

CO-OCCURRING SUBSTANCE USE AND MENTAL HEALTH DISORDERS AMONG
CRIMINAL JUSTICE-INVOLVED ADULTS: TRAJECTORIES, POSITIVE COPING
STRATEGIES, AND SERVICE UTILIZATION PROFILES

by

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(Under the Direction of Orion Mowbray)

ABSTRACT

Rates of mental health disorders, substance use disorders, and their co-occurrence are disproportionately higher among adults in the criminal justice system than among those in the general population. This dissertation presents three studies related to mental health, substance use, and co-occurring disorders among justice-involved adults around community reentry. The first study examines developmental trajectories of depressive symptoms from young adulthood to mid-life among men and women with early justice involvement. Findings from the first study suggest that levels of depressive symptoms increase linearly over time among this group and that justice-involved women have unique experiences of depression across time. The second study identifies predictors of positive, problem-focused coping strategies among incarcerated adults with co-occurring disorders preparing for reentry. Results from the second study revealed that personal, material, and social coping resources, particularly perceptions of overall health, emotional well-being, higher income, and stronger relationship depth predicted elevated levels of problem-focused coping. The third study establishes latent profiles of service utilization among returning citizens and examines longitudinal associations of service use patterns with

psychological distress. The results of the third study reveal different patterns of initial service use among reentering adults and those who report using more services experience steeper declines in psychological distress over time. Each study comprises its own chapter and discusses implications for future research. This dissertation concludes with a final chapter that summarizes findings and provides implications for social work research and practice.

INDEX WORDS: Criminal justice, substance use, mental health, co-occurring disorders, coping strategies, service utilization

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CHAPTER 1

INTRODUCTION

The National Institute of Drug Abuse (NIDA) estimates that approximately half of state and federal incarcerated individuals in the United States (U.S.) have substance use disorders (SUDs) (NIDA, 2014), with others estimating this number closer to two thirds of the incarcerated population (Puglisi et al., 2022), compared to nine percent of people in the general population (Cloud, 2014). Additionally, approximately 17-34 percent of justice-involved individuals have a serious mental illness (SMI), such as mood disorders and psychotic disorders that are persistent and severe, which surpasses rates found in the general population (Prins, 2014; Steadman et al., 2009). When looking at the convergence of both SUDs and SMIs, an estimated 10-15 percent of males and 25-34 percent of females in the justice system have co-occurring disorders (CODs), compared to just 3.8 percent of those in the general population (Peters et al., 2017; Steadman et al., 2013; Substance Abuse and Mental Health Services Administration [SAMHSA], 2020). The prevalence of CODs among justice-involved populations is especially problematic when considering this group is more likely to be rearrested, withdraw from treatment, be hospitalized, experience substance use relapse, and violate conditions of community supervision (Balyakina et al., 2014; Corrigan & Watson, 2005; Gates et al., 2017; Horsfall et al., 2009; McCabe et al., 2012; Messina et al., 2004; Rojas & Peters, 2016; Wilson et al., 2011; Young et al., 2018).

Further, substance use and mental illness are detrimental to public health and community well-being, costing an estimated \$300 billion annually as well as incalculable social costs to both individuals and their families, including homelessness, broken social relationships, and

premature death (Dear & Wolch, 2014; Lurigio, 2011; National Alliance on Mental Health, 2018; Sawyer & Wagner, 2023). Despite this, many justice-involved individuals do not receive holistic, comprehensive treatment for CODs, which tremendously hinders the reentry process (Jones & McCance-Katz, 2019; Mauro et al., 2016; NIDA, 2014). As the challenges of effectively mitigating the cumulative harms of behavioral health diagnoses among the justice-involved population persist, the historical context further illustrates the multi-dimensional nature of this social problem.

In the U.S., the criminal justice system has a disproportionate reach in communities of color, areas of poverty, and among the most socially disenfranchised (Alexander, 2012; Hetey & Eberhardt, 2018; Kovera, 2019; Soss et al., 2011; Wacquant, 2009). During the 1950s and 1960s, criminal justice policies turned a corner towards a rehabilitative focus, expanding employment assistance, treatment, and the use of halfway houses to aid formerly incarcerated individuals transitioning back to their communities (Jonson & Cullen, 2015). However, during the 1970s and 1980s, stark criticisms regarding the efficacy of rehabilitative programs fueled a “nothing works” attitude and a punitive political approach to crime emerged, which ushered in unforgiving policies as part of the “War on Drugs” (Grecco & Chambers, 2019; Martinson, 1974; Sirin, 2011). Policies like the Controlled Substances Act of 1970, Anti-Drug Abuse Act of 1986, and the Violent Crime Control and Law Enforcement Act of 1994 exhibited a tough-on-crime approach that included stringent sentencing and severe criminalization of substance use, which exponentially increased the incarcerated population (Drug Policy Alliance, 2020; Sirin, 2011). For example, in 1980, there were 50,000 people incarcerated for nonviolent drug offenses, but by 1997, that number grew to over 400,000 (Drug Policy Alliance, 2020).

Concurrently, during the late 1960s and 1970s, long-term psychiatric hospitals were shutting their doors, leaving those in their care to funnel back into the community, which became known as “mass deinstitutionalization” (Lamb & Bachrach, 2001; Mundt et al., 2012). Following deinstitutionalization, poor coordination and inadequate alternative systems of care left many individuals with mental illness without proper treatment, which contributed to high rates of homelessness and increased contact with the criminal justice system as a pseudo-replacement for mental healthcare (Kuehn, 2014; Lamb & Weinberger, 2020). High rates of mental illness among justice-involved populations after deinstitutionalization have led some scholars to refer to this occurrence as the “criminalization of the mentally ill” (Lamb & Weinberger, 2020, p. 173; Slate et al., 2013). Moreover, the community-based treatment infrastructure in the U.S. has historically struggled with sufficient resources to meet the needs of persons with mental illness, appropriately match treatments to individuals, and meet the individual where they are, both within the treatment process and in the community through outreach services (Lamb & Weinberger, 2020). Even recently, a study found that only 38% of justice-involved individuals received behavioral health treatment, with merely 7% receiving both substance use and mental health treatment (Hunt et al., 2015).

Links between mental illness, substance use, and crime

National interest has sparked debate as to whether people with SMIs (such as schizophrenia, antisocial personality disorder, bipolar disorder, and major depressive disorder) are more likely to commit crime (Moore et al., 2019). Others have previously argued that comorbid substance use contributes to increased risk of violent criminal behaviors among individuals with mental illness (Fazel et al., 2009; Mulvey et al., 2006; Steadman et al., 1998). Further, research has found evidence that the presence of mental illness is associated with a

higher risk of criminal behavior outcomes, and an even higher risk was found for those with multimorbidity or comorbid substance use and mental illness (Angst et al., 2002; Balyakina et al., 2014; McCormick et al., 2015; Moore et al., 2019). However, this does not paint a complete picture as research also indicates that not all people with mental illness commit crimes (Moore et al., 2019) and having an SMI does not independently predict violent behavior (Elbogen & Johnson, 2009). As such, the broader literature suggests that other factors converge to drive criminal behavior despite the overrepresentation of mental health disorders among justice-involved individuals.

Research shows that a wide range of contextual factors warrant attention when exploring the causal links between mental illness, substance use, and crime or violence, including, but not limited to criminal victimization, histories of trauma, parental abuse, age, gender, income, unemployment, social networks, and other environmental stressors (Bryson et al., 2017; Dobmeier et al., 2017; Elbogen & Johnson, 2009; Hammersley, 2011; Lowe et al., 2016; Luciano et al., 2014; Vaughn et al., 2010; Yun et al., 2022). Overall, these findings suggest the links between mental health, substance use, and criminal behaviors, and the heterogenous pathways leading to it, are nuanced processes (Volavka & Swanson, 2010). Thus, these studies point to the careful consideration of a litany of factors with respect to CODs and criminal behavior.

Etiology of CODs

While the linkages between mental illness, substance use, and crime are dubious in conveying a complete picture, it is also useful to consider the etiology of CODs more broadly from a neuroscientific perspective. The neuroscience of CODs involves the biological processes between substance use and mental illness (Grecco & Chambers, 2019). Seen as brain diseases,

the relationship between the two is extremely complex as both forms of disorders are closely interwoven within the brain and across populations (Gandal et al., 2018; Grant et al., 2016; Hartwell et al., 2009). The biological causality of CODs is seen as involuntary and general across various forms of SUDs and mental health disorders (Grecco & Chambers, 2019).

Some researchers argue that co-occurring substance use and mental health disorders are “bi-directional,” such that having either form of disorder increases the likelihood of onset and ensuing severity of the other (Chambers et al., 2001; Grecco & Chambers, 2019). However, the temporal proximity between disorder onset continues to spark debate. Indeed, other researchers point to the clinical limitations of terms such as “co-occurring” or “comorbidity,” and highlight an overlapping etiology involving shared pathways (Barkus & Murray, 2010; Maes et al., 2011). These disorders do not co-occur independently, but they are the consequence of common pathways and shared vulnerability. Yet, a recent review on the current state of evidence on the neurobiology of CODs found that issues related to this topic remain unresolved, but those with CODs likely differ neurobiologically compared to those with a mental health or substance use disorder alone (Balhara et al., 2017). For example, studies on comorbid schizophrenia and SUDs have demonstrated that co-occurrence negatively impacts certain areas of the brain from adverse effects associated with substance use but not directly related to schizophrenia (Balhara et al., 2017). However, studies on the neurobiology of CODs have not extensively studied the various possible comorbidities and have not been highly replicated.

Despite the ongoing debate of causal pathways, evidence suggests there is substantial overlap, which compounds, leaving those with CODs at risk for more severe negative outcomes compared to those with only one form of disorder, including more severe challenges to psychosocial functioning, homelessness, poorer health outcomes, higher rates of relapse and

recidivism, and early death (Luciano et al., 2014; Lurigio, 2011; Ross & Peselow, 2012). Adding to the existing challenges created by the complexities of cooccurrence, those with CODs also have a worse prognosis, are often unrecognized, and undertreated (Ross & Peselow, 2012).

Reentry context

Definitions of reentry remains an active point of discussion, but broadly refer to the activities and programs implemented to help formerly incarcerated individuals successfully integrate back into their communities (Koschmann & Peterson, 2013). There remains a large degree of inconsistency when determining a singular definition of reentry and what constitutes successful reentry (Pettus et al., 2021). Traditionally, reentry research has focused primarily on recidivism as the key outcome for determining success, but additional outcomes can vary greatly due to the interconnected and individualized needs among reentering adults, including employment, education, transportation, and symptoms of trauma (Baillargeon et al., 2009; Carr et al., 2016; Larson et al., 2022). With more than 600,000 people released from prisons and over 10 million passing through jails each year (Carson, 2021), there is a clear need for universal outcomes of successful reentry, expanding beyond the scope of recidivism to include a broader survey of overall quality of life, for improved continuity of care.

Disproportionate rates of CODs among justice-involved individuals pose unique challenges during the reentry process (Grecco & Chambers, 2019; Lurigio, 2011; Peters et al., 2015, 2017). When released, reentering individuals with CODs navigate existing treatment systems, often involving emergency and crisis services, while dealing with challenges related to a lack of affordable housing, transportation, and hindered vocational and educational opportunities (Horsfall et al., 2009; Larson et al., 2022; Peters et al., 2017; Uggen et al., 2014). The totality of societal barriers that stem from the collateral consequences of a criminal record

and returning to underserved areas leaves many justice-involved individuals without stable living conditions, reliable transportation, or means to afford a way out of their situation. Additionally, stark disparities exist for communities of color within the criminal justice system and at reentry, which further exacerbates negative social determinants of health (Lopez-Aguado, 2016). Thus, effective reentry programming is gravely needed to meet the complex needs of reentering individuals managing CODs, structural inequalities, and the collateral consequences of system involvement (Lopez-Aguado, 2016; Uggen et al., 2014).

Relevant theoretical frameworks

General strain theory

Robert Agnew's (1992, 2001, 2006) general strain theory (GST) was originally formulated at the social-psychological level to explain between-individual differences in dealing with stressors, referred to as strain, and engaging in antisocial behaviors like crime or substance use. When stressors create a disconnection between an individual's goals and their means to achieve those goals, it creates strain. Agnew (1992) outlines three major types of strain: 1) failure to achieve positively valued goals (e.g., economic or social upward mobility), 2) removal or threat of removal of positively valued stimuli (e.g., losing a spouse, death of a parent), and 3) confrontation with negatively valued stimuli (e.g., abuse, repeated arrests). Strain increases the likelihood for negative emotions, including fear, anger, and depression, which creates pressure for strained individuals to find coping strategies to ameliorate negative emotional states, including crime or substance use. GST acknowledges many different coping strategies to strain, with many individuals opting for legal or more socially acceptable strategies, while only some individuals turn to crime or substance use (Agnew, 1992). As to why individuals do or do not turn to criminal behavior, Agnew (1992) points to a litany of conditional variables such as

available resources, skills, self-efficacy, problem-solving abilities, social supports, and environmental conditions.

