. How many residents are living in the program at the present time?…._____

SECTION II: TYPES OF ROOMS AND FEATURES AVAILABLE

1. How many residents have their own bedroom at the present time?……._____

2. What is the largest number of residents who share one room or dormitory unit at the present time?……_____

3. How many residents have their own bathroom at the present time?…._____

4. What is the largest number of residents who share one bathroom area at the present time?……_____

1

2

5. Do residents have their own mailboxes?……..
   Yes No

6. Are there locks on all the bathroom doors?……..
   Yes No

SECTION III: ORGANIZATIONAL POLICIES

PART I: GENERAL INFORMATION

1. In what type of facility is this program located? (please check one)

   1 Psychiatric or mental hospital

   2 General hospital

   3 Group home

   4 Personal care home

   5 Other (please specify)

_____

2. Which of the following best describes the ownership and management of the facility?

1 Nonprofit organization

2 Department of Veterans Affairs

3 Other federal facility

4 State, city, or county

5 Large corporation

6 Small corporation

7 Individual or partnership

8 Other (please specify)

_____

3. Does this program receive income from:

1

2

Department of Veterans Affairs?…….
Yes No

Other federal agencies?……
Yes No

State, city, or county agencies?……...
Yes No

Private benefactor(s)?……..
Yes No

Charity organization(s)?……..
Yes No

Private insurance?……
Yes No

Residents' out-of-pocket payments?……
Yes No

Other? (please specify) _____
Yes No

4. If this is a residential community care program, is it licensed?…….
Yes No

4a. If so, by whom? _____

5. If the program is housed within a hospital, is the hospital accredited by the JCAHO (Joint Commission on Accreditation of Health Care Organizations)?……..
Yes No

6. Does this program contract services with the 1
2
Department of Veterans Affairs?…….
Yes No

7. Do new residents receive a handbook that outlines procedures, available services, etc.?……
Yes No

7a. If so, has the handbook been revised or updated in the past two years?……..
Yes No

8. Is there a handbook for staff that outlines policies, operating procedures, treatment approaches, etc.?…….
Yes No

8a. If so, has the handbook been revised or updated in the past two years?…….
Yes No

9. Is there an orientation program for new residents?……
Yes No

10. Is there an orientation program for new staff?……
Yes No

11. Are there formal staff meetings?…….
Yes No

11a. If so, how often?

1 Every day

2 Once a week or more, but not every day

3 Once or twice a month

4 Less than twice a month

12. Are there volunteers who help out in this program?……..
Yes No

12a. If so, is there an orientation program 8
for volunteers?…… N/A Yes
No

13. Is this program formally affiliated with a university training program for psychiatric practitioners or other mental health professionals?……..
Yes No

PART II: RULES RELATED TO PERSONAL POSSESSIONS AND BEHAVIORS

This section includes questions about the rules and expectations for residents. Check the responses that best describe the policies and procedures in this program. Please use the following categories:

Encouraged: This kind of behavior or activity is encouraged.

Allowed: This kind of behavior is allowed, no special attempt is made to change it.

Discouraged: An attempt is made to discourage or stop this kind of behavior.

Intolerable: This type of behavior is not permitted. A resident who persisted in this type of behavior would have privileges taken away or be asked to leave the program.

	Encouraged	Allowed	Discouraged	Intolerable
	1	2	3	4
1. Smoking cigarettes, cigars, or pipes inside the program….				
2. Having one's own furniture in the room……..				
3. Moving furniture around in the room……..				
4. Keeping a small pet (bird, fish, etc.)……				
5. Skipping breakfast to sleep late				
6. Closing the door to one's room..				
7. Locking the door to one's room..				
8. Locking up personal items in a place such as a locker or safe…				

9. Having a TV in one's room…...

10. Having a radio or stereo in ones room……

11. Hanging pictures or decorating one's room…….

	Encouraged	Allowed	Discouraged	Intolerable
	1	2	3	4
12. Preparing or cooking one's own meal in the kitchen…...				
13. Going out in the evenings….				
14. Spending private time with a spouse or partner in one's room……..				
15. Spending the weekend away from the program……..				

PART III: EXPECTATIONS RELATING TO FUNCTIONAL/MENTAL ABILITY

Please indicate whether or not individuals with the following levels of functioning are
accepted into this program.

1 2

1. Serious impairment in judgment
(e.g., acts inappropriately much of the time)…….
Yes No

2. Serious mental confusion or disorientation……
Yes No

3. Seriously affected by paranoid delusions……..
Yes No

4. Seriously affected by hallucinations
(e.g., auditory, visual)……
Yes No

5. Inability to make one's own bed……
Yes No

6. Danger to self (including suicidal) or others…….
Yes No

7. Serious physical illness…….
   Yes No

8. Under the influence of alcohol and/or illicit drugs……
   Yes No

PART IV: POLICIES RELATED TO SUBSTANCE USE

1. Is a resident asked to leave the program the first time 1
2
he or she drinks alcohol when it is not allowed?…….
Yes No

2. Is a resident asked to leave the program the first time he or she uses illicit drugs?……..
Yes No

3. Are residents tested for alcohol use while they are in this program?..
Yes No

3a. If so, under what conditions?

