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RECOVERY CAPITAL IN A JUSTICE-INVOLVED POPULATION: AN ASSET-BASED APPROACH TO RECOVERY AND COMMUNITY REENTRY

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Evan Joseph Batty, Student

Dr. Carrie Oser, Major Professor

Dr. Janet Stamatel, Director of Graduate Studies

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DISSERTATION

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy in the
College of Arts and Sciences
at the University of Kentucky

By

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Lexington, Kentucky

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2024

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ABSTRACT OF DISSERTATION

RECOVERY CAPITAL IN A JUSTICE-INVOLVED POPULATION: AN ASSET-BASED APPROACH TO RECOVERY AND COMMUNITY REENTRY

The burden of the opioid epidemic demands further efforts to facilitate recovery, particularly for disadvantaged populations and those recently released from prison. After community reentry, individuals face a period of vulnerability as they adjust to new roles and responsibilities to meet their basic needs. Prison-based substance use disorder treatment (SUD Tx) programs provide support to help prepare individuals with SUD for their release and facilitate successful recovery goals after community reentry. This dissertation has three aims: (1) further the understanding of potential barriers and facilitators of recovery after community reentry, (2) assess how prison-levels of recovery capital influence recovery outcomes post-release from prison, and (3) model personal, social/family, and community factors associated with recovery capital levels after community reentry.

This project utilizes data from the ongoing longitudinal National Institute on Drug-Abuse-funded study called the Geographic Variation in Addiction Treatment Experiences (GATE) study. This study aims to assess multi-level factors influencing prison-based initiation of medications for opioid use disorder (MOUD), predictors of MOUD utilization post-release, and adverse outcomes among rural and urban persons with opioid use disorder. Qualitative analysis is used to understand what barriers or facilitators individuals experience after community reentry in aim 1. Analyses for aim 2 and 3 utilize quantitative modeling informed by the recovery capital framework to predict recovery outcomes and identify factors associated with levels of recovery capital post-release from prison.

Findings indicate the importance of asset-building during the period of incarceration to better facilitate the transition from prison to the community. Further, results identify factors in the community associated with recovery capital levels post-release from prison. The findings from this dissertation can be used to develop informed interventions for the carceral setting as well as in the community to better support

individuals in recovery during the vulnerable transitionary period during community reentry.

KEYWORDS: Criminal legal system, Substance use disorder, Community reentry, Treatment, Recovery Capital

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4/24/2024

Date

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Date

DEDICATION

To my beautiful daughters and wife

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CHAPTER 1. Background and introduction

1.1 An introduction to the topic

The social and economic burdens of the opioid epidemic demand further efforts to facilitate recovery, particularly for disadvantaged populations and those with a history of involvement with the criminal legal system (CLS). About 58% of individuals incarcerated in state prisons meet the criteria for a substance use disorder (SUD) (BJS 2020). Further, drug-related offenses constitute nearly a quarter of the national population of individuals on parole (BJS 2021). Among U.S. states, Kentucky ranks within the top 10 states affected by the opioid epidemic (KFF 2022). In Kentucky, the economic burden of the opioid crisis equates to a total cost of $24.46M ($5,491 per capita) (Florence et al. 2017). Additionally, the mortal cost related to fatal opioid overdose has increased by over a third (38.6%) since 2017 (KIPRC 2022). In response to the opioid crisis, the Kentucky (KY) Department of Corrections (DOC) oversees 14 prison-based substance use disorder treatment programs (SUD Tx) across 11 prisons (KY DOC 2021).

KY DOC utilizes a therapeutic community (TC) model of treatment that reflects a shift towards evidence-based treatment (KY DOC 2021; De Leon 2000). Providing incarcerated individuals access to clinically-driven treatment programming shifts the perspective of SUDs from being viewed as a social problem to a health crisis (McLellan et al. 2000). The TC modality provides a setting separated from a prison's general population and provides a recovery-goal-oriented community to provide mutual peer support to individuals in their recovery journey (KYDOC 2021; De Leon 2000). These programs provide clinical and logistical support to help prepare individuals with SUDs for their release by connecting treatment to the prison's community reentry procedures.

To better understand the impact of these preparations, this dissertation utilizes an asset-based theoretical framework called recovery capital (RC). Developed in the 1990s by Granfield and Cloud (1999), RC attempts to understand how resources are accumulated and expended over the course of an individual's addiction. This dissertation explores the contributions of KY prison-based SUD Tx through a three-paper format addressing three key research questions:

RQ1 (Chapter 1):	How do prison-based SUD Tx program staff view the barriers and facilitators to recovery upon community reentry?
RQ2 (Chapter 2):	Does the level of recovery capital during an individual's incarceration affect recovery outcomes in the community after reentry?
RQ3 Chapter 3):	What factors are associated with higher or lower levels of RC post-release from prison?

To better contextualize this series of papers, in this introductory chapter, I will discuss vulnerability during the reentry period, the recovery capital theoretical framework guiding the three papers, and provide a brief discussion of each of the three papers.

1.1.1 Vulnerability and the Reentry Period

This transition from the prison TC to the community introduces new social and institutional stressors as the individual must balance their recovery with meeting their basic social and physical needs. Access to needed public assistance can be delayed due to challenges individuals face in acquiring necessary identification and acquiring insurance coverage (Wilson 2009). These same issues may also further delay access to employment post-release from prison due to a lack of required documentation (e.g., state identification, social security card) (Wilson 2009). Additionally, greater frequency and a

longer duration of incarceration has been shown to decrease the likelihood of having insurance coverage up to a year after community reentry (Zhao et al. 2023). Access to coping resources, such as social support, financial stability, and one's self-concept, help to mitigate stressors faced by people with both an opioid use disorder (POUD) and a history of involvement with the criminal legal system (Cassel 2017; Wheaton 1985). However, stigma diminishes access to these resources through isolation and discrimination (Link et al. 1997; Link & Phelan 2001; Hatzenbuehler et al. 2009; Meyer 2003).

The detrimental influence that discrimination and stigma can have on recovery provides a social context for understanding the challenges faced by individuals reentering the community after a period of incarceration. In a stratified system, disadvantaged groups are more likely to align with predisposing factors that both encourage drug use as a strategy for coping with social stressors and limit access to resources that may encourage treatment-seeking and/or use of recovery supports (Dohrenwend et al. 1992; Aneshensel et al. 1991; Silver et al. 2002; Boardman et al. 2001). This has been tied to the relationship between socioeconomic status, neighborhood disadvantage, and discrimination experienced over the life course as individuals struggle to achieve financial stability (e.g., employment, housing, insurance) (Pearlin 1989; Pearlin et al. 2005; Crowder & Downy 2010; Ross et al. 2000; Thoits 2010; Elswick 2018; Lloyd et al. 2019). The compounding impact of these challenges creates a social environment of competing needs and the accumulation of stress.

Additionally, strains on individuals' social connections due to incarceration limit the availability of social support individuals may access during the trying period of

reentry (Lloyd et al. 2019). Supportive social networks have been shown to improve recovery outcomes as a consequence of providing access to both emotional and material forms of support (Bui & Morash 2010); however, the instability of networks and the loss of support hinder this capacity. Additionally, the accessibility of community resources in certain geographic areas, such as mutual support groups for SUD, may create an additional barrier to accessing support (Palombi et al. 2019).

Overall, the limited access to resources conducive to recovery threatens individuals' resiliency during the reentry period. Resiliency can be understood as the capacity for individuals to bounce back in the face of adversity and relies on flexibility to adapt to stressors, personal strength, and self-efficacy (Pincus & Mitten 2010; Tedeschi & Calhoun 2004). Greater adversity faced during reentry demands a greater amount of resources to maintain recovery; however, the limits discussed may lead individuals to unhealthy coping strategies, including a return to drug use (Moon & Lee 2020). Research identifies a return to use as further exacerbating the constraining limits on resource accumulation (Nordfjaern 2011; Cornelius et al. 2003; Domino et al. 2005; Moos & Moos 2006). To help prevent this cycle of resource depreciation during reentry, it is important to frame reentry through an asset-based theoretical perspective, such as RC.

1.1.2 Recovery Capital Framework

RC provides a flexible framework for understanding factors of recovery across personal-, micro-, and meso- ecological levels (Hennessy 2017). At the individual level, factors range from more tangible material resources (e.g., transportation, housing, finances) to physical and mental health and also internal characteristics, such as one's self-concept, skills, and knowledge (Cloud & Granfield 2008; White & Cloud 2008;

Neale et al. 2014). The micro level includes social factors related to both the development of social connections as well as the functional support (e.g., financial, emotional, and recovery support) these connections can provide (Cloud & Granfield 2001; White & Cloud 2008). Lastly, the meso level applies to broader community factors, such as community sentiments and policies, that influence the availability of accessible recovery support (e.g., inclusiveness, treatment availability) (White & Cloud 2008).

Challenges faced in RC accumulation as well as potential benefits of RC have been increasingly studied within the past decade as they relate to individuals with a history of involvement with the CLS. RC research identifies the depreciation of accumulating financial and social support during reentry and a need for life skill development to better support employability and the ability to develop interpersonal connections and mitigate challenges to self-sufficiency (Connolly & Granfield 2017; Kahn et al. 2019). Access to recovery supporting social groups has been shown to reduce drug use; additionally, this may also be tied to engagement in fulfilling activities (Cheney et al. 2016). This further supports findings that social integration facilitates capital accumulation (Terrion 2013; Watson et al. 2017; Ray et al. 2021). The accessibility of resources that can be expended in support of one's recovery improves resiliency and has been associated with an increase in overall life satisfaction (Laudet & White 2009). To better mitigate these challenges and facilitate the achievement of the described benefits, further research on prison-based SUD Tx, RC and reentry is needed.

1.2 Dissertation Research

Data for all three papers were collected as part of an ongoing National Institute on Drug-Abuse-funded study called the Geographic Variation in Addiction Treatment

Experiences (GATE) study. This study aims to assess multi-level factors influencing prison-based initiation of medications for opioid use disorder (MOUD), predictors of MOUD utilization post-release, and adverse outcomes among rural and urban persons with opioid use disorder (POUD) (Oser et al. 2023). The three chapters advance the research on the reentry period for formerly incarcerated individuals through Cloud and White's (2008) RC model, which assesses RC at the three ecological levels (e.g., personal, micro-, and meso-) labeled as personal RC, family/social RC, and community RC. These chapters use a combination of qualitative data from prison-based SUD Tx staff and quantitative data collected from prison-based SUD Tx participants. These papers provide a comprehensive perspective on not only how these programs attempt to build RC prior to release but also how RC helps support recovery post-release from prison.

1.2.1 Paper #1 (Chapter 2): "Recovery Capital and Community Reentry: Perspectives from Prison-Based Substance Use Disorder Treatment Program Clinicians and Administrators"

The first paper of this dissertation addresses RQ1 through a qualitative analysis of semi-structured interviews with prison-based SUD Tx clinicians and administrators. Utilizing White and Cloud's (2008) model of RC, paper 1 in Chapter 2 identifies themes relevant to three domains of RC: (1) personal RC domain – the importance of self-efficacy to improve recovery outcomes, (2) family/social RC domain – home placement and returning to pre-incarceration social networks may help or hinder recovery, and (3) community RC domain –logistical planning and community geography pose barriers to treatment continuation. Qualitative interviews with prison staff provide insights into programmatic functions before an individual's release and their potential influence on post-release recovery, which is an area of research that remains unexplored (Terrion

2013; Whiteford et al. 2016; Miles et al. 2020; Kaur et al. 2022, 2023; Parlier-Ahmad et al. 2021). Prison staff perspectives help to ground the goals of prison-based SUD Tx programs (e.g., recovery goals of clients, skill building, healthy coping behaviors) with prison reentry procedures to better contextualize pre-release preparations for individuals in recovery from an SUD and challenges clients might face after returning to the community. This is important to understanding how RC transfers from prison to the community and identifying areas of intervention that could improve the continuum of care post-release from prison.

Data includes 32 interviews, which were transcribed verbatim and coded using qualitative software. This paper outlines potential benefits prison-based SUD Tx program clients may receive while incarcerated; however, these benefits may not always transfer to the community once individuals are released from prison.

1.2.2 Paper #2 (Chapter 3): "Preparing Individuals for Community Reentry: Using a Recovery Capital Framework to Assess Recovery Outcomes Post-Release from Prison"

In Chapter 3, the second paper addressed RQ2 through a longitudinal quantitative analysis of survey data collected from prison-based SUD Tx participants and tests 5 hypotheses:

> H1: Greater RC during incarceration improves the likelihood of abstaining from drug use post-release from prison.
>
> H2: Greater RC during incarceration improves the likelihood of obtaining employment post-release from prison.
>
> H3: Greater RC during incarceration improves the likelihood of obtaining stable housing post-release from prison.
>
> H4: Greater RC during incarceration will increase an individual's resiliency post-release from prison.

H5: Significant RC domains will differ based on the post-release recovery outcome (i.e., return to drug use, employment, stable housing, and resiliency).

Prison-based SUD Tx programs aim to enhance the assets and skills available to individuals in recovery prior to their release from prison (Lyons 2008); however, research examining how prison-based levels of RC predict recovery outcomes is limited (Neale & Stevenson 2014; Laudet & White 2009; Best 2012:2024; Lloyd et al. 2019). This gap is further widened when considering how specific domains of RC predict these outcomes. By expanding on the research in this area, programming and interventions both in prison and the community could target specific dimensions with a person-centered approach to better support client needs. Facilitating the achievement of recovery goals post-release can enhance a sense of stability and prevent reduce negative outcomes (e.g., return to drug use, reincarceration) (Binswanger et al. 2022; BJS 2021).

Data includes a two-part baseline survey administered to individuals incarcerated or within 3 months of their release from prison and a 6-month follow-up survey in the community. The sample includes 247 participants who screened eligible and completed the baseline and 6-month surveys. RC is assessed using the Brief Assessment of Recovery Capital (BARC-10) scale, measuring RC across 10 conceptual domains (Groshkova et al. 2013; Vilsaint 2017). Statistical modeling includes regressing the outcomes of returning to drug use, employment, stable housing, and resiliency from the 6-month assessment on RC during incarceration.

1.2.3 Paper #3 (Chapter 4): "Assessing the Accumulation of Recovery Capital for Prison-Based Substance Use Treatment Program Participants after Community Reentry"

The third paper addresses RQ3 in Chapter 4 through an exploratory quantitative analysis of survey and social network data collected from prison-based SUD Tx participants. This paper explores what factors are associated with higher or lower levels of RC 6 months post-release from prison and addresses the following research questions: (1) *"How does RC change from prison to the community?"*, and (2) *"What individual-, social-, and community-level factors are associated with higher or lower levels of RC post-release from prison?"* Prior research identifies the importance of social relationships and community integration during the reentry period (Kahn et al. 2019; Terrion 2013; Connolly & Granfield 2017). However, public stigma related to individuals' history of incarceration and substance use poses challenges for garnering RC in addition to having a negative impact on an individuals' self-concept and, subsequently, sustained recovery (Burleson & Kaminer 2005; Ciraulo et al. 2003). Therefore, it is important to gain a better understanding of factors influencing RC during this vulnerable period. By doing so, interventions at the personal, social/family, and community level may be designed to bolster supportive RC factors and mitigate the harms associated with negative RC factors.

Similar to paper 2 in Chapter 3, data includes the two-part baseline survey administered to individuals incarcerated or within 3 months of their release from prison and a 6-month follow-up survey. Additionally, a social network inventory collected at the 6-month timepoint is also used. The sample includes 222 participants who screened eligible and completed the baseline and 6-month surveys. The BARC-10 is also used to measure RC (Groshkova et al. 2013; Vilsaint 2017). Multivariate linear regression was

used to identify the association of personal, family/social, and community-level variables on RC 6-months after community reentry. RC at baseline was included as a control to clearly identify factors associated with an increase or decrease in RC after prison release.

1.2.4 Synthesizing Study Findings (Chapter 5)

This dissertation concludes with a fifth chapter summarizing key findings and discussing the significance of this work. Chapter 5 highlights three key contributions made by this dissertation: (1) Identifying needs in facilitating RC transference from prison to the community, (2) displaying that levels of RC during incarceration matter for recovery outcomes in the community, and (3) assessing the multidimensionality of community levels of RC. This chapter also provides insight into the real-world implications of this research, particularly relevant to strategizing for both prison-based and community-based interventions. Limitations of this dissertation and suggestions for future directions for research are also discussed.

CHAPTER 2. Recovery Capital and Community Reentry: Perspectives from Prison-Based Substance Use Disorder Treatment Program Clinicians and Administrators

2.1 Introduction

Community reentry following criminal legal system (CLS) involvement is a highly vulnerable transition period marked by significant adjustment to new roles, relationships, and responsibilities (Luther et al., 2011; Few-Demo & Arditti, 2014). People with a history of opioid use disorder (POUD) face even greater challenges during this period, as the stress of meeting basic needs intersects with recovery challenges (Luther et al., 2011; Begun et al., 2016). Stress may result in detrimental effects on POUD's recovery, such as return to use, overdose, and death (Keyes et al., 2014; Oser & Harp, 2015; Havens et al., 2011; Havens et al., 2013). For this reason, prison-based substance use disorder treatment (SUD TX) programs help to prepare POUD for reentry and may bolster positive outcomes for participants (Bahr et al., 2012; Messina et al., 2010; Wormith et al., 2007). Kentucky has been an important site for the expansion of treatment programs because of increased drug charges in Kentucky's prison population with a nearly threefold increase in SUD TX slots over the past decade (Kaebel et al., 2015; Staton-Tindall et al., 2015). As prison-based SUD TX programs continue to develop, there is a need for a clearer understanding of the best practices observed by prison-based SUD TX program personnel. The theoretical framework of recovery capital (RC) provides an asset-based approach for categorizing the potential effect of prison-based treatment programs on inter- and intrapersonal resources used by POUD to navigate their recovery upon community reentry (Granfield & Cloud, 1999; Cloud and Granfield, 2008).

Having a criminal history influences opportunities available to POUD upon reentry and contributes to an environment where access to socioeconomic resources may be more limited and increases levels of stress. Formerly incarcerated POUD are a dually stigmatized group forced to cope with unique stressors related to fulfilling their roles and responsibilities vis-à-vis discrimination related to their history of drug use and incarceration (McLellan et al., 2000; Meyer, 2003; Link et al., 1997). Barriers to goal-attainment inflict stress upon many people with a history of opioid use disorder, and associated strains may lead to detrimental forms of behavior to adapt or cope, such as a return to drug use (Dohrenwend et al., 1992; Boardman et al., 2001). Therefore, it is important to consider not only the psychological aspects of recovery and reentry but also an individual's social environment (e.g., treatment accessibility, social support, housing, employment opportunities, geography), and material resources for a comprehensive perspective (Lyons & Lurigio, 2010; Granfield & Cloud, 1999; Cloud & Granfield, 2008).

Originally conceptualized in the 1990s, RC aims to understand the influence of one's total resources on individuals' well-being during all stages of addiction (i.e., before one's initial drug use through to their recovery) as a positive-negative continuum (Granfield & Cloud, 1999; Cloud & Granfield, 2008). Since then, research utilizing a recovery framework has maintained its fundamental definition provided by Granfield and Cloud (1999) and continues to evolve into various models compartmentalizing a wide breadth of conceptual domains (Hennessy, 2017). However, consistency amongst the domains of RC models reflects an ecological framework, which includes constructs across the individual-, micro-, and meso-ecological levels (Hennessy 2017). This study

uses a comprehensive RC model developed by White and Cloud (2008) that aligns with the three ecological levels by including three domains: (1) personal RC, (2) family/social RC, and (3) community RC. Personal RC includes both physical (e.g., financial assets such as health insurance, employment, transportation) and human (e.g., knowledge, values, self-concept) forms of capital as a representation of the individual's personal assets (White and Cloud 2008). The family/social RC domain consists of the relationships that make up an individual's social network, specifically related to the provision of recovery support (White & Cloud, 2008). The third domain, community RC, refers to both cultural attitudes towards opioid use disorder (OUD) as well as tangible resources, such as the availability of a full continuum of SUD resources (e.g., mutual-support groups, prescribers of medication for opioid use disorder (MOUD), residential/out-patient treatment facilities) (White & Cloud, 2008). This brings the important consideration of "place" into the RC model as potentially enabling or disabling recovery based on the availability of resources across a network of diverse actors and agencies (Duff, 2011; Whiteford et al., 2016).

