The Pennsylvania State University

The Graduate School

College of the Liberal Arts

TESTING AN INTERACTIONIST THEORY OF TREATMENT

ENGAGEMENT IN A PRISON-BASED THERAPEUTIC COMMUNITY

A Thesis in

Criminology

by

Kimberly M. Davidson

Submitted in Partial Fulfillment
of the Requirements
for the Degree of

Master of Arts

December 2017

The thesis of Kimberly M. Davidson was reviewed and approved* by the following:

Derek Kreager
Professor of Sociology and Criminology
Thesis Adviser

Jeremy Staff
Professor of Criminology and Sociology

Jeffery Ulmer
Professor of Sociology and Criminology

Eric Baumer
Professor of Sociology and Criminology
Head of the Department of Sociology and Criminology

*Signatures are on file in the Graduate School.

Abstract

The prison-based therapeutic community (TC) is a promising drug and alcohol treatment program that emphasizes sobriety and desistance through group interaction and individual responsibility. While program evaluations have demonstrated positive results, the cognitive, behavioral, and social processes that define the prison-based TC, processes that ultimately separate those who desist from those who relapse, are largely absent from prior research. In particular, the TC model rests on the assumption that residents increase their treatment engagement and willingness to change through peer interactions and positive role modeling, but this social interactionist process has received virtually no research attention. TC-PINS (Therapeutic Community Prison Inmate Network Study) data collected over ten months captures self appraisals, reflected appraisals, and peer appraisals of resident willingness to change, tracing alignment of those appraisals over time in treatment. In this thesis, I explore peer-driven mechanisms of the TC model by examining the alignment of residents' appraisals over time and by predicting within-person changes in treatment engagement by changes in the appraisal measures. Results suggest that self, peer, and reflected appraisals tend to converge over time and that changes in reflected appraisals are most predictive of changes in treatment engagement over time in treatment. Such results, consistent with a symbolic interactionist perspective, inform prison-based treatment programming and contribute to research on individual-level trajectories of desistance and substance use recovery.

TABLE OF CONTENTS

List of Tables

List of Figures

Acknowledgements

Introduction

In 2015, more than 640,000 inmates were paroled and re-entered their communities, a number that will persist or even grow as America exits the recent era of mass incarceration (Carson and Anderson 2016). It is estimated that approximately three-fourths of these released offenders will recidivate within five years, and that a primary contributing factor to this recidivism is substance addiction (Cooper et al 2014). More than 60% of male arrestees tested positive for at least one drug in the 2013 Arrestee Drug Abuse Monitoring Program and less than 30% of those arrestees had ever received drug or alcohol treatment (The Office of National Drug Control Policy 2013). Similarly, it is estimated that only 20% of inmates needing substance abuse treatment receive any during their incarceration (Belenko and Peugh 2005). Repairing this destructive gap in services is fundamental for reducing recidivism and facilitating successful community reentry.

The inadequate attention given to substance use disorders in prison-based programming is reflected in program evaluation, with sparse research on drug treatment among incarcerated individuals (National Research Council 2014). When program evaluations and meta-analyses are conducted, their findings do not necessarily translate into prison practice, with surveys indicating that few correctional facilities are utilizing evidence-based drug treatment programs (Chandler, Fletcher and Volkow 2009). This dearth in both drug treatment services and program evaluations is surprising and concerning considering the universally recognized impact the War on Drugs has had on incarceration rates in the United States. Despite a tenfold increase in incarceration for drug offenses during the decades of the prison boom, drug crimes did not decline during those decades (National Research Council 2014). Substance use disorders continue to be significantly higher, at approximately 65% (CASA 2010), among incarcerated populations than among the

general population, with approximately 8.4% of Americans having a substance use disorder (Center for Behavioral Health Statistics and Quality 2015).

A more thorough understanding of processes of desistance from crime and substance use is needed to better tailor in-prison treatment programs to the needs of individuals and to reduce recidivism rates. While some evaluations of programs work toward this aim, the mechanisms of individual change that are pertinent for desistance, and if and how such mechanisms are present in various in-prison treatment programs, have not been adequately parsed out. For example, the prison-based Therapeutic Community (TC) is a widely used drug and alcohol treatment program that program evaluations have consistently found to be effective at reducing recidivism (Mitchell, Wilson and MacKenzie 2012). Yet despite evidence supportive of prison-based TCs, research has not adequately explored the mechanisms underlying this treatment modality. Absent such research, it is difficult to evaluate which elements of treatment are effective and how to improve the program to further reduce relapse and recidivism rates.

George De Leon, recognized as the preeminent expert in TCs, states in his seminal monograph on TC philosophy that, "Although much is known about *whether* TCs work in terms of successful outcomes, less is understood as to why and *how* TCs work. The link between treatment elements, treatment experiences, and treatment outcomes must be established to firmly substantiate the specific contribution of the TC to long-term recoveries" (De Leon 2000, pg. 5, emphasis in original). This thesis works to fill that recognized gap by analyzing within-person change in various appraisals of resident willingness to change across four months of prison-based TC treatment. In addition to assessing the mechanisms of individual change through treatment, this research contributes to discussions of theories of desistance and what elements of internal change or external support are crucial in cessation of criminal behavior and substance

use. Life-course theories of desistance and concepts rooted in symbolic interactionism will be examined through the lens of individual processes of recovery by utilizing an innovative longitudinal dataset collected in a prison-based TC. Out of 210 eligible inmates, 177 participated in at least one wave of data collection (84% response rate), resulting in a saturated sample of TC participants within a Pennsylvania prison. Longitudinal data and near saturation enable a more thorough understanding of individual-level and unit-level changes across time and a more accurate picture of the social dynamics of the TC unit.

The Therapeutic Community

The prison-based Therapeutic Community (TC) is a promising drug and alcohol treatment program that emphasizes sobriety and desistance through group interaction and individual responsibility. Prison-based TCs are widely used nationwide, present in approximately 30% of state prisons, making program evaluation and improvement imperative (Taxman et al. 2007). Evaluations of prison-based TCs in various states have largely concluded the program is effective in lowering rates of relapse, rearrest, and/or reincarceration post-release, especially when compared to similar treatment programs (Bahr et al. 2012; Sacks et al. 2012; Welsh and Zajac 2013).

The TC is an intensive in-patient program developed with a "community as method" approach as its foundation. Developed from similar community treatment models such as Alcoholics Anonymous and Synanon, the TC model views addictions as a disorder of the whole person and therefore, a disorder that requires complete commitment to values of right living (e.g., honesty, responsible concern for resident peers, work-ethic) (De Leon 2000). Residents are expected to become embedded within the community over time and, throughout the course of

their own substance use recovery, assist in the recovery processes of their fellow residents. TC residents provide corrections and affirmations of the behavior of their peers in addition to accepting and utilizing the peer feedback they receive. The community as method model relies heavily on social learning mechanisms, specifically peer influence, which are mechanisms of particular interest when considering the TC model within a prison context. The confined nature of a prison TC increases the potential strength of peer influence within the treatment community, which also increases the accuracy and usefulness of peer appraisals as a measure of resident change over time.

George De Leon, author of the TC model textbook, explains that genuine participant investment in TC treatment methods is essential for both success in treatment and long-term sobriety (De Leon 2000). Prison-based TCs have been evaluated and participant engagement measured using scales such as the Client Assessment Summary (CAS; Kressel and De Leon 1997), Staff Assessment Summary (SAS; De Leon and Kressel 1997), and Therapeutic Community Scale of Essential Elements Questionnaire (SEEQ; De Leon and Melnick 1996). Self-reported client treatment engagement measures are undoubtedly useful, but the potential impacts of social desirability effects are inflated within a prison-based TC, especially considering successful program completion is often a requirement for parole. Staff assessments, while more objective, still do not capture the most accurate measures of individual participant engagement due to the community as method approach utilized within the program.

TC residents are intended to be the primary source of feedback for their peers, through affirmations and corrections of behaviors and attitudes, as residents progress through three phases of treatment. As they move through phases, residents are expected to replace antisocial thoughts and behaviors with prosocial ones, transitioning into leaders and role models within the

community. Through their countless daily interactions, program-necessitated evaluations of the behaviors around them, and group treatment experiences, peer evaluations of participant engagement are arguably the most accurate measure within a prison-based TC due to the community as method approach of the program. Peer evaluations also result in multiple points of data per resident, reducing the impact of any single biased peer-based appraisal and allowing for trends to emerge through aligning peer perceptions.

While many TC graduates exemplify the success of the program with criminal desistance and sobriety upon reentry, there are at least an equal number of participants who do not experience such successes (see Welsh and Zajac 2013, pg. 260). A more thorough understanding of the cognitive, behavioral, and social processes that transpire within the prison-based TC, and the differences between desisting and relapsing TC graduates, enables better tailoring to the strengths and needs of participating inmates. George De Leon himself asserts, "Illuminating the treatment process is essential for improving the TC treatment itself. Thus, wise modification of the approach must be guided by an understanding of the active 'ingredients' in the treatment model, the course of recovery, and the complexity of individual change" (De Leon 2000, pg. 5).