1 Residents are tested only if staff suspect a problem

2 Testing is done randomly

3 All residents are tested on a regular basis

4 Other (please specify)_____

4. Are the following methods used to test for alcohol use?

4a. Uninalysis……..
Yes No

4b. Blood test……..
Yes No

4c. Breathalyzer…….
Yes No

4d. Saliva test strip…….
Yes No

4e. Other (please specify)_____
Yes No

5. Are residents tested for drug use while they are in this program? ……
Yes No

5a. If so, under what conditions?

1 Residents are tested only if staff suspect a problem

2 Testing is done randomly

3 All residents are tested on a regular basis

4 Other (please specify)_____

6. Are the following methods used to test for drug use?

6a. Urinalysis……..
Yes No

6b. Blood test……..
Yes No

6c. Other (please specify)_____
Yes No

PART V: RULES RELATED TO POTENTIAL PROBLEM BEHAVIORS

For Part V, please use the following categories to describe the program's policies with
respect to the behaviors and activities listed below.

Allowed: This kind of behavior is allowed, no special attempt is made to change it.

Discouraged: An attempt is made to discourage or stop this kind of behavior.

Intolerable: This type of behavior is not permitted. A resident who persisted in this type of behavior would have privileges taken away or be asked to leave the program.

	Allowed	Discouraged	Intolerable
	1	2	3
1. Refusing to participate in programmed activities……			
2. Disrupting therapy sessions, community meetings, or other organized group activities……..			
3. Refusing to take prescribed medication…			
4. Walking around the building or grounds at night…….			

5. Leaving the building during the evening without letting anyone know…….

6. Refusing to bathe or clean oneself properly

7. Damaging or destroying property (e.g., tearing books or magazines)…….

8. Verbally threatening a staff member…….

	Allowed	Discouraged	Intolerable
	1	2	3
9. Threatening to attempt suicide……..			
10. Engaging in other self-destructive behaviors (e.g., burning or cutting oneself)…….			
11. Making sexually suggestive remarks or gestures…….			
12. Engaging in sexual activity with other residents……			
13. Engaging in sexual activity with a visiting spouse or partner……..			

PART VI: RESIDENT PARTICIPATION

1 2

1. Are any of the residents hired and paid to work within the facility?
   Yes No

2. Do any of the residents have other types of chores or duties (unpaid) that they perform in the facility?……
   Yes No

3. Is there a residents' council (i.e., a group of residents who are elected or volunteer to represent other residents at meetings related to the general operation of the program)?…….
   Yes No

4. Are there regular community, house, or unit meetings for residents (i.e., general meetings open to all residents in the program) other than those that may be conducted as part of therapy?…….
   Yes No

5. Other than a residents' council, are there additional resident committees (or committees that include residents as members?….
   Yes No

6. Are there resident alumni meetings?……
Yes No

7. Is there a newsletter for residents?……
Yes No

7a. If so, how often is it printed?

1 Once a week or more

2 Twice a month

3 Once a month

4 Less than once a month

7b. Is the newsletter written primarily by residents?…….
Yes No

8. Is there a bulletin board that is used by residents?……..
Yes No

9. Are rules and regulations posted on the bulletin board or in another convenient public location?……
Yes No

PART VII: DECISION MAKING

For Part VII, please indicate the extent to which staff and residents are involved in
policy decisions in the following areas.

	Staff/Adm. basically decide by themselves	Staff/Adm. decide, but residents have input	Residents decide, but staff have input	Residents basically decide by themselves
	1	2	3	4
1. Planning educational activities such as courses and lectures….				
2. Planning orientation activities for new residents……..				

3. Making rules about attendance at activities……

4. Planning daily or weekly menus

5. Setting mealtimes……..

6. Setting visitors' hours……

	Staff/Adm. basically decide by themselves	Staff/Adm. decide, but residents have input	Residents decide, but staff have input	Residents basically decide by themselves
	1	2	3	4
7. Deciding on the décor of public areas (e.g., pictures or plants)……				
8. Dealing with residents' complaints…….				
9. Deciding on residents' privileges……..				
10. Dealing with safety hazards…				
11. Selecting new residents……...				
12. Moving a resident from one bed or room to another……				
13. Deciding when a troublesome resident will be asked to leave				
14. Determining individual treatment plans……				
15. Planning for discharge and aftercare activities……...				

SECTION IV: TREATMENT, SERVICES, AND ACTIVITIES

PART I: TREATMENT

Please indicate which of the following treatment modalities are provided by this program and the approximate number of residents receiving each type of treatment in a TYPICAL WEEK.