RC frameworks have been used to understand how capital is accumulated and expended by individuals to sustain recovery over time. Research shows that RC not only enhances the ability to cope with stressors but also enhances overall life satisfaction; this has resulted in further exploration into the long-term reciprocal effect of RC on sustained recovery (Laudet & White, 2009; Best, 2012). Previous literature highlights the importance of abstinence-supporting networks, particularly recovery community role models, and engagement in conventional, nondrug-using activities in reducing drug use to further support recovery (Cheney et al., 2016). However, housing and financial

instability presents challenges to creating a stable environment to reduce stress and allow engagement in conventional activities (Elswick et al., 2018).

Additionally, the disproportionate vulnerability of an individual's recovery in rural communities presents a geographic challenge to understanding RC as rural places often face greater opioid-related risks (e.g., injection drug use, overdose, and infectious disease) as well as more limited accessibility of opioid treatment facilities (Van Handel et al., 2016; Oser & Harp, 2015; Pullen & Oser, 2014; Oser et al., 2011; Schalkoff et al., 2020; Hester, 2004; Cherry et al., 2017). Prior research on OUD treatment disparities found the distance to the nearest treatment facility from the county center point to be greatest for rural patients compared to their metropolitan counterparts (Brown et al., 2018). Specialty availability and the capacity to treat comorbid physical and mental health conditions in rural areas further limits accessibility to adequate treatment, particularly when also considering limited personal capital available to rural CLS-involved POUD such as insurance coverage and the cost of care (Cherry et al. 2017; Hester 2004). Prior research in this area has only focused on rural RC, finding that limited social interaction and support as well as the accessibility of recovery capital poses challenges for creating a therapeutic rural setting for recovery (Whiteford et al., 2016).

This research will address the current gap in RC literature by addressing specific and potentially unique issues associated with treating individuals with OUD. The current RC literature on OUD populations appears to focus exclusively on comparing OUD with alcohol use or an alcohol use disorder cohort (Bormann et al., 2023; Kaur et al., 2022; Kaur et al., 2023) or assesses the relationship between RC and utilization of MOUD (Miles et al., 2020; Parlier-Ahmad et al., 2021). Additional research identifies the

significance of an individual's integration to establishing assets across White and Cloud's 3 domains of RC (i.e., personal, family/social, and community) (Terrion, 2013; White & Cloud, 2008). However, there is a need for research exploring the personal, social, and community aspects of reentry that may help or hinder an individual's recovery, particularly from the perspective of personnel working within prison-based SUD Tx programs. The aim of this study is to apply White and Cloud's (2008) RC model to better understand the circumstances of community reentry for POUD involved with the criminal legal system who have also participated in a KY prison-based SUD TX program through the perspective of program staff.

Based on a thorough review of the literature, this is the first study to focus on the viewpoints of prison SUD TX staff involved in this population's recovery while incarcerated and after community reentry into both rural and urban areas. Prior research in this area has only focused on rural RC, finding that limited social interaction and support as well as the accessibility of recovery capital poses challenges for creating a therapeutic rural setting for recovery (Whiteford et al., 2016). This study utilizes qualitative data collected from prison-based SUD treatment program clinicians and administrators because they work directly in developing and implementing the program. They communicate directly with clients in the program regarding their recovery, resources, and stressors while in the program and preparing for their upcoming release from prison. A qualitative methodology allows for the use of a broad data collection instrument to determine what personnel find significant to POUD recovery during reentry, based on their open responses. The following research question guided the qualitative analysis:

Research Question: From the perspective of prison-based SUD treatment programs personnel, how does community reentry affect individuals' recovery capital?

2.2 Methods

This investigation draws on data from a qualitative study of prison-based SUD treatment program social service clinicians and administrators employed by the KY Department of Corrections (DOC), conducted as part of the Geographic variation in Addiction Treatment Experiences (GATE) Study (Oser et al., 2023).

2.2.1 Sampling and Recruitment

Research staff conducted in-depth interviews with prison-based SUD treatment program social service clinicians (n=23) from August 2020 to December 2020 and with administrators (n=9) from September 2021 to February 2022, respectively for a total sample of 32 participants. Prison-based SUD TX programs in KY utilize a six-month, secular, therapeutic community modality (KYDOC, 2021) to encourage responsibility and accountability in the community and treatment processes through peer support (KYDOC, 2021). This peer-support based modality helps encourage accountability through its community setting, which houses program clients separately from the rest of the prison population (KYDOC, 2021). In 2019, KYDOC expanded service provision for Supportive Assistance with Medication for Addiction Treatment (SAMAT), which includes psychosocial therapies, case management to develop a transitional reentry plan, and currently offers MOUD to people who meet clinical criteria for OUD (CJKTOS, 2022). Administrators oversee programming of the prison-based treatment program and program adherence, while also supervising clinical staff. Clinicians provide clinical services in both individual and group settings with program clients.

Using a census sampling approach across prison-based SUD treatment programs offering medication for the treatment of opioid use disorder in Kentucky, all 27 clinicians employed in prison SUD treatment programs were invited to participate in a qualitative interview, and 4 clinicians did not participate resulting in an 85% response rate. This approach was also used to invite all 10 administrators, and 1 administrator did not participate (90% response rate). Trained research staff interviewed all participants one-on-one using the communication platform Zoom. Interview times averaged around 1 hour. Participants provided verbal consent prior to data collection. Participants were offered a token of appreciation (valued at less than $10) for their participation as monetary incentives for staff are prohibited by the Kentucky Executive Branch Ethics Commission. The University of Kentucky's Institutional Review Board provides approval for the GATE study, and a Certificate of Confidentiality provides protection to participants.

2.2.2 Data Collection

Semi-structured interview guides for administrators and clinicians covered the following topics: (1) clients' personal barriers and facilitators for treatment utilization, (2) supportive relationships, (3) treatment linkages upon reentry, and (4) rural vs. urban comparisons. Examples of questions related to these topics included:

- "What are the challenges your clients experience in creating and maintaining supportive relationships?"
- "Will you please describe the community treatment linkage process for your last client who initiated [treatment option] while in prison?"
- "In what ways are [individual, social, and structural] factors similar or different for clients who live in rural areas as compared to urban areas?"

Clinicians and administrators also completed a brief Qualtrics survey (< 5 minutes) to collect demographic information.

2.2.3 Analytic Strategy

Directed content analysis methods were used to analyze the resulting data. This involved the development of an initial codebook loosely grounded by an existing theory (Hsieh & Shannon, 2005). The Social-Ecological Model (Brofenbrenner, 1979; McLeory et al., 1988), which is the core theoretical framework for the GATE study, informed the creation of the codebook's parent codes at three social levels: (1) individual, (2) interpersonal, and (3) structural. A team of two coders and a team lead completed the coding of all transcripts using NVivo 12.0 software. The early stages of coding applied the parent codes to transcripts to create additional child codes for organizing the content of the transcripts into emergent thematic categories. In this case, the need to add child codes was exhausted after three transcripts, which completed this stage of the analysis. After developing the initial codebook, coders recoded the three transcripts from the previous stage, and then compared the coding for consistency. Coders discussed and reconciled discrepancies in coding, and if needed, the team lead served as the tiebreaker. This practice continued until the coding for all transcripts was completed (Srivastava & Hopwood, 2009; McAlearney et al., 2023). This study utilized RC as a theoretical framework to explain emergent themes relevant to individuals' reentry and recovery processes.

2.3 Results

2.3.1 Participant Demographic Information

Clinicians' and administrators' demographic characteristics are displayed separately in Table 1. Both clinicians and administrators were primarily white (91.30%/88.89%), female (65.21%/77.78%) and worked in prisons located in rural KY counties (69.57%/77.78%). The average age of clinicians (43.00) and administrators (42.22) was similar, as was the proportion who have obtained a Master's degree-level of education (43.48%/33.33%). Additionally, similar proportions of clinicians (65.22%) and administrators (66.67%) had at least one family member with a substance use disorder. The Kentucky Board of Alcohol and Drug Counselors provides certification to individuals with a bachelor's degree or higher or licensure to individuals with a Master's degree or higher who also pass a licensure examination (KBADC 2023). A higher proportion of clinicians (65.21%) were certified addiction counselors compared to administrators (55.55%). One (4.35%) clinician was a licensed addiction counselor and the average clinician worked in SUD TX field for nearly a decade (9.13 years). Two (22.22%) administrators were licensed addiction counselors. Administrators had an average of 12.11 years of experience working in the SUD TX field. Compared to administrators (mean=2.67), clinicians spent more years in their current position (mean=4.38). The average number of clients in the prison-based treatment programs was 68.89, while the clinician's average caseload was 32.30 clients.

Table 2.1 Descriptive Statistics of Prison-Based Tx Program Clinicians and Administrators

Variable	Clinicians (n=23)		Administrators (n=9)	
	% or Mean (SD)	Range	% or Mean (SD)	Range
Rural	69.57%		77.78%	
Female	65.21%		77.78%	
White	91.30%		88.89%	
Age	43.00 (9.50)	27.00-63.00	42.22 (7.17)	33.00-55.00
Have Family with SUD	65.22%		66.67%	
Master's Degree	43.48%		33.33%	
Certified Addiction Counselor	65.21%		55.55%	
Licensed Addiction Counselor	4.35%		22.22%	
Number of Years in SUD Tx	9.13 (6.78)	1.00-22.00	12.11 (7.93)	0.00-25.00
Number of Years in Current Position	4.38 (4.05)	1.00-13.00	2.67 (2.45)	0.00-7.00
Number of Clients	32.30 (16.94)	2.00-80.00	68.89 (36.41)	20.00-140.00

Notes: Number of clients reported as mean caseload for clinicians and the mean number of prison-based treatment program clients for administrators.

2.3.2 Identified Themes

The perspectives of administrators and clinicians on the reentry and recovery of individuals with a history of involvement with the criminal legal system are presented in terms of White and Cloud's three domains of RC (2008). Significant themes include the: (1) personal RC domain – the importance of self-efficacy to improve recovery outcomes, (2) family/social RC domain – home placement and returning to pre-incarceration social networks may help or hinder recovery, and (3) community RC domain –logistical planning and community geography pose barriers to treatment continuation.

2.3.2.1 The Importance of Self-Efficacy to Improve Recovery Outcomes

Clinicians and administrators nearly always identified self-efficacy - defined as an individual's belief in their own capacity to execute behaviors necessary to produce specific performance attainments, specifically maintaining recovery in this case (Bandura, 1977) - as highly salient in preparing clients for reentry and after community release. Consequently, prison SUD TX staff noted that they encourage self-efficacy to improve motivation and confidence in POUDs' recovery goals. As one administrator, noted:

Administrator: *"I think we have done a really good job trying to keep them motivated and dig down deep and help them take a deeper look at, you know, 'This is going to be a lot harder on the streets than it is right now, and you're stronger than this. And we believe in you, and you might not believe in you right now, but we do, and so we see something in you that you don't see yourself.'"*

The desire to advocate for oneself is critical to clients' efforts to maintain their recovery when returning to the community. Clinicians describe their role as the counselor within the prison-based program to motivate their clients and encourage self-efficacy prior to reentry by recognizing the challenges that clients face. One clinician stated, *"[W]hen they just get passed to the system as another number, and they get the information [on treatment], they've already probably been beat down so much that you know, just a little word of encouragement that maybe this is something that will help them get, you know, through the worst of their addiction[.]"* By recognizing the vulnerable state of clients while they are in prison, the clinicians can provide the encouragement needed for clients to move forward with recovery during their time incarcerated to better prepare them for their reentry.

Prison SUD TX staff also mention the challenges clients face in completing the prison-based SUD TX program; however, program discontinuation due to disciplinary termination may act as the catalyst needed to change a client's perspective on their recovery. When asked about reasons clients do not graduate from the program, one administrator described the potential positive influence termination could have on a client and states *"Most common, you know, I was thinking for our programs, usually because they receive like a disciplinary write-up. A lot of times those are either for fighting, sometimes it's for positive drug screens or drug related […] But you know, they can come back into the program. Sometimes, you know, that one termination kind of gets them like 'Okay, I need to buckle down.'"* Limited flexibility in the structure of the programs at some facilities may conflict with client self-efficacy, as a clients' definitions of recovery do not always align with the program's process. When asked the same question, some administrators for a different program describe program discontinuation because of the program's firm structure. One administrator shared "*The program's been here for 20 something years. And so, I think a lot of times people come in and think, 'Oh, I'm going to do it my way, I'm going to change it,' and it's already structured, and there's a wonderful way of doing things that's settled and proven... There's other people who just aren't capable of getting it."* The issue administrators describe reflects a potential disconnect between the structural requirements of the prison-based program and the need for more personalized treatment planning that might better address individual client needs and foster self-efficacy. This helps to provide the personal capital needed to take practical steps to attain realistic recovery goals. Programs do provide flexibility regarding termination for returning to use. One administrator describing lenience as a

common practice for clients in the early stages of the program, stating "[…] [I]t's really an expectation that if somebody is in treatment for substance use that they might use the substance within their first month of treatment, so I think that is a symptom of addiction and why they're here. So, we can treat that if it's early enough." Several respondents further noted that expanding options for addressing specific client needs may be beneficial if applied more broadly across the program.

2.3.2.2 Home Placement and Returning to Pre-Incarceration Social Networks May Help or Hinder Recovery

Prison SUD TX staff identified clients' social networks as influential in their recovery efforts upon community reentry. One key component to this theme discussed in the interviews is family members who have a substance use disorder and are not in recovery. Returning to environments where this may be the case places clients in potentially triggering situations and greater risk of returning to use. Additionally, one clinician identified the distinct difference between the controlled environment of a prison-based SUD TX program compared to client's returning to similar enabling environments prior to their incarceration upon community reentry:

Clinician: *"One of the challenges of the after-care part is continuing to maintain that structure [of the program] and the resources available to them. [Having] [s]omebody to just say, "Hey, I'm here for you." That guide to say "Hey, this is what we need to do," and unfortunately, the places, people, and things they go back to was where they left from, and they go back in the same cycles."*

On the other hand, network members who are in recovery could contribute to bolstering recovery efforts of clients through additional support and the potential to attend peer-

based recovery support groups (i.e., SMART Recovery, Narcotics Anonymous, etc.). These supportive network members help build recovery capital.

Prison SUD TX staff described the establishment of supportive networks as one of the biggest challenges faced by criminal legal involved individuals in recovery. Overall, support from the members of clients' networks presents a more complex resource rather than being purely beneficial. Clinicians and administrators identify strained support systems as a frequent outcome due to both the circumstances surrounding an individual's conviction or the time and distance created by the length of an individuals' sentence. However, the program aims to support maintaining or rebuilding client support networks prior to reentry to facilitate successful outcomes:

Administrator: *"It's also a lot of mending relationships and getting them, I guess, prepared for re-entry because they look at things like relationships, sponsor meetings. I even had one mentor who, he went home and he also, before he left, he got the application for a peer specialist in the community. Like, he was going to go through the process, and he actually applied, and he's now been hired at a recovery center."*

By facilitating the "mending" of previous relationships and encouraging involvement in peer-based settings prior to release, program participants could mitigate feelings of isolation upon community reentry and strengthen their recovery support networks.

Some clinicians and administrators also highlighted the significance of "place" in home placement, providing important reference to the challenges individuals may face. One clinician described the convergence of safety and support in home placement while also outlining the greater challenges associated with rural placement:

Clinician: *"Some people, their home placement and release processing, we can say, 'Yeah, if you're going to go back here, this is gonna be a*

lot harder, and you're gonna have to have this and this meetings and sponsors and more support because your family is not supportive.' […] If you're in a rural area, and they're not willing to help you with transportation and pieces like that, you're probably, it's gonna be harder too. So, we still cover all those, as many as we can, to prepare them [and] put themselves in the safest place possible with as much support[…]."

Geographic placement is tied to the accessibility of resources that clients can employ to strengthen their recovery. Comparing rural and urban placements, another clinician described a success story of one of their clients released to a supportive home placement located within an urban setting:

Clinician: *"He had a really strong family support, and the home that he went to, there was a lot of education that his family was willing to accept and study [MOUD]. Whenever he went out, he had a really good clinician on the outside that had his appointment setup for him […]. He goes every month, and he still participates in NA/AA meetings. He meets his clinician once a month. […] He lives in a large area where he can walk anywhere. It's not like he's in a rural area."*

In this case, the client initiated XR-NTX while in prison and there is successful coordination of follow-up treatment with a community social service clinician housed in the probation and parole office. Additionally, the client returns to a home conducive to recovery with social forms of support located within the household. While available if needed, the client does not need to rely on their supportive resources to access the community recovery resources (e.g., XR-NTX treatment, community social service clinician, peer-support groups) due to the density and accessibility of these resources in the urban setting.

2.3.2.3 Logistical Planning and Community Geography Pose Barriers to Treatment Continuation

To better prepare individuals for community reentry, clinicians also discuss their efforts to develop a goal-oriented plan for establishing housing, employment, and continuing treatment for OUD (i.e., counseling, MOUD, peer-based recovery support groups) to establish a stable recovery environment and reduce stressors. These efforts to prepare clients for reentry also include ensuring proper documentation required for accessing social services as well as health insurance coverage for clients, stating "*Before they walk out of the prison, they're enrolled [with health insurance coverage]. Reentry will have their social security card, birth certificate, they'll have 'em signed up with Medicaid, Medicare. They get their file folder, so they're set-up before they walk out the door."*

Administrators describe that part of the aftercare process for clients who initiated MOUD in prison includes notifying the social service clinician (SSC) to find a provider to prevent any lapse in treatment in the community. SSCs are housed in probation and parole offices and help oversee client treatment needs before their release from prison. The chain of communication for the continuum of care may be broken though, as prison SUD TX staff describe some unpredictability regarding client release dates. Additionally for clients initiating MOUD during their incarceration, clinicians described that there was a disruption between establishing a linkage from prison medical and reentry staff to community treatment:

Clinician: *"So once they identify that they want to [initiate MOUD], you know, there's paperwork that goes through. The medical [staff] meet with them […] and they get [MOUD], and while reentry staff*

> *assist them with their insurance to try and get that where they have insurance when they are released, I guess there's really a disconnect between medical in the institution and where [the clients] need to go when they get in the community."*

Time constraints and fluctuating release dates pose a challenge to coordinating with resources outside of the prison and may present a breakdown of the reentry protocol.

These temporal concerns create additional challenges in coordinating linkages to continued treatment during re-entry. Establishing linkages for clients to continue OUD treatment is a priority of administrators and clinicians. This includes prison personnel (e.g., program administrators, clinicians, and reentry coordinators) working with SSCs. One administrator describes the process as a "healthy handoff" for client reentry and treatment continuation and states that they, *"Let [the reentry coordinator] know, 'Hey, this individual is in on [MOUD], and they're coming your way,' so that way when [clients] hit the streets, they're responsible for contacting their parole officer and their community social service clinician. They already have a heads-up that they're coming."* However, another administrator identified the benefit of parole-upon-completion of the prison-based treatment program in reducing the challenge of establishing a "healthy handoff" by allowing for a more tangible timeline to work with reentry coordinators to confirm the logistics of a client's reentry:

Administrator: *"Parole-upon-completion is perfect because if I know that somebody is in my program, and I know exactly when they're going to complete […] I can communicate with reentry and records to make sure everything is straight with that. Make sure that their home placement, I mean their home placement has to be approved, just to make sure that—I mean, it is just the ideal situation."*

This was described as the "ideal situation" and not the normal timeline they have available to coordinate individuals' placement needs prior to their release.

Despite efforts to prepare clients prior to their release, geographic place creates additional barriers to the continuity of care from prison to the community. Healthcare availability and accessibility upon community reentry emerge as prevalent components of treatment continuation in the conversations with clinicians and administrators. Geographic differences for clients' counties of release result in varied opportunities for treatment and recovery supports. Prison SUD TX staff describe uncertainty about the accessibility of some treatment resources, such as medication for opioid use disorder (MOUD) providers and peer-based recovery support groups, as they may not be as widely available in some counties compared to others. One administrator described rural areas as potential "social service desert[s]" and stated, "*Just community support, A[lcoholics] A[nonymous] meetings, N[arcotics]A meetings. It may not be as easy to get to those places because they might just not exist in that area. And so, there may be a social service desert, and you just can't get there. The services are not as prevalent as they would be in an urban setting.*" Additionally, administrators and clinicians identified transportation as a significant barrier to accessing these resources when comparing urban and rural communities. For clients utilizing MOUD in rural areas, transportation poses a greater problem, as the availability of providers nearby may be scarce. Some clients need to travel to another town or county to access MOUD prescribers for treatment, as described by administrators and clinicians:

Administrator: *"Well, there's not public transportation. The nearest treatment provider may be 45 minutes to an hour away. [Clients] may not have a driver's license. They may not have family that can take*

> *them. They may just not have no way to get to the treatment provider. There are medi-cab services, and if you have Medicaid, your treatment provider can contact Medicaid, and they will come get the [client] for their appointment and take them home. But, that is a, that's a pretty lengthy, painstaking process to even get that going a lot of the time because those resources are limited as well."*

Establishing a continuity of care from prison to the community poses both logistical challenges concerning preparing individuals for community reentry while incarcerated as well as geographic barriers, particularly for rural clients.