Although researchers are generally supportive of prison TCs, critical evaluations do exist. Specifically, critical reviews of the TC program have concluded that gender and race effects permeate TC treatment, resulting in lower engagement for less privileged groups and the perpetuation of inequality through institutional hierarchies (McCorkel 2013; Kerrison 2017). Both McCorkel (2013) and Kerrison (2017) argue that the TC view of addiction as a disorder of the whole person, which requires residents to adopt a "broken self" or "damaged" identity, hinders progress in recovery for specific groups. McCorkel evaluates the TC experiences of women, finding both race and gender effects, and Kerrison finds racial disparities in treatment

experiences, success, and support through interviews with 300 male ex-inmates who participated in prison-based TC programs. The current study includes only male inmates, prohibiting evaluation of gender effects, but potential race disparities in changes in treatment engagement and appraisals over time will be assessed. De Leon's call for a deeper understanding of the treatment process and ingredients that contribute to success in recovery is warranted given that some TC residents may be disadvantaged in their treatment efforts due to their race or their gender.

Despite a lack of understanding regarding precisely how TCs foster recovery and desistance, and how such processes may hinder or advantage certain residents, evaluations of their aggregate effectiveness have been largely positive over time. In their review of current literature, Bahr et al. (2012) discuss the results of eight evaluations of TC programs in California, Delaware, Texas, and Pennsylvania, all of which contribute to their conclusion that well-executed TCs can be "effective in reducing the risk of drug relapse and rearrest, particularly among high-risk individuals and when followed by aftercare programs" (Bahr et al. 2012: 160). Similarly, a highly comprehensive meta-analytic review of incarceration-based drug treatment programs found that TCs most consistently reduced post-release drug use and recidivism post-release (Mitchell et al. 2012). The authors suggest policymakers utilize programs that "intensively focus on the multiple problems of substance abusers, such as TC programs" (Mitchell et al. 2012: 30). These program evaluations and meta-analyses demonstrate the promise of prison-based TC programs, yet a gap in research exists regarding what mechanisms and processes within prison-based TC treatment are benefitting inmates, increasing their engagement, and potentially fostering substance use recovery and more positive long-term reentry outcomes.

The mechanisms underlying effective TC treatment can be uncovered through evaluation of one's self-reported "willingness to change" as they progress through treatment, and whether that perception matches peer evaluations, to determine if the expected increase in self-awareness and positive role modeling is coming into fruition through engagement in TC treatment methods. Within the TC model, recovery is defined as a change in lifestyle and identity, placing change at the core of desistance from crime and substance use. According to the philosophy of the TC, one must demonstrate a readiness or willingness to change before change can occur (De Leon 2000), making various appraisals of one's "willingness to change" a valuable longitudinal measure of engagement with and progress in drug and alcohol treatment. In addition to self-reported and peer evaluated willingness to change, a reflected appraisal measure of resident willingness to change is included to further parse out mechanisms of individual change and peer influence. Reflected appraisals, or how an individual perceives the actual appraisals of others, enable evaluation of processes of peer influence that affect individual self-concept or identity. Determining the relationship between these three appraisals (self, reflected, and peer) of willingness to change for residents of a prison-based TC sheds light on processes of within-person longitudinal change and peer influence within the TC treatment model.

Symbolic Interactionism & Identity Change

The TC hinges on peer processes, focusing on identity change within a community as method model that is embedded in peer influence, and therefore is a treatment program that relies on processes of learning and change rooted in symbolic interactionism. Developed from the work of George Herbert Mead, symbolic interactionism asserts that humans live in symbolic environments as well as physical environments, influenced by "symbols" or stimuli with learned

meanings and values (Rose 1962). Individuals learn meanings, values, and ways of acting from others through symbolic communication and gestures. Mead (1934) goes as far as to say, "I know of no way in which intelligence or mind could arise or could have arisen, other than through the internalization by the individual of social processes of experience and behavior…as made possible by the individual's taking the attitudes of other individuals toward himself and toward what is being thought about" (pg. 88). This conceptualization of one's identity or sense of self as arising from iterations of social learning is highly relevant within the context and philosophy of a prison-based TC.

Working in a symbolic interactionism framework, Stryker and Serpe (1982) describe how the "self" develops through social interaction. Individuals develop alternate identities based on the environment, learned meaning and behavior, and social interactions with specific reference groups. These identities then exist hierarchically within individuals and are drawn upon under specific circumstances. People are differentially committed to their various identities, but this commitment is derived socially, based on the degree to which the individual's relationships are tied to each identity (Stryker and Serpe 1982). Throughout their work, Stryker and Serpe (1982) acknowledge the "reciprocity of society and self," recognizing human interdependence and how environments and communication exist in interpretive, iterative processes of change.

Reflected appraisals, or how an individual perceives the actual appraisals of others, represent one pivotal way in which society shapes the "self." The concept of reflected appraisals can be traced to 1902 with Cooley's "looking-glass self," a concept in which individuals imagine how they appear to others, react to the imagined judgment of that appearance by others, and shape their self or identity through that perceived judgment. Many scholars in various fields have evaluated the looking-glass self and reflected appraisals since Cooley's work, finding that, while

8

our perceptions of how others see us are not necessarily accurate, they nevertheless influence behavior (Felson 1993; Alvarez and Helms 2001; Bouchey and Harter 2005).

Looking specifically within the field of criminology, Matsueda (1992) used longitudinal data to assess how reflected appraisals of youth as a "rule violator" by their parents are associated with future self-reported delinquency. Adolescents who ascertained that they would be rated highly on measures of rule violation by their parents were significantly more likely to score higher on a delinquency inventory rating in the following wave of data collection. While actual appraisals from parents had a direct influence on future delinquency, much of this effect was mediated by reflected appraisal as a rule violator. Extending that work, Heimer and Matsueda (1994) concluded that having delinquent reflected appraisals is a fundamental element of role-taking, in which individuals view themselves as objects from the viewpoint of others and fit their actions into the social setting accordingly, and that delinquent behavior results largely from role-taking.

Building on these concepts, Asencio's (2011) research within a medium-security correctional facility demonstrated that reflected appraisals from family members and fellow inmates have a significant influence on an individual's self appraisal of their criminality. Asencio (2013) additionally explains how self-esteem moderates reflected appraisals within incarcerated populations, with those measuring high on self-esteem reporting reflected appraisals that more closely align with actual peer appraisals than those with low self-esteem. These findings indicate that the progression of a TC participant's reflected appraisal of their willingness to change throughout the program will influence their self appraisal and overall identity, contributing to their eventual success or relapse during reentry. As inmates progress through TC treatment, the transformation of antisocial tendencies should be reflected in increased self-esteem and closer

alignment of reflected and actual peer appraisals. Additional individual-level changes that should result from active engagement in TC treatment, such as increased self-awareness and community cohesion, should contribute to this alignment over time. As such, residents for whom reflected and peer appraisals do align throughout treatment are predicted to be more engaged in TC treatment and to experience greater success in the program and in long-term desistance and recovery.

The Therapeutic Community as a Life Course Turning Point

Assessing trajectories of crime and desistance is common within life course criminology, a discipline focused on within-individual offending behavior. Working in a life course framework, Sampson and Laub (2003) consider social role transitions, such as entrance into marriage, parenthood, or meaningful employment, and how becoming socially embedded with prosocial peers can encourage desistance. While these role transitions often result in desistance, they are typically beyond the control of policy intervention, which makes the prison-based TC a unique and important area of research. For Sampson and Laub, participation in a prison-based TC would be a significant life event or turning point, providing necessary stability and support while the individual becomes socially embedded with prosocial peers, and it is a policy-driven opportunity for social role transition. Within their age-graded theory of informal social control, TC participation alone, providing there is community support and prosocial peers, should set residents on a path to desistance. While agency is taken into consideration in later iterations of their theory, the primary impetuses of change and desistance are still external sources of informal social control when assessing social role transitions. Agency and internal cognitive changes are

not necessary or sufficient impetuses of desistance for Sampson and Laub, and these processes are framed as responses to entrance into pro-social roles (e.g., marriage, employment).

Sampson and Laub hypothesize that transitions in the life course are exogenous to individuals, which suggests that success for TC residents largely hinges on experiencing a prison-based TC as a turning point. Other theories of desistance emphasize the importance of human agency in the process of identity transformation, positing agency in desistance as a more central mechanism of individual-level change (Giordano, Cernkovich, and Rudolph 2002; Maruna 2001). Giordano et al.'s (2002) theory of cognitive transformation, which presents a symbolic interactionist approach to desistance, would consider participation in a prison-based treatment program as a "hook for change," or a prosocial catalyst for change. In this perspective, the path to desistance rests upon the actor's role in latching onto such a catalyst by being receptive to change and perceiving the hook as meaningful or salient. Only with such a combination of factors can the individual begin to envision a "replacement self," changing their perception of their deviant behavior and identity, leaving behind a now irrelevant deviant self, and moving forward as their envisioned self. In her book on prison-based drug and alcohol treatment programs in Britain, Stevens (2013) describes this process as deriving "from the synthesis of internally derived self-concepts and externally derived definitions and validations" (pg. 8).