Number of residents

	Is the treatment provided? 1	2	Number of residents who receive this treatment at least once in a TYPICAL WEEK
1. Assessment and diagnosis…….	Yes	No	_____
2. Crisis intervention…….	Yes	No	_____
3. Detoxification……	Yes	No	_____
4. Pharmacotherapy:			
4a. Medications……..	Yes	No	_____
4b. Electroconvulsive therapy (ECT)	Yes	No	_____
5. Individual counseling or psychotherapy	Yes	No	_____
6. Group counseling or psychotherapy…..	Yes	No	_____
7. Couples or family counseling……	Yes	No	_____
8. Psychoeducation:			
8a. For residents…….	Yes	No	_____
8b. For family members of residents	Yes	No	_____
9. Peer counseling……	Yes	No	_____
10. Social skills training……	Yes	No	_____
11. Daily living skills training……..	Yes	No	_____
12. Self-help groups or mutual support groups (e.g., AA or NA)…….	Yes	No	_____

	Is the treatment provided? 1	2	Number of residents who receive this treatment at least once in a TYPICAL WEEK
13. Physical therapy……..	Yes	No	_____

14. Occupational or recreational therapy.. Yes No _____

15. Work therapy or work training…… Yes No _____

16. Biofeedback…… Yes No _____

17. Discharge planning……. Yes No _____

18. How many patients have an individual treatment plan? _____

19. What is the average length of stay in this program? _____

20. Is there a maximum length of stay for residents in this program?…… Yes No

20a. If so, what is it?……. _____

21. Which of the following is the primary determinant of residents' length of stay?

1 The severity of the problem for which they are under treatment

2 The program has a fixed length of stay for all residents

3 Residents' ability to pay or willingness of insurance to continue coverage

22. Does this program provide aftercare services for residents? Yes No

23. Does this program use seclusion or restraints?…… Yes No

24. Is this a locked unit?…… Yes No

25. Which of the following best summarizes the primary treatment philosophy of this program?

1 Medical model

2 Therapeutic community (T.C. model)

3 Cognitive-behavioral therapy or social learning model

4 Twelve-step model

5 Psychosocial rehabilitation model

6 Other (please specify)_____

PART II: SERVICES

Please indicate which of the following services are available to residents through this program and the approximate number of residents who use them at least once in a TYPICAL WEEK.

	Is the service available? 1	2	Number of residents who receive this treatment at least once in a TYPICAL WEEK
1. Emergency room services (general or psychiatric)…….	Yes	No	_____
2. Regularly scheduled doctors' hours for medical care……	Yes	No	_____
3. Doctor-on-call for medical care……	Yes	No	_____
4. Regularly scheduled nurses' hours for medical care……	Yes	No	_____
5. Psychiatrist and/or psychologist on call	Yes	No	_____
6. Regularly scheduled psychiatrists' and/or psychologists' hours……..	Yes	No	_____

7. Assistance in using prescribed medications…… Yes No _____

	Is the service available? 1	2	Number of residents who receive this treatment at least once in a TYPICAL WEEK
8. Religious or spiritual counseling……...	Yes	No	_____
9. Legal advice or counseling……	Yes	No	_____
10. Vocational/educational counseling…..	Yes	No	_____
11. Nutrition counseling…….	Yes	No	_____
12. AIDS screening and counseling……..	Yes	No	_____
13. Assistance with spending money, banking, or other financial matters….	Yes	No	_____
14. Assistance with cleaning room……	Yes	No	_____
15. Assistance with preparing meals…….	Yes	No	_____
16. Assistance with personal care or grooming…….	Yes	No	_____
17. Barber or beauty service…….	Yes	No	_____
18. Assistance with laundry…….	Yes	No	_____
19. Assistance with shopping……..	Yes	No	_____
20. Providing transportation (e.g., van) or assistance using public transportation	Yes	No	_____

PART III: ADDITIONAL SERVICES AND PROCEDURES

1 2

1. Is breakfast served each day?……...
   Yes No

   1a. If so, do residents help prepare breakfast?……
   Yes No

1b. Between what hours is breakfast served?……
_____

2. Is lunch served each day?……
Yes No

2a. If so, do residents help prepare lunch?……
Yes No

2b. Between what hours is lunch served?…….
_____

3. Is dinner served each day?……..
Yes No

3a. If so, do residents help prepare dinner?……..
Yes No

3b. Between what hours is dinner served?……
_____

4. Is there a fairly set time at which residents are awakened in the morning?……..
Yes No

4a. If so, what time?

1 6:00 or earlier 3 7:01 to 8:00

2 6:01 to 7:00 4 After 8:00

5. Are there certain times during which residents are expected to take baths or showers?……
Yes No

6. Is there a fairly set time at which residents are expected to go to bed?
Yes No

6a. If so, what time?

1 9:00 or earlier 3 10:01 to 11:00

2 9:01-10:00 4 After 11:00

1

2

7. Is there a "curfew," (i.e., a time by which all residents must be in the program in the evening)?……...
Yes No

7a. If so, what time?

1	9:00 or earlier	3	10:01 to 11:00
2	9:01 to 10:00	4	After 11:00

8. Are some areas of the building in which the program is located locked or out of bounds to residents at times (e.g., the dining area)?…….
Yes No

PART IV: ACTIVITIES ORGANIZED BY THE PROGRAM

For each activity listed below, indicate how frequently it is offered and about how many residents, on average, participate in the activity each time it is offered. Only those activities organized by the program (i.e., by staff and/or residents) should be counted here.