To cope with the pressures of strain, Agnew (1992) argues that many individuals deal with negative emotional states through substance use, as a form of self-medication, which minimizes strain-related suffering. While Agnew (2006) has argued that anger is an essential emotion for antisocial coping, particularly violent crime, he also claimed that other negative emotions, like feelings of depression and anxiety, may be more directly related to substance use. Indeed, there has been some empirical support for GST being able to explain substance use (Agnew & White, 1992; Carson et al., 2008) as well as studies finding evidence for a robust association between stress exposure and substance use (Barrett & Turner, 2006; Ford & Schroeder, 2009; Preston, 2006), and an association between feelings of depression and substance use (Drapela, 2006; Ford & Schroeder, 2009; Jang & Johnson, 2003).

A broader survey of the literature reveals some studies have found mixed or inconclusive results with respect to the mediating role of negative emotions between strain and substance use as GST originally suggests (Drapela, 2006; Eitle et al., 2013; Slocum, 2010). However, additional research has posited that situational-based measures of negative emotions are more appropriate as mediators as opposed to trait-based measures, which are more commonly used (Manasse & Ganem, 2009; Moon et al., 2009; Ngo & Paternoster, 2013). As a result, the temporal precedence between strain and emotional state are not always adequately measured and negative emotions can differ, and even co-occur, depending on different situations (Ganem, 2010). In this way, testing situationally based strains, such as victimization and financial strain may be particularly useful in future research in this area. Finally, given that only some individuals choose to cope through illegal means and that people are more likely to choose

legitimate coping strategies when resources are available, it is important to examine the conditions for which positive coping mechanisms are adopted.

Well-being development model

Pettus and colleagues' (2021) well-being development model (WBDM) is a relatively recent contribution to the literature on reentering justice-involved individuals. The WBDM is a psychosocial model that was designed to lead the development of reentry programming and serve as an alternative to deficit-based frameworks (Pettus et al., 2021; Pettus-Davis & Kennedy, 2020; Pettus-Davis et al., 2019). Pettus (2021) defines the construct of well-being as a "state of satisfying and productive engagement with one's life and the realization of one's full psychological, social, and occupational potential" (p. 414).

Citing a vast empirical foundation across various disciplines including sociology, psychology, public health, and social work, the WBDM stems from evidence that interventions targeting well-being are effective for people struggling with individual- and structural-level barriers that prevent them from reaching their full potential both within themselves and their communities (Boiler et al., 2013; Davidson & McEwen, 2012; Gander et al., 2013; Pettus et al., 2021; Weiss et al., 2016). At the core of the WBDM, is the notion that social, economic, and racial and ethnic disparities cumulatively and negatively impact justice-involved populations (Lopez-Aguado, 2016; Pettus, 2013; Soss et al., 2011; Wacquant, 2009). These disparities create significant barriers that are left unaddressed by current deficits-based reentry models, which primarily focus on character defects and avoidance (Pettus et al., 2021).

The WBDM focuses on five key facilitators for well-being development: 1) healthy thinking patterns, 2) meaningful work trajectories, 3) effective coping strategies, 4) positive social engagement, and 5) positive interpersonal relationships (Pettus et al., 2021; Pettus-Davis

& Kennedy, 2020). Healthy thinking behaviors entail adaptive cognitive processes, having empathy for others, and accepting values that promote prosocial behavior. Meaningful work trajectories emphasize the long-term compatibility between an individual's abilities, professional goals, and what is required from the occupation. Effective coping strategies are adaptive actions and thoughts that seek to minimize stressors so that they do not sustain harm. Positive social engagement involves the social experiences geared towards promoting societal good. Finally, positive interpersonal relationships focus on building and sustaining trust-worthy and rewarding relationships that reinforce psychological well-being. Pooled together, the five facilitators have been used to promote evidence-based interventions for justice-involved individuals that build greater capacity to thrive and overcome barriers.

WBDM's key facilitators were proposed based on reconceptualization of the central risk and need factors of Bonta and Andrews' (2007) risk-need-responsivity (RNR) model to prioritize well-being within the reentry context by rethinking the preeminent model of reentry. Previous research has identified associations between healthy thinking patterns, particularly empathy and adaptive cognitions, and increased psychological well-being, as well as serving as a protective factor against daily stress (Gloster et al., 2017; Kelley, 2011; Wei et al., 2011). Although there has yet to be empirical examinations of meaningful work trajectories with criminal justice populations (Pettus et al., 2021), there have been many studies that suggest indicators of work satisfaction predict well-being, even in longitudinal studies and a meta-analysis of 85 studies (Klug & Maier, 2015; Lin et al., 2014; Wiese et al., 2002). Undoubtedly, effective coping strategies, particularly problem-focused coping, has been found to be associated with increases in well-being across various groups including age and gender (Gattino et al., 2015; Mayordomo et al., 2016; Meng & D'Arcy, 2016; Penley et al., 2002). This key facilitator is of particular

importance to this research as substance use (as well as other criminal behavior) is seen to be a negative coping strategy (Agnew, 1992). Consequently, it is essential to identify mechanisms that enable positive coping strategies for justice-involved individuals, a pivotal component for nearly all evidence-based behavioral treatments for substance use and mental health disorders (Adan et al., 2017). Finally, positive social engagement and positive interpersonal relationships are also associated with well-being, particularly those that promote leisure (Kuykendall et al., 2015) and close, reliable bonds with others (Lyubomirsky et al., 2005; Ramsey & Gentzler, 2015)

The WBDM embodies a strengths-based focus on resiliency and well-being development that is most appropriate for social work researchers and practitioners. Similarly, social inequality that shapes structural strain creates unequal outcomes for many justice-involved individuals (e.g., employment, education, housing, treatment quality), where both internal and external resources are needed to properly navigate the reentry process. This is consistent with ideas from both GST and WBDM. Indeed, the key facilitators, particularly fostering healthy thinking patterns, effective coping strategies, and positive interpersonal relationships (social support) reflect the idea that protective mechanisms can build capacity to mitigate the detrimental effects of strain. In summary, this research is informed by GST as an explanatory framework that highlights individual and structural strains as well as coping mechanisms to mitigate strains, paired with the WBDM, which serves as a practical model to reentry services and emphasizes resiliency and well-being beyond the narrow scope of recidivism.

Given the information and state of research provided thus far, there are many questions left to explore with respect to justice-involved individuals with co-occurring mental health and substance use. This dissertation explores three specific areas associated with justice involvement

and CODs, which include developmental trajectories among those with early justice system involvement, predictors of problem-focused coping strategies among incarcerated individuals preparing for reentry, and patterns of service utilization during reentry. Through exploration of these areas, this dissertation provides contributions to our understanding of criminal justice-related reentry experiences and implications for improving the delivery of care for justice-involved persons with CODs.

Dissertation Structure

This dissertation will address developmental associations, positive coping mechanisms, and service utilization patterns among criminal justice-involved individuals with co-occurring substance use and mental health challenges. The framework of the dissertation follows the three-article style with a particular focus on reentry. The first study uses data from the National Longitudinal Study of Adolescent to Adult Health (Add Health) and multilevel growth curves to model trajectories of depressive symptoms, associations with substance use, and gender differences from young adulthood to midlife among adults with early criminal justice system involvement. The second study uses data from the 5-Key Model for Reentry to examine predictors of problem-focused coping strategies, including personal, material, and social coping resources, among justice-involved adults with CODs preparing for reentry. Finally, the third study uses data from the 5-Key Model for Reentry and latent class analysis to identify distinct profiles, or classes, of service utilization. Multilevel mixed-effects regression analyses are used to determine whether service class membership predicts subsequent levels of psychological distress, and how behavioral health diagnoses influence psychological distress at model intercept. These studies make up Chapters 2, 3, and 4, respectively. Collectively, these studies seek to inform future intervention efforts for justice-involved adults with substance use and

mental health disorders to maximize individual potential, promote overall well-being, and reduce the impact of the criminal justice system.

CHAPTER 2

TRAJECTORIES OF DEPRESSIVE SYMPTOMS, ASSOCIATIONS WITH SUBSTANCE USE, AND GENDER DIFFERENCES AMONG CRIMINAL JUSTICE-INVOLVED YOUNG ADULTS TO MIDLIFE: A MULTILEVEL GROWTH CURVE MODEL

Introduction

Of the nearly 6 million individuals involved with the criminal justice system, approximately 17-34 percent of justice-involved individuals have a mental health condition, which surpasses rates found in the general population (Prins, 2014; Sawyer & Wagner, 2023; Steadman et al., 2009). Similarly, rates of major depression among this group have been estimated up to nearly 30 percent (Prins, 2014). Further, major depression is a highly prevalent mental health challenge often found to be comorbid with substance use (Baranyi et al., 2022). Indeed, a recent meta-analysis found that co-occurring depression and substance use was twice as prevalent in justice-involved samples compared to general population samples (Baranyi et al., 2022). Additionally, co-occurring mental health and substance use disorders (CODs) are more common among justice-involved women than among men (Borschmann et al., 2020; Peters et al., 2017; Steadman et al., 2013). For example, an estimated 10-15 percent of men in the justice system have CODs compared to 25-34 percent of women (Peters et al., 2017; Steadman et al., 2013; Substance Abuse and Mental Health Services Administration [SAMHSA], 2020). Women may have unique pathways and treatment needs given different experiences of socialization, culture, and exposure to violence (Finkelstein, 2011; Goldstein et al., 2012; Gorvine et al., 2021; Isom Scott & Mikell, 2019; Morse et al., 2017; Nyamathi et al., 2017). As a result, recently

incarcerated women returning to the community also have higher risk for premature death in the first year after release, compared to men (Binswanger et al., 2007).

The impact of depression and substance use is extremely costly, both economically and socially, with estimates of approximately \$300 billion per year, and has thus emerged as a key priority for criminal justice and public health research in recent years (Dear & Wolch, 2014; Fazel et al., 2016; Lurigio, 2011; National Alliance on Mental Health, 2018). While there is some evidence that suggests depression begins at an earlier age than substance use (Kessler, 2004), the complex pathways between forms of disorders, and potential gender differences, create a murky picture for developmental trajectories (Balhara et al., 2017; Grecco & Chambers, 2019). Moreover, depression is particularly challenging during young adulthood when major life changes occur following great instability related to attaining a sense of identity and life aspirations, which can become chronic disorders over the life course (Arnett et al., 2014; Kessler et al., 2007; Thomas et al., 2022). However, prior research on depression, substance use, and gender differences has primarily focused on non-justice related and adolescent populations (Chen & Jacobson, 2012; Eberhart et al., 2006; Hyde et al., 2008; Lev-Ran et al., 2013; Van de Velde et al., 2010). Even among justice-involved populations, research on gendered experiences of system involvement across adulthood is still limited (Porter & Novisky, 2017). Thus, the current study seeks to use a nationally representative sample to model trajectories of depressive symptoms and examine associations with substance use and gendered effects from young adulthood to midlife among those with criminal justice system involvement.

Gender differences & gendered general strain theory

Depression and co-occurring substance use is more common among women in general, but particularly among justice-involved women (Peters et al., 2017; Steadman et al., 2013;

Thomas et al., 2022; Villagr a et al., 2019). The relationship between depression and substance use is extremely complex as both forms of disorders are closely interwoven within the brain and developmental processes of depression are further complicated by gendered biological mechanisms (Cyranowski et al., 2000; Gandal et al., 2018; Grant et al., 2016; Hartwell et al., 2009; O'Shields et al., 2023). From an environmental context, co-occurring mental illness and substance use is more prevalent among those who experienced physical and sexual abuse during childhood, with sexual abuse predicting co-occurrence among women and major depression being the most common condition among women with co-occurrence (Tripodi & Pettus-Davis, 2013; Villagr a et al., 2019). Women's experiences through the criminal justice system and subsequent needs differ from men, which is thought to largely be attributed to varying social processes of socialization, gender norms, exposure to abuse and violence, responses to distress, and experiences post-incarceration (Broidy & Agnew, 1997; Finkelstein, 2011; Goldstein et al., 2012; Isom Scott & Mikell, 2019; Morse et al., 2017; Pettus-Davis et al., 2018). As such, feminist criminologists have criticized the original development, conception, and application of theories of crime that were derived with mainly samples of men (Belknap, 2007; Chesney-Lind & Irwin, 2013; Isom Scott & Mikell, 2019). Specifically, they contend that these traditional theories of crime are an "add and mix" approach derived from men's behaviors, which neglect the nuanced lived experiences of women (Isom Scott & Mikell, 2019).