Giordano et al.'s theory predicts higher treatment engagement and greater long-term success for individuals who develop into self-aware, positive treatment community members during their months of drug and alcohol treatment. Longitudinal measures from program participants can disentangle the mechanisms of change that transpire within a prison-based TC program. This study takes an innovative approach to tracing social and cognitive paths to

11

desistance, measuring what changes emerge through participation in a prison-based treatment for residents at varying levels of engagement. These desistance processes are illuminated through a longitudinal measure of one's perceived willingness to change as they progress through treatment, and whether that perception matches peer evaluations, determining if the expected increases in self-awareness and decreases in antisocial personality traits transpire through engagement in treatment methods. When linked to measured treatment engagement, these longitudinal measures of willingness to change shed light on the individualized process between a "hook for change" and post-release outcomes.

Hypotheses

The Therapeutic Community Prison Inmate Network Study (TC-PINS: PI Kreager) data collected over ten months in a prison TC enables the comparison of self, reflected, and peer appraisals of individual residents' willingness to change as those residents progress through four months of TC treatment. Participants who become more invested and embedded in the community throughout their time in the program, as is required of effective TC treatment, should have self and reflected appraisals that more closely align with the evaluations of their peers. As TC residents progress through their months of treatment, they are intended to recognize and alter their antisocial personality traits, become more self-aware, and develop higher self-esteem. These processes should also contribute to bringing self appraisal and reflected appraisal measures into alignment with peer appraisals. Additionally, the community as method approach should foster self-disclosure and bonding between residents, enabling them to evaluate one another more accurately over time.

> *Hypothesis 1: Self appraisals, reflected appraisals, and peer appraisals of willingness to change will align throughout four months of TC treatment.*

Hypothesis 2: Peer appraisal standard deviations will decrease throughout four months of treatment.

An intensive prosocial community environment is the most suitable context for evaluating these individual trajectories, especially in attempting to overcome potential self-report biases within a prison-based treatment context due to parole requirements. Consistent with symbolic interactionism, peer evaluations and peer-influenced perceptions (i.e., reflected appraisals) will be more accurate and more predictive of long-term desistance in a small, intensive treatment setting, such as a prison-based TC.

In addition to the logistical aspects of the unit that contribute to the usefulness and accuracy of peer appraisals, such appraisals reflect the intended model of the TC. The community as method model hinges on peer influence processes, with participation measured by "whether members provide, as well as use, peer observation and feedback" (De Leon 2000 pg. 96). Residents are expected to engage with their peers, identify their attitudes and behaviors that conflict with recovery and right living, and grow in their own recovery through responsible concern for others. This process requires interaction with peers and awareness of peer progress in recovery, which implies appraisal alignment over time.

Determining which of these three appraisals best predicts changes in treatment engagement informs our understanding of social, behavioral, and cognitive processes transpiring within the prison-based TC. Taking previous research on reflected appraisals and the isolated and intensive nature of the prison-based TC into consideration, I predict reflected appraisals will have a significant impact on self-concept and behavior in a program based on community as method, resulting in reflected appraisals being more predictive of self-reported treatment engagement than self appraisals. Reflected appraisals represent a blending of self and peer

13

appraisals, capturing elements of both individual agency and social context. Despite isolation of the prison-based TC unit and high levels of daily social interaction, TC peers cannot fully know a fellow resident (e.g., their mindset, experiences, motivation), therefore individual agency limits the accuracy of peer appraisals. Self appraisals, on the other hand, tend to present an idealistic representation of desire to change, an impulsive affirmation of hope for recovery that lacks the realism introduced by considering the more cynical views presented by TC peers, other sources of external identity formation (e.g., family and friends), and society in general. With this lack of realism, self appraisals are typically high throughout treatment, resulting in minimal variation and low predictive power. Reflected appraisals require the consideration of perceptions from external sources while still allowing room for individual agency, presenting a more conservative and realistic appraisal of willingness to change, accounting for complex social dynamics that shape identity (Burke 1991, Asencio 2011, Asencio and Burke 2011).

> *Hypothesis 3: Reflected appraisals of willingness to change will be most predictive of self-reported treatment engagement measures.*

Conversely, if the community as method model is not functioning as intended, it is possible that peer influence mechanisms do not predict within-person changes in treatment engagement and that differences treatment engagement result from pre-existing individual characteristics and not endogenous treatment effects.

> *Hypothesis 4: Appraisals are unrelated to changes in treatment engagement over time (i.e., selection).*

If selection drives the treatment process in this unit, minimal change will be observed in the appraisal sources for residents over their four months of treatment and peer-influenced appraisals (i.e., reflected and peer) will not have significant predictive power for treatment engagement.

14

Data

 Data for the NIH-funded Therapeutic Community Prison Inmate Networks Study (TC-PINS: PI Kreager) was collected monthly from August 2016 to May 2017 at a State Correctional Institution (SCI) in southeast Pennsylvania with five TC units. The medium-security SCI houses approximately 1,300 inmates (bed capacity 1,175) in an urban-based facility that has a heightened focus on substance use treatment and houses many inmates completing such treatment at the end of their sentences. The facility houses many short-sentence inmates, which creates a prison environment that is more focused on treatment and reentry than many Pennsylvania SCIs.

 After approval from the Pennsylvania State University Institutional Review Board (IRB), the author visited the prison TC units to discuss and organize logistics for the ten month data collection with prison and TC staff. For the first five months of data collection, the author provided information about the research aims and the content of the survey to all unit residents during the TC morning meeting on the first day of data collection, answering any residents' questions and asking them to indicate whether or not they would like to participate by filling out a brief sign-up form. In each subsequent month, recruitment became less formal as many residents on the unit already knew about the study and inmates became interested in participating through word of mouth. The author still made herself available to answer questions and address any concerns about confidentiality, use of the survey data, etc. In the last five months of data collection, there was no longer a morning meeting at the start of the first day of data collection, so the author recruited inmates to participate by talking to them individually on the unit and by utilizing positive word of mouth.

Computer assisted personal interviews (CAPI) were conducted monthly with participants in one of the TC units (n=62). Inmates who chose to participate completed the CAPI in a confidential setting with the author or another interviewer who read all questions and answer choices to the respondents and provided clarification when necessary. All inmates within the TC unit were given the choice to complete the CAPI, answering a variety of open- and closed-ended questions about their familial relationships, future expectations, treatment engagement, various peer network measures, and their evaluation of the TC program and experiences as a resident. The response rates per wave ranged from 73% to 82% of the unit, combining to a total sample response rate of 84% of eligible respondents completing at least one CAPI during their month(s) on the unit.

Over ten months of data collection, 470 CAPI surveys were administered to 177 respondents. Variable missingness is relatively low (3.8%, n = 18 observations) and is mostly accounted for by missing peer appraisals due to new TC residents not being known by their peers. Missing peer appraisals account for 72% of the missingness (n = 13), with missing reflected appraisals accounting for the remaining 28% (n = 5). One respondent did not provide a self appraisal at one treatment wave, but his missingness was already accounted for with an absent reflected appraisal at that treatment wave. Due to the relatively modest amount of missingness, listwise deletion is used in all analyses.

Inmates who score at a certain level on a drug screen administered upon entry into the state system are parole-mandated to attend and complete the prison-based TC program. If an inmate declines to participate or "signs out" of the TC program, they are required to sign their maximum sentence papers as they leave the TC, agreeing to serve their maximum sentence instead of being eligible for parole at their minimum sentence date. Therefore, the majority of

inmates mandated to the TC agree to participate, whether or not they have any interest in the program, in order to be eligible for parole at their minimum sentence date. This creates a dynamic of coercion into treatment and removes much of the selection bias potentially resulting from only highly motivated or inmates joining the TC unit. Any inmates with a score of six or above on their drug screen intake are placed in the TC toward the end of their sentence, creating a respondent sample with ample variation in motivation for recovery and willingness to change.

In Pennsylvania state prisons, the TC program is currently four months long, shortened from a longer TC program (i.e., twelve months) of the past. Those four months of TC treatment are separated into three phases: Phase 1 or the "induction" phase lasts one month, Phase 2 or "primary treatment" last two months, and Phase 3 or "reentry" compromises the fourth and final month. Inmates enter the unit on a rolling admission system (i.e., inmates do not enter as cohorts) and "phase up" based on their entry date to the TC. However, many treatment groups are conducted within phase, so residents do spend more time with the residents in their phase than those in other phases.

The traditional TC program is at least twelve months long (De Leon 2000), and many previous evaluations of prison-based TC programs assessed programs of that length (Welsh and Zajac 2013, pg. 253). Many states are trending toward shorter TC programs, often to reduce treatment costs, and a growing percentage of prison-based TCs are four months long or even shorter. In 2007, Taxman, Perdoni and Harrison reported that a third of prison-based TC programs were 90 days or shorter and additional programs have been shortened since then, including those in Pennsylvania state prisons. The effects of these modifications to the program have not been adequately evaluated, but there is evidence that inconsistencies across treatment

17

programs result in variant effects in reentry outcomes (i.e., reduction in recidivism) (Zhang et al. 2011; Jensen and Kane 2012).