Number of residents who participate each time	Very rarely or never	Once or twice a month	Once or twice a week	Three times a week or more
1. Exercise or other physical fitness activity (e.g., walking, swimming, weight lifting)……. _____	1	2	3	4
2. Organized recreation (e.g., softball, basketball volleyball)…….. _____				

3. Films or movies……..

   _____

4. Classes or lectures
   (other than those
   given as therapy)……..

   _____

5. Cards or other games
   (e.g., bingo)……..

   _____

6. Religious services…….

   _____

7. Social hour
   (e.g., coffee hour)…….

   _____

8. Arts and crafts……..

   _____

9. Club or social group…….

   _____

10. Discussion groups
    (other than those held
    as part of therapy)…….

    _____

Appendix 7. Logistic Regression Models

Table 8.21 Logistic Regression Base Model Year Four Returns (N=559)

	Model 0	
Covariate	**Logit**	**Odds Ratio**
Months in TC	.007	1.007
Race/Ethnicity	--	--
Black (ref)	--	--
Hispanic	.045	1.046
White	-.188	.829
	Negelkere R^2	**Model Chi-Square**
Model Fit	.002	.850

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.22 Logistic Regression Omnibus Facility Model Year Four Returns (N=559)

	Omnibus Model 1	
Covariate	**Logit**	**Odds Ratio**
Months in TC	.004	1.004
Race/Ethnicity	--	--
Black (ref)	--	1.000
Hispanic	.181	1.198
White	-.238	.788
Class Probability	--	--
Class 1 Probability	1.020	2.774**
Class 2 Probability	1.138	3.120***
Class 3 Probability	.769	2.159**
Class 4 Probability (ref)	--	1.000
Facility	--	--
Facility A (ref)	--	1.000
Facility B	-1.266	.282
Facility C	.498	1.645
Facility D	-.354	.702
Facility E	-1.763	.171
Facility F	-.393	.675
Facility G	-.149	.862
Facility H	-.222	.801
Facility I	.493	1.638
Facility J	-.079	.924
Facility K	-.499	.607
Facility L	-.689	.502
Facility M	1.116	3.052
Facility N	-.890	.410
Facility O	-.674	.510
Facility P	.696	.499
	Negelkere R^2	**Model Chi-Square**
Model Fit	.038	34.622*

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.23 Logistic Regression Omnibus Program Year Four Returns (N=559)

	Omnibus Model 2	
Covariate	**Logit**	**Odds Ratio**
Months in TC	.006	1.006
Race	--	--
Black (ref)	--	1.000
Hispanic	.143	1.154
White	-.245	.783
Class Probability	--	--
Class 1 Probability	.967	2.630**
Class 2 Probability	1.202	3.326***
Class 3 Probability	.809	2.246**
Class 4 Probability (ref)	--	1.000
Program	--	--
Rehabilitation (ref)	--	1.000
Cognitive-Behavioral	.298	1.347
12-Step	-.024	.976
Therapeutic Community	.044	1.045
	Negelkere R^2	**Model Chi-Square**
Model Fit	.044	17.507*

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.24 Logistic Regression Model Rehab * Class 1 Interaction Year Four Returns (N=559)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.005	1.006	.003	1.004
Race	--	--	--	--
Black (ref)	--	1.000	--	1.000
Hispanic	.169	1.184	.181	1.198
White	.23	1.271	.252	1.286
Class 1 Probability	.207	1.230	-.270	.764
Rehab	-.183	.833	-.326	.722
Rehab * Class 1	--	--	1.291	3.637*
	Negelkere R^2	**Model Chi-Square**	**Negelkere R^2**	**Chi-Square Change**
Model Fit	.006	1.572	.017	4.522*

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.25 Logistic Regression Model Rehab * Class 2 Interaction Year Four Returns (N=559)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.012	1.012	.012	1.012
Race	--	--	--	--
Black (ref)	--	1.000	--	1.000
Hispanic	.042	1.043	.038	1.039
White	-.232	.793	-.252	.777
Class 2 Probability	.505	1.657	.287	1.333
Rehab	-.156	.856	-.303	.739
Rehab * Class 2	--	--	.666	1.946
	Negelkere R^2	**Model Chi-Square**	**Negelkere R^2**	**Chi-Square Change**
Model Fit	.015	5.612	.020	2.530

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.26 Logistic Regression Model Rehab * Class 3 Interaction Year Four Returns (N=559)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.008	1.008	.007	1.007
Race	--	--	--	--
Black (ref)	--	1.000	--	1.000
Hispanic	.064	1.066	.040	1.041
White	-.165	.848	-.195	.823
Class 3 Probability	.079	1.082	.426	1.531
Rehab	-.182	.833	.210	1.233
Rehab * Class 3	--	--	-.903	.405*
	Negelkere R^2	**Model Chi-Square**	**Negelkere R^2**	**Chi-Square Change**
Model Fit	.005	1.239	.017	3.926*

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.27 Logistic Regression Model Rehab * Class 4 Interaction Year Four Returns (N=599)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.005	1.005	.005	1.005
Race	--	--	--	--
Black (ref)	--	1.000	--	1.000
Hispanic	.160	1.173	.157	1.170
White	-.182	.833	-.182	.833
Class 4 Probability	-.908	.403***	-.958	.384**
Rehab	-.161	.851	-.186	.830
Rehab * Class 4	--	--	.120	1.128
	Negelkere R^2	**Model Chi-Square**	**Negelkere R^2**	**Chi-Square Change**
Model Fit	.034	13.454*	.034	.053