In response, Agnew's (1992, 2001, 2006) general strain theory (GST) has been extended through Broidy and Agnew's (1997) gendered general strain theory (GGST) to account for gendered experiences and responses to strain. GST asserts that stressors, or strains, result in negative emotions, like anger or depression, which may lead to antisocial forms of coping including criminal behaviors or substance use. Strains arise when there is failure to achieve

positively valued goals, the loss of something positively valued, or confronted with something negatively valued. To cope with strain, Agnew (1992) argues that many individuals deal with negative emotional states through substance use, as a form of self-medication, which minimizes strain-related suffering. GGST extends the original theory by adding that men and women experience different types of strain, they respond to strain with different emotions, and that men are more likely to cope with criminal behaviors (Broidy & Agnew, 1997). Applications of GGST have found empirical support (De Coster & Zito, 2010; Isom Scott & Mikell, 2019; Ngo & Paternoster, 2013), including findings that women are more likely to internalize negative emotions, which can contribute to substance use, and experience co-occurrence of negative emotions with depression more likely than anger (De Coster & Zito, 2010; Jennings et al., 2009; Ngo & Paternoster, 2013).

Agnew (2006) has also claimed that feelings of depression may be more directly related to substance use while feelings of anger may be more essential for violent crime. As such, it is particularly salient to examine depression, substance use, and gender differences among those who experienced involvement with the criminal justice system. Additionally, this research will examine developmental trajectories of depressive symptoms across adulthood while accounting for two forms of strain that are seen as severe, perceived as unjust, and situationally based with the potential for different responses among men and women: victimization and financial strain (Beaver et al., 2016; Boccio & Beaver, 2021; Ganem, 2010; Kim & Lo, 2016; Ngo & Paternoster, 2013). Previous research on victimization has demonstrated significant impact on a wide array of subsequent negative behavioral outcomes, including substance use and depression (Banducci et al., 2014; Lo, Kim, & Church, 2008; Peltonen et al., 2010). Similarly, financial strain is a more nuanced measure that goes beyond income or socioeconomic status by assessing

perceived hardship and worries related to finances and inability to meet basic financial responsibilities, which prior research suggests is associated with depression (Dijkstra-Kersten et al., 2015; Zimmerman & Katon, 2005). Through examining trajectories and associations over time, while accounting for theoretical conceptions of strain, discernable differences can be estimated that identify age and gender-specific periods for intervention to improve the behavioral health of justice-involved individuals over the life course post-involvement.

Current Study

The current study utilizes the last three waves from the National Longitudinal Study of Adolescent to Adult Health to contribute to the current state of literature and answer three research questions: 1) Are there significant trajectories of depressive symptoms among young adults who experienced involvement with the criminal justice system? 2) How is substance use associated with trajectories of depressive symptoms from young adulthood into midlife? 3) Are there significant differences and interactions in trajectories of depressive symptoms by gender? This research hypothesizes linear growth in depressive symptoms across time, that co-occurring substance use will be associated with elevated depressive symptoms, and that significant gender differences exist when controlling for additional sociodemographic, clinical, and strain-related characteristics.

Method

Sample

Data for this study includes Waves III-V from the National Longitudinal Study of Adolescent to Adult Health (Add Health). Add Health is a longitudinal study of a nationally representative sample of adolescents who were in grades 7 to 12 in the U.S. during the 1994-1995 school year (Harris & Udry, 2022). Participants were ages 18 to 26 during Wave III in 2001-

2002, ages 24 to 32 during Wave IV in 2008-2009, and ages 33 to 43 during Wave V in 2016-2018. The data collection team utilized systematic stratified sampling by selecting respondents from 132 high schools and middle schools that were representative of U.S. schools according to region, size, type, urbanicity, and ethnicity. During Wave I of data collection, over 90,000 students participated in an in-school questionnaire (Harris & Udry, 2022). Then, approximately 20,000 students were randomly selected for an in-home interview with additional in-home interviews conducted for each of the subsequent four Waves. Wave III interviewed 15,170 of original Wave I respondents, Wave IV interviewed 15,701 of Wave I respondents, and Wave V interviewed 12,300 of Wave I respondents. Additional information and detailed descriptions of Add Health's sampling strategy and data collection can be found elsewhere (Chen & Harris, 2020; Harris & Udry, 2022; Harris et al., 2019).

This research is specifically interested in individuals who experienced criminal justice involvement during young adulthood and assessing trajectories of depressive symptoms through mid-life. To identify justice-involvement during young adulthood, this study used a binary measure at Wave III (ages 18-26) asking respondents "Have you ever been arrested or taken into custody by the police?" Those who indicated yes and completed Waves III-V were included in the final analytical sample ($N = 884$). Add Health contains data at each wave on participants' social and mental well-being, including depressive symptoms and substance use behaviors, and allows for longitudinal examination of growth trajectories, making it suitable for this research. This study was reviewed and approved by the Institutional Review Board at the author's home institution.

Measures

Depressive symptoms

The dependent variable, depressive symptoms, was measured continuously using a modified three-item version ($\alpha = .85$) from the Center for Epidemiological Studies Depression (CES-D) scale (Radloff, 1977). The CES-D is a validated self-report scale that measures depressive symptoms in the general population with higher scores indicating higher risk for depression. Three items from the CES-D were found at each of the Waves in this study including: 1) could not shake off the blues even with help from family or friends, 2) feeling depressed, and 3) feeling sad. Respondents were asked how frequently they experienced each depressive symptom during the past seven days on a 4-point Likert scale with values 0 (never/rarely), 1 (sometimes), 2 (a lot of the time), and 3 (most/all of the time). Scores for the three-item CES-D scale had a range of 0-9 with 0 indicating no depressive symptoms in the past seven days and 9 indicating experiencing symptoms most or all the time in the past seven days, at each Wave. Previous research has utilized this measure of the CES-D with Add Health data (Chen & Harris, 2019), which has shown sufficient reliability, validity, and invariance across age, race/ethnicity, and immigrant status (Perreira et al., 2005; Radloff, 1991; Roberts, 1980; Vilagut et al., 2016).

Gender

Gender was a binary measure based on self-report with responses coded as 0 (Male) and 1 (Female).

Substance use

Substance use included measures for alcohol, cannabis, cocaine, and other drugs (i.e., LSD, PCP, ecstasy, mushrooms, speed, methamphetamine, heroin, or pills). Alcohol was measured differently than other substance use measures across waves and was captured by a categorical variable indicating frequency of use in the past year with values 0 (None), 1 (1 or 2

days in past 12), 2 (Once a month or less [3-12 times in past 12 months]), 3 (2 or 3 days a month), 4 (1 or 2 days a week), 5 (3-5 days a week), and 6 (every day/almost). The remaining substances were measured as binary indicators of past-30-day use, coded as 0 (No) and 1 (Yes) for each substance.

Covariates

Covariates for this study included race and ethnicity, age, major depression diagnosis, received mental health or substance use treatment in the past year, physical or sexual abuse before the age of 12, past-year victimization, and past-year financial hardship. Race/ethnicity was measured categorically including Non-Hispanic White, Black, Hispanic, Native American, Asian, and Other. This measure of race/ethnicity has been used in previous research with Add Health data (Udry et al., 2003), is recommended by the Add Health research team, and coincides with standards used by the U.S. Census. Age was a continuous measure with a range of 18 to 43 across Waves. Major depression diagnosis was measured at Wave III, which asked respondents to report if they had ever been diagnosed with major depressive disorder (MDD). Responses were coded as 0 (No) and 1 (Yes). Receiving past-year mental health or substance use treatment and physical or sexual abuse before the age of 12 were also self-reported binary indicators from Wave III with responses coded as 0 (No) and 1 (Yes).

Consistent with GST and GGST (Agnew, 1992, 2001, 2006; Broidy & Agnew, 1997), two forms of situational strain were accounted for: victimization and financial hardship. Past-year victimization was measured as a scale of five items ($\alpha = .68$) at Wave III indicating whether the following events happened to respondents in the past 12 months: 1) you saw someone shoot or stab another person, 2) someone pulled a gun on you, 3) someone pulled a knife on you, 4) someone shot you, and 5) someone cut or stabbed you. For each item, responses were coded as 0

(No) or 1 (Yes) with higher values indicating higher levels of victimization. Previous research has utilized similar measures of victimization with Add Health data (Beaver et al., 2016; Boccio & Beaver, 2021). Past-year financial hardship was measured as a scale of five items ($\alpha = .63$) at Wave III indicating whether the following events happened to respondents in the past 12 months: 1) was there a time when you were without telephone service for any reason? 2) you didn't pay the full amount of the rent or mortgage because you didn't have enough money? 3) you were evicted from your house or apartment for not paying the rent or mortgage? 4) you didn't pay the full amount of a gas, electricity, or oil bill because you didn't have enough money? 5) you had the service turned off by the gas or electric company, or the oil company wouldn't deliver, because payment was not made? For each item, responses were coded as 0 (No) or 1 (Yes) with higher values indicating higher levels of financial strain. Previous research has utilized this measure of financial strain with Add Health data (Boccio & Beaver, 2021).

Analysis Plan

Univariate descriptive analyses were conducted to assess sample characteristics. Analyses were computed using Wave III sample weights from the Add Health team for unbiased parameters and robust standard errors (Chen & Harris, 2020). These weighted analyses adjust standard errors for complex survey sampling design effects including clustered data and include multilevel longitudinal weights for respondents who completed all Waves (Chen & Harris, 2020; Lee & Estrada-Martínez, 2020). Next, a multilevel growth curve model (MGCM) was used to examine trajectories of depressive symptoms among adults with early justice-system involvement into mid-adult life as well as associations with substance use and gender when controlling for other sociodemographic, clinical, and strain-related characteristics. The MGCM with longitudinal data accounts for the nesting of time, or study waves, within individuals.

Additional discussion on the merits of multilevel models, including MGCMs with longitudinal data, is beyond the purview of this manuscript. However, excellent treatments on the subject can be found across multiple sources (Garson, 2019; Kim & Lo, 2016; Lee & Estrada-Martínez, 2020; Singer, 1998; Singer et al., 2003).

The MGCM assessed participants' baseline depressive symptom scores at Wave III (intercept) and associations with covariates at model intercept, as well as changes over time (slope) in depressive symptoms from young adulthood (ages 18-26) to mid-life (ages 33-43). An unconditional model was estimated with only the intercept to calculate the intraclass correlation (ICC), which indicates the variance attributed to Level 2 (between-individual) differences as opposed to Level 1 (within-individual) (Garson, 2019; Lee & Estrada-Martínez, 2020). The final model with covariates included an interaction term between gender and time to examine whether gender impacted trajectories of depressive symptoms. All analyses were performed in Stata v.18 (StataCorp, 2023), including multilevel analyses conducted with the 'mixed' procedure and maximum likelihood estimation.

Results

Table 2.1 displays sample descriptive characteristics of adults with criminal justice system involvement ($N = 884$). Univariate results revealed that mean scores for depressive symptoms were 1.33 ($SE = 0.08$, range = 0-9), but increased across Waves IV ($M = 1.38$, $SE = 0.08$) and V ($M = 1.45$, $SE = 0.09$). The large majority of the sample was male (80.16%), and more than half (52.94%) drank alcohol in the past 12 months at least once a week. Similarly, slightly more than half of the sample (51.58%) reported using cannabis within the past 30 days. Much lower usage rates were observed for cocaine (11.89%) and other drugs (12.84%), including opioids, methamphetamine, hallucinogens, and others. Approximately 68% of the

sample identified as non-Hispanic White, followed by roughly 15% identified as African American. At Wave III, the average age of the sample was 21 years ($SE = 0.16$). Nearly 14% had a previous diagnosis of major depression disorder at Wave III and almost 18% reported receiving mental health or substance use treatment in the past year. Close to 40% of the sample experienced physical abuse before the age of 12 while 7% experienced sexual abuse before the age of 12. Finally, the average values for experiencing victimization strain and financial strain at Wave III (ranges 0-5) were 0.47 ($SE = 0.05$) and 0.61 ($SE = 0.06$), respectively.

Table 2.1. Sample descriptives for young adults with early justice system involvement.

N = 884	% or (M, SE)
Depressive symptoms	
Wave 3	(1.33, 0.08)
Wave 4	(1.38, 0.08)
Wave 5	(1.45, 0.09)
Gender	
Male	80.16
Female	19.84
Past-year alcohol use (Wave 3)	
None	14.9
1 or 2 days	6.2
Once a month or less	9.55
2 or 3 days a month	16.43
1 or 2 days a week	28.79
3-5 days a week	18.48
Every day/almost every day	5.67
Past 30-day cannabis use (Wave 3)	51.58
Past 30-day cocaine use (Wave 3)	11.89
Past 30-day other drug use (Wave 3)	12.84
Race/ethnicity	
White non-Hispanic	67.69
African American	15.51
Hispanic	2.58
Native American	3.57
Asian or Pacific Islander	2.76
Other	7.89
Age (Wave 3)	(21.83, 0.16)

Major depression diagnosis	13.93
Past-year mental health or substance use treatment	17.58
Physical abuse before the age of 12	38.26
Sexual abuse before the age of 12	7.36
Past-year victimization	(0.47, 0.05)
Past-year financial strain	(0.61, 0.06)

Note. Weighted sample proportions and means with standard errors presented.