Residents of this prison-based TC unit are isolated from the other inmates in the prison for the majority of their four months on the unit. The TC unit studied houses approximately 62 inmates at a time who maintain a high level of interaction in a small space, spending many hours per day in treatment groups, moving to and from meals together, attending the same daily yards, and spending all their downtime on the TC unit with other residents. Unit residents attend meetings and treatment groups Monday through Friday from 9am to 4pm, with a few breaks for meals and institution-wide inmate counts. Considering the isolation of the unit and the intensity of treatment on a daily basis, peer dynamics should be particularly influential in this type of prison-based TC.

Sample

Over ten waves of data collection, a total of 210 inmates were on the TC unit during days the CAPI was administered. Of those 210 potential respondents, 177 inmates completed at least one CAPI. Unit and sample demographics are described in Table 1. Participation in additional treatment waves declined per wave: 144 inmates participated at two treatment waves, 97 participated at three treatment waves, and 52 inmates completed all four possible treatment waves. Much of this decline across waves was due to the timing of their treatment (e.g., inmates were partway through treatment when data collection started or ended), inmates being transferred to other TC units before program completion, or discharge from the unit by request or for behavioral reasons. As a result of these factors, only 41% of inmates in the sample had all four of their months of treatment overlap with the data collection window.

Average respondent age is 36.85, which is only slightly lower than the average across Pennsylvania SCIs, which was 39 as of the time of the study (Pennsylvania DOC Planning, Research, and Statistics 2016). The race distribution of the TC unit studied is significantly different than the statewide distribution, with a higher percentage of white inmates in the sample than in all SCIs. This is possibly a product of the drug epidemic, especially widespread use of opioids, affecting rural areas of America in recent years, which is reflected in rates of prison admittances from rural Pennsylvania counties over the past several years (Pennsylvania DOC Planning, Research, and Statistics 2013-2016). Across all Pennsylvania SCIs, 48% of male inmates are black, 41% are white, and 10% are Hispanic. In contrast, the sampled TC is predominantly white, with 58% white residents, 35% black residents, and 7% Hispanic residents (see Table 1).

Table 1 - Descriptive Statistics				
	Total Unit (n=210)		Sample (n=177)	
	Mean (SD)		Mean (SD)	
Age	36.85	(11.12)	35.58[a]	(10.39)
Race (%)				
White and Other	58.09%		58.85%	
Black	35.24%		33.14%	
Hispanic	6.67%		8.00%	
Grade Completion	11.30	(1.20)	11.33	(1.19)
IQ	92.02	(13.05)	93.14[a]	(13.13)
Offense Gravity Score (OGS)	6.54	(3.07)	6.54	(3.12)
TCU Score	6.72	(1.18)	6.74	(1.21)
Drug of Choice (%)				
Alcohol	22.38%		18.29%	
Opiates	31.43%		34.86%	
Other Stimulants	6.67%		6.86%	
Hallucinogens	2.38%		2.29%	
Cocaine or Crack	10.95%		10.86%	
Tranquilizers or Sedatives	2.86%		2.29%	
Marijuana	7.62%		9.14%	
None Specified	15.24%		14.86%	

[a] Sample significantly different than non-sample (p<.05)

19

The mean for highest completed grade rests slightly below twelfth grade for both the unit and the sample. Mean IQ falls within the average range (average IQ is between 90 and 109) and the average offense gravity score is between 6 and 7 for both the unit and the sample (for additional information on Pennsylvania offense gravity scores see: http://www.pacode.com/secure/data/204/chapter303/s303.15.html).

Inmate TCU score is measured using the TCU Drug Screen II (TCU Institute of Behavioral Research 2014), which is administered during the prison intake process. Scores range from zero to nine, indicating the severity of substance use disorder, with a score of six or above typically resulting in parole-mandated completion of a prison-based TC program. Individuals who are required by parole to complete a prison-based TC but do not do so can be required to "max out" or complete their maximum sentence length as opposed to being released on or near their minimum release date and finishing their max time on state parole. Inmates in the sample with a TCU score less than six may have still been mandated by parole to complete the TC due to previous drug-related charges or they may have self-selected into TC treatment. Substance use treatment is still recommended for individuals scoring between three and five on the TCU Drug Screen II, although outpatient treatment is generally the preferred treatment modality.

Drug of choice is also measured with the TCU Drug Screen II, which asks inmates to indicate the substance that is the primary source of their disorder. The largest drug use group in both the unit and the sample is opiates, an unsurprising statistic given the widely acknowledged opioid epidemic, followed by alcohol and then crack/cocaine. Approximately 15% of the unit and the sample do not specify a primary drug, which may indicate multi-drug use or denial that any single drug is a source of disruption to their daily life and functioning.

Measures

Treatment engagement is the dependent variable for this study and is a self-reported measure using the Client Assessment Summary, a validated TC treatment engagement scale developed by TC experts (CAS; Kressel and De Leon 1997). Responses are averaged to create a treatment engagement score with a minimum score of 1.0 to maximum score of 5.0 (α = 0.86) (see Appendix A). Across all waves and observations, the mean treatment engagement score is 3.85 (standard deviation 0.51) and measured scores range from 2.64 to 4.93.

Self appraisals, reflected appraisals, and peer appraisals of willingness to change are this study's primary independent variables and were collected from each TC resident who took the CAPI. The following questions were asked of respondents at every wave in which they participated:

> *Self appraisal: "On a scale of 0 to 10, how much do you really want to change? 0 = I do not want to change; 10 = I really want to change"*

> *Reflected appraisal: "On a scale of 0 to 10, how much do you think others in the unit believe that you want to change?"*

The mean value of all self appraisals collected over ten waves is the highest across appraisal types at 8.76 (standard deviation 1.85). The reflected appraisal mean across observations is significantly lower at 6.65 (standard deviation 2.37).

The peer-based appraisal measure utilized in this thesis is derived within phase, with residents evaluating only the residents in their same phase, making these peer appraisal measures less burdensome on respondents and more accurate due to heightened intra-phase interaction. Within the CAPI survey, respondents were asked to rate the peers within their phase (i.e., Phase 1, Phase 2 or Phase 3) on their willingness to change. Interaction levels are higher between TC residents within the same phase as treatment groups are often split up by phase.

Peer appraisals: "This is a list of the residents in your phase. On a scale of 0 to 10, how much do the residents in your phase really want to change?"

A mean peer appraisal value was generated for each respondent for each wave they were a resident of the TC, averaging all the peer appraisal values received by that individual per wave. The mean peer appraisal value across observations is 6.28 (standard deviation 1.53).

TC-PINS interviewers were trained to prompt respondents to skip any residents within their phase that they did not know and only provide a peer appraisal rating for those residents they knew. Due to lower response rates among Phase 1 residents and TC residents getting to know one another on the unit over time, peer appraisals should become more accurate and consistent as residents move through their four months of treatment. To test this assumption, a peer appraisal standard deviation measure was generated for each respondent at each wave of his TC residency, pinpointing how consistent or variable peer perceptions were over time for each resident. The mean value of this standard deviation measure over ten waves of observation is 2.26 (standard deviation 0.60).

Correlations between the three appraisal types and treatment engagement show higher correlations between the peer-driven appraisals and treatment engagement, with reflected appraisals being the most correlated with treatment engagement. This matches expectations arising from the peer-driven TC model and from symbolic interactionist principles, but additional within-person analyses will clarify these relationships by removing unobserved time-stable between-person differences (see Fixed Effects Models section below).

	Table 2 - Correlations				
		1	2	3	4
1	Treatment Engagement	1.000			
2	Self Appraisal	0.37***	1.000		
3	Reflected Appraisal	0.68***	0.54***	1.000	
4	Peer Appraisal	0.50***	0.21**	0.48***	1.000

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

Demographic variables from official Department of Corrections (DOC) data include age (continuous variable generated from date of birth), race and ethnicity, highest completed grade, IQ, TCU Drug Screen score (scale from 1 to 9), drug of choice, and offense gravity score (scale from 1 to 18). These demographic variables will be utilized to determine if the dynamics of these three appraisals and their relationship to changes in treatment engagement vary by time stable characteristics (i.e., age, race/ethnicity, educational attainment). Given previous literature on race and gender effects of TC treatment (McCorkel 2013; Kerrison 2017), it is possible that such characteristics influence the mechanisms underlying TC treatment.

Methods

First, to test Hypothesis 1 and the alignment of appraisals over time in treatment, I assess means by treatment wave for all three appraisal variables and treatment engagement. Additionally, to remove potential bias due to sample missingness, I graph appraisals and treatment engagement by treatment wave for those 52 respondents who completed the CAPI at all four possible treatment waves. To test Hypothesis 2, I calculate within-person peer appraisal standard deviation means by treatment wave to determine if those standard deviations do decrease throughout time in treatment.

To test Hypothesis 3, the three appraisal sources used to outline individual trajectories across treatment are used to predict treatment engagement within fixed effects models to determine which processes of change best predict engagement in treatment over time. Fixed effects models account for the influence of unobserved time-invariant selection variables. By focusing only on within-person variation in independent and dependent variables across time, fixed effects models eliminate bias introduced by time-stable unobserved individual-level factors

23

that are related to observed variables. Within these fixed effects models, such potentially biasing

unobserved variables include personality characteristics (e.g., gregariousness, agreeability,

malleability) and historical personal experiences (e.g., previous incarceration experiences,

participation in other drug and alcohol treatment programs, childhood trauma) that could directly

influence appraisal sources and treatment measures.