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.28 Logistic Regression Model CB * Class 1 Interaction Year Four Returns (N=559)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.005	1.005	.005	1.005
Race	--	--	--	--
Black (ref)	--	1.000	--	1.000
Hispanic	.190	1.209	.190	1.210
White	.255	1.291	.255	1.290
Class 1 Probability	.238	1.269	.135	1.145
CB	.301	1.351	.257	1.293
CB * Class 1	--	--	.531	1.701
	Negelkere R^2	**Model Chi-Square**	**Negelkere R^2**	**Chi-Square Change**
Model Fit	.009	3.104	.011	.506

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.29 Logistic Regression Model CB * Class 2 Interaction Year Four Returns (N=559)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.012	1.012	.012	1.012
Race	--	--	--	--
Black (ref)	--	1.000	--	1.000
Hispanic	.037	1.038	.040	1.041
White	-.251	.778	-.264	.768
Class 2 Probability	.515	1.673*	.938	2.556**
CB	.285	1.329	.599	1.820**
CB * Class 2	--	--	-1.248	.287*
	Negelkere R^2	**Model Chi-Square**	**Negelkere R^2**	**Chi-Square Change**
Model Fit	.019	7.156	.034	6.241*

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.30 Logistic Regression Model CB * Class 3 Interaction Year Four Returns (N=559)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.007	1.007	.006	1.006
Race	--	--	--	--
Black (ref)	--	1.000	--	1.000
Hispanic	.056	1.057	.060	1.062
White	-.187	.829	-.176	.838
Class 3 Probability	.065	1.067	-.097	.908
CB	.287	1.333	.058	1.059
CB * Class 3	--	--	.530	1.700
	Negelkere R^2	**Model Chi-Square**	**Negelkere R^2**	**Chi-Square Change**
Model Fit	.008	2.510	.012	1.600

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.31 Logistic Regression Model CB * Class 4 Interaction Year Four Returns (N=559)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.004	1.004	.005	1.005
Race	--	--	--	--
Black (ref)	--	1.000	--	1.000
Hispanic	.156	1.169	.157	1.170
White	-.202	.817	-.211	.810
Class 4 Probability	-.920	.398***	-1.032	.356***
CB	.298	1.347	.223	1.250
CB * Class 4	--	--	.353	1.424
	Negelkere R^2	**Model Chi-Square**	**Negelkere R^2**	**Chi-Square Change**
Model Fit	.038	15.090**	.039	.402

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.32 Logistic Regression Model 12-Step * Class 1 Interaction Year Four Returns (N=559)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.004	1.004	.001	1.001
Race	--	--	--	--
Black (ref)	--	1.000	--	1.000
Hispanic	.191	1.210	.204	1.227
White	.245	1.278	.263	1.301
Class 1 Probability	.209	1.232	.584	1.793
12-Step	-.066	.936	.081	1.084
12-Step * Class 1	--	--	-1.104	**.332+**
	Negelkere R^2	**Model Chi-Square**	**Negelkere R^2**	**Chi-Square Change**
Model Fit	.003	.631	.011	**3.168+**

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.33 Logistic Regression Model 12-Step * Class 2 Interaction Year Four Returns (N=559)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.011	1.011	.011	1.011
Race	--	--	--	--
Black (ref)	--	1.000	--	1.000
Hispanic	.026	1.026	.031	1.031
White	-.256	.774	-.247	.781
Class 2 Probability	.527	1.693	.462	1.587
12-Step	-.092	.912	-.154	.857
12-Step * Class 2	--	--	.234	1.263
	Negelkere R^2	**Model Chi-Square**	**Negelkere R^2**	**Chi-Square Change**
Model Fit	.014	5.013	.015	.191

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.34 Logistic Regression Model 12-Step * Class 3 Interaction Year Four Returns (N=559)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.006	1.006	.006	1.006
Race	--	--	--	--
Black (ref)	--	1.000	--	1.000
Hispanic	.048	1.049	.037	1.037
White	-.186	.830	-.206	.814
Class 3 Probability	.073	1.075	.001	1.001
12-Step	-.053	.949	-.173	.841
12-Step * Class 3	--	--	.294	1.343
	Negelkere R^2	**Model Chi-Square**	**Negelkere R^2**	**Chi-Square Change**
Model Fit	.003	.218	.004	.416

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.35 Logistic Regression Model 12-Step * Class 4 Interaction Year Four Returns (N=559)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.003	1.003	.004	1.004
Race	--	--	--	--
Black (ref)	--	1.000	--	1.000
Hispanic	.145	1.156	.140	1.150
White	-.208	.812	-.218	.804
Class 4 Probability	-.930	.395***	-.853	.426**
12-Step	-.124	.883	-.050	.952
12-Step * Class 4	--	--	-.469	.626
	Negelkere R^2	**Model Chi-Square**	**Negelkere R^2**	**Chi-Square Change**
Model Fit	.033	13.021*	.034	.440