To examine trajectories of depressive symptoms among adults with early justice-system involvement from young adulthood to mid-life, this study used a multilevel growth curve modeling approach. Results from the unconditional model revealed that the intercept, or mean level of depressive symptoms at Wave III, was significant ($b = 1.47, SE = 0.05, p < .01$) and the ICC indicated that approximately 31% of the variance is attributed to between-individual differences ($p < .01$). Table 2.2 displays results from the final MGCM. Controlling for sociodemographic, clinical, and strain characteristics, the model shows that there is significant linear change in depressive symptoms over time from Wave III to V ($b = 0.22, SE = 0.10, p < .05$). Figure 2.1 shows the linear increase in depressive symptoms across Waves among the total sample. A model was examined with a quadratic term to test for non-linearity, but was not statistically significant, indicating the relationship was better fit by the linear model.

At model intercept, women had significantly higher levels of depressive symptoms ($b = 0.93, SE = 0.19, p < .01$), compared to men. Those who reported drinking at least one or two days a week in the past 12 months had significantly lower levels of depressive symptoms at model intercept ($b = -0.33, SE = 0.16, p < .05$), but other levels of reported alcohol use were not significant. Additionally, those who used cannabis in the past 30 days had significantly higher levels of depressive symptoms at model intercept ($b = 0.24, SE = 0.10, p < .05$). However, cocaine and other drug use were not significantly associated with depressive symptoms at model intercept. Compared to non-Hispanic Whites, African Americans had significantly higher levels

of depressive symptoms at model intercept ($b = 0.57, SE = 0.14, p < .01$). Having a major depression diagnosis ($b = 0.84, SE = 0.16, p < .01$) and past-year financial strain ($b = 0.18, SE = 0.05, p < .01$) were also significantly associated with elevated levels of depressive symptoms at model intercept. Physical abuse and sexual abuse before the age of 12 were not significant, although prior sexual abuse was trending towards significance ($p = .09$). Finally, age, past-year mental health or substance use treatment, and past-year victimization were not significantly associated with depressive symptoms at model intercept.

The interaction between gender and time was significant ($b = -0.49, SE = 0.21, p < .05$), revealing differences between males and females across Waves. Figure 2.2 graphically depicts the interaction. At model intercept, females had significantly higher levels of depressive symptoms, but showed decreasing levels over time. Although males started with lower levels of depressive symptoms, they exhibited increases over time. Still, females showed higher levels of depressive symptoms across all three Waves compared to males. Given the salience of co-occurring substance use in this study, interactions were tested among various forms of substance use and time but revealed no significant interactions.

Table 2.2. Results of multilevel growth curve model.

N = 834	b	SE
Depressive symptoms		
Wave 3	-	-
Wave 4	0.12	0.09
Wave 5	0.22*	0.10
Gender (female)	0.93**	0.19
Gender X Wave (male as reference)		
Female X Wave 4	-0.49*	0.21
Female X Wave 5	-0.33	0.24
Past-year alcohol use		
None	-	-
1 or 2 days	-0.09	0.25
Once a month or less	-0.12	0.19

2 or 3 days a month	-0.17	0.18
1 or 2 days a week	-0.33*	0.16
3-5 days a week	-0.29	0.18
Every day/almost every day	0.15	0.25
Past 30-day cannabis use	0.24*	0.10
Past 30-day cocaine use	0.28	0.17
Past 30-day other drug use	-0.09	0.15
Race/ethnicity		
White non-Hispanic	-	-
African American	0.57**	0.14
Hispanic	0.24	0.21
Native American	0.21	0.26
Asian or Pacific Islander	0.15	0.22
Other	-0.02	0.16
Age (in years)	0.02	0.03
Major depression diagnosis (Yes)	0.84**	0.16
Past-year mental health or substance use treatment (Yes)	0.19	0.13
Physical abuse before the age of 12 (Yes)	0.08	0.1
Sexual abuse before the age of 12 (Yes)	0.32	0.19
Past-year victimization	0.06	0.06
Past-year financial strain	0.18**	0.05

Note. Weighted unstandardized coefficients presented; * = $p < .05$, ** = $p < .01$

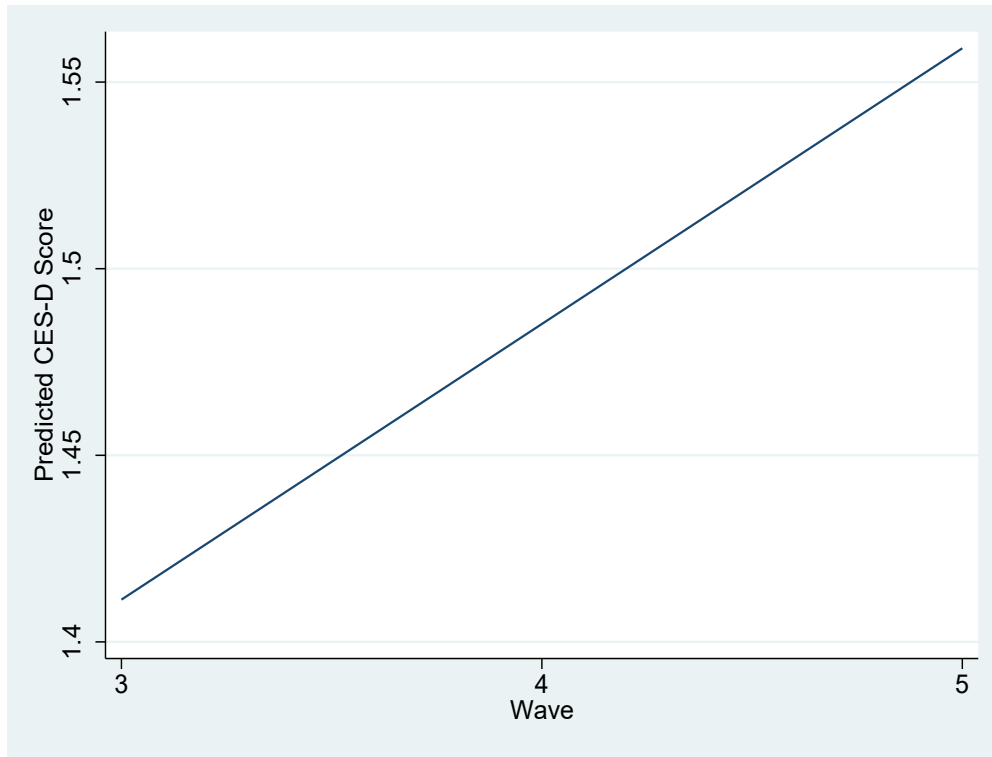


Figure 2.1. Trajectory of depressive symptoms among total sample.

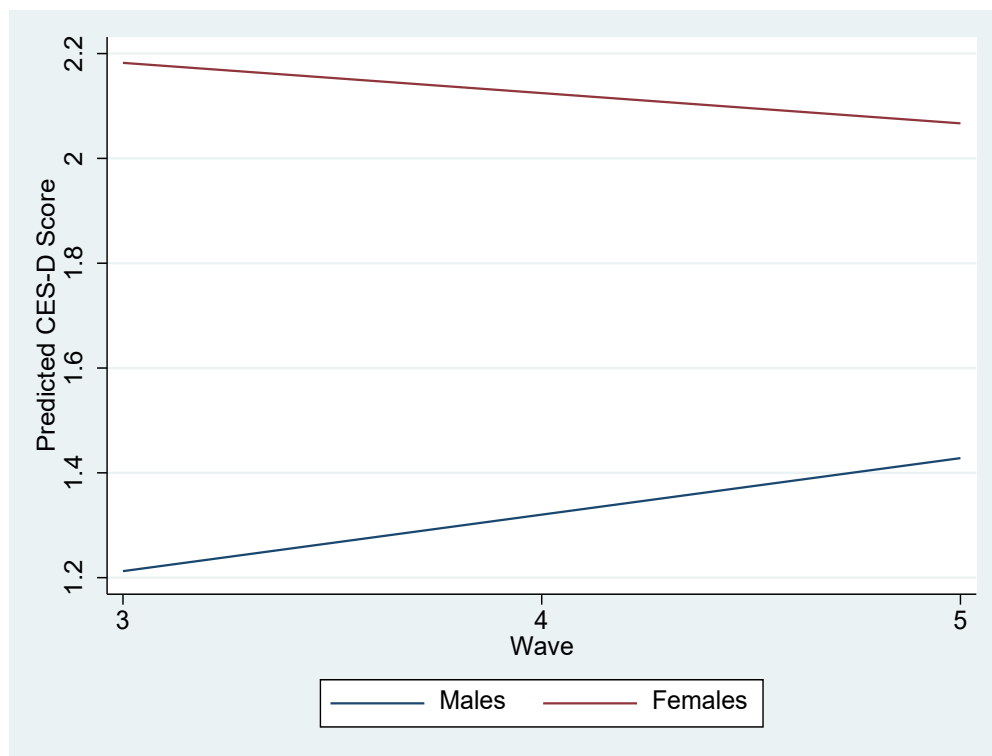


Figure 2.2. Trajectories of depressive symptoms by gender.

Discussion

This research applied multilevel growth curve modeling to examine trajectories of depressive symptoms, associations with substance use, and interactions with gender among a sample of adults who experienced involvement with the criminal justice system during young adulthood. Results from the multilevel growth curve revealed that among the total sample, depressive symptoms linearly increased from Waves III (ages 18-26) to V (ages 33-43). This finding is largely consistent with recent research suggesting depression is overrepresented in criminal justice populations and persists long after initial involvement with the justice system (Baker et al., 2023; Grecco & Chambers et al., 2019; Testa & Semenza, 2020). Additional studies with similar approaches to depressive symptoms among adolescents and non-justice-involved populations through adulthood have found similar linear effects, but some also report significant quadratic effects, suggesting a curvilinear relationship (Chen & Harris, 2019; Lee & Estrada-Martínez, 2020; Thomas et al., 2022). However, this study found that the linear model was a better fit of the data, which suggests that depressive symptoms increase over time among justice-involved adults.

Prior research has identified associations between incarceration and depressive symptoms using Add Health data (Porter & Novisky, 2017), but this study builds on previous work by finding linear longitudinal growth of depressive symptoms among a sample of justice-involved adults through adulthood. Increased prevalence of mental health conditions in the criminal justice system follows a long history post-deinstitutionalization of controversial long-term psychiatric hospitals in the late 1960s and 1970s, which increased criminal justice contact for many who did not have alternative avenues of care (Kuehn, 2014; Lamb & Bachrach, 2001; Lamb & Weinberger, 2020; Mundt et al., 2012). Additionally, experiences of incarceration and

criminal justice contact in of themselves produce deleterious impacts on health and well-being including depression (Boen, 2020; Esposito et al., 2017; Porter & DeMarco, 2019; Sugie & Turney, 2017), particularly among African Americans (Archibald, 2018), which was supported through this study's finding that African Americans had significantly higher levels of depressive symptoms compared to non-Hispanic Whites at model intercept. Future research should continue to examine varying degrees of damaging consequences of system involvement among different groups, including long-term consequences for mental well-being after involvement and how mental well-being changes over time.

Women are the quickest growing segment of the criminal justice system, showing increases in rates of incarceration that are almost double than those of men (Cloyes et al., 2010; Drapalski et al., 2009; King et al., 2018; Tripodi & Pettus-Davis, 2013). Even more problematic, the disproportionate representation of mental health conditions in the justice system is more pronounced for women, leading to a host of negative outcomes including greater severity of mental health symptoms, substance use problems, recidivism, and increased risk of mortality (Binswanger et al., 2007; Cloyes et al., 2010; King et al., 2018; Rosenfield & Mouzon, 2013; Tripodi & Pettus-Davis, 2013). Similarly, this study found that women had significantly higher levels of depressive symptoms compared to men at Wave III and while they showed some modest decreases over time, they showed significantly higher levels than men across Waves, controlling for other sociodemographic, clinical, and strain covariates. Conversely, men started at Wave III with significantly lower levels of depressive symptoms and showed some slight increases over time but did not surpass women across the study time frame.