Results

Appraisal Trajectories & Alignment

   Due to the community as method model of the TC, I hypothesize that all three appraisal

sources should align throughout four months of treatment (Hypothesis 1). In the observed data,

self appraisals decline across each Treatment Wave, or each month of TC treatment (1-4), while

reflected appraisals increase in each Treatment Wave (see Table 3).

Table 3 - Variable Means by Treatment Wave									
	Total Mean (SD)		Treatment Wave 1 Mean (SD)		Treatment Wave 2 Mean (SD)		Treatment Wave 3 Mean (SD)		Treatment Wave 4 Mean (SD)	
Self Appraisals	8.76	(1.85)	9.10	(1.63)	8.93	(1.95)	8.61	(2.27)	8.58	(2.35)
Reflected Appraisals	6.65	(2.37)	6.21	(2.67)	6.80	(2.54)	6.81	(2.64)	7.07	(2.62)
Peer Appraisals (Mean)	6.28	(1.53)	6.16	(1.94)	6.02	(1.52)	6.30	(1.50)	6.64	(1.68)
Treatment Engagement	3.85	(0.51)	3.77	(0.51)	3.85	(0.50)	3.89	(0.53)	3.95	(0.58)
N	*n=177*		*n=101*		*n=123*		*n=125*		*n=120*	

   As inmates progress through the treatment program, they rate their own willingness to

change more conservatively while simultaneously seeing their recovery identity more positively

from the assumed perspective of their TC peers. Declining self appraisals may seem

counterintuitive to TC treatment aims but in reality, this trajectory is likely a positive result of

inmates becoming more self-aware and developing more realistic expectations regarding their

recovery timeline and their long-term goals through treatment curriculum. Many of the TC

groups include themes of realistic expectations and residents are encouraged to recognize the

enduring, challenging work required to maintain sobriety. Additionally, TC treatment

emphasizes the broad scale changes in behavior and identity that are required for success in

recovery long-term. Internalization of these treatment themes would result in more conservative

appraisals of one's own willingness to change.

Peer appraisals decline from Treatment Wave 1 to 2, but increase substantially in

Treatment Waves 3 and 4. On an aggregate level, TC residents perceive their peers to be more

willing to change as they "phase up" and complete the program, which suggests that residents are

demonstrating attitudes and behaviors more inline with recovery over time in treatment. In

combination, these sample-level appraisal trajectories result in self, reflected, and peer appraisals

becoming more aligned through each Treatment Wave (1-4), providing support for Hypothesis 1.

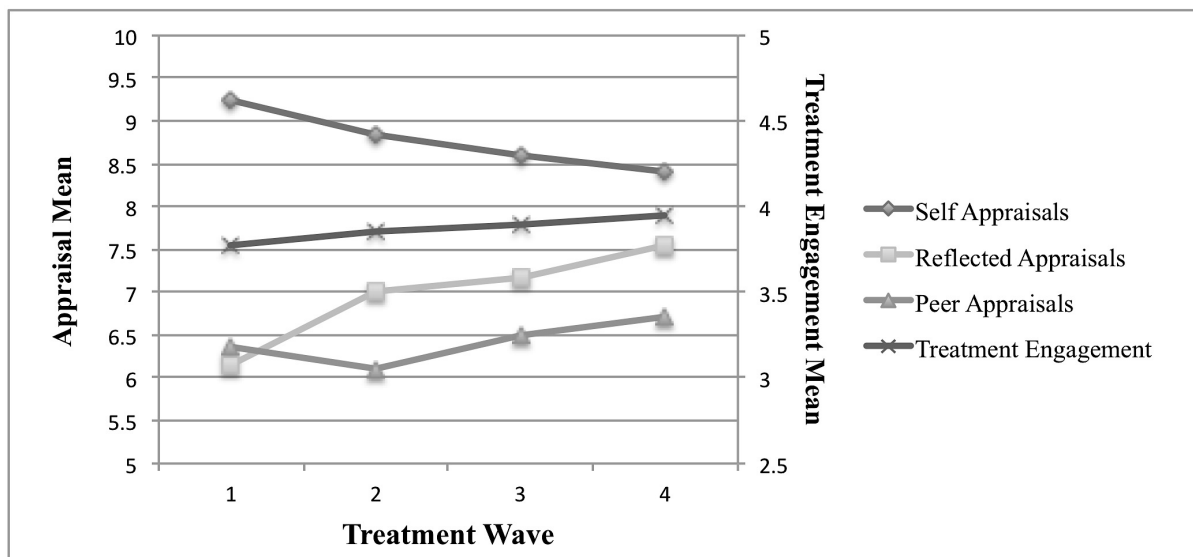**Figure 1: Appraisal Alignment and Treatment Engagement Across Treatment Waves (n = 52)**

Figure 1 shows mean values across treatment waves for the appraisal variables and

treatment engagement scale for those respondents who completed a CAPI during all four of their

Treatment Waves (n=52). Aggregate appraisal trajectories generally align and average treatment

engagement values increase somewhat over time-in-treatment.

25

The standard deviation of peer appraisals received by each inmate on the unit at every wave was generated to determine trends in mean peer appraisal standard deviations across Treatment Wave. The sample sizes by Treatment Wave do not match those of the other appraisals due to a number of inmates receiving only one peer appraisal, particularly during their first and second Treatment Waves. This is unsurprising given that CAPIs were often administered during some inmates first few days on the unit, resulting in their TC peers not knowing them at all or not knowing them well enough to evaluate their willingness to change. Response rates were also lowest for Phase 1 (i.e., Treatment Wave 1) residents, decreasing the baseline number of peer appraisals a Phase 1 inmate could possibly receive. Despite this missingness, variation in peer appraisals trend downward over Treatment Waves, and the mean is smallest at Treatment Wave 4. By the time inmates reach Phase 3 with their phase members, they typically know everyone in their phase and the peer evaluations are more consistent during this final month of treatment.

Table 4 - Within-Person Peer Appraisal Standard Deviation Means

	Total Mean (SD)		Treatment Wave 1 Mean (SD)		Treatment Wave 2 Mean (SD)		Treatment Wave 3 Mean (SD)		Treatment Wave 4 Mean (SD)	
Within-Person Peer Appraisal SD	2.26	(0.60)	2.35	(1.17)	2.53	(0.74)	2.40	(0.67)	2.15	(0.74)
N	*n=177*		*n=77*		*n=119*		*n=125*		*n=120*	

Fixed Effects Models

Table 5 lists estimates from fixed effects models of the bivariate associations between the three appraisal variables and treatment engagement scale before estimating a full model that includes all three appraisal measures. When all three appraisals are included in the model, only changes in reflected appraisals maintain statistical significance in predicting changes in treatment engagement over time. As hypothesized, reflected appraisals appear to represent a middle ground

between self and peer appraisals. In the presence of the reflected appraisal measure, the coefficient for self appraisals drops by 64% and the coefficient for peer appraisals drops by 26% (see Appendix B).

Table 5 - Fixed Effects Regressions of Appraisals on Treatment Engagement (n=452)							
	Model 1		Model 2		Model 3		Model 4
	Coefficient (SE)		Coefficient (SE)		Coefficient (SE)		Coefficient (SE)
Self Appraisal	.011	(.01)					.006	(.01)
Reflected Appraisal			.033***	(.01)			.030***	(.01)
Peer Appraisal					.027*	(.01)	.020†	(.02)
F-Test	*0.89*		*15.87***		*5.06*		*6.31***	
Degrees of Freedom	*275*		*275*		*275*		*273*	

***p<.001, **p<.01, *p<.05, †p<.1

The results in Table 5 do not include a measure of time and therefore may be upwardly biased, particularly given the longitudinal patterns observed in Figure 1. To account for time trends, Table 6 includes a measure of Treatment Wave into the fixed effects models. Its coefficient is significant and positive, suggesting that treatment engagement tends to increase over inmates' time in the program. Including Treatment Wave also alters the appraisal estimates. The self appraisals estimate increases in size and significance, suggesting a suppression effect, whereas the reflected and peer appraisal estimates decrease in size and significance, suggesting mediation. Indeed, the peer appraisals estimate is no longer statistically significant using a one-tailed statistical test ($p = .22$).

Despite the attenuation of the reflected appraisal coefficient in the presence of Treatment Wave, Model 4 continues to support Hypothesis 3, with only the reflected appraisals estimate maintaining significance in the full model. These results indicate that changing perceptions of peer appraisals are significant correlates of changes in attitudes and behaviors within this prison-based TC unit.