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.36 Logistic Regression Model TC * Class 1 Interaction Year Four Returns (N=559)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.004	1.004	.007	1.007
Race	--	--	--	--
Black (ref)	--	1.000	--	1.000
Hispanic	.185	1.203	.179	1.197
White	.243	1.276	.226	1.253
Class 1 Probability	.202	1.244	.326	1.385
TC	-.140	.870	.069	1.072
TC * Class 1	--	--	-.1886	*.152*
	Negelkere R^2	**Model Chi-Square**	**Negelkere R^2**	**Chi-Square Change**
Model Fit	.004	.706	.010	2.618+

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.37 Logistic Regression Model TC * Class 2 Interaction Year Four Returns (N=559)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.011	1.011	.012	1.012
Race	--	--	--	--
Black (ref)	--	1.000	--	1.000
Hispanic	.031	1.032	.009	1.009
White	-.247	.781	-.276	.759
Class 2 Probability	.516	1.676*	.434	1.544
TC	-.119	.888	-.452	.636
TC * Class 2	--	--	1.845	6.326
	Negelkere R^2	**Model Chi-Square**	**Negelkere R^2**	**Chi-Square Change**
Model Fit	.014	4.987	.020	2.455

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.38 Logistic Regression Model TC * Class 3 Interaction Year Four Returns (N=559)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.007	1.007	.008	1.008
Race	--	--	--	--
Black (ref)	--	1.000	--	1.000
Hispanic	.051	1.053	.054	1.056
White	-.182	.834	-.171	.843
Class 3 Probability	.073	1.076	.028	1.028
TC	-.137	.872	-.418	.658
TC * Class 3	--	--	.733	2.028
	Negelkere R^2	**Model Chi-Square**	**Negelkere R^2**	**Chi-Square Change**
Model Fit	.003	.370	.005	.844

+p<.1 *p<.05 **p<.01 ***p<.001

Table 8.39 Logistic Regression Model TC * Class 4 Interaction Year Four Returns (N=559)

	Model 1		Model 2	
Covariate	**Logit**	**Hazard Ratio**	**Logit**	**Hazard Ratio**
Months in TC	.004	1.004	.004	1.004
Race	--	--	--	--
Black (ref)	--	1.000	--	1.000
Hispanic	.149	1.161	.145	1.156
White	-.196	.822	-.201	.818
Class 4 Probability	-.912	.402***	-.859	.424**
TC	-.058	.944	.113	1.119
TC * Class 4	--	--	-.608	.545
	Negelkere R^2	**Model Chi-Square**	**Negelkere R^2**	**Chi-Square Change**
Model Fit	.032	12.689	.033	.432

+p<.1 *p<.05 **p<.01 ***p<.001

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Education

2010 **Ph.D., Criminal Justice**
Rutgers University
Newark, NJ
Specialization: Reentry and Substance Abusing Offenders

Dissertation Title: Matching Halfway House Interventions within a Continuum of Care: A Novel Use of Latent Class Analysis

2004 **Master of Arts, Criminal Justice**
Rutgers University
Newark, NJ

2002 **Bachelor of Arts, Sociology & Psychology**
University of Iowa
Iowa City, IA

Research Experience

November 2006-April 2010 ***Principle Investigator,*** Dissertation.

Project

- Treatment Matching for Re-Entering Substance-Abusing Offenders: A Novel Use of Latent Class Analysis
  - *Description* – Project utilizes latent class analysis to produce a matching strategy for substance-abusing offenders exiting prison and entering halfway house interventions in New Jersey

July 2008- Center for Court Innovation.
July 2010

Projects

- Senior Research Associate, Midtown Community Court (MCC) and Harlem Community Justice Center (HCJC)
  - *MCC Description* – First community court in the US, established in 1995; designed to provide on-site sanctions and interventions to address locally identified justice needs.
  - *HCJC Description* – Community court for the Upper Manhattan/East Harlem region, established in 2000; designed to provide programming and services to address community needs. Court projects include: Harlem Reentry Court, Harlem Housing Court, Juvenile Reentry Project, Attendance Court, Youth Court, Housing Resource Center, and Youth Court
  - *Responsibilities* – On-site researcher, providing progress reports of court and all provided interventions, data management and reporting of all court research activities; assist in grant development, writing and reporting activities
  - *Special Assignments* – Impact Evaluation of The Harlem Reentry Court (to be presented at the 2009 American Society of Criminology conference); Study of Upper Manhattan Parole Reentry; Harlem Reentry Graduation/Completer Study, Evaluation of Prostitution Programming; Study of Time Square Employment Programming.

July 2005- ***Senior Research Associate,*** National Development &
June 2008 Research Institutes, Inc.