2.4 Discussion

This qualitative study of prison-based SUD TX program administrators and clinicians found emergent themes corresponding to the personal, family/social, and community domains of RC (White & Cloud 2008): (1) personal RC domain – the importance of self-efficacy to improve recovery outcomes, (2) family/social RC domain – home placement and returning to pre-incarceration social networks may help or hinder recovery, and (3) community RC domain –logistical planning and community geography pose barriers to treatment continuation. Prison SUD TX staff reported efforts to build clients' personal and family/social resources during their time in the program, which can support their recovery after community reentry. However, risks and stressors associated with home placement pose additional challenges to some clients, particularly those placed in rural settings where community resources may be more scarce compared to urban areas.

2.4.1 Personal RC Domain

Clinicians and administrators emphasized their efforts to encourage self-efficacy to help clients develop confidence to achieve their recovery goals; however, program discontinuation or expulsion for clients may prevent individuals from receiving these potential benefits. Bolstering healthy coping behaviors in response to stress is a core function of self-efficacy (Bandura & Locke, 2003). Lower levels of self-efficacy prevent individuals from employing the capital available to them (e.g., personal, family/social, community) to maintain their recovery and has been associated with increased drug use (Bandura & Locke, 2003; McKay, 2004; Hayaki et al., 2021). This presents a need for addressing self-efficacy with clients, which clinicians and administrators recognize. Prison SUD TX staff reported discussions of what the future would be like post-release for clients and goal setting, which has been shown to increase self-efficacy for individuals involved in SUD TX (Lozano & Stephens, 2010). They also recommended expanding options in the program to allow for more personalized approaches in addressing client concerns and needs in order to improve overall retention in the SUD TX program and increase the potential benefits to self-efficacy among other positive outcomes post-release (e.g., recidivism, drug use frequency) to the prison population with OUD (Prendergast et al., 2003; De Andrade et al., 2018).

2.4.2 Family/Social RC Domain

Accumulating family/social capital poses a significant challenge to many clients based on prison SUD TX staff's discussion of clients' social networks, particularly for clients released to rural communities. Clinicians and administrators emphasized the importance of establishing a stable supportive network in the face of potential social

stressors that clients could face upon community reentry (e.g., returning to drug using networks). The deterioration of pre-incarceration networks is not viewed as necessarily a reduction in positive family/social capital, as prison personnel mention that many of those relationships could be with others who use drugs. This leaves room for clients to build networks supportive of recovery (Longabaugh et al., 2010). To further build a supportive network, prison SUD TX staff also describe their encouragement to rebuild ties with individuals who will support a client's recovery upon release. Shifting networks in preparation of prison release has been shown to increase access to emotional and material forms of support (Bui & Morash, 2010). Prison SUD TX staff describe the importance of clients developing peer-support networks after release by attending recovery groups and encouraging clients to find groups to attend prior to their release. This aligns with prior research finding that peer groups characterized by recovery predict long-term recovery (Best et al., 2008). KYDOC is currently putting forth efforts to include a peer support specialist within each prison (CJKTOS, 2023). Changes to clients' social networks appear inevitable due to incarceration; however, prison personnel emphasize the importance of shifting these changes positively to establish strong supportive recovery networks. However, the overall cost in personal and family/social capital is often higher for clients in rural counties while also being more challenging to accumulate (Irish et al., 2020; Palombi et al., 2022), due to the potential barriers associated with accessing community capital conducive to recovery (e.g., peer-support groups, treatment providers) (Palombi et al., 2019).

2.4.3 Community RC Domain

Continuation of treatment post-release will often require logistical planning to create direct linkages to treatment resources; however, community recovery capital is associated with the geographic availability and overall accessibility of treatment options. Prison SUD TX staff describe the reentry procedures as attempting to address the common challenges clients face in accessing economic and medical resources (Binswanger et al., 2012) by providing identification materials required for employment as well as enrolling in Medicaid/Medicare to access follow-up treatment post-release. Despite these preparations, the availability and accessibility of available community capital depends on the geography of their home placement, particularly for individuals released to rural areas.

Additionally, prior studies identify the importance of post-release aftercare for individuals who participate in prison-based SUD TX programs to provide additional supervision and accountability while also aiding in finding stable housing and employment (Catalano et al., 1989; Hawkins & Catalano, 1985; Turner & Petersilia, 1996; Hiller et al., 1999; Adams et al., 2011; Binswanger et al., 2012). Participation in aftercare services upon community reentry has also been shown to improve both recovery and recidivism outcomes for individuals (Burdon et al., 2004; Hiller et al., 1999). However, community placements vary by client and, subsequently, many face depreciation of their available capital as well as their capacity to mobilize capital (Irish et al., 2020; Palombi et al., 2022; Palombi et al., 2019). Clinicians and administrators discussed the disparate challenges faced by rural clients compared to urban clients. Rural areas often require further distances to travel to utilize treatment (Rosenblum et al., 2011;

Brown, et al., 2018) as well as a shortage of rural providers, particularly for MOUD (Quest et al., 2012; Holly et al., 2019). These issues pose a greater challenge and identify a need for additional resources to facilitate the continuum of care post-release (Kiang et al., 2021). Prison SUD TX staff also describe the role of community social service clinicians employed by the Department of Corrections who work with prison personnel during the reentry procedures to establish linkages to treatment prior to release. This coordination provides a unique benefit to the client but is not without its challenges, as fluctuating release dates are reported as interrupting the continuum of care in some cases. In rural areas, clients still face transportation challenges despite treatment linkages, increasing client reliance on employing personal and family/social forms of capital to acquire reliable transportation in lieu of community transportation infrastructure (Sung et al., 2011; Bui & Morash, 2010). KY DOC recently made progress in addressing transportation challenges within the community for individuals on supervision through a new ride assistance pilot program with the Kentucky Transportation Cabinet in which clients can request transportation to certain approved appointments, treatments, and classes (CJKTOS 2023).

Findings should be understood within the parameters of this study and its limitations. Interviews with clinicians and administrators who conduct the prison-based SUD TX programs provides a unique perspective as to how the DOC providers understand recovery capital prior to and post-release, which provides greater context to understanding the programming and reentry procedures administered by DOC. However, the perspectives from individuals with lived experience who have experienced the program and reentry processes at these institutions is needed to corroborate these

findings. Steps to enhance validity were taken and include interviews with both clinicians and administrators to provide a more comprehensive perspective of the prison-based program and reentry procedures for clients. Additionally, this study is conducted in one state's DOC because of efforts to develop treatment programming in that state, but there are state-level differences in how state DOCs provide TX and reentry services.

2.5 Conclusion

The interviews with the administrators and clinicians of prison-based SUD TX programs provide an in-depth view into the reentry process for individuals with OUD who participate in a prison-based SUD TX program. From these data, the themes present information relevant to the three domains of recovery capital outlined by White and Cloud (2008) (i.e., personal, family/social, community) to outline potential how capital is accumulated and employed by individuals upon community reentry. The potential benefits to recovery capital from participation in a prison-based SUD treatment program are numerous; however, clients may face a greater challenge to employ the accumulated resources post-release, particularly those released to rural geographies. Future research should assess recovery capital among people who use drugs and have a criminal history. To further the understanding of long-term recovery for this population, it is important to study how both the accumulation and mobilization of RC variers within an individual's geographic environment to better understand challenges and inform planning for community-based interventions. Bolstering RC and enabling its utilization provides individuals with the means to achieve their long-term recovery goals while also reducing recidivism (Laudet & White, 2009; Best, 2012; Cheney et al., 2016; Lyons & Lurigio, 2010).

CHAPTER 3. Preparing Individuals for Community Reentry: Using a Recovery Capital Framework to Assess Recovery Outcomes Post-Release from Prison

3.1 Introduction

Across the United States prison system, an increasing population of persons who are incarcerated meet the criteria for a substance use disorder (SUD), with a recent report identifying that SUD affects over half of the prison population (58%) (BJS 2020). States are beginning to take action to reduce recidivism and improve community outcomes for persons with an SUD by implementing prison-based substance use disorder treatment programs (SUD Tx). Over the last decade, the state of Kentucky has increased their SUD Tx capacity by nearly threefold to address this rising concern (Kaebel et al. 2015; Staton-Tindall et al. 2015).

Individuals who participate in substance use disorder treatment (SUD Tx) programs during their incarceration have greater access to resources and better outcomes after their return to the community. Previous research provides evidence of bolstered psychosocial resources (e.g., self-efficacy, social support) post-release because of prison-based treatment substance use treatment program participation (Staton et al. 2021; Bahr et al. 2012). Additionally, recidivism amongst individuals who participated in a SUD Tx program while incarcerated is proportionally lower (59.2%) compared to those who did not participate (87.4%) (Prendergast, Hall, & Wexler 2003). There is also evidence that graduating from a SUD Tx program is associated with high rates of stable housing (88.9%) and employment (81.4%) 12 months post-release (CJKTOS 2022).

Based on these potential benefits, this chapter aims to better understand how prison intervention and resource accumulation prior to release may have lasting benefits during the reentry period. To achieve this aim, this study utilizes a recovery capital (RC) framework to assess how wealth or deficits in various types of assets during an individual's incarceration affects their recovery journey after reentering the community. Conceptualized in the 1990s, RC provides an asset-based approach to identifying how available resources are employed by individuals during each stage of their recovery (Granfield & Cloud 1999; Cloud & Granfield 2008). These assets include both internal (e.g., financial and psychological assets) and external resources (e.g., social support and community involvement) across the personal, social, and community levels (White & Cloud 2008).

Persons in recovery for an opioid use disorder who have a history with the criminal legal system (CLS) often face significant challenges to creating a stable environment conducive to recovery, due to a greater exposure to stressors when adjusting to new roles and responsibilities after community reentry (Luther et al. 2011; Begun et al. 2016). Some of these challenges may include procuring financial resources, such as legal employment and stable housing, which help relieve stressors associated with meeting one's basic needs (Elswick et al. 2018; Lloyd et al. 2019). Additionally, negative RC may result from returning to previous settings and relationships that may be triggering for individuals, particularly if those individuals also use drugs and may influence a return to drug use (Neale & Stevenson 2014). The limited opportunities to procure and expend RC for this population in addition to potential resource depreciation threatens their overall ability to cope with stressors (Laudet & White 2009; Best 2012; Lloyd et al. 2019). As

stress accumulates, the challenges faced become even greater and the disparity between the assets needed and those held widens.

Incarceration presents a major life-altering event in which the assets that individuals could draw on before arrest may change after their release. Within this context, participation in prison-based SUD Tx can provide a crucial intervention targeting specific areas of individuals' lives to better improve recovery outcomes after release. The therapeutic community in prison exists as a temporary setting conducive to building new supports and/or rebuilding existing social support networks strained by the time spent incarcerated to promote individuals' recovery journeys (Lyons 2008). However, the shock of reentry pulls individuals from this controlled environment and may place them into instability. Prior research on RC and reentry presents evidence that engagement with one's community may lead to additional material and social resources to help motivate individuals in their recovery (Watson et al. 2017; Ray et al. 2021). Additionally, the ability to meet one's own needs has been linked not only with financial and social assets but also engagement in fulfilling activities (e.g., developing life skills) and personal health (Connolly & Granfield 2017; Kahn et al. 2019). Yet, a thorough literature review finds only one article assessing RC prior to an individual's release from incarceration. Best and colleagues (2024) identified a bridging effect to maintaining a continuity of care, which results in greater RC growth post-release from jail for individuals released to recovery residences. This presents a need for additional research on how interventions within the prison setting might increase RC and subsequent recovery outcomes upon release.

Understanding how levels of RC during incarceration affect recovery outcomes in the community is important to improving program fidelity and achieving client goals, as well as for reducing return to use and recidivism. This could benefit not only the individual but their families and communities as well. Access to financial resources not only creates a sense of stability but also relieves some of the barriers to treatment faced after prison release (Fernandez & Peters 2023; Sahker et al. 2019). Additionally, improving outcomes post-release can reduce the economic burden of substance use for communities and the CLS by potentially reducing drug-related offences and return to incarceration (Florence et al. 2017; BJS 2021). Additionally, to this point, there is a current need to break down RC measures to their conceptual domains and comprehensively assess recovery outcomes post-release in the literature to help prioritize asset development based on individuals' strengths and needs. This chapter will address the following research question to address this gap: What tools contribute to positive recovery outcomes after individuals are released from prison? The following hypotheses will be tested to further explore how individual RC domains affect recovery outcomes:

> H1: Greater RC during incarceration improves the likelihood of abstaining from drug use post-release from prison.
>
> H2: Greater RC during incarceration improves the likelihood of obtaining employment post-release from prison.
>
> H3: Greater RC during incarceration improves the likelihood of obtaining stable housing post-release from prison.
>
> H4: Greater RC during incarceration will increase an individual's resiliency post-release from prison.
>
> H5: Significant RC domains will differ based on the post-release recovery outcome (i.e., return to drug use, employment, stable housing, and resiliency).

3.2 Methods

Data (N=247) were collected as part of an ongoing longitudinal survey with individuals released from prison in the state of Kentucky as part of the National Institute on Drug Abuse (NIDA)-funded study called the Geographic Variation in Addiction Treatment Experiences (GATE) study. This study aims to assess multi-level factors influencing prison-based initiation of medications for opioid use disorder (MOUD), predictors of MOUD utilization post-release, and adverse outcomes among rural and urban persons with opioid use disorder (POUD) (Oser et al. 2023).

3.2.1 Setting

In the state of Kentucky, the Department of Corrections' (DOC) Division of Addiction Services oversees prison-based SUD Tx for individuals assessed with a substance use disorder (SUD) to promote recovery and prepare individuals to transition to the community upon their release (KY DOC 2021). This oversight includes the operations for 14 programs across 11 prisons in KY with 903 available beds (KY DOC 2021). Under Senate Bill 192 in 2015, the KY General Assembly provided KY DOC $3 million in funding support for evidence-based SUD treatment, including FDA-approved medications for opioid use disorder (MOUD). Based on eligibility, individuals may begin MOUD treatment while incarcerated with up to two doses of injectable extended-release naltrexone or orally administered buprenorphine in preparation for injectable extended-release buprenorphine within 60 days of their release (KY DOC 2021). This helps shape a transition from a punitively driven curriculum to a clinically driven model of care. In addition to the availability of MOUD as a treatment option, prison-based SUD Tx programs in KY follow a six-month, secular, therapeutic community modality to

encourage responsibility and accountability in the community and treatment processes through peer support (KY DOC 2021). This programming builds positive relationships amongst the members of the treatment community within a group setting, who are housed separately from the prison's general population to maintain the community's focus on recovery (De Leon 2000; Stevens 2013; Kreager et al. 2018; Wexler and Prendergast 2010). In preparing for an individual's release, prison-employed reentry coordinators meet with them to help prepare documentation (e.g., state identification, health insurance) and identifying housing placements. After prison release, DOC employs social service clinicians in the community who work out of parole offices to provide additional support to individuals.

3.2.2 Sampling and Recruitment

A KY DOC liaison provided a list each month to the research team that included the names and identification numbers of individuals who participated in a prison-based SUD Tx and who were within 60 days of being paroled or serving out their sentences. Trained research staff determined study eligibility based on four criteria: (1) participation in a prison-based SUD treatment program (completion not required), (2) reported history of opioid use disorder, (3) within 90 days of being released from prison, and (4) released within the state of KY. Data collection occurred in-person, telephonically, or using the video conferencing program Zoom. Participants completed surveys while incarcerated or within three months of their release from prison, due to COVID-19 restrictions.

Individuals voluntarily participated in the GATE study and signed a written informed consent form before completing the survey in-person. For those who participated over the phone or using Zoom, research staff obtained verbal consent from

the participant. Baseline data collection included the completion of two surveys, because each of the baseline surveys took an average of 1.5 hours to complete. Participants received a $30 incentive for completing each survey for a total of $60.

Participants were contacted by research staff six months after their release from prison to complete a follow-up survey. Participants received an additional $30 for participating in the six-month follow-up survey. The university's Institutional Review Board provided approval for the GATE study's protocol, and a Certificate of Confidentiality provides protection for study participants. No data was shared with the Kentucky DOC.

3.2.3 Data Collection

From June 2021 to January 2024, 487 participants were enrolled in the GATE study. Of those participants, 410 were released from prison and 313 were eligible for their six-month follow-up survey as data collection is still ongoing. At the time of writing this chapter, 247 participants had completed the baseline and six-month follow-up assessments, resulting in a retention rate of 79%. Currently, 66 participants who did not complete the six-month follow-up survey are excluded from the analyses. Survey data were collected and managed using Research Electronic Data Capture (Harris et al. 2009; Harris et al. 2019). The baseline surveys included questions on the following topics: substance use history, medication for opioid use disorder knowledge, treatment needs and motivations, stigma and discrimination, sexual behaviors, criminal history, traumatic life events, mental and physical health, community characteristics, and participants' demographics. These topical areas were revisited during data collection at the six-month time point.

3.2.4 Measures

Outcome Variables

This study examines four recovery outcomes measured at the 6-month follow-up survey. The first outcome, *Return to Use*, was measured dichotomously (0=No, 1=Yes) and indicates self-reported return to drug use within the six-month period post-release from prison. The second outcome, *Employment*, is a dichotomous measure assessing if the participant was employed at least part-time during the six-month follow-up period (0=No, 1=Yes). Similarly, the third outcome, *Stable Housing*, dichotomously assessed if an individual acquired stable housing after community reentry. Lastly, *Resiliency* after prison release was assessed using the Brief Resilience Scale (BRS), which scores the average across six 5-point Likert-type questions ($\alpha = 0.72$) (Smith et al., 2008).

Recovery Capital

Recovery Capital was assessed using the Brief Assessment of Recovery Capital (BARC-10) scale collected at baseline. The BARC-10 provides a validated measure of the 10 conceptual domains represented in the full 50-measure ARC with 10 items (Groshkova et al. 2013; Vilsaint 2017). These domains were included as individual variables: (1) *Sobriety,* (2) *Psychological Health,* (3) *Physical Health,* (4) *Community Involvement,* (5) *Social Support,* (6) *Meaningful Activities,* (7) *Living Situation, (8) Accountability, (9) Life Functioning,* and (10) *Recovery Progress*. Due to limits in the binary response options in the ARC, the BARC-10 includes six-point Likert response options (1=Strongly Disagree, 6=Strongly Agree) to better capture nuances in the brief

assessment (Vilsaint 2017). The total sum of the responses across the 10 items is calculated with a potential range of 10-60 to assess RC ($\alpha = 0.83$).

Control Variables

SAP Completion was assessed with a dichotomous measure of whether or not an individual completed the SUD Tx program during their incarceration (0=No, 1=Yes). *MDD/GAD* was also measured with a dichotomous indicator of whether an individual met the DSM-V criteria for either major depressive disorder or general anxiety disorder at baseline (GAIN 2010). The Three-Item Loneliness Scale was used to assess the variable *Loneliness* by summing the score across 3 items with 3-point Likert-type responses collected at baseline ($\alpha = 0.80$) (Hughes et al. 2004). The loneliness questions were framed to assess loneliness during an individual's incarceration. *Resiliency* was also assessed at baseline using the BRS and included as a control ($\alpha = 0.76$) (Smith et al., 2008). *Employment* and *Stable Housing* prior to incarceration were also measured dichotomously at baseline and included as controls. *Age* was measured in years. *Female* was represented by a dummy variable (1=Female, 0=Male). *White* was assessed as a dummy variable coded as non-Hispanic white = 1, all other racial categories = 0. *Education* is measured as an ordinal variable ranging from 1-7 based on the participant's reported level of educational achievement (1=No High School/GED, 2=High School/GED Equivalent, 3=Less than one year of college credit, 4=One year or more of college credit, 5=Associate's Degree, 6=Bachelor's Degree, 7=Graduate or Professional Degree). Lastly, *Years Incarcerated* was included as a control to account for the length of the participant's most recent incarceration period.

3.2.5 Analytic Strategy

Analyses were completed using STATA Version 18 and proceeded in three steps. First, descriptive statistics were examined. Multivariate lagged MLE logistic and OLS regression models were then used to assess the association of RC at baseline with the likelihood of returning to use, gaining employment, and acquiring stable housing six months post-release, as well as changes in *resiliency* over this timeframe. Subsequent MLE logistic and OLS regression models assessing the same outcomes evaluated the relative significance of the individual RC conceptual domains. Controls for stable housing, employment, and resiliency at baseline were included to account for variation in these key resources among the sample and more clearly identify factors associated with changes in these recovery outcomes post-release. Missing values (n=10) were replaced based on each variable's average value.