Consistent with previous research (Cloyes et al., 2010; King et al., 2018; Rosenfield & Mouzon, 2013), findings from this research indicate that justice-involved women are a

particularly vulnerable group with respect to depression and the range of complications that accompany it, not only compared to women in the general population, but also to justice-involved men. From a GGST perspective, potential reasons for this disparity may lie in the tendency of women to internalize gender normative beliefs and negative emotions (De Coster & Zito, 2010; Isom Scott & Mikell, 2019), respond less likely than men with anger or aggression (Jennings et al., 2009), or experience co-occurrence of negative emotions that produce varied reactions to different forms of strain (Hay, 2003; Ngo & Paternoster, 2013). Additionally, women may be more likely to respond to strain through substance use coping (Broidy & Agnew, 1997; Isom Scott & Mikell, 2019), which could also help to explain higher rates of co-occurrence among justice-involved women (Peters et al., 2017; Steadman et al., 2013; Villagr a et al., 2019).

It is essential that behavioral health treatment and service providers, both within correctional facilities and in communities during reentry, recognize the impact of justice involvement on mental health and that women require gender-based approaches to treatment that account for disparities, unique pathways, and varied lived experiences that contribute to depression and substance use. For example, women tend to report higher levels of experiencing barriers to treatment related to childcare and family, relationships, stigma, and mental health (Agterberg et al., 2020), which are exacerbated by collateral consequences of justice system involvement and should be uniquely targeted to address gender-specific concerns. To respond accurately to the needs of justice-involved women, further research and programmatic efforts are needed that reflect lived experiences and contrasting realities.

Somewhat surprisingly, this research found that various forms of substance use largely did not significantly predict depressive symptoms at model intercept. It should be noted that this

could be partially due to available measures of different forms of substance use in Add Health data, including the ‘other drug’ category that combines various substances such as opioids, methamphetamine, hallucinogens, and others. More nuanced measures assessing substance use that go beyond indicators of past use and include consequences of use may further shed light on the relationship between substance use problems and depression among justice-involved adults. Despite the limited utility of the substance use measures, findings from this study suggest some significant effects for alcohol and cannabis use. Those who reported drinking at least one or two times a week had significantly lower levels of depressive symptoms at model intercept, which may suggest that alcohol use alone is not necessarily detrimental to mental health. However, this study did find a positive association between drinking every day or almost every day and depressive symptoms, although it was not statistically significant when controlling for other variables. Thus, the volume of alcohol use patterns and associated consequences may have a clearer relationship with depression (Dvorak et al., 2013; Li et al., 2020). Furthermore, past 30-day cannabis use was associated with elevated levels of depressive symptoms at model intercept, which is consistent with previous research with other populations (Degenhardt et al., 2003; Lev-Ran et al., 2014; Womack et al., 2016). Given inconsistent measures of substance use across Waves in the data, this research was unable to assess temporal patterns or how changes in one affects the other, but additional research with consistent measures that distinguish degrees of use should examine how these relationships predate one another or change over time among those with criminal justice involvement.

GGST suggests that financial strain is typically more salient among men, compared to women who may be more affected by victimization and social or familial forms of strain (Broidy & Agnew, 1997; Isom Scott & Mikell, 2019). Findings from this study revealed that financial

strain was associated with significantly elevated levels of depressive symptoms, but victimization was not significant. One potential reason for this finding may be, as GGST suggests, negative effects of financial strain are more pervasive among men, and the sample for this study was 80% men. Undeniably, economic ramifications of justice system involvement, including vocational difficulties, unstable housing, monetary fines stemming from involvement, inability to afford basic needs or reliable transportation, among others, have a profound negative impact for those involved (Porter & Novisky, 2017; Shannon et al., 2020; Soss et al., 2011; Uggen et al., 2014; Wacquant, 2009). As a result, pathways to economic upward mobility and meaningful employment are essential to improving psychological well-being among justice-involved individuals during reentry (Pettus et al., 2021; Pettus-Davis et al., 2019). Future research and interventions around behavioral health should account for the interrelated economic component and address mechanisms that adversely impact material resources among this group.

Limitations

The current study established differences in depressive symptom trajectories among justice-involved men and women using a representative longitudinal sample. However, several limitations merit discussion. First, Add Health data provides multiple waves of information on participants' social and mental well-being, but criminal justice-related measures are limited, and substance use measures were inconsistent across Waves, which limited the ability to perform additional models longitudinally examining how temporal changes in substance use, or frequency of use, impact changes in depressive symptoms. Similarly, repeated measures of different forms of strain, including victimization and financial hardship, were unavailable as item wording and inclusion changed across waves, which prevented this research from assessing effects of changes in situationally based strain. Finally, because this study focused on those who

experienced involvement with the justice system during young adulthood, small proportions of females in this group precluded the ability to disaggregate and perform gender-specific models that could assess additional effects. However, this is not entirely uncommon given that men still make up the vast majority of the criminal justice population (King et al., 2018; Tripodi & Pettus-Davis, 2013).

Conclusion

Rates of depression and substance use are more prevalent and pervasive among justice-involved individuals compared to the general population, particularly among justice-involved women (Baranyi et al., 2022; Villagr a et al., 2019). The current study examined longitudinal trajectories of depressive symptoms among a sample of justice-involved adults and found that depressive symptoms increased over time and exhibited significantly different trajectories between men and women. Future research should seek to disentangle temporal patterns of contextual factors and their varying degrees on mental health, including substance use and strains, as well as how contemporary interventions for depression with this population also address the wide breadth of interrelated social, physical, and economic consequences of system involvement. Social workers and other related practitioners in criminal justice and reentry settings may benefit from this work, as it emphasizes the nuanced, gender-based experiences of depression post-justice-involvement, which requires intentional, tailored efforts to meet the needs of this heterogeneous group.

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CHAPTER 3
PREDICTORS OF PROBLEM-FOCUSED COPING STRATEGIES AMONG CRIMINAL
JUSTICE-INVOLVED ADULTS WITH CO-OCCURRING SUBSTANCE USE AND
MENTAL HEALTH DISORDERS

Introduction

Rates of mental illness, substance use disorders (SUDs), and their co-occurrence are disproportionately higher among adults in the criminal justice system than among those in the general population (Feucht & Gfroerer, 2011; Lurigio, 2011; Peters et al., 1998, 2017). It is estimated that 10-15 percent of males and 25-34 percent of females in the justice system have co-occurring mental health and substance use disorders (CODs), compared to 3.8 percent of individuals in the general population (Peters et al., 2017; Steadman et al., 2013; Substance Abuse and Mental Health Services Administration [SAMHSA], 2020). With nearly 6 million people involved in the United States (U.S.) criminal justice system (Sawyer & Wagner, 2023), CODs impact an increasing number of individuals in jails, prisons, and community settings (Peters et al., 2015). Further, it is estimated that nearly 650,000 individuals reenter communities from state and federal prisons each year and that another 10.6 million people cycle through jails annually (Carson, 2021; National Institute of Corrections, 2023), which necessitates greater attention on reentry post-incarceration. Unfortunately, amidst the vast reach of the criminal justice system, those who have CODs often experience higher rates of rearrest, recidivism, treatment attrition, and substance use relapse (Balyakina et al., 2014; Gates et al., 2017; Horsfall et al., 2009; Rojas & Peters, 2016; Young et al., 2018). As a result, rehabilitative frameworks have been

emphasized to promote “smart decarceration,” one of the Grand Challenges of Social Work, which aims to reduce the disproportionate impacts of the mass incarceration era by offering “effective, sustainable, and socially just” strategies to transform the justice system and preserve public and community safety (Epperson & Pettus-Davis, 2015; Grand Challenges, 2023).

One framework, the well-being development model (WBDM; Pettus et al., 2021), serves as a resilience and strengths-based psychosocial model to lead the development of reentry programming. The WBDM prioritizes overall well-being through the use of evidence-based interventions that enhance individual engagement with society, productivity, and actualizing one’s own “psychological, social, and occupational potential” (Pettus et al., 2021). Within this model, targeting well-being and resilience serves as a pivotal mechanism to curb future justice-system involvement. At its core, the WBDM asserts that social, economic, and racial/ethnic disparities cumulatively and negatively impact justice-involved populations (Lopez-Aguado, 2016; Pettus, 2013; Soss et al., 2011; Wacquant, 2009), creating significant barriers that are left unaddressed by current deficits-based reentry models.

To address the multitude of barriers to well-being, interventions within the WBDM target five key facilitators: 1) healthy thinking patterns, 2) meaningful work trajectories, 3) effective coping strategies, 4) positive social engagement, and 5) positive interpersonal relationships (Pettus et al., 2021; Pettus-Davis & Kennedy, 2020). Pulling from a vast empirical foundation across various disciplines including sociology, psychology, public health, and social work, evidence-based interventions targeting each facilitator were combined into one reentry services model and have been shown to increase well-being (Pettus & Kennedy, 2018; Pettus-Davis et al., 2019). Of particular importance to this study, effective coping strategies is targeted through solutions-focused brief therapy (Bavelas et al., 2013; Knekt et al., 2013; Lindforss &

Magnusson, 1997), which has undergone randomized controlled trials, and was tailored specifically to promote recovery among reentering individuals with substance use and mental health disorders (Pettus & Kennedy, 2018; Pettus-Davis et al., 2019).

Another compatible psychosocial framework to help explain coping, criminal behavior, and substance use, while not as recent, is Robert Agnew's (1992, 2001, 2006) general strain theory (GST). GST attempts to explain differences in dealing with stressors, referred to as strain, and engaging in antisocial behaviors like crime or substance use. When stressors create a disconnection between an individual's goals and their means to achieve those goals, it creates strain and negative emotions, which require coping mechanisms to alleviate emotional states. Coping strategies may involve illicit behaviors including substance use and criminal acts, but Agnew (1992) acknowledges that many individuals opt for legal or more socially acceptable strategies. To explain the variation in coping, GST attempts to account for conditional variables including available resources, skills, demographics, and social supports (Agnew, 1992; Joon Jang, 2007; Pérez et al., 2008).

There is empirical support for GST being able to explain substance use (Agnew & White, 1992; Carson et al., 2008) as well as studies finding evidence for associations between stress exposure and substance use (Barrett & Turner, 2006; Ford & Schroeder, 2009; Preston, 2006), and associations between feelings of depression and substance use (Drapela, 2006; Ford & Schroeder, 2009; Jang & Johnson, 2003). Given the emphasis on GST being an explanatory framework, there are few interventions for coping strategies based only GST, but paired with the WBDM, there is potential utility in examining challenges related to substance use and mental health among criminal justice-involved persons, and how coping influences outcomes.

A key component of both the WBDM and GST involves the use of effective coping strategies to minimize external strains. Coping strategies are defined as “adaptive behavioral and psychological efforts taken to manage and reduce internal and external stressors [strains] in ways that are not harmful in the short or long term” (Pettus et al., 2021, p. 441). Similarly, Lazarus and Folkman’s (1984) stress and coping theory defines positive, negative, and avoidant coping strategies, and asserts that developing effective coping strategies can allow individuals to respond to strains in a healthy manner as opposed to using violence, substances, or other negative coping strategies (Taylor & Stanton, 2007). There has been an abundance of attention given to negative coping strategies, such as substance use or engaging in illegal behaviors (Agnew, 1992), but much less attention on positive coping mechanisms among those entangled in the criminal justice system.

One form of positive coping, problem-focused coping, involves efforts to improve problem solving, gather information, weigh options, choosing between options, and acting on choices. The use of effective coping strategies, particularly problem-focused coping, is associated with increases in overall health and well-being across various settings, gender, and age groups as well as individuals with serious mental illness (Chen et al., 2018; Gattino et al., 2015; Mayordomo et al., 2016; Meng & D’Arcy, 2016; Moslehi et al., 2015; Penley et al., 2002). Further, the positive relationship between problem-focused coping and well-being was also found among a nationally representative sample of 40,000 people in Canada (Meng & D’Arcy, 2016) and supported by a meta-analysis of 34 studies (Penley et al., 2002). Among incarcerated individuals, previous studies suggest that effective coping strategies have a stronger relationship with well-being than incarceration-related predictors (Gullone et al., 2000) and interventions

designed to improve coping strategies and decrease substance use were associated with improved overall well-being (Freeman, 2003; Shuker & Newton, 2008).

Research suggests that problem-focused coping is more likely to be utilized when situations are thought to be changeable and when social support is available (Holahan & Moos, 1987; Sabina & Tindale, 2008). Resources that can make problem-focused coping more likely fall into three categories: personal (e.g., health, beliefs, skills), material (e.g., income, education) and social support (Lazarus & Folkman, 1984; Sabina & Tindale, 2008). However, little is known about predictors of problem-focused coping among formerly incarcerated individuals with CODs. To date, it is relatively unknown what facilitates this form of coping among a particularly vulnerable group within the criminal justice system. Thus, the current study seeks to understand associations with the use of problem-focused coping among a sample of criminal justice-involved adults with CODs preparing to reenter back into the community.