Table 6 - Fixed Effects Regressions of Appraisals on Treatment Engagement (with Treatment Wave) (n=452)							
	Model 1		Model 2		Model 3		Model 4	
	Coefficient (SE)		Coefficient (SE)		Coefficient (SE)		Coefficient (SE)	
Self Appraisal	.023*	(.01)					.017	(.01)
Reflected Appraisal			.025**	(.01)			.021*	(.01)
Peer Appraisal					.019	(.01)	.016	(.01)
Treatment Wave	.055***	(.01)	.040**	(.01)	.046***	(.01)	.043**	(.01)
F-Test	*11.09****		*14.00****		*10.43****		*7.95****	
Degrees of Freedom	*274*		*274*		*274*		*272*	

***p<.001, **p<.01, *p<.05, †p<.1

A purely selection-driven process of recovery, as opposed to the presence of at least some elements of the community as method approach, would result in null estimates in fixed effects models. Baseline measures would be fully predictive of treatment engagement, and within-person changes, tested with fixed effects models, would be statistically nonsignificant. Significant reflected appraisal estimates indicate that individual-level change in this TC unit is not entirely fueled by selection. However, there is evidence of selection when comparing correlations (Table 2) to fixed effects estimates (Table 6). The between-person correlations presented in Table 2 show high correlations between appraisal types and treatment engagement, while within-person fixed effects results are statistically significant for only the reflected appraisal estimate. After accounting for between-person differences and stable unobserved characteristics of TC residents, correlations decrease considerably.

Additional Models

Treatment Wave interaction terms were included in the Table 6 models to determine if the effects of any appraisal type varied across time in treatment. Given the community as method model of the TC, it would be unsurprising if peer-based appraisal measures became more strongly predictive of treatment engagement over four months of treatment. However, these

terms were nonsignificant in all fixed effects models (see Appendix C). Additionally, interactions between the appraisal variables and time-invariant variables, including age, race and ethnicity, highest grade completed, drug of choice, TCU score, and offense gravity score, were estimated and none reached statistical significance.

To further parse out potentially different effects across various demographic groups, separate fixed effects models were estimated with demographic subsets of the TC unit. Fixed effects regressions of all three appraisal types on treatment engagement for white versus non-white residents, younger versus older residents, residents with less than a high school degree versus those with high school or more, and those with TCU scores below seven versus those at seven or above demonstrate some interesting and potentially important demographic effects.

Results from these models (see Table 7) appear to show that the peer-driven mechanisms of this TC unit are more pronounced for residents who are under 35 than for those 35 and older. None of the appraisal measures are statistically significant for those residents who are 35 or older, while both peer and reflected appraisals are significant for those under 35. However, z tests indicate that the differences between these coefficients are not statistically significant (see Paternoster, Brame, Mazerolle, and Piquero 1998). Small sample sizes and resulting relatively large standard errors may be the reason for these nonsignificant z tests. The means for all four variables in the models are higher for those 35 and above compared to those below 35, illustrating both self-perceived and peer-perceived levels of engagement and willingness to change that are higher for the older inmates on this TC unit (see Table 8). Thirty-five was chosen as the age cutoff based on previous literature regarding the age-crime curve and "at-risk" age ranges (see Ulmer and Steffensmeier 2014; Kanazawa and Still 2000).

Table 7 - Fixed Effects Regressions of Appraisals on Treatment Engagement (Separated Models)

		Self Appraisal Coefficient (SE)		Reflected Appraisal Coefficient (SE)		Peer Appraisal (Mean) Coefficient (SE)		Treatment Wave Coefficient (SE)		
Age	Less Than 35	.009	(.014)	.022*	(.010)	.024†	(.014)	.043*	(.016)	n=98
	35+	.035	(.022)	.019	(.015)	-.004	(.022)	.042*	(.019)	n=78
Race	White & Other	.017	(.013)	.017	(.010)	.002	(.016)	.040*	(.016)	n=104
	Black & Hispanic	.009	(.030)	.026	(.017)	.030	(.020)	.052*	(.020)	n=72
Grade	Less Than HS	.022	(.019)	.019	(.013)	.019	(.018)	.047*	(.018)	n=68
	High School+	.012	(.015)	.026*	(.012)	.012	(.016)	.038*	(.017)	n=108
TCU Score	Less Than 7	.023	(.014)	.020†	(.011)	.011	(.015)	.054**	(.017)	n=113
	7 to 9	.003	(.026)	.022	(.015)	.019	(.020)	.029	(.019)	n=63

***p<.001, **p<.01, *p<.05, †p<.1

Additional demographic group models show interesting patterns, although z tests indicate that coefficient differences are not statistically significant for any of the separated demographic models. Once again, low power due to small sample sizes and resulting large standard errors likely contribute to the lack of statistical significance in model comparisons. Nevertheless, these fixed effects regressions show slightly stronger peer-driven mechanisms for black and Hispanic inmates versus white and other inmates, with larger peer and reflected appraisal coefficients, although these coefficients do not reach statistical significance. In the models separated by grade attainment, reflected appraisals have stronger significance for those inmates with at least a high school degree, which is perhaps a result of these inmates being more adept at role-taking, or seeing themselves as an object in the eyes of others, and engaging in more complex cognition required to evaluate the collective perception of others. TC residents with a TCU score between seven and nine, representing more serious substance addictions, are the only group for which Treatment Wave is not statistically significant. This indicates that time in treatment does not predict increased treatment engagement for those residents with more severe addictions, a potentially concerning pattern. Additional research regarding treatment effectiveness within the complicated interaction of resident risk level and treatment intensity level is needed to adequately understand such variation in mechanisms.

Variable means across these demographic categories generally match the trends found in the fixed effects models separated by demographic categories (see Table 8). The means for treatment engagement and all three appraisals are lower for white residents than black and Hispanic residents, which, when combined with weaker predictive power for peer-driven appraisals in the white inmate fixed effects model, suggests that this TC unit may be less effective for white inmates versus black and Hispanic inmates. This is counter to recent research that suggests prison-based TCs are less effective for black inmates (Kerrison 2017), but the staff dynamics of this particular prison likely have an impact on the experience of the TC residents. The graduate students collecting this data met and interacted with approximately 25 TC counselors and supervisors over ten months and every TC staff member was either black or Hispanic. This dynamic permeated a great deal of the narratives of the white residents, who were uncomfortable with the racial composition of the staff and/or felt they were treated unfairly by them as a result of their race.

Means by grade attainment suggest an interesting pattern in which residents with lower grade attainment (i.e., less than high school) rate themselves slightly higher on self-reported measures on average. However, those with higher grade attainment have significantly higher peer appraisal means. This implies that levels of educational attainment, and potentially intelligence, have an effect on treatment mechanisms and peer dynamics on the TC unit. Means by TCU score are higher for inmates with a score of seven or above for all four variables, but the fixed effects model indicate that those residents with more severe addictions demonstrate less change in their treatment engagement across Treatment Wave. These variable mean patterns combined with the fixed effects models suggest complicated interactions of treatment change mechanisms and substance use severity.

31

Table 8 - Variable Means by Demographic Categories

		Treatment Engagement	Self Appraisal	Reflected Appraisal	Peer Appraisal	
Age	*Less Than 35*	3.74	8.65	6.33	6.00	*n=99*
	35+	3.99	8.91	7.06	6.63	*n=78*
Race	*White & Other*	3.73	8.53	6.34	6.07	*n=102*
	Black & Hispanic	4.01	9.08	7.08	6.56	*n=75*
Grade	*Less Than HS*	3.86	8.85	6.68	6.05	*n=69*
	High School+	3.85	8.71	6.64	6.42	*n=108*
TCU Score	*Less Than 7*	3.83	8.64	6.50	6.21	*n=114*
	7 to 9	3.89	8.98	6.93	6.40	*n=63*

Discussion

Prison-based TCs are utilized in approximately 30% of prisons nationwide, yet the mechanisms that separate TC participants who benefit from treatment and progress in recovery from those who do not are not understood. This study takes steps toward a better understanding of processes of change within a prison-based TC to enable improved program implementation and greater success for participants.

These results indicate that peer influence processes, both direct and indirect through resident perceptions, are driving factors within prison-based TC treatment and that these processes change within person over time in the treatment program. Additionally, prison-based TC treatment does not appear to be fueled entirely by selection, which indicates that this form of treatment intervention can alter individual attitudes and likely affect trajectories of desistance. Given the current nationwide drug epidemic and high recidivism rate, a better understanding of processes of recovery and desistance for individuals with histories of substance use disorders is an important step toward improving programming and fostering greater success in reentry. This research works to fill that gap by illuminating core, and previously unmeasured, aspects of the

TC philosophy. These results contribute to George De Leon's call for a better understanding of how and why the TC model can be effective (De Leon 2000, pg. 5).

Fixed effects regression results indicate that concepts rooted in symbolic interactionism, such as reflected appraisals, are important when evaluating the changes in attitudes, behaviors, and identity that accompany processes of substance use recovery and desistance. The self develops through social interaction and identities exist within contexts, which makes the evaluation of peer influence on changing identities in treatment and recovery processes important in reducing rates of recidivism and relapse.

Results are also supportive of cognitive theories of desistance, such as cognitive transformation, which is rooted in symbolic interactionist principles. The exogenous appraisal source (i.e., peer appraisals) was not significantly predictive of change in treatment engagement in these fixed effects models. Instead it was reflected appraisals, which blend agentic thinking with an externally imposed treatment community or "hook for change", that were most predictive of within-person change over time in treatment. This illustrates that the process of recognizing a "hook for change," internalizing it to some degree, and allowing that external influence to shape self-concept is an important element of within-person change in this TC unit.