The first analysis presented in Table 2 consists of 4 models. Model 1 regresses *Return to Use (6M)* on the control variables and baseline RC. Model 2 assesses the effect of RC on *Employment (6M)* with all controls. The third model regresses *Stable Housing (6M)* on RC with all controls. Model 4 presents the RC on *Resiliency (6M)* with all controls. Table 3 presents the results of 4 additional models which assessed the effects of each conceptual domain of the BARC-10 on the 4 outcome variables including all control variables. Additionally, standardized coefficients are reported for the OLS model in Table 3 to compare effects across the specific RC domains.

3.3 Results

Summary statistics are displayed in Table 1. About one-quarter of the sample self-reported returning to use at the six-month follow-up survey (26%). Almost three-fourths (72%) of participants reported being employed at the follow-up compared to 51% at baseline. Stable housing trended differently than employment with a higher percentage having stable housing (67%) before incarceration compared to after their release (62%). Participants reported an average level of resiliency higher than the midpoint (3.48) at their follow-up, which was slightly higher than the average level at baseline (3.26). Average RC was high across the sample (50.73). The sample was primarily white (83%) and male (69%) around the age of 40 years. Additionally, the average participant was high school educated/held a GED or equivalent or had some college credit. Participants' incarceration period at baseline was around five years (4.70).

Table 3.1 Summary Statistics (n=247)

Variable	Mean(SD) or N(%)	Min	Max
Return to Use (6M)	65(26%)	-	-
Employment (6M)	180(76%)	-	-
Stable Housing (6M)	154(62%)	-	-
Resiliency (6M)	3.48(.67)	1.33	5
Recovery Capital (Baseline)	50.37(7.13)	23	60
Sobriety	5.53(.66)	2	6
Psychological Health	4.85(1.27)	1	6
Physical Health	4.92(1.16)	1	6
Community Involvement	4.43(1.44)	1	6
Social Support	4.78(1.34)	1	6
Meaningful Activities	4.91(1.15)	1	6
Living Situation	4.94(1.27)	1	6
Accountability	5.57(.61)	2	6

Table 3.1 (continued)

Life Functioning	5.13(.95)	1	6
Recovery Progress	5.37(.93)	1	6
SAP Completion (Baseline)	206(83%)	-	-
MDD/GAD (Baseline)	208(84%)	-	-
Loneliness (Baseline)	5.87(2.20)	3	9
Resiliency (Baseline)	3.26(.40)	2	4.17
Employment (Baseline)	127(51%)	-	-
Stable Housing (Baseline)	165(67%)	-	-
Age (Baseline)	38.75(8.91)	21	66
Female (Baseline)	76(31%)	-	-
White (Baseline)	207(83%)	-	-
Education (Baseline)	2.72(1.28)	1	7
Years Incarcerated (Baseline)	4.70(4.68)	0.15	44.69

Results for models regressing the four recovery outcomes by the RC scale are presented in Table 2. Models 1-3 use MLE logistic regression, and Model 4 uses OLS. In Model 1, a higher level of RC during an individual's incarceration reduced the likelihood of returning to drug use after their release from prison. Additionally, meeting the criteria for general anxiety disorder or major depressive disorder greatly reduced the likelihood of returning to drug use after community reentry. However, a higher level of loneliness during an individual's incarceration increased the odds of self-reported drug use after prison release. Model 2 revealed that an improved likelihood of gaining employment after release was predicted by a higher level of RC during incarceration. Additionally, meeting the criteria for a mental health disorder (i.e., either generalized anxiety disorder or major depressive disorder), being employed before incarceration, and a greater number of years incarcerated also improved the odds of gaining employment post-release. As age

increased, the odds of gaining employment after release decreased. In Model 3, both RC and baseline resiliency predicted a greater likelihood of acquiring stable housing after release from prison. However, greater educational achievement negatively affected the odds of acquiring stable housing post-release. In the final model which used OLS regression, RC predicted a slight increase in resiliency at follow-up. Additionally, a greater level of resiliency at baseline increased in resiliency six months after an individual's release from prison.

Table 3.2 Regression of Recovery Outcomes by Recovery Capital (n=247)

	Model 1	*Model 2*	*Model 3*	*Model 4*
	Return to Use (6M)	*Employment (6M)*	*Stable Housing (6M)*	*Resiliency (6M)*
Recovery Capital (Baseline)	0.92***	1.08**	1.04*	0.01***
	(0.02)	(0.03)	(0.02)	(0.00)
SAP Completion (Baseline)	0.69	1.67	0.70	0.11
	(0.30)	(0.79)	(0.29)	(0.07)
MDD/GAD (Baseline)	0.32**	2.79*	1.77	-0.03
	(0.13)	(1.32)	(0.70)	(0.07)
Loneliness (Baseline)	1.20**	0.97	0.97	0.00
	(0.09)	(0.08)	(0.06)	(0.01)
Resiliency (Baseline)	1.13	1.04	2.03*	1.26***
	(0.47)	(0.46)	(0.75)	(0.07)
Employment (Baseline)	0.57	3.87***	1.01	0.07
	(0.19)	(1.46)	(0.29)	(0.05)
Stable Housing (Baseline)	0.67	1.51	0.86	-0.05
	(0.23)	(0.56)	(0.27)	(0.06)
Age (Baseline)	0.97	0.93***	1.00	0.00
	(0.02)	(0.02)	(0.02)	(0.00)
Female (Baseline)	0.59	0.77	0.75	-0.10

Table 3.2 (continued)

	(0.23)	(0.31)	(0.25)	(0.06)
White (Baseline)	2.13	2.01	0.53	0.11
	(1.05)	(0.95)	(0.23)	(0.07)
Education (Baseline)	1.13	1.03	0.76*	0.02
	(0.14)	(0.13)	(0.08)	(0.02)
Years Incarcerated	0.96	1.16***	1.03	0.00
(Baseline)	(0.04)	(0.07)	(0.04)	(0.01)
Constant	41.49*	0.05	0.09	-1.56***
	(81.62)	(0.10)	(0.17)	(0.32)
Psuedo-R^2	0.15	0.18	0.06	-
R-squared	-	-	-	0.65

Notes: Standard errors are reported in parentheses. Indicator variables were assessed at baseline. Models 1-3 used logistic regression and reported the odds ratio. Model 4 used OLS regression. $p<0.001$ = ***, $p< 0.01$ = **, $p<0.05$ = *

Table 3 presents the results of analyses regressing the recovery outcomes by the BARC-10's individual RC conceptual domains. Model 1 found that engagement in meaningful activities, having a living situation conducive to one's recovery, and progress in one's recovery journey reduced the likelihood of returning to drug use post-release with progress having the greatest impact on the outcome. Having a mental health issue, either MDD or GAD, decreased the likelihood of returning to use but loneliness significantly increased the odds of returning to use after release. In Model 2, no individual RC domain was found to significantly affect employment post-release. Mental health, employment prior to incarceration, and years incarcerated remained significant in predicting a gain in employment. Age reduced the likelihood of being employed post-release in Model 2. In Model 3, greater community involvement and personal accountability in prison at baseline reduced the likelihood of acquiring stable housing after release. However, having a living situation conducive to one's recovery during

incarceration improves the likelihood of acquiring stable housing post-release. Additionally, resiliency at baseline greatly increases the odds of acquiring stable housing post-release, while a higher level of education reduces these odds. Model 4 did not find any individual RC domains to significantly predict a change in resiliency. Resiliency at baseline predicts an increase in resiliency after community reentry.

Table 3.3. Regression of Recovery Outcomes by BARC-10 Domains (n=247)

	Model 1	*Model 2*	*Model 3*	*Model 4*
	Return to Use (6M)	*Employment (6M)*	*Stable Housing (6M)*	*Resiliency (6M)*
RC Domain				
Sobriety	0.79	1.61	1.39	0.03
	(0.24)	(0.51)	(0.37)	(0.05)
Psychological Health	0.98	1.09	1.20	0.05
	(0.16)	(0.18)	(0.18)	(0.03)
Physical Health	1.20	0.85	1.01	0.01
	(0.22)	(0.16)	(0.16)	(0.03)
Community	1.03	1.34	0.73*	0.05
Involvement	(0.18)	(0.21)	(0.12)	(0.02)
Social Support	1.03	1.27	0.84	0.09
	(0.17)	(0.20)	(0.14)	(0.03)
Meaningful Activities	0.72*	0.84	1.32	0.08
	(0.12)	(0.17)	(0.21)	(0.03)
Living Situation	0.73*	1.02	1.70***	-0.09
	(0.11)	(0.20)	(0.27)	(0.03)
Accountability	1.21	1.29	0.37**	0.05
	(0.39)	(0.50)	(0.13)	(0.05)
Life Functions	1.54	0.93	1.50	0.03
	(0.40)	(0.24)	(0.34)	(0.04)
Recovery Progress	0.53*	1.05	0.91	-0.06
	(0.14)	(0.26)	(0.23)	(0.04)

Table 3.3 (continued)

SAP Completion (Baseline)	0.68	1.79	0.61	0.06
	(0.31)	(0.88)	(0.28)	(0.07)
MDD/GAD (Baseline)	0.31**	3.00*	2.09	-0.01
	(0.14)	(1.46)	(0.89)	(0.07)
Loneliness (Baseline)	1.24*	0.94	1.00	0.01
	(0.10)	(0.08)	(0.07)	(0.01)
Resiliency (Baseline)	0.95	1.19	2.25*	0.74***
	(0.42)	(0.56)	(0.92)	(0.07)
Employment (Baseline)	0.49*	4.04***	1.10	0.04
	(0.18)	(1.60)	(0.35)	(0.05)
Stable Housing (Baseline)	0.60	1.51	0.90	-0.04
	(0.21)	(0.58)	(0.30)	(0.06)
Age (Baseline)	0.97	0.92***	1.01	0.01
	(0.02)	(0.02)	(0.02)	(0.00)
Female (Baseline)	0.75	0.65	0.70	-0.07
	(0.33)	(0.28)	(0.26)	(0.06)
White (Baseline)	2.60	1.74	0.61	0.06
	(1.42)	(0.86)	(0.28)	(0.07)
Education (Baseline)	1.13	1.00	0.72**	0.03
	(0.15)	(0.13)	(0.09)	(0.02)
Years Incarcerated	0.96	1.19**	1.02	0.03
(Baseline)	(0.05)	(0.08)	(0.04)	(0.01)
Constant	31.23	0.02	0.20	-1.67
	(71.63)	(0.04)	(0.43)	(0.36)
Psuedo-R^2	0.21	0.20	0.16	-
R-squared	-	-	-	0.67

Notes: Standard errors are reported in parentheses. Indicator variables were assessed at baseline. Models 1-3 used logistic regression and reported the odds ratio. Model 4 used OLS regression and reports standardized coefficients. $p<0.001$ = ***, $p< 0.01$ = **, $p<0.05$ = *

3.4 Discussion

Assisting individuals in establishing a stable environment upon reentry following incarceration can alleviate some of the challenges encountered during this sensitive period (Luther et al. 2011; Begun et al. 2016; Binswanger et al. 2012). These challenges can be addressed by bolstering psychosocial growth as factors of recovery (e.g., self-concept, social support, substance use) and working to accumulate material resources during the vulnerable reentry period. Importantly, the carceral period provides a point of intervention where assets can be gathered and growth can occur, particularly for individuals residing in a therapeutic community aimed at preparing individuals to maintain their recovery and develop healthy coping skills (Lyons 2008). To date, research assessing the importance of RC during incarceration is limited (Best 2024). To address this gap in the scientific literature, this chapter utilized an RC framework to address five hypotheses to better understand how various components of recovery benefit from greater RC prior to release from prison:

> H1: Greater RC during incarceration improves the likelihood of abstaining from drug use post-release from prison.
>
> H2: Greater RC during incarceration improves the likelihood of obtaining employment post-release from prison.
>
> H3: Greater RC during incarceration improves the likelihood of obtaining stable housing post-release from prison.
>
> H4: Greater RC during incarceration will increase an individual's resiliency post-release from prison.
>
> H5: Significant RC domains will differ based on the post-release recovery outcome (i.e., return to drug use, employment, stable housing, and resiliency).

These analyses supported the first hypothesis and found a reduction in the odds of returning to drug use based on greater levels of RC prior to release. Return to use often reflects an inability to cope with stressors faced, particularly during the reentry period (Moon & Lee 2020). Subsequently, return to use has been shown to hinder individual's abilities to obtain financial security, develop healthy social support networks, and increase self-efficacy (Nordfjaern 2011; Cornelius et al. 2003; Domino et al. 2005; Moos & Moos 2006). Return to use may also be particularly dangerous for individuals released from prison due to a higher risk of overdose after a period of abstinence (Binswanger et al. 2012). This presents a potential continuum of disadvantages, as resources may continue to decline and continue to limit the availability of healthy coping strategies (Dohrenwend et al. 1992). However, by further supporting RC growth during incarceration, these outcomes of returning to drug use may be mitigated. It is also worth noting that meeting criteria for a mental health disorder also reduced the likelihood of returning to use. The reason for this association is unclear, but it may be connected to mental health treatment during incarceration and continuity of care post-release. Loneliness is the only variable increasing the odds of returning to use and could be the result of weaker ties and levels of social support leading to greater isolation following the release from prison (Lyons 2008).

Additionally, this analysis found support for the hypothesis that different RC domains would have varying relevance for the post-release recovery outcomes assessed (H5). Three specific RC domains help to reduce the likelihood of returning to use after reentry: (1) *Meaningful Activities*, (2) *Living Situation*, (3) *Recovery Progress*. By engaging in meaningful activities while incarcerated, individuals can develop desirable

skills that can be employed in the community as either healthy methods of coping or to further gain material and social assets (Connolly & Granfield 2017; Kahn et al. 2019). Feeling that their living situation is conducive to recovery also improved the likelihood of abstaining from drug use post-release. This might reflect the therapeutic community environment individuals participate in, which advocates for abstinence in support of long-term recovery (Lyons 2008). Additionally, the importance of feeling as though they've made progress in their recovery prior to their release in preventing a return to use might also be explained by how the prison-based SUD Tx program advances individuals towards their recovery goals. Facilitating person-centered approaches to SUD Tx within a prison-based setting could improve the acceptability and feasibility of the program to better assist in achieving individualized goals, while also identifying areas where needs may be better met for program participants (Yardley et al. 2015).

The analyses also confirmed the hypothesis that greater RC during incarceration improves the likelihood of obtaining employment after release from prison (H2), as greater RC increased the likelihood of employment after an individual's release from prison. The dual stigma faced by individuals with a history of incarceration and SUD poses a significant threat to employment during the post-release period (McLellan et al. 2000; Meyer 2003; Link et al. 1997). However, employment has been shown as an important measure for maintaining stability in one's life through greater access to financial resources, the expansion of social networks, and fulfillment (Cummins 2000; O'Sullivan et al. 2019). Additionally, employment is shown to also have treatment benefits, as it helps support any financial burdens associated with treatment seeking or continuation (Fernandez & Peters 2023; Sahker et al. 2019). The results from Table 3 do

not identify any specific RC domains as significantly associated with employment (H5), but the results find that employment prior to incarceration significantly predicts employment after release. Previous studies find an association between employment and wellbeing for those in recovery while also helping individuals expand their social connections as a bridging resource to further build RC (Best et al. 2011; Cummins 2000). Lastly, the time spent incarcerated improves the likelihood of gaining employment after reentry. This is contrary to previous findings that longer imprisonment worsens employment prospects (Ramakers et al. 2014). However, longer sentences may increase participation in prison-based programs to develop transferable skills during one's incarceration, which may provide greater opportunities for employment (Duwe & Clark 2014). These factors may place individuals in a stronger position post-release to find employment.

The hypothesis that greater RC during incarceration improves the likelihood of obtaining stable housing post-release from prison (H3) is also supported by the results, as RC during incarceration is shown to increase the odds of having stable housing after community reentry. Stable housing provides individuals with a basic need and relieves stress associated with seeking shelter and can be particularly difficult to obtain for individuals recently incarcerated (Howard et al. 2023; Elswick et al. 2018;). Assisting individuals in locating stable housing before release will help prevent these stressors. However, targeting specific domains of RC may be more challenging, as an individual's views of their living situation as conducive to recovery predicts the likelihood of stable housing after release but the RC domains of community involvement and accountability reduce that likelihood (H5). While the purpose of the TC is to envelope the individual in

a supportive recovery community, the transition from the prison-based TC to the community may pose a shock to the individual as the feelings of being part of a therapeutic community and the requirement of accountability may not align with their post-release environment (Lyons 2008). On the other hand, recognition of the stable living environment provided prison-based SUD Tx program may push individuals to seek housing stability after their release as an important component to their recovery journey. Lastly, resiliency during incarceration also increases the likelihood of having stable housing after community reentry. A higher capacity to resist stress during one's incarceration may transfer to the community as well and reduce the hindrances individuals face in procuring financial resources needed to maintain housing in the community (Luther et al. 2011; Begun et al. 2016). Lastly, a higher level of education was associated with a lesser likelihood of gaining stable housing after community reentry. This may be more a consequence of individuals' offense history and potential stigma experienced when seeking housing (Evans & Porter 2015); additionally, parole conditions may also prevent individuals from stable housing options provided by friends and family (Huebner et al. 2019).

Hypothesis four is also supported by the association of RC during incarceration with an individual's level of resiliency post-release; however, the effect is reasonably small. There is no support for hypothesis five when the RC scale is broken into its conceptual domains. However, efforts to bolster RC across its domains during incarceration would improve individual's abilities to recover from adversity. For example, flexibility or the ability to adapt, personal strength, and belief in one's own success have previously been found to be significant to resiliency (Pincus & Mitten 2010;

Tedeschi & Calhoun 2004). Residing in a prison-based TC provides an opportunity to target these domains more directly to help increase resiliency post-release (Lyons 2008). Additionally, the finding that baseline resiliency predicts an increase in resiliency post-release demonstrates that resiliency can transition well from the carceral setting to the community.

This study has several limitations. First, the BARC-10 measure for RC is limited in its ability to identify nuance within the ten domains of RC included to better explain their associations with the variables of interest. Follow-up study with the full BARC inventory is recommended to better direct future programs based on the RC model. Additionally, the period observed includes only the first 6-months after community reentry. Extending this period further would help identify potential effects on long-term recovery. Also, return to drug use is a self-reported outcome and may be underreported, particularly for individuals in the sample who were on community supervision. Lastly, there is a limitation associated with the newness of this research topic in academic literature (Best 2024; Laudet & White 2009; Best 2012; Lloyd et al. 2019; Neale & Stevenson 2014; Watson et al. 2017; Ray et al. 2021; Granfield 2017; Kahn et al. 2019). There is a need for rich-qualitative study into the nuances of specific RC domains from individuals with lived experiences to gain a better understanding of the barriers and facilitators to RC accumulation and utilization towards recovery goals. Despite these limitations, this study contributes to the literature in two significant ways. By identifying domains important to specific outcomes, these findings provide a foundation for further exploration into aspects of these domains relevant to their respective recovery outcomes. Additionally, the focus on the short-term period after release from prison is crucial to the

overall support of recovery, as individuals must learn to cope with new stressors while transitioning from a controlled TC to the community.

3.5 Conclusion

This study with prison-based SUD Tx participants prior to and after their release from prison found RC levels during incarceration to significantly predict multiple recovery outcomes. Individuals within prisons come from a variety of backgrounds, including differing levels of socioeconomic status, underlying health conditions, and levels of social support, which have been shown to influence SUD treatment engagement (McLellan et al. 2000). KY DOC provides support for individuals during their incarceration through their prison-based SUD Tx and reentry coordination, as well as community support for individuals in the community and on supervision through employed social service clinicians. Recovery coaching services are also being implemented within prison-based SUD Tx programs in KY to provide further support to program clients through guidance and coaching, community resource education, and hope and encouragement as part of a multi-disciplinary treatment team (CJKTOS 2022). By assessing the outcomes of returning to drug use, establishing employment, obtaining stable housing, and resiliency by individual domains of RC, this research provides meaningful insight that may further support existing or novel programming in prison or in the community to meet individuals' needs.