Current Study

To better understand the utilization of problem-focused coping strategies and what best facilitates this usage among justice-involved adults with CODs, this research attempts to address the following research questions: 1) To what extent do justice-involved adults with CODs engage in problem-focused coping strategies? 2) What resources make problem-focused coping strategies more likely among reentering justice-involved adults with CODs? This research hypothesizes that coping resources, including personal, material, and social resources, predicts higher levels of problem-focused coping strategies.

Method

Sample

Data for this study includes Phase 1 of the 5-Key Model for Reentry, a multisite randomized controlled trial originally developed by Pettus and colleagues (2019) from the Institute for Justice Research and Development (IJRD) at Florida State University (FSU). Guided by the WBDM (Pettus et al., 2021), the 5-Key Model was designed as a reentry services approach informed by the five key facilitators of the WBDM: healthy thinking patterns, positive relationships, positive social engagement, effective coping strategies, and meaningful work trajectories. Phase 1 of the 5-Key Model for Reentry includes 1,544 incarcerated individuals with a scheduled release date between May 2018 and March 2019 across four states: Florida, Kentucky, Pennsylvania, and Texas (Pettus-Davis & Kennedy, 2018, 2020). Data collection involved individuals from 50 prisons among 4 urban and 8 rural counties across the four states. The research team employed broad eligibility criteria, including all individuals who were at least 18 years old, had a scheduled release date within the study period, were able to speak conversational English, and were cognitively capable to provide consent (determined via a cognitive screening questionnaire). Additional information on data collection procedures and study design can be found in the research team's first quarterly report (Pettus-Davis & Kennedy, 2018).

Data was collected during incarceration as a baseline measurement and at four additional time points: immediately after release, and then 4, 8, and 15 months after release. The current study only used baseline data that was collected during incarceration prior to release and implementation of parent study intervention. The 5-Key Model for Reentry data includes socio-demographic, criminal justice history, substance use, and mental health variables, as well as a range of information on various well-being metrics, including coping strategies, which make it suitable for this research. To determine whether a reentering individual met criteria for a current

COD to be included in the study sample, mental health and substance use disorders were measured by the Mini International Neuropsychiatric Interview (MINI), a structured interview used to diagnose disorders according to the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; DSM–IV; American Psychiatric Association [APA], 2000; Sheehan et al., 1998). Binary composite variables were used to indicate whether participants reported symptoms consistent with current disorders for major depressive episode, manic and hypomanic episode, social anxiety disorder, psychotic disorder, and generalized anxiety disorder, as well as alcohol use disorder and substance use disorder. MINI measures have demonstrated acceptable reliability, validity, and invariance across cultural and age groups (Amorim, 2000; Otsubo et al., 2005; Sheehan et al., 1997, 1998, 2010). Focusing on just those who met criteria for current co-occurrence of a substance use and mental health disorder, the final analytical sample for the current study was N = 225. Both the original parent study and this study were reviewed and approved by the Institutional Review Boards at their respective institutions.

Measures

Problem-focused coping strategies

The dependent variable, problem-focused coping strategies, is a composite measure based on the sum of eight items ($\alpha = 0.95$), which indicate different aspects of employing problem-focused strategies. Examples of items include “I concentrate my efforts on doing something to change the situation I am in” and “I take action to try to make my situation better” (see Appendix A for each item and item wording). Respondents were asked to think about a stressful situation that they encountered in the past two weeks and indicate its frequency on a 4-point Likert scale with values 1 (never), 2 (rarely), 3 (often), and 4 (always). Summing the responses on the eight items resulted in a range of 8-32 with higher scores indicating higher levels of problem-focused

coping. Inclusion of items to create the composite variable was originally compiled by the 5-Key Model of Reentry research team (Pettus, 2019). Items assessing problem-focused coping are similar to the problem-focused coping subscale of The Ways of Coping Questionnaire (Lazarus & Folkman, 1984), which has been empirically validated across settings and populations (Falkum et al., 1997; Folkman & Lazarus, 1984; Lundqvist & Ahlström, 2006; Scherer et al., 1988; Wineman et al., 1994).

Personal, material, and social resources

Personal coping resources included three subscales from the RAND SF-36 Health Survey (Hays et al., 1993, 2001): physical role limitations (4 items; $\alpha = .85$), emotional well-being (5 items; $\alpha = .81$), and overall health (5 items, $\alpha = .79$). See Appendix B for list of items from each subscale. The physical role limitations subscale has a range from 0-100 and was recoded to reflect that higher scores indicate that participants reported lower levels of limitation on their daily functioning due to physical health problems. Emotional well-being subscale was recoded to have a range from 0-100 with higher scores indicating that participants reported greater positive perception of their emotional health. Overall health subscale was recoded to have a range of 0-100 with higher scores indicating that participants reported greater positive perception of their physical health.

Material coping resources included income, employment, and education. Income was measured continuously in dollars, where respondents were asked “What is the typical amount of money you made in a month over that six-month period prior to your incarceration?” Monthly income was categorized as \$0-1,500, \$1,501-3,000, \$3,001-4,500, \$4,501-6,000, and \$6,000 or more. Employment, which was originally collected as a continuous number of jobs each respondent had in their lifetime, was recoded as a binary variable where 0 (None) and 1 (One or

more). Finally, education was measured categorically as the highest level of education completed prior to their incarceration. Education was coded as 0 (Less than High School), 1 (High School graduation or GED), 2 (Trade/technical training or some college), and 3 (College degree).

Social coping resources included a composite variable from a quality of relationship inventory: relationship depth with a person the respondent is closest to. Respondents were asked to identify a person in their lives that they felt closest to in the past couple of weeks (e.g., mother, father, spouse, friend, etc.). Relationship depth with the closest person ($\alpha = .88$) included six items: 1) “How positive a role does this person play in your life?” 2) “How significant is this relationship in your life?” 3) “How close do you expect your relationship to be with this person in 10 years?” 4) “How much would you miss this person if the two of you could not see or talk with each other for a month?” 5) “How responsible do you feel for this person’s well-being?” and 6) “How much do you depend on this person?” Responses were coded as 1 (Not at all), 2 (A little), 3 (Quite a bit), and 4 (Very much), with a range of 6-24 where higher responses indicate that the respondent perceives their relationship with the person that they are closest to as positive, important, and secure.

Risk factors

Risk factors included prior prison commitments and trauma history. Prior prison commitments was a continuous measure with a range of 0-11. Trauma history was measured by the Trauma History Questionnaire (THQ; $\alpha = .70$), a validated scale with 25 items that has been widely used in both national and international studies as well as with incarcerated populations (Hooper et al., 2011; Jackson et al., 2017; Komarovskaya et al., 2011; Morrison et al., 2019; Morrison et al., 2023). Items were coded as 0 (No) and 1 (Yes), where higher scores reflect that a participant reported a higher number of lifetime traumatic events. THQ items asked respondents

about a range of potentially traumatic experiences including victimization, accidents, natural disasters, sexual abuse, and physical abuse.

Sociodemographic variables

Sociodemographic variables included race/ethnicity, gender, and age. Race/ethnicity was measured categorically as African American, Hispanic, White, or Other. Gender was a binary measure where 0 (Male) and 1 (Female). Age was a continuous measure in years with a range of 18-65.

Analysis Plan

Univariate descriptive analyses were conducted to assess sample characteristics with respect to study variables. Bivariate analyses, including *t*-tests, chi-square tests of independence, Pearson correlation coefficients, and estimates of effect size (eta square) examined personal coping resources, material resources, social resources, risk factors, and sociodemographic characteristics associated with problem-solving coping strategies. Multivariate linear regression was used to assess salient predictors of problem-focused coping strategies among reentering adults with CODs. All analyses were performed in Stata v.18 (StataCorp, 2023).

Results

Table 3.1 provides descriptive statistics for the sample. Results from univariate analyses ($N = 225$) showed the mean level of utilizing problem-focused coping strategies was 24.52 ($SD = 2.49$, range = 8-32), indicating that those in the sample, on average, reported relatively high amounts of problem-focused coping. The mean of self-reported physical role limitations was 76.99 ($SD = 34.99$) indicating that on average, respondents reported lower physical role limitations. Similarly, overall health had a mean of 69.8 ($SD = 22.02$), which suggests that respondents have moderately high perceptions of their health on average, but perceptions of

emotional well-being ($M = 58.24$, $SD = 22.27$) was lower. Monthly reported income among the sample show that over half (61.6%) of respondents made less than \$3,000 per month prior to their incarceration, while approximately 20% reported making \$6,000 or more per month. Additionally, 92% of the sample reported having at least one legal job in their lifetime and nearly half of the sample had less than high school education.

Relationship depth with the person they are closest to ($M = 20.21$, $SD = 4.39$) indicated that on average, respondents felt that their closest relationship was positive and secure. However, respondents on average had at least one prior prison commitment ($M = 1.79$, $SD = 1.75$) and a mean trauma history of 8.35 ($SD = 3.70$). Finally, descriptive statistics show that a large majority of the sample were male (83.85%), nearly 43% were White, and nearly 39% percent were African American. Further, the average age among the sample was 36.21 ($SD = 10.26$).

Table 3.1. Sample descriptives for those with co-occurring disorders.

N = 225	% or (M, SD)
Problem-focused coping strategies	(24.51, 3.49)
Physical role limitations	(76.99, 34.99)
Emotional well-being	(58.24, 22.27)
Overall health	(69.80, 22.02)
Income	
\$0-1,500	35.74
\$1,501-3,000	25.86
\$3,001-4,500	9.51
\$4,501-6,000	8.37
\$6,000 or higher	20.53
Employment	
None	7.98
One or more	92.02
Education	
Less than High School	46.95
High School graduation or GED	32.44
Trade school or some college	15.65
College degree	4.96
Relationship depth with closest person	(20.21, 4.39)

Prior prison commitments	(1.79, 1.75)
Trauma history	(8.35, 3.70)
Race/ethnicity	
African American	38.93
Hispanic	7.63
White	42.75
Other	10.69
Gender	
Male	83.85
Female	16.15
Age (in years)	(36.21, 10.26)

Table 3.2 presents the results from bivariate analyses. Bivariate associations show that emotional well-being ($r = .33, p < .05$) and overall health ($r = .30, p < .05$) were significantly associated with problem-focused coping strategies. Further, chi-square tests of independence show that race and ethnicity ($\chi^2 = 132.18, p < .01$) was significantly associated with problem-focused coping strategies.

Table 3.2. Bivariate associations with problem-focused coping strategies.

	<i>R</i>	χ^2 or (t)
Physical role limitations	.08	-
Emotional well-being	.33*	-
Overall health	.30*	-
Income	-	72.8
Employment	-	(-.06)
Education	-	70.2
Relationship depth with closest person	.23*	-
Prior prison commitments	-.01	-
Trauma history	.01	-
Race/ethnicity	-	132.18**
Gender	-	(-.04)
Age	-.003	-

Note. * = $p < .05$, ** = $p < .01$

Table 3.3 presents the results of the multivariate linear regression analysis. The regression model ($F = 4.68, p < .0001, R^2 = 0.302$) accounted for 30% of the variance in the outcome variable, problem-focused coping strategies. The results of the model revealed significant relationships between problem-focused coping strategies and two personal coping resources, emotional well-being ($b = 0.042, SE = 0.01, p < .01$) and overall health ($b = 0.040, SE = 0.01, p < .01$), indicating positive associations such that, when controlling for other variables, for every unit increase in emotional well-being and overall health, there is an increase in problem-focused coping strategies by 0.042 and 0.04, respectively. However, physical role limitations was not statistically significant. When it comes to material resources, only making a monthly income of \$6,000 or more ($b = 1.19, SE = 0.06, p < .05$) was significantly associated with problem-focused coping, such that those in this income group reported significantly higher levels of utilizing problem-focused coping. Employment and education were not significantly associated with problem-focused coping strategies. For social coping resources, relationship depth was significantly associated with problem-focused coping ($b = 0.12, SE = 0.05, p < .05$), indicating that for every one unit increase in positive relationship depth, there is an increase in problem-focused coping by 0.12. Risk factors of prior prison commitments and trauma history were not significantly associated with problem-focused coping. However, among demographic measures, compared to White individuals, African Americans ($b = 1.52, SE = 0.48, p < .01$) and Other ($b = 2.25, SE = 0.76, p < .01$) had significantly higher levels of problem-focused coping. Finally, gender and age were not statistically associated with problem-focused coping.

Table 3.3. Multivariate associations with problem-focused coping strategies.