Fixed effects models separated by demographic subsets of the unit and variable means for those subsets demonstrate the need for further evaluation of prison-based TC mechanisms. While coefficients were not statistically different, likely as a result of small sample size, this exploratory research suggests that TC treatment dynamics are complicated and peer-driven mechanisms vary based on resident demographics including age, race and ethnicity, and educational attainment. Staff composition can further complicate these processes, making generalization of findings difficult and calling for evaluations of additional prison-based TC

33

units to determine how institution-level, peer-level, and individual-level differences interact to impact the recovery trajectories of inmate residents.

A qualitative follow up research project will enable evaluation of within-person trajectories in reentry. Residents who completed the TC on the unit of study will be interviewed prior to their release from prison, three-months post-release, and nine-months post-release about their substance use histories, experiences in TC treatment, and plans for reentry and maintained sobriety. This reentry research will allow for trends observed across four months of TC treatment to be connected to long-term relapse and recidivism outcomes to further parse out important TC treatment mechanisms.

Limitations

While the mechanisms underlying any TC treatment are expected to be similar across prison units and across states, generalizability of findings is a limitation of this research. Pennsylvania TC programs are four months long, which is shorter than many TC programs in other states. Additionally, the Pennsylvania DOC controls programming and regulations, and units are unlikely to be structured identically in other states, where their own DOC (or equivalent branch) controls the program. This calls for replication of this research in TC units in other states, especially states with substantial differences in programming and longer TC programs. De Leon (2000) outlines a twelve-month TC program, the recommended length of treatment, and it is probable that the shorter TC program used within Pennsylvania prisons is not as effective, particularly when looking at measures of change in treatment investment, identity, prosocial attitudes and behaviors, and self-awareness (De Leon 2000). A fidelity assessment has not been conducted on the unit studied in this thesis, although such an assessment will take place shortly.

This assessment will illuminate where this unit lies on the spectrum of prison-based TCs in terms of its fidelity to the intended TC model.

In addition to program length, programs vary in the progress and engagement residents must demonstrate to graduate from the TC. Inmates are expected to participate actively in groups and show progress throughout treatment in terms of providing feedback to their peers, responding positively to feedback, addressing their addiction, and setting goals for recovery (De Leon 2000). Failure to show this kind of progress should result in inmates being held back in their phase for additional time or, with continued lack of progress, dismissal from the program. The TC unit in this study did not hold inmates back in their phases for lack of progress and dismissal from the program only occurred with major behavioral disruptions (e.g., prison misconducts such as fighting as opposed to lack of participation). The graduation rate for those inmates who were eligible to graduate during the ten months of the study was 94%, despite many inmates admitting to lack of participation, sometimes as extreme as staying in their cells during treatment groups.

Another limitation, one that is present in all social network-based research, is the potential implications of missing data. High response rates were maintained throughout data collection, but respondents who do not participate contribute to missing network data and missing data across variables, potentially confounding results if those missing individuals tend to share specific demographics or treatment engagement levels within the community. Non-respondents on this unit were, on average, older inmates who had slightly lower IQs, a trend that affects the generalizability of these findings. However, individuals completing the survey were able to appraise willingness to change for all TC residents, not just those who completed the CAPI, minimizing the detriment of missing data. Official DOC data will also provide measures

of TC completion and any contact with the criminal justice system post-release, providing full measures of program completion and measures of post-release success. These longer-term trajectories will be evaluated in future analyses, connecting patterns observed during TC treatment with reentry outcomes, further illuminating processes of desistance or recidivism for inmates with histories of substance use disorders.

Long-term trajectories, obtained through quantitative records and qualitative re-entry interviews, are an important extension of this research given that the link between treatment engagement within the TC and long-term success is not established within these models. Reason asserts that higher engagement in TC treatment should bolster reentry success (e.g., sobriety, desistance), but the experiences of reentering ex-inmates are dynamic and oftentimes capricious, with many internal and external factors contributing to long-term outcomes. The author is currently pursuing this long-term extension, conducting qualitative interviews with a subset (n = 88) of this TC sample pre- and post-release and combining official data sources to track reentry success quantitatively.

The possibility of reverse causality also exists within these fixed effects models, as changes in treatment engagement may influence changes in appraisals. Fixed effects models with lagged independent variables were examined to determine time-order (see Appendix D). As expected, the coefficients for all three appraisal sources decreased in magnitude and significance, but the relative pattern among the variables held across all models. Further analyses are needed to better parse out these time-dependent effects.

Reflected appraisals and treatment engagement are both self-reported measures, which can create measurement bias. Future analyses will assess associations between the three appraisal sources and a peer-reported measure of who is considered to be a role model on the TC unit.

Determining which appraisal(s) are most predictive of a peer-derived measure of engagement in treatment and recovery eases social desirability and measurement bias concerns while also illuminating additional mechanisms that underlie TC treatment and processes of within-person change in attitudes, behaviors, and identity. Later analyses will also include the number of peer appraisals received (i.e., peer appraisal indegree) as a predictor of engagement in treatment and long-term success in reentry. TC residents who participate more actively in their treatment should be more well known by their peers and have higher peer appraisal indegree, all of which suggest high levels of treatment engagement and the potential for greater success in sobriety and desistance in reentry.

Given that the outcome of interest is self-reported, it would not be surprising if self appraisals were the best predictor of that self-reported treatment engagement, yet this was not the case in the fixed effects regressions. It is logical to assume that residents would rate their treatment engagement according to their internalized sense of dedication to change and recovery. Despite the challenges a prison-based treatment environment poses in terms of encouraging resident vulnerability and personal disclosure, peer-based effects are still present and statistically significant in a prosocial direction in this particular TC unit.

Despite these environmental hurdles and research limitations, this research is an important step toward a better understanding of the mechanisms of prison-based TC treatment, and why some residents have higher engagement and experience more progress in their substance use recovery than others. Many differences exist in TCs within different states and determining how specific programming and regulations are impacting inmate residents opens the door for improvement in TC implementation and greater rates of long-term success for prison-based TC graduates.

References

Alvarez, Alvin N. and Janet E. Helms. 2001. "Racial Identity and Reflected Appraisals as Influences on Asian Americans' Racial Adjustment." *Cultural Diversity and Ethnic Minority Psychology*, *7*(3): 217.

Asencio, Emily K. 2011 "Familiarity, Legitimation, and Frequency: What Matters More for the Criminal Self-view?" *Sociological Inquiry* 80(4): 636-654.

Asencio, Emily K. 2013. "Self-Esteem, Reflected Appraisals, and Self-Views: Examining Criminal and Worker Identities." *Social Psychology Quarterly* 76(4): 291-313.

Asencio, Emily K. and Peter J. Burke. 2011. "Does Incarceration Change the Criminal Identity? A Synthesis of Labeling and Identity Theory Perspectives on Identity Change." *Sociological Perspectives* 54: 163-82.

Bahr, Stephen J., Amber L. Masters, and Bryan M. Taylor. 2012. "What Works in Substance Abuse Treatment Programs for Offenders?" *The Prison Journal* 92(2): 155-174.

Belenko, Steven and Jordon Peugh. 2005. "Estimating drug treatment needs among state prison inmates." Drug and Alcohol Dependence. 77(3): 269-81

Bouchey, Heather A. and Susan Harter. 2005. "Reflected Appraisals, Academic Self-Perceptions, and Math/Science Performance During Early Adolescence." *Journal of Educational Psychology*, *97*(4): 673.

Burke, Peter. 1991. "Identity Processes and Social Stress." *American Sociological Review*, 56: 836-49.

Carson, E. Ann and Elizabeth Anderson. 2016. *Prisons in 2015*. Washington, DC: Bureau of Justice Statistics Bulletin.

CASA: The National Center on Addiction and Substance Use at Columbia University. 2010. "Behind Bars II: Substance Abuse and America's Prison Population." New York, NY.

Center for Behavioral Health Statistics and Quality. (2015). *Behavioral health trends in the United States: Results from the 2014 National Survey on Drug Use and Health* (HHS Publication No. SMA 15-4927, NSDUH Series H-50). Retrieved from http://www.samhsa.gov/ data/

Chandler, R.K., Fletcher, B.W., and Volkow, N.D. (2009). Treating drug abuse and addiction in the criminal justice system: Improving public health and safety. *Journal of the American Medical Association, 301*(2), 183-190.

Cooley, Charles Horton. 1902. *Human Nature and the Social Order.*

Cooper, Alexia D., Matthew R. Durose, and Howard N. Snyder. 2014. "Recidivism of Prisoners Released in 30 States in 2005: Patterns From 2005 To 2010." *Bureau of Justice Statistics*.

De Leon, George and Gerald Melnick. 1996. Therapeutic Community Scale of Essential Elements Questionnaire (SEEQ Scale). *Center for Therapeutic Community Research.*

De Leon, George and David Kressel. 1997. Therapeutic Community Staff Assessment Summary for Correctional-Based Programs (SAS Scale). *Center for Therapeutic Community Research.*

De Leon, George. 2000. *The Therapeutic Community: Theory, Model, and Method.* New York: Springer Publishing.

Felson, Richard B. 1993. "The (Somewhat) Social Self: How Others Affect Self-Appraisals." *Psychological Perspectives on the Self, 4*: 1-26.

Giordano, Peggy C., Stephen A. Cernkovich, and Jennifer L. Rudolph. 2002. "Gender, Crime, and Desistance: Toward a Theory of Cognitive Transformation." *American Journal of Sociology* 107(4): 990-1064.