CHAPTER 4. Assessing the Accumulation of Recovery Capital for Prison-Based Substance Use Treatment Program Participants after Community Reentry

4.1 Introduction

The opioid epidemic remains a significant burden on the criminal legal system (CLS) and communities, demanding continued efforts to reduce recidivism and increase health outcomes for individuals with opioid use disorder (OUD). Across the United States, individuals with drug-related offenses as their most serious offense made up nearly one-fourth (23%) of the total population of individuals on parole (BJS 2021). It is estimated that 58% of state prisoners meet the criteria for a substance use disorder (SUD), and 65% of individuals released after a drug charge end up re-arrested within 3 years (BJS 2020:2021). Kentucky (KY) is at the epicenter of the opioid epidemic and ranks in the top 10 of states affected by the opioid crisis (KFF 2022). In recent years, fatal opioid-involved overdose rates have increased 38.6% since 2017 (KIPRC 2022). Additionally, the economic burden of opioid use in KY equates to a total cost of $24.46B ($5,491 per capita) (CDC 2021). This burden includes expenditures associated with drug-related offenses in KY, which significantly contribute to the overall CLS involved population in KY. For those reentering the community with a history of OUD, the transitionary period poses significant challenges to their recovery and risk of recidivism. This is why the transition period is an important target for prison-based substance use disorder treatment (SUD Tx) programs.

Prison-based SUD Tx programs help improve post-release outcomes for participants and, particularly, graduates who engage in treatment programs based on a therapeutic community (TC) model. In KY, for example, the Department of Corrections

uses a modified-TC model where participating residents live separately from the general population and participate in a 6-month program (KY DOC 2021). This model aims to inspire accountability through peer support while focusing on recovery for SUD (KY DOC 2021). Prison-based TCs embed the individual within a community with similar goals, which may promote the development of positive relationships and result in reduced risk of returning to drug use (De Leon 2000; Stevens 2013; Kreager et al. 2018). TCs help facilitate the growth of community through reciprocal positive reinforcement amongst its members through mutual monitoring and discussions within a group setting (De Leon 2000; Wexler and Prendergrast 2010). Prison-based TCs create a seemingly sterile social environment for recovery that promotes positive social interactions amongst individuals who may have many commonalities; however, history over the course of one's life as well as potential relationships maintained with individuals outside of the prison setting continue to play a significant part in an individual's recovery (Kreager 2018).

The beneficial outcomes of prison-based SUD Tx programs include seeking aftercare, greater self-efficacy, or an individual's belief in their own capacity to execute behaviors necessary to produce specific performance attainments, creating environments conducive to recovery, and greater accountability (Staton et al. 2021; Bahr et al. 2012). Additionally, an assessment study on recidivism outcomes 12-months post-release showed significant benefit to those who participated in treatment with lower rates of recidivism and longer recovery periods before returning to use post-release as compared to people who did not participate (Prendergast, Hall, & Wexler 2003). A more recent systematic review of research across all types of prison-based SUD interventions (e.g.,

therapeutic communities, cognitive-behavioral therapy, medications for opioid use disorder, etc.) by de Andrade and colleagues (2018) found similar results regarding recidivism, while also identifying improved drug use outcomes to a lesser extent.

4.1.1 Recovery Capital and Community Reentry

Despite the proven benefits, however, there is a dearth of information on the ways in which personal, social/familial, and community resources contribute to recovery as well as the relative contribution of each of these domains. This chapter aims to better understand prison-based SUD Tx participant experiences after community release through an asset-based approach utilizing a recovery capital framework. Introduced by Robert Granfield and William Cloud (1999), recovery capital (RC) provides a lens to identify the external and internal assets available to an individual, which provide a pool of resources available to the individual to initiate and sustain their recovery. This study utilizes White and Cloud's (2008) model of RC that presents capital across three domains: (1) personal RC, (2) family/social RC, and (3) community RC. Physical (e.g., financial assets such as health insurance, employment, transportation) and human (e.g., knowledge, values, self-concept) forms of capital are represented within the personal domain and include an individual's personal assets (White and Cloud 2008). The family/social domain includes the recovery support available to an individual through their social connections (White and Cloud 2008). Lastly, community RC includes cultural attitudes within an individual's community as well as the material resources available within the community that may facilitate or support an individual's recovery (e.g., mutual-support groups, treatment facilities, availability of public transportation) (White and Cloud 2008).

The development of RC as a framework assessed on a positive-negative continuum provides meaningful consideration of the continually changing nature of recovery capital and factors that may help or hinder an individual's recovery (Cloud & Granfield 2008). Marginalized populations face greater hardships in procuring assets conducive to recovery; additionally, similar challenges exist for maintaining attained assets. Previous research on homeless populations with SUDs finds both a desire for stability in individuals' relationships in the face of transient housing as well as uncertainty about the consistency of support networks and fluctuations in their composition overtime (Neale & Brown 2016; Neale & Stevenson 2015). Similar uncertainty regarding one's available assets and the future of one's recovery has been studied for individuals with a CLS history. Incarceration presents what may be described as a turning point or a significant disruption during one's life that results in life-altering changes (Granfield & Cloud 1999). Although CLS involvement may increase adverse consequences for RC amongst a general population of individuals with an SUD, research also shows that the negative effects on reducing social forms of capital are not irreparable (Best & Aston 2015).

Depending on the circumstances of the individual, incarceration may provide a positive or negative transformative experience (McIntosh & McKeganey 2000). One study following a sample of prison-based SUD Tx participants six months post-release, finds that participants' relationships are commonly strained during incarceration and that physical capital assets, such as housing, are lost after their release (Lloyd et al. 2019). This posits that RC tends to be lower overall post-release for individuals (Lloyd et al. 2019). However, other research describes "alternative communities" that may emerge for

individuals with an SUD during their incarceration, comprised of mentors and other individuals in recovery who may bolster RC during an individual's incarceration (Lyons 2008). These "alternative communities" reflect the therapeutic communities created within KY prison-based SUD treatment programs with the associated outcomes described previously; however, these new social connections may be lost upon release from prison but could have a lasting effect on individuals' overall RC.

Research assessing RC during the reentry period has been on the rise with efforts put forth to understand barriers and facilitators to the accumulation of RC and potential programmatic interventions. Lyons (2010) describes the importance of developing bonding-capital amongst individuals in recovery to strengthen social recovery support through their discussion of an Illinois statewide program established to help individuals build social capital upon reentry. A recent pilot for an intervention study found that a community program providing peer support and financial assistance for recovery service needs improve treatment motivation and self-efficacy amongst a population of individuals with substance use disorder after community reentry (Watson et al. 2017; Ray et al. 2021). However, challenges to building RC have also been identified. One qualitative case study assessed the potential benefit of a religious organization as a community resource for previously incarcerated individuals with a substance use disorder that mitigates financial and social support challenges through its contribution of building life skills and providing a caring and empathetic community (Connolly & Granfield 2017). Another qualitative study examines the barriers and facilitators to self-sufficiency amongst a CLS-involved community population and identifies factors at the personal, social, and cultural levels (e.g., income, transportation, education, sources of social

support, personal health, having a case manager, and adopting new behaviors) (Kahn et al. 2019). However, the broader geographical context with regard to recovery service availability and community resources is not considered. Lloyd and colleague's qualitative study (2019) assessed the elements of RC prior to and post-release from prison in a sample of individuals who participated in prison-based SUD Tx in England and Wales, finding limited institutional recovery support during incarceration and a lapse in treatment continuity after community reentry.

Prior research on RC and reentry helps to guide this analysis by identifying factors associated with RC after a period of incarceration; however, these factors have only been examined within the context of an external intervention or have missed the important consideration of an individual's physical geography. This study is the first to comprehensively examine factors influencing a positive or negative change in RC after community re-entry quantitatively and across the personal, social, and community levels. The following research questions guides this chapter's analysis: (1) *"How does recovery capital change from prison to the community?", and (2) "What individual-, social-, and community-level factors are associated with higher or lower levels of recovery capital post-release from prison?"*

4.2 Methods

Data (N=247) were derived from a longitudinal survey and social network data collected from individuals released from prison in the state of KY as part of the National Institute on Drug Abuse (NIDA)-funded study called the Geographic Variation in Addiction Treatment Experiences (GATE) study. This study aims to assess multi-level factors influencing prison-based initiation of medications for opioid use disorder

(MOUD), predictors of MOUD utilization post-release, and adverse outcomes among rural and urban persons with opioid use disorder (POUD) (Oser et al. 2023).

4.2.1 Sampling and Recruitment

Trained research staff recruited participants from monthly lists provided by a KY DOC liaison. These lists provided the names and inmate identification numbers of individuals who participated in a prison-based SUD Tx program and are within 60 days of being paroled or serving out their sentences. Research staff determined study eligibility based on four criteria: (1) participation in a prison-based SUD Tx program (completion not required), (2) reported history of opioid use disorder, (3) within 90 days of being released from prison, and (4) released within the state of KY. Data collection occurred in-person, telephonically, or using the video conferencing program Zoom. Participants completed surveys while incarcerated or within three months of their release from prison, due to COVID-19 restrictions.

Individuals voluntarily participated in the GATE study and signed a written informed consent form prior to completing the survey and social network data collection in-person. For those who completed the instruments over the phone or using Zoom, research staff obtained verbal consent from the participant. Baseline data collection included the completion of two surveys, due to the total length (i.e., each part of the baseline survey averages 1.5 hours to complete). The social network data was collected during the first survey of the baseline. For their participation, participants received a $30 incentive for each part of the baseline for a total of $60.

Six months after a participant's release date from prison, research staff contacted the participants to complete a follow-up survey and social network inventory with an 81.8% retention rate. Participants received an additional $30 for participating in the six-month follow-up survey. The university's Institutional Review Board provided approval for the GATE study's protocol, and a Certificate of Confidentiality provides protection for study participants.

4.2.2 Data Collection

From June 2021 to January 2024, 487 participants were enrolled in the GATE study. Of those participants, 410 were released from prison and 313 were eligible for their six-month follow-up survey as data collection is still ongoing. However, at the time of writing this chapter, 247 participants completed their baseline and six-month assessments during this period with a retention rate of 79%. The 66 participants who did not complete their six-month assessment are excluded from the analyses. Survey data were collected and managed using Research Electronic Data Capture (REDCap) (Harris et al. 2009; Harris et al. 2019). The baseline surveys included questions on the following topics: substance use history, substance use treatment history, MOUD initiation, MOUD knowledge, treatment needs and motivations, stigma and discrimination, sexual behaviors, criminal history, traumatic life events, mental and physical health, community characteristics, and participants' demographics. These topical areas were revisited during data collection at the six-month time point.

Social network data was collected using Network Canvas software (Complex Data Collective 2016). Two name generator questions were included in the social network inventory to evoke the participant's (ego) support network members (alters),

which included only living people (e.g., naming God/higher power, individuals deceased, and pets were not included): 1) Who have you been able to count on for support during the last six months and 2) Thinking about the last six months, with whom in your life did you discuss your substance use. The social network inventory included questions assessing network composition, relationships of network members (e.g., alters) to the participant (e.g., ego), and the provision of support functions.

4.2.3 Measures

Outcome Variable

The outcome variable, *Recovery Capital (6M)*, at the six-month data collection time point is derived from the brief assessment of recovery capital (BARC-10). The BARC-10 provides a validated measure assessing the 10 domains represented in the full 50-measure ARC with 10 items (Groshkova et al. 2013; Vilsaint 2017). Due to limits in the binary response options in the ARC, the BARC-10 includes six-point Likert response options (1=Strongly Disagree, 6=Strongly Agree) to better capture nuances in the brief assessment (Vilsaint 2017). The total sum of the responses across the 10 items is calculated to assess RC ($\alpha = 0.85$).

Control Variables

Age (Baseline) is measured in years. *White (Baseline)* is assessed as a dummy variable coded as non-Hispanic white = 1, all other racial categories = 0. *Female (Baseline)* is represented by a dummy variable (1=Female, 0=Male). *Recovery Capital (Baseline)* assessed the participant's recovery capital during their incarceration using the BARC-10 ($\alpha = 0.84$) (Vilsaint 2017).

Personal Domain

Employment, Stable Housing, *Personal Transportation* are dichotomous variables (1=Yes, 0=No) from the six-month assessment and are based on the status reported by the participant for the six-month period after their release from prison. *Education* is measured as an ordinal variable ranging from 1-6 based on the participant's reported level of educational achievement at the baseline assessment. *Anticipated Stigma* and *Internalized Stigma* are derived from the Substance Use Stigma Mechanism Scale (SU-SMS) collected at the six-month survey and assess multiple dimensions of stigma (Smith et al. 2016). Responses to the SU-SMS are given on a 5-point Likert-type scale (1=Never, 5=Very Often). The anticipated ($\alpha = 0.89$) and internalized ($\alpha = 0.89$) subscales are created by averaging the responses to six items provided for each stigma mechanism. *Self-Efficacy* is measured based on a participant's response to a 5-point Likert-type scale question about their belief in their ability to get off and stay off opioids at the six-month timepoint (1=Very Poor, 5=Very Good). *Perceived Stress* is assessed at the six-month survey using the Perceived Stress Scale (PSS), which consists of 10 items on a 5-point Likert-type scale ($\alpha = 0.84$) (0=Never, 4=Very Often) (Cohen et al. 1983). The scores are summed across all scale items after reversing responses to four positively stated items.

Social/Family Domain

Social network variables were collected at the six-month survey. *Density* provides a measure of the connections that exist across the alters named in ego's social network and is calculated by total number of alters-ties (i.e., network members who know each other) divided by the possible number of alter-ties in the network. *Proportion of Family* and *Proportion in Remission* are two network variables assessed as the proportion of

ego's social network who are identified as a family member (e.g., significant other, parent, child, other relative) and are in remission for a substance use disorder, respectively. *Network Social Support Functions* is a measure of the average number of support functions provided by members of the participant's support network. Support functions include listening to personal or private matters, the provision of emotional support, participation in fun and leisure activities together, provision of practical suggestions or advice, assistance with housework, errands, childcare, or other tasks, and financial support items. Each support function is assessed dichotomously (0=No, 1=Yes) with the values across the six items summed. Then, the average number of total network support functions is calculated across participants. *Trust in Network* is derived from the average level of trust on a 5-point Likert-type scale (1=Do not trust at all, 5=Trust with my life) across the participant's network members.

Community Domain

Social Cohesion ($\alpha = 0.83$) (1=Strongly Agree, 5=Strongly Disagree) and *Informal Social Control* ($\alpha = 0.76$) (1=Very Likely, 5=Very Unlikely) are each derived from the average of each participant's responses to five items measured on a 5-point Likert-type scale at the six-month timepoint (Sampson et al. 1997). *Rural Release* is a dummy variable created from the rural-urban continuum codes (RUCC) classification for participants' projected counties of release (USDA 2013). RUCC classifies counties on a scale of 1-9 for increasing rurality based on population and adjacency to a metro area. Individuals released to counties coded 1-3 are considered non-rural (0), while counties coded 4-9 were coded as rural (1). *SUD Tx in Community* is a dichotomous variable (1=Yes, 0=No) created from the participant's response to whether or treatment services

were available in their community at the six-month assessment. *Accessible Public Transportation* is also a dichotomous variable (1=Yes, 0=No) created from the participant's response to whether or not public transportation services (e.g., public bus, medical appointment transportation services, ride sharing/taxi service) were available within their community.

4.2.4 Analytic Strategy

Descriptive statistics were examined. A paired *t* test was used to assess the change in RC from baseline to the six-month follow-up survey. Multivariate linear regression was used to assess the association of personal, family/social, and community-level variables on recovery capital 6-months post-release from prison. All analyses controlled for recovery capital at baseline to more clearly identify factors associated with increased or decreased recovery capital post-release. Standardized coefficients are reported for comparing the effect size of indicators across the RC domains. R-squared values are included in the models. Diagnostic testing included Variable Inflation Factor testing for multicollinearity. VIF scores did not exceed two for any variable, so multicollinearity was not a concern in these analyses. Additionally, the Breusch-Pagan and Cook-Weisberg test was used to test for heteroskedasticity ($p < .05$). Standard errors were reported in Model 2 and Model 5 to correct for detected heteroskedasticity. Analyses were completed using STATA version 18. Missing values (n=10) were replaced based on each variable's average value.

The analysis consists of five models. Model 1 regresses *Recovery Capital (6M)* on the control variables and baseline RC. The association of variables within the personal RC domain and baseline RC with recovery capital at the 6-month timepoint is presented

in Model 2. The third model regresses recovery capital post-release on variables within the family/social domain of RC, while controlling for baseline RC. Model 4 presents the association of community domain variables with *Recovery Capital (6M)*, while controlling for baseline RC. Model 5 provides a full model of all variables across Models 1-5.

4.3 Results

Summary statistics are displayed in Table 1. The average participant was white (83%), male (69%), and around 40 years of age. Participants reported an average RC-level of 50.37 while incarcerated with a slightly lower average six months after release (49.22). Around three-fourths of the participants held at least part-time employment after release from prison (76%), while 62% reported having stable housing. Most participants reported having access to personal transportation (84%). The average participant was high school educated/held a GED or equivalent or had some college credit. Levels of anticipated (2.19) and internalized (2.85) stigma as well as perceived stress (14.88) were near the midpoint, while self-efficacy was high amongst the sample after prison release (4.24). Participants' social networks mostly knew one another (68%), primarily consisted of family members (73%), and one-fifth of networks were in remission from a SUD (20%). Social networks provided a relatively high number of support functions (4.79) and were also deemed trustworthy (4.56) by the participant. Social cohesion (3.45) and informal social control (3.70) were well above the midpoint. Around half of the sample was released to a rural county (49%). Two-thirds of the sample reported having SUD treatment available in their community (66%). Most participants also reported having access to public transportation in their community (86%).

Table 4.1 Summary Statistics (n=247)

Variable	Mean (SD) or N(%)	Min	Max
Dependent Variable			
Recovery Capital (6M)	49.22(7.43)	22	60
Control Variables			
Age (Baseline)	38.75(8.91)	21	66
Female (Baseline)	76(31%)	-	-
White (Baseline)	207(83%)	-	-
Recovery Capital (Baseline)	50.37(7.13)	23	60
Personal RC Domain			
Employment (6M)	180(76%)	-	-
Stable Housing (6M)	154(62%)	-	-
Personal Transportation (6M)	208(84%)	-	-
Education (Baseline)	2.26(1.28)	1	6
Anticipated Stigma (6M)	2.19(1.00)	1	5
Internalized Stigma (6M)	2.85(1.00)	1	5
Self-Efficacy (6M)	4.24(1.12)	1	5
Perceived Stress (6M)	14.88(6.12)	2	32
Family/Social RC Domain			
Density (6M)	68%	0	100
Percent of Family in Network (6M)	73%	0	100
Network Social Support Functions (6M)	4.79(1.16)	.83	6
Percent of Network in Remission (6M)	20%	0	100
Trust in Network (6M)	4.56(.68)	1	5
Community RC Domain			
Social Cohesion (6M)	3.45(.79)	1	5
Informal Social Control (6M)	3.70(.87)	1	5
Rural Release (Baseline)	122(49%)	-	-
SUD Tx in Community (6M)	163(66%)	-	-
Accessible Public Transportation (6M)	213(86%)	-	-

Change in RC from prison to the community is displayed in Tables 2 and 3. Table 2 shows that 99 participants in the sample had an increase in RC following their release from prison (40%). Nearly half of the sample had lower levels of RC in the community compared to their baseline assessment (49%). 11% of participants had no change in their RC from baseline to the six-month assessment. Results of testing for a significant difference in RC from baseline to the six-month follow-up survey are reported in Table 3. RC levels decreased after community reentry by 1.15 points. The difference between prison levels of RC and levels in the community is significant ($p<0.01$).

Table 4.2 Recovery Capital Change Descriptives

	N(%)	Min	Max
Positive Change	99(40%	1	17
Negative Change	121(49%)	-1	-25
No Change	27(11%)	-	-

Table 4.3 T-test Comparing Baseline and Six-Month Assessments of Recovery Capital

	Mean at Baseline	Mean at Follow-up	Difference	95% CI Lower	95% CI Upper	t	p-value
Recovery Capital	50.37	49.22	-1.15	-2.03	-0.27	-2.58	<0.01

Regression results are displayed in Table 4. Across all five models, no control variables were significant but an individual's baseline level or RC during their incarceration has a positive association with RC six months after release from prison. In Model 2's assessment of the personal domain, anticipated stigma and perceived stress are

negatively associated with RC at the 6-month timepoint while self-efficacy is positively associated with the RC outcome. Model 3 found the level of trust in a participant's social network is associated with a higher level of RC post-release from prison. At the community domain of RC (Model 4), social cohesion (e.g., trust and solidarity amongst community is also associated with greater RC (Sampson et al. 1997).