N = 225	b	SE	β	Eta sq.
Physical role limitations	-0.01	0.01	-0.08	0.01
Emotional well-being	0.04**	0.01	0.27	0.07
Overall health	0.04**	0.01	0.25	0.06

Income				0.02
\$0-1,500	-	-	-	-
\$1,501-3,000	0.44	0.56	0.06	
\$3,001-4,500	0.58	0.79	0.05	
\$4,501-6,000	0.59	0.81	0.05	
\$6,000 or higher	1.19*	0.6	0.14	
Employment (Yes)	-0.44	0.84	-0.03	0.01
Education				0.01
Less than high school	-	-	-	-
High School graduation or GED	0.61	0.49	0.08	
Trade school or some college	0.59	0.63	0.06	
College degree	0.79	1.05	0.05	
Relationship depth with closest person	0.12*	0.05	0.15	0.03
Prior prison commitments	-0.07	0.13	-0.03	0.01
Trauma history	-0.01	0.06	-0.01	0.01
Race/ethnicity				0.06
White non-Hispanic	-	-	-	-
African American	1.52**	0.48	0.21	
Hispanic	1.36	0.92	0.09	
Other	2.25**	0.76	0.19	
Gender (Female)	0.92	0.59	0.09	0.01
Age	0.04	0.02	0.11	0.01

Note. Unstandardized and standardized coefficients presented; * = $p < .05$, ** = $p < .01$

Discussion

Among a sample of criminal justice-involved adults with CODs preparing for reentry back into their communities across four states, this study examined associations with employing problem-focused coping strategies. The findings from this study showed that personal coping resources including emotional well-being and overall health were positively associated with problem-focused coping strategies. More specifically, those with more positive perceptions of their general and emotional health were more likely to report higher utilization of problem-focused coping. This finding is consistent with previous research examining other populations including nonclinical adults and women survivors of domestic violence (Lazarus & Folkman, 1984; Penley et al., 2002; Sabina & Tindale, 2008). This is the first study, to the researcher's

knowledge, to extend this finding to justice-involved adults with CODs. Moreover, for this population, dealing with challenges related to substance use and mental health disorders may serve as a direct barrier to emotional well-being in conjunction with circumstances and collateral consequences attached to justice-system involvement during reentry (Grecco & Chambers, 2019; Peters et al., 2017; Shannon et al., 2020; Uggen et al., 2014). It is also established that experiences of incarceration are associated with increases in depressive risk and C-reactive protein (Boen, 2020), a biological marker for inflammation linked to chronic stress exposure and increased health risk (Emerging Risk Factors Collaboration, 2010), as well as additional physical health risks including hypertension, chronic conditions, and mortality (Massoglia, 2008; Massoglia & Remster, 2019; Schnittker & John, 2007; Spaulding et al., 2011).

While there is some evidence that there may be a few short-term health benefits associated with incarceration (Spaulding et al., 2011), largely due to access to health care previously not available for many individuals, the overwhelming body of evidence points to experiences of incarceration and other experiences of justice-system involvement having long-term negative repercussions for physical and mental health (Boen, 2020; Kulkarni et al., 2010; McFarland et al., 2019; Porter & DeMarco, 2019; Porter & Novisky, 2017). Additionally, substance use among formerly incarcerated individuals is highly related to increased mortality risk, particularly risk of overdose, with the riskiest period occurring immediately after release (O'Connor et al., 2022). Consequently, individuals preparing to reenter the community post-incarceration with co-occurring substance use and mental health disorders face unique challenges to physical and emotional well-being, which may be influential in the facilitation of engaging in problem-focused coping, as illustrated by effect sizes in this research. Interventions that seek to enhance positive coping among this group should also target other markers of overall well-being

including physical and emotional health, which points to holistic care that is still greatly needed upon immediate reentry.

As for material resources, this study found that those with higher income reported significantly higher levels of engaging in problem-focused coping. Previous research has found that lower income individuals reported using problem-focused coping significantly more than higher income individuals (Brantley et al., 2002), which appears to be contradicted by the findings of this study. However, more recent research has also identified that form of employment may influence this, particularly among those who are self-employed and more likely to engage in problem-focused coping (Nikolaev et al., 2023). The current study only examined employment as previously having legal jobs, but future research should look to further disentangle the role of income and type of employment within the context of problem-focused coping and meaningful work trajectories, as defined by the WBDM (Pettus et al., 2021). Financial hardships among those in criminal justice system have been well documented (Diller et al., 2010; Shannon et al., 2020; Sobol, 2015; Wacquant, 2009), and lower income individuals often report more chronic stressors (Scarinci et al., 1999), which may necessitate a wider range of coping strategies (Brantley et al., 2002), but possessing a higher income may increase the availability and accessibility of interventions on productive coping mechanisms and needs to be further studied among this group.

This research also found that social coping resources, particularly self-reported relationship depth with the closest person in their life, was positively associated with problem-focused coping, which is consistent with previous research (Holahan & Moos, 1987; Mousavi et al., 2015; Sabina & Tindale, 2008). Further, adequate social support is an essential aspect of life while incarcerated as well as during the reentry process. Having someone to confide in, receive

advice from, help navigate complex life stressors, and feel secure in the connection can be extremely beneficial for reentering individuals with CODs as they try to make positive changes in their lives.

Another finding from this study was the relationship between race/ethnicity and problem-focused coping strategies. Compared to non-Hispanic Whites, African Americans and those in the 'Other' category were found to report significantly higher levels of problem-focused coping. Research on racial disparities in coping mechanisms has found that African Americans were more likely to engage in emotion-focused coping, a more internal form of coping that aims to manage emotions from a situation (Brantley et al., 2002; Vassilliere et al., 2016), but perceived racial discrimination helped to explain this relationship (Vassilliere et al., 2016). Similar to those with lower incomes, which disproportionately includes many African Americans, African Americans often report higher rates of stress and may require a wider range and greater use of coping strategies, including proactive strategies, to mitigate experiences of racial discrimination (Brantley et al., 2002; Mallett & Swim, 2009; Van Gundy et al., 2015). This may also help to explain differences in problem-focused coping. Those in the 'Other' grouping included Asian Americans, Native Americans, multi-racial individuals, and others, but due to sample size challenges within each group, this research was unable to parse out these relationships. Future research should seek to collect larger samples of racial and ethnic groups among justice-involved individuals with co-occurrence to better understand differences in coping.

Finally, it is important to note that problem-focused coping is reflective of efforts geared toward changing the situation, which is thought to be more effective when the stressor is under the perceived control of the individual (Carroll, 2020). While many circumstances surrounding the criminal justice system are not within the purview of control by the individual, it is essential

to emphasize the areas that *are* under control by the individual, including how they manage stressors related to their CODs and criminal justice involvement, engagement within treatment programs, how they react and navigate relationships, among a litany of other areas. In this way, future interventions for increasing problem-focused coping should be focused on well-being and resilience, as well as wide-ranging in scope to deal with the many facets of everyday life and help justice-involved individuals to identify specific areas where change is possible in their lives.

Limitations

Several limitations are present in the current study that merit discussion. First, due to limitations in sample size, this research was unable to examine any subsequent waves or longitudinal associations in problem-focused coping among those with co-occurrence throughout the reentry process. As a result, this research was also unable to include additional criminal justice outcome measures such as recidivism, reincarceration, and technical violations. Similarly, challenges to sample size limited the examination of racial disparities in problem-focused coping. While this research was able to examine differences among Whites, African Americans, and Hispanics, it was unable to further disentangle differences among other racial and ethnic groups as well as those belonging to more than one racial identity, although this group as a whole was found to significantly differ from Whites. Finally, employment measures were limited, which reduced the ability to better understand type, quality, and meaningfulness of employment as defined by the WBDM and broader research around material resources and effective coping strategies.

Conclusion

The current study indicates that personal, material, and social coping resources influence the use of problem-focused coping strategies among criminal justice-involved adults with CODs.

Specifically, positive perceptions of physical and emotional health, higher income, and strong relationship depth with the closest person all positively predicted higher reported usage of positive-coping strategies. Additionally, African Americans and other racial/ethnic groups that were not Hispanic reported significantly higher levels of engaging in problem-focused coping, compared to non-Hispanic Whites. It is important to better understand unique stressors related to experiences of discrimination and how this may impact the usage of problem-focused coping among various racial and ethnic groups with justice-system involvement and co-occurring disorders. Further, it is imperative that interventions holistically enhance the various areas of coping resources in order to better improve the usage of effective coping mechanisms at reentry and post-incarceration. While effective coping strategies is only one facilitator of overall well-being, interrelated facilitators of healthy thinking patterns, meaningful work trajectories, positive social engagement, and interpersonal relationships should also be targeted in programming to capture the wide scope of available coping resources and personal growth during reentry. Future research should continue to focus on the facilitators of well-being during reentry with a particularly tailored focus for those with co-occurring substance use and mental health disorders. Social workers and other related practitioners in criminal justice and reentry settings may benefit from this work, as it highlights specific predictors to incorporate in future interventions as well as the need for broader training and resources related to effective problem-focused coping among this unique population.

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CHAPTER 4

LATENT CLASS ANALYSIS OF SERVICE UTILIZATION PATTERNS AMONG REENTERING CRIMINAL JUSTICE-INVOLVED ADULTS: LONGITUDINAL MIXED EFFECTS MODEL WITH PSYCHOLOGICAL DISTRESS

Introduction

In the United States (U.S.), there are nearly 2 million incarcerated individuals and another 3.7 million on probation or parole (Sawyer & Wagner, 2023). Further illustrating the vast reach of the criminal justice system, it is estimated that over 79 million people in the U.S. possess a criminal record (Sawyer & Wagner, 2023). Additionally, more than 95 percent of incarcerated individuals will be eventually released back into their communities with an estimated 650,000 individuals reentering from prisons each year (Carson, 2021; Pettus et al., 2021). In the past two decades, as the era of mass incarceration ebbs, the reentry period has seen a considerable increase in scholarly attention and policy interest, but effective and holistic reentry services for this group remain a serious need (Hunt et al., 2015; Jones & McCance-Katz, 2019; Mauro et al., 2016; McGovern et al., 2014; National Institute on Drug Abuse [NIDA], 2014; Taxman et al., 2007).

A great deal of prior research has focused on various treatment modalities for common behavioral or physical health conditions among reentering justice-involved individuals, with many studies examining services for those who have substance use or mental health disorders, including medications for opioid use disorders (MOUD) (Bachhuber et al., 2018; Biondi et al., 2018; Friedmann et al., 2018), behavioral therapies (Lee et al., 2017; McHugo et al., 2021), and

peer-support services (Ashford et al., 2018; Cos et al., 2020; Grant et al., 2021). Service research for justice-involved populations has also focused on when treatment delivery is most effective and promoting continuity of services from pre- to post-release (Friedmann et al., 2018; Gordon et al., 2017; Hamilton & Belenko, 2019; Martin et al., 2019). However, additional research is needed on service utilization, particularly with person-centered methods, which can generate participant profiles based on the services used by reentering justice-involved adults. Through person-centered methods, patterns of service utilization among this group can be established and used to better identify heterogeneous outcomes among justice-involved adults at reentry.

Person-centered methods have been growing in the social sciences (Collins & Lanza, 2013), and previous studies have applied these methods with alcohol use and treatment (Jackson & Sher, 2005; Mowbray et al., 2015), substance use and criminal thinking among justice-involved veterans (Timko et al., 2022), and lifetime trauma and mental health psychopathology among incarcerated populations (Edwards et al., 2022; Morrison et al., 2023). Yet, knowledge of service utilization patterns among reentering individuals remains limited and few studies have assessed the relationship between empirical classifications generated from prior service use and subsequent outcomes using longitudinal data. Thus, the current study seeks to establish latent classes of service utilization among justice-involved adults at reentry and examine associations with subsequent levels of psychological distress using panel data when controlling for behavioral health disorders and sociodemographic characteristics.

Service needs among justice-involved populations at reentry

Services for those with justice-system involvement often include treatment for substance use or mental health. Rates of substance use disorders (SUDs), mental health disorders, and their co-occurrence are disproportionately higher among those in the criminal justice system

compared to those in the general population (Feucht & Gfroerer, 2011; Grella et al., 2008; Lurigio, 2011; Peters et al., 1998, 2017; Steadman et al., 2013). National estimates suggest that between half to two thirds of the incarcerated population have an SUD, a third of the incarcerated population have a serious mental illness (SMI), and that 10-15 percent of males and 25-34 percent of females in the justice system have co-occurring disorders (CODs; National Institute on Drug Abuse [NIDA], 2014; Peters et al., 2017; Prins, 2014; Puglisi et al., 2022; Steadman et al., 2009, 2013).