Projects

- Effective Principles of Treatment (EPT)
  - *Description* - Multiyear, multimillion dollar National Institute of Drug Abuse (NIDA) Grant using meta-analytic procedures to examine the existing evidence of NIDA's 13 Principles of Effective Drug Treatment (1999)
  - *Responsibilities* – Identification, screening and coding of eligible studies; creation and management of study database; analysis of findings; reliability testing; co-authorship of two professional presentations (APHA & ASC); contributions in EPT final report to NIDA (Pearson et al., 2009)
  - Women's Prison Project
  - *Description* – Evaluation of Colorado in-prison Therapeutic Community for female offenders - sponsored by 3 year NIDA Grant

- *Responsibilities* – Analysis and co-authorship of 2 journal publications (Sacks et al., 2008, Sacks et al., 2008)
- Criminal Justice Drug Abuse Treatment Studies (CJ-DATS)
- *Description* – Lead center for: development and validating screening instrument for co-occurring disorders (CODSI); construction of National Criminal Justice Treatment Practices (NCJTP) Survey for Co-occurring disorders in criminal justice settings; multi-site examination of violence, HIV Risk and co-occurring disorders within offender populations
- *Responsibilities* – Analyses and co-authorship of two publications examining the relationships of mental health, substance use, violence and HIV risk (Pearson et al., 2009); assist in grant development and writing of CJ-DATS II
- Homeless Families Project
- *Description* – Evaluation of outpatient substance abuse treatment program for female offenders with families - sponsored by NIDA
- *Responsibilities* – Assist in multi-level analysis for final report

May 2005-
July 2006 ***Contributing Editor,*** Juvenile Correctional Mental Health Report

- *Description* – Bi-monthly publication examining the current research within the field of juvenile corrections focusing on youth with mental health issues
- *Responsibilities* – identifying, reviewing and authoring summary reports for publication

February 2003-
May 2005 ***Research Associate,*** Center for Justice and Mental Health Research School of Criminal Justice, Rutgers University, Newark, NJ

Projects

Mental Health and Juvenile Justice Project (MH/JJ)

- *Description* - Project includes 11 sites throughout NY State participating in a juvenile justice diversion program designed to prevent out of community placement of youth with mental health and substance abuse issues
- *Responsibilities* - Management of MH/JJ database and collection; quarterly reporting to the office of Children and Family Services; production of codebook and assessment forms; provide training to site personnel; presentation of project outcomes at conferences (ASC); supervise project staff; co-authorship of four peer-reviewed journal articles (Hamilton et al., 2005; Sullivan et al., 2007; Veysey, Grillo & Hamilton, 2005; Veysey & Hamilton, 2007)

Massachusetts Women and Violence Project

- *Description* - Project sought to evaluate domestic violence centers located within Franklin County, Massachusetts
- *Responsibilities* - Creating coding schematic for qualitative data analysis, database creation, and coauthoring a journal article based on the analyses (Stienus & Hamilton, 2005)

Teaching Experience

Rutgers University, Newark, NJ

Lecturer, *Department of Sociology*

Undergraduate Courses

Corrections, Summer 2005

- This course provides students with the basic understanding of the correctional system in America, which includes such topics as: a historical look at corrections, description of the current practices, and discussion of critical issues within the field

Introduction to Social Research II, Spring 2005

- This course gives an introduction to statistical methods used in sociological research, which includes such topics as: bivariate analysis, hypothesis testing, and SPSS instruction

Introduction to Social Research I, Fall 2004

- This course gives an introduction to research methods used in sociological research, which include such topics as: research designs, sampling, data gathering, analysis, and interpretation of research

Statistics Teaching Assistant*, School of Criminal Justice*

Graduate Courses

- *Responsibilities* - Led Statistics lab, instructing students on SPSS applications of course materials

Intermediate Statistics, Spring 2004 & Spring2005

- This course is designed to provide students with sufficient theoretical background and practical experience to enable them analyze and interpret multivariate interval and ratio-level social science data.

Introduction to Statistical Methods, Fall 2003 & Fall 2004

- This course is designed to provide students with the basic tools used in quantitative analysis in the field of criminal justice and serve as an introduction to the statistical issues involved in the design and logic of research.

Peer Reviewed Publications

Pearson, Frank, Cleland, Charles, Chaple, Michael, and **Hamilton, Zachary.** 2008. Substance Use, Mental Health Problems, and Behavior at Risk for HIV: Evidence from CJDATS. *Journal of Psychoactive Drugs*. 40 (4): 459-469.

Sacks, Joann, McKendrick, Karen, **Hamilton, Zachary,** Cleland, Charles, Pearson, Frank, Banks, Steven. 2008. Treatment Outcomes for Female Offenders: Relationship to Number of Axis I Diagnoses. *Behavioral Sciences and the Law*. 26 (4): 413-434.

Sacks, Joann, Sacks, Stanley, McKendrick, Karen, Banks, Steven, Schoenebergerm Marlies, **Hamilton, Zachary,** Stommel, Joe and Shoemaker, Joe. 2008. Prison Therapeutic Community Treatment for Female Offenders: Profiles and Preliminary Findings for Mental Health and Other Variables (Crime, Substance Use & HIV Risk). *Journal of Offender Rehabilitation.* 46 (3): 233-261

Veysey, Bonita and **Hamilton, Zachary.** 2007. Girls will be girls: Gender differences in predictors of success for diverted youth with mental health and substance use disorders. *Journal of Contemporary Criminal Justice*, 23(4): 341-362.

Sullivan, Chris and **Zachary Hamilton**. 2007. Exploring careers in deviance: a joint trajectory analysis of criminal behavior and substance use in an offender population. *Deviant Behavior*. 28: 1-27.