In the full model (Model 5), anticipated stigma, self-efficacy, perceived stress, and social cohesion maintain consistent associations with the outcome. That is, anticipated stigma and perceived stress are negatively associated with recovery capital, whereas self-efficacy and social cohesion are positively associated with recovery capital. This model additionally reveals that trust in one's social network is no longer significantly associated with RC at the 6-month timepoint when accounting for the full set of predictors. Model 5 is the best model fit for these data (R-squared=0.53).

Table 4.4 Regression of RC by Personal, Family/Social, and Community Variables (n=247)

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
Control Variables					
Age (Baseline)	0.05	0.02	0.06	0.04	0.04
	(0.05)	(0.04)	(0.05)	(0.05)	(0.04)
White (Baseline)	0.03	0.02	0.02	0.01	-0.01
	(1.09)	(0.99)	(1.13)	(1.10)	(1.07)
Female (Baseline)	0.07	0.06	0.09	0.07	0.08
	(0.89)	(0.83)	(0.95)	(0.87)	(0.89)
Recovery Capital (Baseline)	0.53***	0.34***	0.49***	0.49***	0.31***
	(0.06)	(0.06)	(0.06)	(0.06)	(0.07)
Personal Variables					
Employment (6M)	---	0.03	---	---	-0.01
		(0.88)			(0.89)

Table 4.4 (continued)

Stable Housing (6M)	---	0.04	---	---	0.03
		(0.77)			(0.83)
Personal Transportation	---	0.04	---	---	0.04
(6M)		(1.20)			(1.23)
Education	---	0.03	---	---	0.08
		(0.41)			(0.43)
Anticipated Stigma (6M)	---	-0.11*	---	---	-0.12*
		(0.46)			(0.46)
Internalized Stigma (6M)	---	0.02	---	---	0.03
		(0.46)			(0.48)
Self-Efficacy (6M)	---	0.27***	---	---	0.25***
		(0.42)			(0.43)
Perceived Stress (6M)	---	-0.23***	---	---	-0.20**
		(0.07)			(0.08)
Family/Social Variables					
Density (6M)	---	---	-0.03	---	0.06
			(1.49)		(1.30)
Percent of Family in	---	---	0.10	---	0.06
Network (6M)			(1.72)		(1.50)
Network Social Support	---	---	0.00	---	0.02
Functions (6M)			(0.63)		(0.50)
Percent of Network in	---	---	0.07	---	0.06
Remission (6M)			(1.53)		(1.26)
Trust in Network (6M)	---	---	0.13*	---	0.08
			(0.64)		(0.57)
Community Variables					
Social Cohesion (6M)	---	---	---	0.19***	0.12*
				(0.54)	(0.50)
Informal Social Control	---	---	---	0.07	-0.02
(6M)				(0.47)	(0.44)
Rural Release (6M)	---	---	---	-0.05	0.01
				(0.80)	(0.75)

Table 4.4 (continued)

SUD Tx in Community (6M)	---	---	---	0.01	0.02
				(0.88)	(0.88)
Accessible Public Transportation (6M)	---	---	---	0.08	0.06
				(1.83)	(1.33)
Constant	19.03***	25.74***	11.53**	1.10**	13.93*
	(3.51)	(4.47)	(4.44)	(4.29)	(5.95)
R-squared	0.30	0.50	0.34	0.35	0.53

Notes: Standardized coefficients are reported. Model 2 and Model 5 report robust standard errors.
p<0.001 = ***, p< 0.01 = **, p<0.05 = *

4.4 Discussion

This quantitative study of prison-based SUD Tx participants in KY assesses factors associated with positive or negative changes in recovery capital 6-months after community reentry. Prior research in this area guides the analysis and selection of variables across the personal, family/social, and community domains of recovery capital. The results identify a significant reduction in RC from incarceration to the post-release period and variables within the personal and community RC domains.

In this sample, RC decreased on average from prison to their six-month assessment following community reentry. The reduction was relatively small but reflects previous research on the challenges of acquiring capital faced by individuals with a history of involvement with the CLS (Kahn et al. 2019). Further, it is also important to consider that involvement with a TC during one's incarceration may bolster resiliency and an individual's capacity to bounce back from stress through the development of coping skills (Tedeschi & Calhoun 2004; Lyons 2008). Additional research should explore the potential mitigating influence of prison-based SUD Tx on the depreciation of

capital during incarceration and into the community. By lessening the detrimental impact on RC, recovery outcomes (e.g., return to drug use, employment, housing, resiliency) post-release from prison may be improved.

Within the personal domain, self-efficacy is shown to bolster RC while anticipated stigma and perceived stress depreciate RC among people who have recently been released from prison. These results align with existing literature that identifies the importance of self-efficacy as a driver of improved recovery outcomes (i.e., abstinence from drug use, behavioral change, and treatment adherence) (Watson et al. 2017; Ray et al. 2021; Burleson & Kaminer 2005; Bandura 1977; Ciraulo et al. 2003). However, this potential benefit of self-efficacy (Beta = 0.25) is outweighed by the detrimental associations of anticipated stigma (Beta = -0.12) and perceived stress (Beta = -0.20) on RC after community reentry. When leaving prison, individuals face additional challenges as a dually stigmatized group because of their history of drug use and incarceration (Link et al. 1997). Additionally, the reentry period can be highly stressful as individuals must establish a sense of security in meeting basic needs while simultaneously managing their recovery (Luther et al. 2011; Begun et al. 2016). The greater exposure to social stressors may strain the individual's protective traits (e.g., self-efficacy), which results in a greater risk to one's recovery and less resources available to facilitate healthy coping behaviors.

Under the family/social domain, an individual's trust in their social network is found to be associated with RC post-release in Model 3; however, trust is no longer significant when accounting for all variables in Model 5. These results are dissimilar to prior work identifying the importance of social support for RC (Lyons 2010; Kahn et al. 2019). There would be value in future studies further exploring the complexities of

individuals' relationships and the family/social domain of RC, particularly how relationships are established and utilized in the pursuit of specific recovery outcomes (i.e., bridging and bonding social capital) (Best 2024; Putnam & Goss 2002).

Assessment of the community domain revealed positive associations between social cohesion with RC after community reentry. Social cohesion is grounded in trust and solidarity amongst its members (i.e., measures how an individual feels their community would intervene for the common good) (Sampson et al. 1997). This foundational trust in one's community provides an additional level of comfort during the stressful reentry periods, as an individual may feel as though their community supports them and their best interest (e.g., managing their recovery) (Connolly & Granfield 2017).

Lastly, building a strong foundation of RC prior to release is shown to have the strongest potential to increase the RC available to individuals after their release from prison (Beta = 0.31). Participants in prison-based SUD Tx have a unique opportunity to work directly with substance use professionals in a community of peers to build RC while incarcerated. Direct efforts to support beneficial factors of RC and mitigate the detrimental factors prior to prison release will further support the accumulation of RC after community reentry. However, programs may not always provide support or the appropriate types of support to individuals (Lloyd 2019), KY DOC is making efforts to address individuals' needs through increasing accessibility of medications for opioid use disorder to individuals who have not completed prison-based SUD Tx and by including recovery coaches in their Tx programs who provide further support to program clients through guidance and community resource education (CJKTOS 2022).

This study has several limitations. First, the sample includes only participants who have participated in a prison-based SUD Tx program and cannot account for the recovery experiences of individuals who reenter the community and were not residing in a TC or did not fully complete the prison-based SUD Tx program. Future research including both populations would provide a better understanding of how prison-based SUD Tx might influence the difference in RC during the transition period. Second, there may be concerns about the assessment of recovery capital. This study focuses on recovery capital during incarceration and 6-months after community reentry. However, a retroactive assessment of recovery capital prior to incarceration would provide an additional measure assessing the effect of an individual's incarceration on their RC. As identified in prior research, relationships may deteriorate, and financial assets may be lost over the course of an individual's incarceration (Lloyd et al. 2019). Due to data limitations, the outcome and indicator variables are derived from the six-month assessment. Therefore, results only provide associations of the included factors with an increase or decrease in RC. Additionally, data are self-reported, which creates the potential for biased responses. However, the methods for data collection applied by trained research staff support previous scientific work identifying the validity of self-reported responses as a proxy for objective data in both healthcare and CLS research (Crockett et al. 1987; Thornberry & Krohn 2000; Del Boca & Noll 2000; Short et al. 2009). Despite these limitations, this study contributes to existing literature in two important ways. It provides the first quantitative assessment of factors associated with RC for prison-based SUD Tx participants after their release from prison. Additionally,

this research comprehensively assesses RC at the personal, family/social, and community levels, which allows for a comparison by individual variables and across domains.

4.5 Conclusion

This study with prison-based SUD Tx participants prior to and after their release from prison provides a greater understanding of how individuals build RC during the reentry period. The analysis identifies positive associations between RC at the 6-month timepoint and self-efficacy, social cohesion in one's community, and a greater foundation of RC during incarceration; negative associations include anticipated stigma and perceived stress. These findings are important for identifying specific areas of intervention during an individual's incarceration to help build a strong RC foundation prior to their release. These could include interventions for strengthening or rebuilding trust within an individual's social network during the high-risk time of reentry, further developing self-efficacy through skill-building, and addressing potential stressors an individual may face in the community during this period of transition (e.g., facilitating the continuum of care, transportation vouchers, connections to community resources and mutual support groups). Future research on this topic should further assess the change in RC from prison to the community and how these factors of RC are mobilized to sustain recovery among people with substance use disorders being released from prison.

CHAPTER 5. Conclusion

5.1 Introduction

As outlined in Chapter 1, the period of community reentry after prison incarceration is one of vulnerability as persons with an opioid use disorder (POUD) must adjust from a controlled prison setting to a potentially unstable and stressful community environment. Individuals may already be released from prison at a disadvantage as there is evidence of resource depreciation associated with time spent incarcerated (Connolly & Granfield 2017; Kahn et al. 2019). Adding to this disadvantage, vulnerability post-release, often rooted in the dual stigma associated with criminal legal system (CLS) involvement and drug use (Link et al. 1997; McLellan et al. 2000; Meyer 2003), is a challenge to one's ability to meet basic needs. However, interventions within the prison setting, such as prison-based SUD Tx programs, provide an opportunity to expand the resources available to individuals in preparation for their release from prison (De Leon 2000). This dissertation utilizes a recovery capital (RC) framework to address 3 research questions presented in Chapters 2 through 4 aimed at understanding how capital can be accumulated within a prison setting and its potential to affect recovery outcomes after release:

RQ1: How do prison-based SUD Tx program staff view the barriers and facilitators to recovery upon community reentry?

RQ2: Does the level of recovery capital during an individual's incarceration affect recovery outcomes in the community after reentry?

RQ3: What factors are associated with higher or lower levels of RC post-release from prison?

This dissertation research makes significant contributions to the current literature. First, the inclusion of qualitative data representing the viewpoints of prison-based SUD Tx staff is not only a unique approach to understanding RC and reentry but also importantly ties specific programmatic functions to reentry coordination to barriers and facilitators clients may experience in the community. Additionally, this research provides a unique targeted approach to understanding how specific domains of incarcerated levels of RC affect recovery outcomes to better facilitate reentry coordination, which has not previously been studied. Lastly, this research's inclusion of incarcerated levels of RC as a control further explores an understudied area of the RC literature (Best et al. 2024), as RC literature has mainly focused on RC only after incarceration and does not account for potential gain or loss of capital from incarceration to the post-release period (Watson et al. 2017; Ray et al. 2021; Connolly & Granfield 2017; Kahn et al. 2019; Laudet & White 2009; Best 2012). Building upon this work, this dissertation project makes three key contributions to our understanding of RC.

5.2 Key Contributions

5.2.1 Identifying Needs in Facilitating RC Transference from Prison to the Community

Existing research in this area identifies the importance of social integration (e.g., building a recovery support network, accessing community transportation and health services) after reentry to accumulating capital across White and Cloud's (2008) 3 domains; however, information assessing programmatic functions before an individual's release and their potential influence on post-release recovery remains unexplored (Terrion 2013; Whiteford et al. 2016; Miles et al. 2020; Kaur et al. 2022, 2023; Parlier-Ahmad et al. 2021). This project, and specifically the research presented in Chapter 2,

identifies barriers and facilitators relevant to the transference of RC in prison to the community after prison-based SUD Tx participants' release. Qualitative interviews with prison-based SUD Tx staff provide details regarding specifics of not only the curriculum of the program but also reentry procedures and the continuum of care from prison to the community.

Significant findings from this study include the importance of self-efficacy in recovery, potential benefits and challenges to home placement and social networks conducive to recovery, and the ideal type versus reality when coordinating a continuum of care from prison to the community. The goals of the prison-based SUD Tx include preparing individuals (e.g., mentally and practically) prior to their release. However, a need for expanding program options for more personalized programming to promote treatment retention and fluid treatment transitions from prison to the community pose areas of improvement. While staff describes the success of the program in building RC prior to release for individuals who complete the program requirements, facilitating individuals' abilities to mobilize RC after reentry require is needed.

5.2.2 Levels of RC During Incarceration Matter for Recovery Outcomes in the Community

To address the capital depreciation and period of vulnerability following community reentry, the research included in Chapter 3 finds that RC levels prior to release matter for improving recovery outcomes. While most RC research on community reentry has focused on the accumulation and capacity to expend capital after reentry, work on the bridging transition from prison to the community is much more limited due to a lack of RC assessment prior to or during incarceration (Elswick et al. 2018; Lloyd et

al. 2019; Neale & Stevenson 2014; Watson et al. 2017; Ray et al. 2021; Connolly & Granfield 2017; Kahn et al. 2019; Best 2024). However, this chapter found that the level of RC while incarcerated predicts an array of recovery outcomes 6-months after community reentry (i.e., return to drug use, employment, stable housing, and resiliency).This is important for not only reducing exposure to stressors associated with meeting basic needs during the reentry period but also improving resiliency and preventing the dangers of returning to drug use after release from prison (Luther et al. 2011; Begun et al. 2016; Binswanger et al. 2012).

The findings of Chapter 3 not only identify the association of incarcerated levels of RC with the four recovery outcomes, but it also breaks down the RC measure to its conceptual domains in the analysis to assess which domains matter most for the respective recovery outcomes. This helps to address the variation across prison populations and the need for a more nuanced approach to treatment and facilitating asset accumulation. By identifying significant domains, interventions may be developed to address individual needs and maximize the potential benefits more effectively. For example, Chapter 3 shows that individuals concerned about returning to use after their release from prison, would likely receive the most benefit from continuing their recovery progress by being provided with linkages to recovery supports post-release, as recovery progress provided the greatest reduction in the likelihood of returning to drug use after release. It is unrealistic for a single approach to address all the complexities of asset-accumulation and recovery, but by identifying areas of importance, targeted interventions may be developed to help facilitate individual efforts towards specific recovery goals set for community reentry.

5.2.3 Multidimensionality of Community Levels of RC

Findings from Chapter 4 reveal that factors across multiple ecological levels are associated with community levels of RC. Informed by previous literature identifying barriers and facilitators to RC procurement and mobilization, Chapter 4 uniquely draws comparisons between factors across personal, social/family, and community ecological domains (Lyons 2010; Lloyd et al. 2019; Watson et al. 2017; Ray et al. 2021; Elswick 2018; Connolly & Granfield 2017; Kahn et al. 2019; White & Cloud 2008). This chapter expands upon the previous research supporting the significance of reliable relationships and community integration to establishing RC by not only supporting those findings but also identifying how personal factors, such as stigma and stress pose significant hinderances to sustained recovery during the reentry period (Lyons 2010; Kahn et al. 2019; Terrion 2013; Connolly & Granfield 2017). A comparison between these associations identifies the magnitude of stigma and stress as detrimental factors of recovery. This highlights a need for not only community level interventions to address public stigma towards both substance use disorder and prior CLS involvement to mitigate health and economic disparities but also greater efforts to connect individuals to recovery supports post-release from prison (Nieweglowski et al. 2017; Walker et al. 2024; West et al. 2014; Feingold 2021; Kahn 2019; Connolly & Granfield 2017).

The inclusion of a lagged measure of RC is a unique contribution to understanding RC post-release from prison. The associations between the significant factors are independent of the baseline value of RC during incarceration. However, it is also important to consider the importance of incarcerated levels of RC as significantly contributing to a post-release RC (Best 2024). This builds the foundation for developing

prison-based interventions to facilitate RC accumulation to mitigate depreciation of assets over the course of an individual's incarceration and a need for additional research on how to better bridge this capital from incarceration to the community post-release from prison (Lloyd et al. 2019).

5.3 Implications and Real-World Considerations

The current research has important practical applications for interventions and policy. Considering the significant proportion of the national prison population with drug-related offenses, prisons provide an important intervention site to help reduce risks post-release to relieve the social, economic, and healthcare burdens of opioid use disorder (BJS 2021; Florence et al. 2017; KIPRC 2022). First, prison-based SUD Tx programs could incorporate RC inventories into their client assessments. This would advocate further for a person-centered approach to treatment by identifying RC strengths and weaknesses to better identify personal and social areas of development within the program's curriculum. Additionally, an RC assessment could also narrow the focus of reentry coordination based on client needs to improve the transferal of RC accumulated within the prison-based program into the specific community where the client will be placed after their release.

This research identifies personal, social/family, and community factors associated with community levels of RC, providing insight for the development of interventions to be employed within the community. The development of an intervention should importantly consider linkages to community recovery supports. As displayed by this dissertation and prior research, the community setting provides a recovery environment related to some of the most influential factors of RC related to integration (e.g., social

cohesion and stigma) (Nieweglowski et al. 2017; Walker et al. 2024). Additionally, these linkages could help facilitate RC accumulation across multiple RC domains as a source of bridging capital to develop new contacts and expand individuals' recovery support networks to further mitigate perceived stress (Best 2024). Interventions could be designed as a component of individuals' community supervision to further support the transferal of assets established within prison to bolster healthy coping strategies as an alternative to returning to drug use. The benefit of this would be twofold: (1) a reduction in recidivism, and (2) a reduction in overdose following community reentry. Nearly two-thirds (65%) of individuals released after a drug charge end up arrested within 3 years, but RC could mitigate this as RC has also been associated with reductions in recidivism (BJS 2021; Howard et al. 2023). Additionally, the inability to cope with the stressors faced during the reentry period may lead to a return to use, subsequently posing greater disadvantages in procuring RC and further hindering the capacity to cope (Moon & Lee 2020; Nordfjaern 2011; Cornelius et al. 2003; Domino et al. 2005; Moos & Moos 2006). For individuals leaving prison, a return to use also poses a threat to health due to a higher risk of overdose following a period of abstinence (Binswanger et al. 2012). By assessing RC both within the prison and in the community, strategies can be implemented to increase individuals' levels of RC but also help maintain these resources during the vulnerable transitionary period following the release from prison.

5.4 Limitations

This dissertation project has several limitations that should be noted collectively. Although the qualitative perspectives of prison-based SUD Tx staff in Chapter 2 provide a unique approach to understanding programmatic functions as they relate to RC, the

perspectives from individuals with lived experience are needed to provide verification of community outcomes for program participants. Additionally, the BARC-10 measure of RC utilized in Chapter 3 operationalizes the ten conceptual domains by ten items. This limits the ability to identify nuances within each domain and, subsequently, the ability to assess "why" a domain has an association with an increase or decrease in a respective outcome. Lastly, the broader project from which these analyses are derived is currently ongoing. The Geographic Variation in Addiction Treatment Experiences (GATE) study follows participants over the course of twelve months after their release from prison. This limits the ability to predict post-release RC in Chapter 4 as the dimensional indicators are derived at the same time as post-release RC. Lastly, the GATE study data used in Chapters 2-4 is restricted to a sample recruited from a single southern state. Departments of Corrections and prison-based SUD Tx programs vary across states, limiting the generalizability of these results.

5.5 Future Directions for Research

Future directions for research should be built from the findings described within each of the chapters. First, research on RC for individuals with a history of CLS involvement should focus more on how RC is expended. These studies help develop a greater context for understanding appreciation and depreciation of capital over the course of an individual's incarceration and into the reentry period, but the process for how these resources are being implemented to achieve recovery goals requires further exploration.

Secondly, there is a disconnect between the development of RC within prisons and the transference of these assets to the community. Tailoring prison-based interventions based on the most relevant dimensions of RC for the outcomes of interest

could help mitigate the disadvantages faced when entering the community after incarceration. Additionally, research is needed to assess the fidelity of reentry procedures, specifically to improve connecting individuals to treatment post-release to prevent a lapse in care.

Lastly, over the course of developing this dissertation, it became apparent that there are gaps in understanding RC both within the context of the broader literature as well as this dissertation itself. Evidence displaying the importance of social and community dimensions of RC exist. However, there is a missed opportunity to understand RC within the context of technology-related capital. During the COVID-19 pandemic, individuals faced isolation because of quarantine. This introduced a new set of needs related to the development of technological skills, a need for technological assets, and the availability of telehealth and online support groups and presents an apparent gap in existing work within the area of RC, particularly for individuals who are incarcerated. Although not a research direction informed by the findings of these studies, it is an outcome of the process of this dissertation research.