Heimer, Karen and Ross L. Matsueda. 1994. "Role-Taking, Role Commitment, and Delinquency: A Theory of Differential Social Control." *American Sociological Review* 59(3): 365-390.

Jensen, Eric L. and Stephanie L. Kane. 2012. "The Effects of Therapeutic Community on Recidivism Up to Four Years after Release from Prison." *Criminal Justice and Behavior, 39*, 1075-1087.

Kanazawa, Satoshi and Mary C. Still. 2000. "Why Men Commit Crimes (And Why They Desist)." *Sociological Theory* 18(3): 434-447.

Kerrison, Erin M. 2017. "Exploring How Prison-Based Drug Rehabilitation Programming Shapes Racial Disparities in Substance Use Disorder Recovery." *Social Science & Medicine* (In Press).

Kressel, David and George De Leon. 1997. Therapeutic Community Client Assessment Summary for Correctional-Based Programs (CAS Scale). *Center for Therapeutic Community Research.*

Maruna, Shadd. 2001. *Making Good: How Ex-Convicts Reform and Build Their Lives.* Washington, D.C.: American Psychological Association Books.

Matsueda, Ross L. 1992. "Reflected Appraisals, Parental Labeling, and Delinquency: Specifying a Symbolic Interactionist Theory." *American Journal of Sociology* 97(6): 1577-1611.

McCorkel, Jill A. 2013. *Breaking Women: Gender, Race, and the New Politics of Imprisonment.* New York, NY: New York University Press.

Mead, George Herbert. 1934. *Mind, Self, and Society.* Chicago: University of Chicago Press.

Mitchell, Ojmarrh, David B. Wilson, and Doris L. MacKenzie. 2012. "The Effectiveness of Incarceration-Based Drug Treatment on Criminal Behavior: A Systematic Review." *Campbell Systematic Reviews* 2012:18.

The Office of National Drug Control Policy. "2013 Annual Report, Arrestee Drug Abuse Monitoring Program II"

Paternoster, Raymond, Robert Brame, Paul Mazerolle, and Alex Piquero. 1998. "Using the Correct Statistical Test for the Equality of Regression Coefficients." *Criminology* 36(4): 859-866.

Paternoster, Raymond and Shawn D. Bushway. 2009. "Desistance and the "Feared Self": Toward an Identity Theory of Criminal Desistance." *Journal of Criminal Law and Criminology* 99(4): 1103–1156.

Pennsylvania Department of Corrections (DOC), Planning, Research, and Statistics. 2013-2016. "PA Department of Corrections Calendar Year Admissions, 2013-2016."

Pennsylvania Department of Corrections (DOC), Planning, Research, and Statistics. 2016. "Year End Inmate Statistics (as of Dec. 31), 2016."

Rose, Arnold M. 1962. "A Systematic Summary of Symbolic Interaction Theory. *Human Behavior and Social Processes: An Interactionist Approach*, 3-19.

Sacks, JoAnn Y., Stanley Sacks, Michael Chaple, Karen McKendrick, and Charles M. Cleland. 2012. "Randomized Trial of a Reentry Modified Therapeutic Community for Offenders with Co-Occurring Disorders: Crime Outcomes." *Journal of Substance Abuse Treatment* 42(3): 247-259.

Sampson, Robert J. and John H. Laub. 2003. Desistance from Crime Over the Life Course. In J. T. Mortimer & M. J. Shanahan (Eds.), *Handbook of the Life Course* (pp. 295-309). New York: Springer.

Stevens, Alisa. 2013. *Offender Rehabilitation and Therapeutic Communities: Enabling Change the TC Way*. Abingdon, Oxfordshire: Routledge.

Stryker, Sheldon and Richard T. Serpe. 1982. "Commitment, Identity Salience and Role Behavior: Theory and Research Example. In W. Ickes & E. S. Knowles (Eds.). *Personality, Roles, and Social Behavior*. New York: Springer-Verlag.

Taxman, Faye S., Matthew L. Perdoni, and Lana D. Harrison. 2007. "Drug Treatment Services for Adult Offenders: The State of the State." *Journal of Substance Abuse Treatment* 32(3): 239-254.

TCU Institute of Behavioral Research. 2014. "Texas Christian University Drug Screen V." Fort Worth, TX.

Ulmer, Jeffery T. and Darrell Steffensmeier. 2014. "The Age and Crime Relationship: Social Variation, Social Explanations." In *The Nurture versus Biosocial Debate in Criminology*, edited by K. Beaver, B. Boutwell, and J.C. Barnes. Newbury Park, CA: Sage.

Welsh, Wayne N. and Gary Zajac. 2013. "A Multisite Evaluation of Prison-Based Drug Treatment: Four-Year Follow-Up Results." *The Prison Journal* 93(3): 251-271.

Zhang, Sheldon X., Robert E.L. Roberts and Kathryn E. McCollister. 2011. "Therapeutic Community in a California Prison: Treatment Outcomes." *Crime & Delinquency*, *57*(1), 82- 101.

Client Assessment Summary (CAS)

Strongly Disagree	Disagree	Between Disagree/Agree	Agree	Strongly Agree
1	2	3	4	5

1.	My behavior and attitude show that I am a mature person.	1 ------ 2 ------ 3 ------ 4 ------ 5	____ (1)
2.	I regularly meet my obligations and responsibilities.	1 ------ 2 ------ 3 ------ 4 ------ 5	____ (2)
3.	I strive to live with positive values and principles (honesty).	1 ------ 2 ------ 3 ------ 4 ------ 5	____ (3)
4.	I still have the attitudes and behaviors associated with the drug/criminal lifestyle.	1 ------ 2 ------ 3 ------ 4 ------ 5	____ (4)
5.	I often present an image rather than my true self.	1 ------ 2 ------ 3 ------ 4 ------ 5	____ (5)
6.	My job function helps me learn about myself and is a valuable part of treatment.	1 ------ 2 ------ 3 ------ 4 ------ 5	____ (6)
7.	I get along with and interact well (mix well socially) with people.	1 ------ 2 ------ 3 ------ 4 ------ 5	____ (7)
8.	Overall, I have good awareness, judgment, decision-making and problem solving skills.	1 ------ 2 ------ 3 ------ 4 ------ 5	____ (8)
9.	I'm able to identify my feelings and express them in an appropriate way.	1 ------ 2 ------ 3 ------ 4 ------ 5	____ (9)
10.	I feel good about who I am (my self-esteem is high).	1 ------ 2 ------ 3 ------ 4 ------ 5	____ (10)
11.	I understand and accept the program rules, philosophy and structure.	1 ------ 2 ------ 3 ------ 4 ------ 5	____ (11)
12.	I enthusiastically participate in program activities.	1 ------ 2 ------ 3 ------ 4 ------ 5	____ (12)
13.	I feel an investment, attachment and ownership in the program.	1 ------ 2 ------ 3 ------ 4 ------ 5	____ (13)
14.	My behavior and attitude set a good example for other members of the program.	1 ------ 2 ------ 3 ------ 4 ------ 5	____ (14)

Appendix B Table - Fixed Effects Regressions of Dual Appraisals on Treatment Engagement (n=452)

	Model 1 Coefficient (SE)		Model 2 Coefficient (SE)		Model 3 Coefficient (SE)	
Self Appraisal	.005	(.01)	.012	(.01)		
Reflected Appraisal	.032***	(.01)			.030***	(.01)
Peer Appraisal			.028*	(.01)	.020	(.01)
F-Test	*7.99***		*3.08**		*9.35***	
Degrees of Freedom	*274*		*274*		*274*	

***p<.001, **p<.01, *p<.05, †p<.1

Appendix C

Appendix C Table - Fixed Effects Regressions of Appraisals on Treatment Engagement with Treatment Wave and Interactions (n=452)

	Model 1		Model 2		Model 3	
	Coefficient (SE)		Coefficient (SE)		Coefficient (SE)	
Self Appraisal	-.015	(.02)	.013	(.01)	.016	(.01)
Reflected Appraisal	.022*	(.01)	.010	(.01)	.021*	(.01)
Peer Appraisal	.015	(.01)	.016	(.01)	.006	(.02)
TreatWave*SelfApp	.010†	(.01)				
TreatWave*ReflectApp			.005	(.00)		
TreatWave*PeerApp					.004	(.01)
Treatment Wave	-.048	(.05)	.009	(.04)	.013	(.05)
F-Test	7.00***		6.56***		6.43***	
Degrees of Freedom	271		271		271	

***p<.001, **p<.01, *p<.05, †p<.1

Appendix D

Appendix D Table - Fixed Effects Regressions - Lagged IVs				
	Model 1	Model 2	Model 3	Model 4
	Coeff (SE)	Coeff (SE)	Coeff (SE)	Coeff (SE)
Self Appraisal	.008 (.02)			.001 (.02)
Reflected Appraisal		.009 (.01)		.008 (.01)
Peer Appraisal			.026† (.02)	.024 (.02)
Treatment Wave	.037† (.02)	.027 (.02)	.033† (.02)	.030 (.02)

***p<.001, **p<.01, *p<.05, †p<.1