Sullivan, Chris, **Zachary Hamilton**, Bonita Veysey and Grillo, Michele. 2007. Reducing Out of Community Placement and Recidivism: Diversion of Delinquent Youth With Mental Health And Substance Use Disorders From The Justice System. *International Journal of Offender Therapy and Comparative Criminology.* 51 (5): 555-577.

Hamilton, Zachary, Chris Sullivan, Bonita Veysey, and Michele Grillo. 2007. Diverting Multi-Problem Youth from Juvenile Justice: Investigating the Importance of Community Influence on Placement and Recidivism. *Behavioral Sciences and the Law*. 25: 137-158.

Stienus, Vanja, and **Zachary Hamilton**. 2005. Social Roles of Victims of Domestic Violence. *Journal of Behavioral Health Services & Research*. 32(2).

Reports and Manuscripts

Hamilton, Zachary. 2010. Do Reentry Courts Reduce Recidivism? Results from the Harlem Parole Reentry Court. Center for Court Innovation. New York: New York. www.courtinnovation.org/_uploads/documents/Reentry_Evaluation.pdf

Pearson, Frank, Prendergast, Michael, Podus, Debora, **Hamilton, Zachary**, Vazan, Peter, Brownstein, Aaron, Calhoun, Stacy, Greenwell, Lisa, Greenwell, Hyun, Anna, and Kovalchik, Stephanie. 2009. *Final Report to The National Institute on Drug Abuse on Grant Number:* 1 RO1 DA016600 "Evidenced-based Principles of Treatment". National Institutes on Health, U.S. Department of Health and Human Services: Washington, D.C.

Veysey, Bonita, Grillo, Michelle and **Hamilton, Zachary.** 2005. Characteristics and Outcomes of Justice-Involved Girls with Mental Health and Substance Abuse Disorders. In Newman,C.C., C.J. Liberton, K. Kutash and R.M. Friedman (eds.). *The 17th Annual Research Conference Proceedings 'A System of Care for Children's Mental Health: Expanding the Research Base*. Tampa, FL: Louis de la Parte Institute.

Professional Presentations

"Treatment Matching for Re-Entering Substance-Abusing Offenders: A Novel use of Latent Class Analysis". **Zachary Hamilton.** American Society of Criminology. Philadelphia, PA: November 6, 2009.

"Evaluation of the Harlem Parole Reentry Court". **Zachary Hamilton.** American Society of Criminology. Philadelphia, PA: November 4, 2009.

"Drug Use and Crime Risk as Moderators of Outcomes in Drug Abuse Treatment Studies: Evidence from Meta-analysis". Michael Prendergast, Frank Pearson, PhD., Deborah Podus, PhD., Lisa Greenwell, PhD., Aaron Brownstein, MA, **Zachary Hamilton, MA**, Stephanie Kovalchik, MA, Peter Vazan, PhD. American Society of Criminology. Atlanta, GA: November 15, 2007.

"Evidence on multiple treatment services and reassessment of treatment plans" Frank S. Pearson, PhD , Michael Prendergast, PhD, Deborah Podus, PhD, Peter Vazan, PhD, **Zachary Hamilton, MA**, Lisa Greenwell, PhD. American Public Health Association Washington, D.C.: November 6, 2007.

"How Much Does It Really Cost? Examining the Costs of Incarceration." Neil Buchanan and **Zachary Hamilton**. Rutgers University Sentencing Symposium. Newark, New Jersey: April, 2005.

"Reducing Out of Community Placement in Multi-Problem Youth: The Importance of Local Context of Youth Treatment and Processing." Michele Grillo, **Zachary Hamilton**, Christopher Sullivan, and Bonita Veysey. Annual Meeting of the American Society of Criminology. Denver, Colorado: November, 2003.

"The Addictive Needs of Drug Users: Examining the Characteristics of Criminal Justice Referrals to Substance Abuse Treatment Programs." **Zachary Hamilton** and Christopher Sullivan. Annual Meeting of the American Society of Criminology. Denver, Colorado: November, 2003.

Invited Presentations

"Harlem Re-Entry" **Zachary Hamilton** and John Megaw. Delaware's Second Problem Solving Courts Conference. Dover Downs Hotel. December 8, 2009.

Workshops and Professional Training

Morris, Laura. *COMPAS Risk Assessment Training*. Three day seminar. Office of Court Administration. April 5-8, 2010.

Taymanns, Julianna. *Thinking for a Change* – Cognitive Behavioral Therapy Facilitator Training. Four day seminar. Center for Court Innovation. February 8-11, 2010.

Muthen and Muthen. *M-Plus programming work shop* – Categorical latent variable modeling. Two day seminar. John's Hopkins School of Public Health. March 13-14, 2007.

Muthen and Muthen. *M-Plus programming work shop* – Continuous latent variable modeling. Two day seminar. John's Hopkins School of Public Health. October 19-20, 2006.

Memberships and Honors

- Member of the American Society of Criminology (ASC), 2003 Present
- Rutgers School of Criminal Justice Student Senator, 2005
- Rutgers School of Criminal Justice Teaching Fellowship, 2003-2006

Computer Skills

- SPSS
- HLM
- M-Plus