5.6 Conclusion

The incorporation of clinically driven treatment programming in prisons as a response to a high proportion of drug-related offenses provides a foundation for RC development before community reentry (KY DOC 2021; De Leon 2000; BJS 2021). This provides a critical opportunity to alleviate the effects of stressors experienced during the community re-entry process and thereafter. This dissertation has made clear that RC during incarceration can not only improve recovery outcomes after release but also increase community levels of RC to further support long-term recovery. By identifying

factors associated with greater or lesser RC, interventions can be developed and implemented to facilitate asset procurement, encourage stability, and promote healthy coping strategies.

REFERENCES

1. Adams, J. , Nowels, C. , Corsi, K. , Long, J. , Steiner, J. F. & Binswanger, I. A. (2011). HIV Risk After Release From Prison: A Qualitative Study of Former Inmates. *JAIDS Journal of Acquired Immune Deficiency Syndromes, 57* (5), 429-434. doi: 10.1097/QAI.0b013e31821e9f41.
2. Andrilla, C.H.A., Moore, T.E., Patterson, D.G., Larson, E.H. (2019). Geographic distribution of providers with a DEA waiver to prescribe buprenorphine for the treatment of opioid use disorder: A 5-year update. *The Journal of Rural Health, 35*, 109-112.
3. Aneshensel, Carol S. et al. (1991). Social Structure, Stress, and Mental Health: Competing Conceptual and Analytic Models. *American Sociological Review* 56:166-78.
4. Bahr, S., Masters, A., & Taylor, B. (2012). What works in substance abuse treatment programs for offenders. *The Prison Journal, 92(2),* 155-174.
5. Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191-215.
6. Bandura, A., & Locke, E. A. (2003). Negative self-efficacy and goal effects revisited. *The Journal of Applied Psychology, 88*(1), 87–99.
7. Begun, A.L., Early, T.J., & Hodge, A. (2016). Mental health and substance abuse service engagement by men and women during community reentry following incarceration. *Adm Policy Ment Health*, *43*, 207-218.
8. Best D, Aston E. (2015). Long-term recovery from addiction. Criminal justice involvement and positive criminology? In: Ronel R, Segev D, editors. Positive criminology. New York: Routledge; p. 177–193.
9. Best, D., Ghufran, S., Day, E., Ray, R., Loaring, J. (2008). Breaking the habit: A retrospective analysis of desistance factors among formerly problematic heroin users. *Drug and Alcohol Review,* 27(6), 619–624.
10. Best, D., Gow, J., Knox, T., Taylor, A., Groshkova, T., White, W. (2012). Mapping the recovery stories of drinkers and drug users in Glasgow: Quality of life and its associations with measures of recovery capital. *Drug Alcohol Review, 31,* 334-341.
11. Best, D., Sondhi, A., Hoffman, L., Best, J., Leidi, A., Grimes, A., Conner, M., DeTriquet, R., White, W., Bailey, H., Leonard, K., & Hutchison, A. (2024). Bridging the gap: Building and sustaining recovery capital in the transition from prison to recovery residences. *Journal of Offender Rehabilitation*, 63:1, 21-36.
12. Binswanger,I.A., Nowels, C., Corsi, K.F., Glanz, J., Long, J., Booth, R.E., Steiner, J.F. (2012). Return to drug use and overdose after release from prison: A qualitative study of risk and protective factors. *Addict Sci Clin Pract, 7*(3).
13. Boardman, J. D., B. K. Finch, C. G. Ellison, D. R. Williams, and J. S. Jackson. (2001). Neighborhood Disadvantage, Stress, and Drug Use Among Adults. *Journal of Health and Social Behavior* 42:151-65.

14. Bormann, N.L., Weber, A.N., Arndt, S., Lynch, A. (2023). Improvements in recovery capital are associated with decreased alcohol use in a primary opioid use disorder treatment-seeking cohort. *The American Journal of Addictions,* 1-7.
15. Brofenbrenner, U. (1979). *The ecology of human development.* Cambridge: MA: Harvard University Press.
16. Brown, J.D., Goodin, A.J., & Talbert, J.C. (2018). Rural and Appalachian disparities in neonatal abstinence syndrome incidence and access to opioid abuse treatment. *J Rural Health, 34*(1), 6-13.
17. Bui, H.N. & Morash, M. (2010). The impact of network relationships, prison experiences, and internal transformation on women's success after prison release. *Journal of Offender Rehabilitation, 49*(1).
18. Burdon, W.M., Messina, N.P., Prendergast, M.L. (2004). California treatment expansion initiative: Aftercare participation, recidivism, and predictors of outcomes. *Prison Journal*, *84*, 61-80.
19. Bureau of Justice Statistics. (2020). Drug Use, Dependence, and Abuse Among State Prisoners and Jail Inmates, 2007-2009. Retrieved from https://bjs.ojp.gov/content/pub/pdf/dudaspji0709.pdf
20. Bureau of Justice Statistics. (2021). Prisoners in 2020 – Statistical tables. Retrieved from: https://bjs.ojp.gov/library/publications/prisoners-2020-statistical-tables
21. Bureau of Justice Statistics. (2021). Recidivism of prisoners released in 24 states in 2008: A 10-year follow-up period (2008-2018). Retrieved from: https://bjs.ojp.gov/BJS_PUB/rpr24s0810yfup0818/Web%20content/508%20compliant%20PDFs
22. Burleson, J.A. & Kaminer. (2005). Self-efficacy as a predictor of treatment outcome in adolescent substance use disorders. *Addictive Behaviors, 30*(9), 1751-1764.
23. Catalano, R. F., Wells, E. A., Jenson, J. M. & Hawkins, J. D. (1989) Aftercare services for drug- using institutionalized delinquents, Social Service Review, 63, 553-577.
24. Centers for Disease Control and Prevention, National Center for Injury Prevention and Control (2021). Economic Cost Summary.
25. Cheney, A.M., Booth, B.M., Borders, T.F., & Curran, G.M. (2016). The role of social capital in African Americans' attempts to reduce and quit cocaine use. *Substance Use and Misuse, 51*(6), 777-787.
26. Cherry, S.B., Robinson, A., Jashinsky, J., Bagwell-Adams, G., Elliott, M., Davis, M. (2017). Rural community health needs assessment findings: Access to care and mental health. *Journal of social, behavioral, and health sciences, 11*(1), 268-277.
27. Chestnut Health Systems. (2010).Chestnut Health Systems. Global appraisal of individual needs: Administrative guide for the GAIN and related measures [Version 5.7.6]. Bloomington, IL.
28. Ciraulo, D.A., Piechniczek-Buczek, J., Iscan, E.N. (2003). Outcome predictors in substance use disorders. *The Psychiatric Clinics of North America, 26*(2), 381-409.

29. CJKTOS (2022). Kentucky Department of Corrections supportive assistance with medication for addiction treatment (SAMAT) pilot expansion program evaluation. Retrieved from: https://corrections.ky.gov/Divisions/ask/Pages/SAMAT.aspx
30. CJKTOS. (2022). Criminal justice Kentucky treatment outcome study FY2022. Retrievedfrom: https://corrections.ky.gov/Divisions/ask/Documents/CJKTOS_FY2022%20Report_FINAL_2023-05-30.pdf
31. Cloud W, Granfield R. 2001. Natural recovery from substance dependency: lessons for treatment providers. J Social Work Prac Addict. 1:83–104.
32. Cloud, W. & Granfield, R. (2008). Conceptualizing recovery capital: Expansion of a theoretical construct. *Subst Use Misuse, 43,* 1971-1986.
33. Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, *24*, 386-396.
34. Commonwealth of Kentucky Department of Corrections. (2021). Addiction Services of Kentucky.
35. Complex Data Collective. Network Canvas Interviewer. 2016. www.doi.org/10.5281/zenodo.6026548
36. Connolly, K. & Granfield, R. (2017). Building recovery capital: The role of faith-based communities in the reintegration of formerly incarcerated drug offenders. *Journal of Drug Issues, 47*(3), 370-382.
37. Cornelius JR, Maisto SA, Pollock NK et al.2003. Rapid relapse generally follows treatment for substance use disorders among adolescents. Addict Behav,28,381–386.
38. Crockett, L. J., Schulenberg, J. E., & Petersen, A. C. (1987). Congruence between Objective and Self-Report Data in a Sample of Young Adolescents. *Journal of Adolescent Research*, *2*(4), 383-392.
39. Crowder, Kyle, and Liam Downey. 2010. "Inter-Neighborhood Migration, Race, and Environmental Hazards: Modeling Micro-Level Processes of Environmental Inequality." *American Journal of Sociology* 115.4:1110.
40. Cummins R. A. (2000). Objective and subjective quality of life: An interactive model. *Social Indicators Research*, 52, 55–72. Crossref. ISI.
41. De Andrade, D., Ritchie, J., Rowlands, M., Mann, E., Hides, L. (2018). Substance use and recidivism outcomes for prison-based drug and alcohol interventions. *Epidemiol Rev.*, *1*(40), 121-133.
42. Del Boca, F.K. & Noll, J.A. (2000). Truth or consequences: The validity of self-report data in health services research on addictions. *Addictions,95*(11s3),347-360.
43. De Leon, G. (2000). *The Therapeutic Community: Theory, Model, and Method*. New York: Springer Publishing.
44. Dohrenwend, B.P. et al. (1992). Socioeconomic status and psychiatric disorders: The causation-selection issue." *Science, 255*, 946-52.
45. Domino KB, Hornbein TF, Polissar NL et al. (2005). Risk factors for relapse in health care professionals with substance use disorders. JAMA,293, 1453–60.
46. Duff, C. (2011). Networks, resources and agencies: On the character and production of enabling places. *Health & place*, *17*(1), 149-156.

47. Duwe, G., & Clark, V. (2014). The Effects of Prison-Based Educational Programming on Recidivism and Employment. The Prison Journal, 94(4), 454-478. https://doi-org.ezproxy.uky.edu/10.1177/0032885514548009
48. Elswick, A., Fallin-Bennett, A., Ashford, K., Werner-Wilson, R. (2018). Emerging adults and recovery capital. *Journal of Addictions Nursing, 29*(2), 78-83.
49. Evans D. N., Porter J. R. (2015). Criminal history and landlord rental decisions: A New York quasi-experimental study. Journal of Experimental Criminology, 11(1), 21–42. https://doi-org.ezproxy.uky.edu/10.1007/s11292-014-9217-4
50. Feingold, Z.R. (2021). The stigma of incarceration experience: A systematic review. *Psychology, Public Policy, and Law, 27*(4),550-569.
51. Fernandez, D.E.R. & Peters, B. (2023). Employment and primary source of treatment payment: physical recovery capital as a predictor of cocaine use treatment completion. *Journal of Substance Use*.
52. Few-Demo, A.L. & Arditti, J.A. Relational vulnerabilities of incarcerated and reentry mothers: Therapeutic implications. *International Journal of Offender Therapy and Comparative Criminology, 58*(11), 1297-1320.
53. Florence C, Luo F, Rice K. The economic burden of opioid use disorder and fatal opioid overdose in the United States, 2017. Drug Alcohol Depend 2021;218:108350. U.S. Department of Justice (2021). Probation and parole in the United States, 2020. *Bureau of Justice Statistics*.
54. Granfield, R. & Cloud, W. (1999). *Coming clean: Overcoming addiction without treatment.* New York University Press, New York.
55. Groshkova, T., Best, D., White, W., (2013). The assessment of recovery capital: properties and psychometrics of a measure of addiction recovery strengths. Drug Alcohol Rev., *32*, 187–194.
56. Hatzenbuehler, M.L., Nolen-Hoeksema, S., Dovidio, J. (2009). How does stigma "get under the skin"? The mediating role of emotion regulation. *Psychological Science, 20.10,* 1282-1289.
57. Havens, J., Lofwall, M., Frost, S., Oser, C., Crosby, R., & Leukefeld, C. (2013). Factors associated with prevalent Hepatitis C infection among rural Appalachian injection drug users. *American Journal of Public Health*, *103(1),* 44-52.
58. Havens, J., Oser, C., Knudsen, H., Lofwall, M., Stoops, W., Walsh, S., Leukefeld, C., & Kral, A. (2011). Individual and network factors associated with non-fatal overdose among rural Appalachian drug users. *Drug and Alcohol Dependence, 115(1-2),* 107-112.
59. Hawkins, J. D. & Catalano, R. F. (1985) Aftercare in drug abuse treatment, International Journal of the Addictions, 20, 917-945.
60. Hayaki, J., Conti, M.T., Bailey, G.L., Herman, D.S., Anderson, B.J., and Stein, M.D. (2021). Negative affect-associated drug refusal self-efficacy, illicit opioid use, and medication use following short-term inpatient opioid withdrawal management. *Journal of Substance Abuse Treatment, 126*.
61. Hennessy, E.A. (2017). Recovery capital: A systematic review of the literature. *Addiction Research & Theory, 25(5),* 349-360.
62. Hester, R.D. (2004). Integrating behavioral health services in rural primary care settings. *Substance Abuse, 25*(1), 63-64.

63. Hiller, M.L., Knight, K., & Simpson, D.D. (1999). Prison-based substance abuse treatment, residential aftercare and recidivism. *Addiction, 94*(6), 833-842.
64. Howard, H., Skinner-Osei, P., Mitchell, C., Cadavid, E., & Hulick, J. (2023). "Now I have my own key": The impact of housing stability on recovery and recidivism reduction using a recovery capital framework. *Urban Social Work.*
65. Hsieh, H.F., Shannon, S.E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research, 15(9),* 1277-1288.
66. Huebner B. M., Kras K. R., Pleggenkuhle B. (2019). Structural discrimination and social stigma among individuals incarcerated for sexual offenses: Reentry across the rural–urban continuum. Criminology, 57(2), 715–738. https://doi-org.ezproxy.uky.edu/10.1111/1745-9125.12226
67. Hughes, M.E., Waite, L.J., Hawkley, L.C., & Cacioppo, J.T. (2004). A short scale for measuring loneliness in large surveys: Results form two population-based studies. *Research on Aging, 26*(6), 655-672.
68. Hunter BA, Jason LA, Keys CB. Factors of empowerment for women in recovery from substance use. Am J Community Psychol. 2013 Mar;51(1-2):91-102. Doi: 10.1007/s10464-012-9499-5. PMID: 22392193; PMCID: PMC3893098.
69. Irish, A., Bowen, E.A., Hawthrone, A.N., & Palombi, L. (2020). "Me, the street, and a backpack": Employment, income, and physical capital in rural recovery." *Journal of Social Work Practice in the Addictions, 20*(3), 194-207.
70. Kaebel, D., Glaze, L., Tsoutis, A., & Minton, T. (2015). Correctional populations in the United States, 2014. NCJ 249513. Retrieved from: http://www.bjs.gov/content/pub/pdf/cpus14.pdf.
71. Kahn, L.S., Vest, B.M., Kulak, J.A., Berdine, D.E., & Granfield, R. (2019). Barriers and facilitators to recovery capital among justice-involved community members. *Journal of Offender Rehabilitation, 58*(6), 544-565.
72. Kaiser Family Foundation. (2022). Drug Overdose Death Rate (per 100,000 population). Retrieved from: https://www.kff.org/other/state-indicator/drug-overdose-deathrate-per-100000-population/
73. Kaur, A., Lal, R., Sen, M.S., Sarkar, S. (2022). Comparison of recovery capital in patients with alcohol and opioid dependence-An exploratory study. *Addict Health, 14*(2), 105-114.
74. Kaur, A., Lal, R., Sen, M.S., Sarkar, S. (2023). Psychosocial correlates of recovery capital in alcohol and opioid-dependent patients: A cross-sectional comparative study. *Indian Journal of Social Psychiatry, 39*(1), 36-41.
75. Kentucky Board of Alcohol and Drug Counselors. (2023). KYADC.
76. Kentucky Injury Prevention and Research Center. (2022). *Drug overdose and related comorbidity county profiles.* Retrieved 12/20/2022.
77. Keyes, K., Cerdá, M., Brady, J., Havens, J., & Galea, S. (2014). Understanding the rural-urban differences in nonmedical prescription opioid use and abuse in the United States. *American Journal of Public Health, 104(2),* e52-e59.
78. Kiang, M.V., Barnett, M.L., Wakeman, S.E., Humphreys, K., & Tsai, A.C. (2021). Robustness of estimated access to opioid use disorder treatment providers in rural vs. urban areas of the United States. *Drug and Alcohol Dependence*, *228*(1).

79. Kreager, D.A., Bouchard, M., De Leon, G., Schaefer, D., Soyer, M., Young, J., Zajac, G. (2018). A life course and networks approach to understanding prison therapeutic communities. Published in *Social Networks and the Life Course Integrating the Development of Human Lives and Social Relational Networks*. Editors: Alwin, Duane F., Felmlee, Diane Helen, Kreager, Derek A. (Eds.). New York: Springer.
80. Laudet, A.B. & White, W.L. (2009). Recovery capital as prospective predictor of sustained recovery, life satisfaction, and stress among former polysubstance users. *Substance Use and Misuse, 43*(1), 27-54.
81. Link, B. & Phelan, J. (2001). Conceptualizing stigma. *Annual Review of Sociology, 7,* 363-85.
82. Link, B., Struening, E., Rahav, M., Phelan, J., Nuttbrock, L. (1997). On stigma and its consequences: Evidence from a longitudinal study of men with dual diagnoses of mental illness and substance abuse. *Journal of Health and Social Behavior, 38*, 177-90.
83. Lloyd, C., Page, G., McKeganey, N., & Russell, C. (2019). Capital depreciation: The lack of recovery capital and post-release support for prisoners leaving the Drug Recovery Wings in England and Wales. *International Journal of Drug Policy*, *70*, 107-116.
84. Longabaugh, R., Wirtz, P.W., Zywiak, W.H., O'Malley, S.S. (2010). Network support as a prognostic indicator of drinking outcomes: The COMBINE study. *Journal of Studies on Alcohol and Drugs,* 71(6), 837–846.
85. Lozano, B. E., & Stephens, R. S. (2010). Comparison of participatively set and assigned goals in the reduction of alcohol use. *Psychology of Addictive Behaviors, 24*(4), 581–591.
86. Luther, J.B., Reichert, E.S., Holloway, E.D., Roth, A.M., & Aalsma, M.C. (2011). An exploration of community reentry needs and services for prisoners: A focus on care to limit return to high-risk behavior. *AIDS PATIENT CARE and STDS, 25*(8), 475-481.
87. Lyons, T. & Lurigio, A.J. (2010). The role of recovery capital in the community reentry of prisoners with substance abuse disorders. *J Offender Rehab, 49(7),* 445-455.
88. Lyons, T. (2008). Unpublished interviews with former prisoners in long-term recovery. Chicago, IL: TASC.
89. McAlearney, A.S., Walker, D.M., Shiu-Yee, K., Crable, E.L., Auritt, V., Barkowski, L., Batty, E.J., Dasgupta, A., et al. (2023). Embedding big qual and team science into qualitative research: Lessons from a large-scale, cross-site research study. *International Journal of Qualitative Methods, 22*, 1-9.
90. McIntosh, J., & McKeganey, N. (2000). Addicts' narratives of recovery from drug use: Constructing a non-addict identity. Social Science & Medicine, 50(10), 1501–1510. https://doi.org/10.1016/S0277-9536(99)00409-8
91. McKay, J. R., Foltz, C., Leahy, P., Stephens, R., Orwin, R. G., & Crowley, E. M. (2004). Step down continuing care in the treatment of substance abuse: Correlates of participation and outcome effects. *Evaluation and Program Planning, 27*(3), 321–331.

92. McLellan, A.T., Lewis, D.C., O'Brien, C.P., Kleber, H.D. (2000). Drug dependence, a chronic medical illness: Implications for treatment, insurance, and outcomes evaluation. *JAMA, 284(13),* 1689-1695.
93. McLellan, AT, Lewis, DC, O'Brien, CP, Kleber, HD. 2000. "Drug Dependence, a Chronic Medical Illness: Implications for Treatment, Insurance, and Outcomes Evaluation." *JAMA* 284(13): 1689-1695.
94. McLeory, K.R., Bibeau, D., Steckler, A., & Glanz, K. (1988). An ecological perspective on health promotion programs. *Health Education Quarterly, 15*(4), 351-377.
95. Messina, N., Grella, C., Cartier, J., & Torres S. (2010). A randomized experimental study of gender-responsive substance abuse treatment for women in prison. *Journal of Substance Abuse Treatment, 38,* 97-107.
96. Meyer, I.H. (2003). Prejudice, social stress and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin, 5*, 674-97.
97. Miles, J., Howell, J., Sheridan, D., Braucht, G., & Mericle, A. (2020). Supporting individuals using medications for opioid use disorder in recovery residences: Challenges and opportunities for addressing the opioid epidemic. *The American Journal of Drug and Alcohol Abuse, 46*(3), 266-*272.*
98. Moon, S.J.E. & Lee, H. (2020). Relapse to substance use: A concept analysis. *Nursing Forum, 55*(3), 301-538.
99. Moos RH, Moos BS. 2006. Rates and predictors of relapse after natural and treated remission from alcohol use disorders. Addiction,101, 212–22.
100. Neale J, Stevenson C. 2014. Social and recovery capital amongst homeless hostel residents who use drugs and alcohol. Int J Drug Policy. 26:475–483.
101. Neale J., Brown C. (2016). We are always in some form of contact: Friendships among homeless drug and alcohol users living in hostels. *Health Social Care Commun, 24,*557–566.
102. Nieweglowski, K., Corrigan, P., Tyas, T., Tooley, A., Dubke, R., Lara, J., Washington, L., Sayer, J., Sheehan, L. (2017). Exploring the public stigma of substance use disorder through community-based participatory research. *Addiction Research and Theory.*
103. Nordfjaern T. 2011. Relapse patterns among patients with substance use disorders. J Subst Use,16,313–29.
104. O'Connor, C. & Joffe, H. (2020). Intercoder reliability in qualitative research: Debates and practical guidelines. *Int J Qual Res, 19*, 1-13.
105. O'Sullivan, D., Xiao, Y., & Watts, J.R. (2019). Recovery capital and quality of life in stable recovery from addiction. *Rehabilitation Counselling Bulletin*, *62*(4), 195-253.
106. Oser CB, Batty E, Booty M, Eddens K, Knudsen HK, Perry B, Rockett M, Staton M. (2023). Social ecological factors and medication treatment for opioid use disorder among justice-involved rural and urban persons: the Geographic variation in Addiction Treatment Experiences (GATE) longitudinal cohort study protocol. BMJ Open, 13(3):e066068. Doi: 10.1136/bmjopen-2022-066068. PMID: 36940952; PMCID: PMC10030549.

107. Oser, C., & Harp, K.L.H. (2015). Treatment outcomes for prescription drug misusers: The negative effect of client residence and treatment location geographic discordance. *Journal of Substance Abuse Treatment, 48(1),* 1-18.
108. Oser, C., Leukefeld, C., Staton Tindall, M., Garrity, T., Carlson, R., Falck, R., Wang, J., & Booth, B. (2011). Rural drug users: Factors associated with substance abuse treatment utilization. *International Journal of Offender Therapy and Comparative Criminology, 55(4),* 567-586. PMC2923294.
109. PA Harris, R Taylor, BL Minor, V Elliott, M Fernandez, L O'Neal, L McLeod, G Delacqua, F Delacqua, J Kirby, SN Duda, REDCap Consortium. (2019**).** The REDCap consortium: Building an international community of software partners**.** *J Biomed Inform, 9. [doi:10.1016/j.jbi.2019.103208]*
110. PA Harris, R Taylor, R Thielke, J Payne, N Gonzalez, JG. Conde. (2009). Research electronic data capture (REDCap): A metadata-driven methodology and workflow process for providing translational research informatics support, *J Biomed Inform., 42(2), 377-81.*
111. Palombi, L., Hawthorne, A. N., Irish, A., Becher, E., & Bowen, E. (2019). "One Out of Ten Ain't Going to Make It": An Analysis of Recovery Capital in the Rural Upper Midwest. Journal of Drug Issues, 49(4), 680–702. https://doi-org.ezproxy.uky.edu/10.1177/0022042619859309
112. Palombi, L.C., Irish, A., Bowen, E.A., Kosobuski, L., Chen, N.S., Hawthorne, A.N., Becher, E. (2022). 'That's got me to where I am today': Examining the role of social capital in rural recovery. *Addiction Research & Theory, 30*(4), 268-278.
113. Parlier-Ahmad, A.B., Terplan, M., Svikis, D., Ellis, L. & Martin, C.E. (2021). Recovery capital among people receiving treatment for opioid use disorder with buprenorphine. *Harm Reduction Journal, 18*(103), 1-10.
114. Patton, M.Q. (1999). Enhancing the quality and credibility of qualitative analysis. *Health Serv Res, 34*(5 Pt2), 1189-1208.
115. Pearlin, Leonard I. (1989). The Sociological Study of Stress. *Journal of Health and Social Behavior* 30: 241-56.
116. Pearlin, Leonard I., Scott Schieman, Elena M. Fazio, and Stephen C. Meersman. 2005. "Stress, Health and the Life Course: Some Conceptual Perspectives." *Journal of Health and Social Behavior* 46(2):205-19.
117. Prendergast, M.L., Hall, E.A., Wexler, H.K. (2003). Multiple measures of outcome in assessing a prison-based drug treatment program. *Offender Rehab.*
118. Pullen, E., & Oser, C. (2014). Barriers to substance abuse treatment in rural and urban communities: A counselor perspectives. *Substance Use & Misuse, 49(7),* 891-901. PMC3995852.
119. Putnam, R.D., Goss, K.A. (2002). *Democracies in flux: The evolution of social capital in contemporary society*. Oxford University Press, New York.
120. Quest TL, Merrill JO, Roll J, Saxon AJ, Rosenblatt RA. Buprenorphine therapy for opioid addiction in rural Washington: the experience of the early adopters. J Opioid Manag. 2012;8:29–38. doi:10.5055/jom.2012.0093.
121. Ramakers, A., Apel, R., Nieuwbeerta, P., & Dirkzwager, A.. (2014). Imprisonment length and post-prison employment prospects. Criminology, 52(3), 399-427.

122. Ray, B., Watson, D.P., Xu, H., Salyers, M.P., Victor, G., Sightes, E., Bailey, K., Taylor, L.R., & Bo, Na. (2021). Peer recovery services for persons returning from prison: Pilot randomized clinical trial investigation of SUPPORT. *J Subst Abuse Treat, 126*.
123. Rosenblum, A., Cleland, C.M., Fong, C., Kayman, D.J., Tempalski, B., Pa rrino, M. Distance traveled and cross-state commuting to opioid treatment programs in the United States. *J Environ Public Health*. 2011;2011:948789. doi:10.1155/2011/948789.
124. Ross, C. E., J. Mirowsky, and S. Pribesh. (2001). Powerlessness and the Amplification of Threat: Neighborhood Disadvantage, Disorder, and Mistrust. *American Sociological Review* 66:568-91.
125. Sahker, E., Ali, S.R., & Arndt, S. (2019). Employment recovery capital in the treatment of substance use disorders: Six-month follow-up observations. *Drug and Alcohol Dependence*, 205.
126. Sampson, R.J., Raudenbush, S.W., & Earls, F. (1997). Neighborhoods and violent crime: A multilevel study of collective efficacy. *Science*, *277*(5328), 918-924.
127. Schalkoff, C.A., Lancaster, K.E., Gaynes, B.N., Wang, V., Pence, B.W., Miller, W.C., Go, V.F. (2020). The opioid and related drug epidemics in rural Appalachia: A systematic review of populations affected, risk factors, and infectious diseases. *Substance Abuse, 41*(1), 35-69.
128. Short, M., Goetzel, R.Z., Pei, X., Tabrizi, M.J., Ozminkowski, R.J., Gibson, T.B., DeJoy, D.M., & Wilson, M.G. (2009). How accurate are self-reports? Analysis of self-reported health care utilization and absence when compared with administrative data. *Journal of Occupational and Environmental Medicine,51*(7),786-796.
129. Silver, Eric, Edward Mulvey, and Jeffrey Swanson. (2002). Neighborhood Structural Characteristics and mental disorder: Faris and Dunham Revisited. *Social Science and Medicine* 55:1457-70.
130. Smith, BW., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J. (2008). The Brief Resilience Scale: Assessing the Ability to Bounce Back.
131. Smith, L.R., Earnshaw, V.A., Copenhaver, M.M., & Cunningham, C.O. (2016). Substance use stigma: Reliability and validity of a theory-based scale for substance-using populations. *Drug and Alcohol Depend., 162*, 34-43.
132. Srivastava, P., Hopwood, N. (2009). A practical iterative framework for qualitative data analysis. *International Journal of Qualitative Methods, 8*(1), 76-84.
133. Staton, M., Tillson, M., & Winston, E. (2021). Criminal Justice Kentucky Treatment Outcome Study (CJ-KTOS) FY2021. Lexington, KY: University of Kentucky, Center on Drug and Alcohol Research. Retrieved from: http://cdar.uky.edu/cjktos/Downloads/CJKTOS_FY2017_Report_Final.pdf
134. Staton, M., Tillson, M., & Winston, E. (2022). *Criminal Justice Kentucky Treatment Outcome Study (CJ-KTOS) FY2022.* Lexington, KY: University of Kentucky, Center on Drug and Alcohol Research.

135. Staton-Tindall, M., Winston, E., Walker, R. & Leukefeld, C. (2015). *Criminal Justice Kentucky Substance Abuse Treatment Outcome Study (CJ-KOTS): Correctional treatment protocol and research description.* Lexington, KY: University of Kentucky, Center on Drug and Alcohol Research.
136. Stevens, A. (2013). Offender Rehabilitation and Therapeutic Communities: Enabling Change the TC Way. Abingdon, UK: Routledge.
137. Sung H. E., Mahoney A. M., Mellow J. (2011). Substance abuse treatment gap among adult parolees: Prevalence, correlates, and barriers. *Criminal Justice Review*, 36, 40-57.
138. Tedeschi, R. G., & Calhoun, L. G. (2004). Target Article: "Posttraumatic Growth: Conceptual Foundations and Empirical Evidence". Psychological Inquiry, 15(1), 1–18. https://doi.org/10.1207/s15327965pli1501_01
139. Terrion J.L. (2013). The experience of post-secondary education for students in recovery from addiction to drugs or alcohol: Relationships and recovery capital. *J Social Personal Relationships, 30*, 3–23.
140. Thoits, Peggy A. (2010). Stress and Health: Major Findings and Policy Implications. *Journal of Health and Social Behavior* 51(1 suppl):S41-S53.
141. Thornberry, T.P. & Krohn, M.D. (2000). The self-report method for measuring delinquency and crime. *Criminal Justice, 4,*33-83.
142. Turner, S. & Petersilia, J. (1996) Work release in Washington: effects on recidivism and corrections costs, Prison Journal, 76, 138-164.
143. U.S. Department of Agriculture. Rural-Urban Continuum Codes. 2013. https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/
144. U.S. Department of Justice (2021). Prisoners in 2020 – Statistical tables. *Bureau of Justice Statistics.*
145. U.S. Department of Justice (2021). Probation and parole in the United States, 2020. *Bureau of Justice Statistics*.
146. Van Handel, R., C., Hallisey, E., Kolling, J., Zibbell, J., Lewis, B., Bohm, M.K., Jones, C.M., Flanagan, B.E., Siddigi, A.E., Igbal, K., Dent, A.L., Mermin, J.H., McCray, E., Ward, J.W., & Brooks, J.T. (2016). County-level vulnerability assessment for rapid dissemination of HIV or HCV infections among persons who inject drugs, United States. *Journal of Acquired Immune Deficiency Syndrome, 73(3),* 323-331.
147. Vilsaint, C. L., Kelly, J. F., Bergman, B. G., Groshkova, T., Best, D., & White, W. (2017). Development and validation of a Brief Assessment of Recovery Capital (BARC-10) for alcohol and drug use disorder. Drug and Alcohol Dependence, *177,* 71-76.
148. Walker, D.M., Lefebvre, R.C., Davis, A., Shiu-Yee, K., Chen, S., Jackson, R.D., Helme, D.W., Oga, E.A., Oser, C.B., Stotz, C., Balvanz, P., Asman, K., Holloway, J., Lewis, N., & Knudsen, H.K. (2024). Differences in perceptions of community stigma towards opioid use disorder between community substance use coalition members and the general public. *Journal of Substance Use and Addiction Treatment,158*,209276.
149. Watson, D.P., Ray, B., Robison, L., Xu, H., Edwards, R., Salyers, M.P., Hill, J., & Shue, S. (2017). Developing substance use programming for Person-

Oriented Recovery and Treatment (SUPPORT): Protocol for a pilot randomized controlled trial. *Pilot and Feasibility Studies, 3*(73).
150. West, M.L., Yanos, P.T., & Mulay, A.L. (2014). Triple stigma and forensic psychiatric patients: Mental illness, race, and criminal history. *International Journal of Forensic Mental Health,13*(1),75-90.
151. Wexler, H. K., & Prendergast, M.L. (2010). Therapeutic Communities in United States' Prisons: Effectiveness and Challenges. Therapeutic Communities, 31(2), 157-175.
152. Wheaton, Blair. (1985). Models for the stress-buffering functions of coping resources." *Journal of Health and Social Behavior, 26,* 352-64.
153. White, W. & Cloud, W. (2008). Recovery capital: A primer for addictions professionals. *Counselor, 9,* 22-27.
154. Whiteford, M., Haydock, W., & Cleave, N. (2016). Two buses and a short walk: the place of geography in recovery. *Drugs and Alcohol Today*.
155. Wilson, A.B. (2009). It takes ID to get ID: The new identity politics in services. *Social Service Review,83*(1),111-132.
156. Wormith, J.S., Althouse, R., Simpson, M., Reitzel, L.R., Fagan, T.J., & Morgan, R.D. (2007). The rehabilitation and reintegration of offenders: The current landscape and some future directions for correctional psychology. *Criminal Justice and Behavior, 34(7),* 879-892.
157. Yardley L, Ainsworth B, Arden-Close E, Muller I. (2015). The person-based approach to enhancing the acceptability and feasibility of interventions. Pilot Feasibility Stud,1,37.
158. Zhao, J., Han, X., Zheng, Z., Fan, Q., Shi, K., Fedewa, S., Yabroff, K.R., & Nogueira, L. (2023). Incarceration history and health insurance and coverage changes in the U.S. *American Journal of Preventative Medicine,64*(3),334-342.

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Curriculum Vitae

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Education:

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2017	M.A.	Colorado State University, Sociology Thesis: *The "Power" of Coal: The US Diplomatic Coal Regime Under the Current Global Environmental Discourse*
2014	B.A.	Saint Xavier University, Sociology & Philosophy *Magna Cum Laude*

Publications

Oser, C., Rockett, M., Otero, S., Gressick, R., **Batty, E.**, Booty, M., Staton, M., & Knudsen, H. Rural and urban clinician views on COVID-19's impact on substance use treatment for individuals on community supervision in Kentucky. 2024. Paper forthcoming in *Health and Justice*.

Booty, M.D., Harp, K., **Batty, E.J.**, Knudsen, H.K., Staton, M., & Oser, C. "Barriers and Facilitators to the Use of Medication for Opioid Use Disorder within the Criminal Justice System: Perspectives from Clinicians." *Journal of Substance Use and Addiction Treatment*. 2023.

Uhrig Castonguay, B.J., LeMasters, K., Corsi, C., **Batty, E.J.,** Travis, M., Waleed, C., Oser, C., Nowotny, K., Brinkley-Rubinstein, L. "Retention Strategies among those on Community Supervision in the South: Lessons Learned During the COVID-19 Pandemic." *PLOS ONE*. 2023.

McAlearney, A.S., Walker, D.M., Shiu-Yee, K. Crable, E.L., Auritt, V., Barkowski, L., **Batty, E.J.**, Dasgupta, A., Goddard-Eckrich, D., Knudsen, H.K., McCrimmon, T., Scalise, A.L., Sieck, C., Wood, J., Drainoni, M.L. "Embedding Big Qual and Team Science into Qualitative Research: Lessons from a Large-Scale, Cross-Site Research Study." *International Journal of Qualitative Methods.* 2023.

Oser, C., **Batty, E.J.**, Booty, M., Eddens, K., Knudsen, H.K., Perry, B., Rockett, M., & Staton, M. "Social Ecological Factors and Medication Treatment for Opioid Use Disorder Among Justice-Involved Rural and Urban Persons: The Geographic Variation in Addiction Treatment Experiences (GATE) Longitudinal Cohort Study Protocol." *BMJ Open.* 2023.

Batty, E.J., Ibragivmov, U., Fadanelli, M., Gross, S., et al. "A Qualitative Analysis of Rural Syringe Service Program Fidelity in Appalachian Kentucky: Staff and Participant Perspectives." *Journal of Rural Health*. 2023.

Brown, R.L., **Batty, E.J.**, Lofwall, M., Kiviniemi, M., & Kizewski, A. "Opioid-Use Related Stigma and Health Care Decision-Making." *Psychology of Addictive Behaviors*. 2022.

Drainoni, M.L., Knudsen, H.K., Adamps, K., Andrews-Higgins, S.A., Auritt, V., Back, S., Barkowski, L.K., **Batty, E.J.**, et al. "Community Coalition and Key Stakeholder Perceptions of the Community Opioid Epidemic Before an Intensive Community-Level Intervention." *Journal of Substance Abuse Treatment.* 2022.

Cooper, H.L.F., Gross, S., Klein, E., Fadanelli, M., Ballard, A., Lockard, S., **Batty, E.J.,** Young, A., Ibragivmov, U. "Capacity for Sustainment of Recently Established Syringe Service Programs in Appalachian Kentucky: The Central Role of Staff Champions." *Drug and Alcohol Review.* 2022.

Brown, R.L., **Batty, E.J.**, Lofwall, M., Kiviniemi, M., Kizewski, A. "Development and Psychometric Properties of Two Indices Assessing Stigma Toward Opioid Use and Treatment." *Addictive Behaviors.* 2022.

Ibragimov, U., Cooper, K.E., **Batty E.J.**, Ballard, A.M., Fadanelli, M., Gross, S.B., Klein, E.M., Lockard, A.S., Young, A.M. & Cooper, H.L.F. "Factors that influence enrollment in syringe services programs in rural areas: a qualitative study among program clients in Appalachian Kentucky." *Harm Reduction Journal.* 2021.

Oser, C., Strickland, J., **Batty, E.J.**, Pullen E., & Staton, M. "The Rural Identity Scale (RIS): Development and Validation." 2021. *Journal of Rural Health*; DOI: 10.1111/jrh.12563

Brown, R.L. & **Batty, E.J.** "The Impact of Internalized Stigma on Physical Health Indicators and Healthcare Utilization over a Three-Year Period." *Stigma and Health*. 2020; DOI: 10.1037/sah0000263

Batty, E.J. & Brown, R.L. "Psychosocial Resources and Strains and Health Services Use Among Adult Illicit Drug Users from the Miami-Dade Community." *Journal of Addictive Diseases.* 2019; DOI: 10.1080/10550887.2019.1690930

Book Chapters:

Brown, R.L. & **Batty, E.J.** "Evolving Perspectives on Disability, Stigma, and Discrimination" in *The Oxford Handbook of the Sociology of Disability*. Oxford Academic. 2022.

Conference Presentations:

2023 Addiction Health Services Research Conference. "Assessing the Accumulation of Recovery Capital after Community Reentry for Persons with Opioid Use Disorder." (New York, New York).
2023 Academic Consortium on Criminal Justice Health. "Recovery Capital and Community Reentry: Perspectives from Prison-Based Substance Use Treatment Program Clinicians and Administrators." (Raleigh, NC).
2021 University of Kentucky Substance Use Research Event. "The Intersection of Community Resiliency and Recovery Capital: A Clinician's Perspective on the Recovery Process for People in Prisons and on Community Supervision." (Virtual Meeting).
2020 American Public Health Association. "Preparing Practitioners to Treat Opioid Use Disorder: Evaluating the Impact of Buprenorphine Waiver Training for Healthcare Professionals." (Virtual Meeting).
2019 Southern Sociological Society. "Measuring the Effect of Psychological and Social Resources on the Treatment Seeking Actions of Drug Users." (Atlanta, Georgia).
2018 Society for the Study of Social Problems. "Does Stigma Make You Sick? Assessing the Health Consequences of Perceived Stigma over a Three-Year Period." (Philadelphia, Pennsylvania).

Teaching Experience:

Summer 2019 SOC360 – "Environmental Sociology"
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Spring 2018 SOC 339 – "Introduction to Criminology"
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Teaching Assistant (Primary Instructor: Christopher Huggins, PhD)

Spring 2017 SOC 363 – "Environmental Justice"
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Spring 2016 SOC 100: General Sociology
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Professional Experience:

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2020-2021 **Pre-doctoral Research Fellow**
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