Justice-involved individuals with behavioral health disorders have unique service needs that are frequently unmet, which leaves this population in a vulnerable position during the reentry process (Hunt et al., 2015; Lurigio, 2011; NIDA, 2014; Peters et al., 2015, 2017). Additionally, beyond dealing with disorder symptoms, the collateral consequences of possessing a criminal record influences multiple dimensions of the reentry process including employment, education, housing, economic mobility, and basic life skills (Baillargeon et al., 2009; Carr et al., 2016; Larson et al., 2022; Shannon et al., 2020; Uggen et al., 2014). Indeed, many returning citizens face pervasive challenges like a lack of affordable housing, reliable transportation, behavioral health conditions, hindered vocational and educational opportunities, strained social relationships, and access to healthcare (Boen, 2020; Horsfall et al., 2009; Larson et al., 2022; Peters et al., 2017; Uggen et al., 2014). Navigating existing systems of care paired with the multi-faceted consequences of system involvement creates unique societal barriers post-incarceration, often with the starkest disparities among those in communities of color and underserved areas (Lopez-Aguado, 2016).

To meet the many challenges facing returning citizens, rehabilitative reentry program models like the risk-need-responsivity (RNR; Bonta & Andrews, 2007) model have gained

popularity and research has primarily focused on service utility and impact with recidivism (Aalsma et al., 2015; Gill & Wilson, 2017; Serowik & Yanos, 2013; Visher et al., 2017). Undoubtedly, recidivism is a serious concern with research suggesting that nearly 70 percent of returning citizens will be rearrested within three years after release (Alper et al., 2018; Durose et al., 2014). However, some scholars have argued this approach is deficit-based, ineffective, and highlights only a symptom of unsuccessful reentry (Pettus-Davis et al., 2019; Pettus et al., 2021).

More recently, alternative strengths-based models have emerged such as the well-being development model (WBDM; Pettus et al., 2021), which emphasizes resilience and overall quality of life as well as examining a range of well-being-oriented, service-related outcomes aside from recidivism. The WBDM is a contemporary reentry approach that is still undergoing empirical testing (Pettus, 2019; Pettus-Davis et al., 2019; Pettus-Davis & Kennedy, 2020), but is derived from a rich empirical foundation that suggests well-being interventions are effective in assisting individuals improve quality of life and realize both individual and community potential (Boiler et al., 2013; Davidson & McEwen, 2012; Gander et al., 2013; Pettus et al., 2021; Weiss et al., 2016). Consistent with the WBDM's approach, this research seeks to apply person-centered methods and outcomes related to psychological well-being.

While a wide range of "what works" research exists for justice-involved individuals, including various service types (Drake, 2013; Visher et al., 2017), much less is known about potential combinations of services that returning citizens engage with as well as how typologies of service use may impact their psychological well-being. More research is needed with person-centered methods to examine profiles of service use among this group and longitudinal associations with outcomes of well-being. Assessing service use patterns among returning

justice-involved individuals can offer a more nuanced understanding of what groups of services are commonly utilized and more accurately reflect real-world patterns.

Current Study

The current study seeks to identify latent classes of service utilization among reentering justice-involved adults, many with behavioral health disorders, and to examine the longitudinal relationship between class membership and psychological distress when controlling for baseline covariates. As such, this study will address the following research questions: 1) Are there distinct service utilization classes among reentering justice-involved adults? 2) Does service utilization class membership predict levels of psychological distress over time? This study hypothesizes that there are different classes of service utilization, and that class membership predicts different levels of psychological distress at subsequent time points.

Method

Sample

Data for this study comes from Phase 1 of the 5-Key Model for Reentry, a multisite randomized controlled trial originally developed by Pettus and colleagues (2019) from the Institute for Justice Research and Development (IJRD) at Florida State University (FSU). Guided by the well-being development model (WBDM) (Pettus et al., 2021), the 5-Key Model was designed as a reentry services approach informed by the five key facilitators of the WBDM: healthy thinking patterns, positive relationships, positive social engagement, effective coping strategies, and meaningful work trajectories. Phase 1 of the 5-Key Model for Reentry includes information from 1,544 individuals who were incarcerated in correctional facilities and had a scheduled release date between May 2018 and March 2019 across four states: Florida, Kentucky, Pennsylvania, and Texas (Pettus-Davis & Kennedy, 2018, 2020). Data collection involved

individuals from 50 prisons in 4 urban and 8 rural counties across the four states. The research team employed broad eligibility criteria, including all individuals who were at least 18 years old, had a scheduled release date within the study period, were able to speak conversational English, and were cognitively capable to provide consent (determined via a cognitive screening questionnaire), to ensure that study participants were representative of the larger reentry population.

Data was collected during incarceration as a baseline measurement and at four additional time points: immediately after release, and then 4, 8, and 15 months after release. Additional information on data collection procedures and study design can be found in the research team's first quarterly report (Pettus-Davis & Kennedy, 2018). Of the 1,544 participants included at baseline during incarceration, 532 participants did not get released during the study window to be eligible for post-release interviews at wave 1 (release). Additionally, 468 participants completed the baseline interview but did not complete additional post-incarceration interviews due to ceasing communication or expressing the wish to no longer participate. As a result, the final analytical sample for this study was $N = 536$ at wave 1. Both the original parent study and this study were reviewed and approved by the Institutional Review Boards at their respective institutions.

Measures

Service utilization

Service utilization was measured as nine observed items at wave 1 that indicated whether a participant received services in the time between baseline and wave 1 interviews for a variety of needs including *personal life skills* (i.e., budgeting, time management, understanding credit score, shopping for food, etc.), *mental health* (i.e., therapy, counseling for emotional problems,

etc.), *substance use* (i.e., psychotherapy, case management, support group, medication, etc.), *relationships* (i.e., communication, anger management, problem solving, etc.), *employment* (i.e., completing a job resume or interview, finding a job, etc.), *education* (i.e., finishing school, obtaining a GED, enrolling in college or trade schools, etc.), *physical health* (i.e., seeing a doctor, going to the hospital, dental care, etc.), *housing* (i.e., completing a housing application, applying for rental assistance, finding a place to live, etc.), and *cognitive skills related to supervision* (i.e., criminal thinking, going to day report centers, etc.). See Appendix C for a list and wording of service utilization items. Responses to all service utilization questions were coded as 0 (No) and 1 (Yes).

Substance use, mental health, and co-occurring disorders

To determine whether a reentering individual met criteria for a current substance use disorder, mental health disorder, or co-occurring disorder (both a substance and mental health disorder), individuals at baseline completed the Mini International Neuropsychiatric Interview (MINI), a structured interview used to diagnose disorders according to the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; DSM–IV; American Psychiatric Association [APA], 2000; Sheehan et al., 1998). Binary composite variables were used to indicate whether participants reported symptoms consistent with current disorders for major depressive episode, manic and hypomanic episode, social anxiety disorder, psychotic disorder, and generalized anxiety disorder, as well as alcohol use disorder and substance use disorder. MINI measures have demonstrated acceptable reliability, validity, and invariance across cultural and age groups (Amorim, 2000; Otsubo et al., 2005; Sheehan et al., 1997, 1998, 2010).

Sociodemographic variables

Sociodemographic variables included race/ethnicity, gender, age, monthly income in dollars, and state. Race/ethnicity was measured categorically as African American, Hispanic, non-Hispanic White, or Other. Gender was a binary measure where 0 (Male) and 1 (Female). Age was a continuous measure in years with a range of 18-72. Income was originally measured continuously in dollars, where respondents were asked “What is the typical amount of money you made in a month over the past six-months?” Monthly income was categorized as \$0-1,500, \$1,501-3,000, \$3,001-4,500, \$4,501-6,000, and \$6,000 or more. Finally, to account for potential state-level differences, state was measured categorically as Florida, Kentucky, Pennsylvania, and Texas.

Psychological distress

Psychological distress was measured through the Kessler Psychological Distress Scale (K10; Kessler et al., 2002), a validated ten-item scale ($\alpha = .91$) that captures various indicators of psychological distress including nervousness, hopelessness, and feeling depressed (see Appendix D for complete list of items and item wording). K10 scores were measured at wave 1 (reentry), wave 2 (4 months after release), wave 3 (8 months), and wave 4 (15 months). Responses were recorded on a five-point Likert scale where 1 (None of the time), 2 (A little of the time), 3 (Some of the time), 4 (Most of the time), and 5 (All of the time). Individual items on the K10 were summed to create a single count measure of psychological distress. Scores on the K10 ranged from 10 to 50 where higher scores reflect higher levels of psychological distress. The K10 has demonstrated sufficient reliability and validity across groups and corresponds with DSM-IV diagnoses of affective disorders (Anderson et al., 2013; Andrews & Slade, 2001; Fassaert et al., 2009; Kessler et al., 2010)

Analysis Plan

Univariate descriptive analyses were conducted to examine characteristics for the sample of formerly incarcerated adults reentering the community. Latent class analysis (LCA) was utilized to identify distinct profiles based upon reported patterns of service utilization at wave 1. LCA is a mixture modeling data analysis technique that assumes an underlying latent structure exists where researchers can identify a set of mutually exclusive groups, called classes, which have similar profiles based on observed categorical variables (McCutcheon, 1987; Nylund et al., 2007). To determine the optimal model of service utilization classes among reentering justice-involved adults, a series of models that examined different class solutions were compared across a number of model fit indices, including the Akaike Information Criterion (AIC; Akaike, 1974), Bayesian Information Criterion (BIC; Schwarz, 1978), sample size adjusted BIC (SSA-BIC; Sclove, 1987), Lo-Mendell-Rubin likelihood ratio test (LMR-LRT; Lo, Mendell, & Rubin, 2001), and a measure of entropy (Ramaswamy et al., 1993). LCA models were run with 300 random sets of starting values and 20 final stage optimizations to avoid the issue of local maxima and ensure convergence (Mowbray et al., 2015). Descriptive statistics and LCA models were performed using Stata v.18 (StataCorp, 2023) and LCA models were reran using Mplus Version 8 (Muthén & Muthén, 2018) for tests of consistency and additional fit indices including the SSA-BIC, LMR-LRT, and entropy measure. The final model selection used to establish the appropriate number of classes was based on both conceptual considerations and the statistical fit indices described.

Next, after identifying the best fitting latent class model, assigned class memberships were exported as a categorical variable to be used in subsequent regression analyses in Stata v.18 (StataCorp, 2023). A multilevel mixed-effects linear regression model examined whether trajectories of psychological distress were significantly different for service utilization classes,

controlling for substance use, mental health, and co-occurring disorders as well as sociodemographic characteristics. Additional information on multilevel models, including mixed-effects models, with clustered or longitudinal data can be found elsewhere (see McNeish & Kelley, 2019; Singer, 1998; Singer et al., 2003). The mixed-effects regression model included the grouping variable derived from the LCA, baseline covariates, and an indicator for time, which were three available waves of data following the LCA (waves 2-4). Additionally, the model included an interaction term between class membership and wave indicator to examine whether class membership impacts trajectories of psychological distress. Because the K10 measure for psychological distress had a high rate of missing cases in waves 2 through 4 (36-43%) and was determined to have data not missing at random, multiple imputation was used with the 'MI' procedure in Stata (StataCorp, 2023) to preserve sample sizes for the mixed-effects model. Multiple imputation of outcome measures with auxiliary variables is an effective method for handling missing data and producing more accurate estimates in longitudinal mixed-effects models (Enders, 2022; Huque et al., 2018; Huque et al., 2020; Johnson & Young, 2011; Van Ginkel et al., 2020).

Results

Sample descriptive characteristics of formerly reincarcerated adults reentering the community are displayed in Table 4.1. Slightly more than half of the sample was African American and one third was non-Hispanic White. The sample was mostly male (91.93%) and had an average age of 38 ($SD = 11.29$). The majority of the sample had an income of less than \$3,000 per month (57.65%) while approximately 23% reported an income of \$6,000 per month or more. Approximately 41% of the sample lived in Florida, followed by 28% in Texas, nearly 20% in Pennsylvania, and roughly 10% in Kentucky. Approximately 68% met criteria for a

current SUD, 18% met criteria for a current mental health disorder, and nearly 14% met criteria for a co-occurring disorder. These proportions are consistent with national prevalence estimates of behavioral health disorders among justice-involved adults (Cloud, 2014; Prins, 2014; SAMHSA, 2020; Steadman et al., 2009, 2013). The average score of psychological distress at wave 1 was 15.16 ($SD = 5.88$), which indicated that the sample, on average, reported relatively moderate levels of psychological distress (Australian Bureau of Statistics, 2012). When examining service utilization at wave 1, employment (24.95%), personal life skills (14.80%), substance use (13.11%), and mental health (11.57%) were the most common service types. Cognitive services (2.67%), education services (5.16%), and relationship services (6.46%) were among the least commonly used.

Table 4.1. Sample descriptive characteristics of formerly incarcerated adults.

N = 536	% or (M, SD)
Race/ethnicity	
African American	52.35
Hispanic	6.19
White	33.96
Other	7.50
Gender	
Male	91.93
Female	8.07
Age (in years)	(38.33, 11.29)
Income	
\$0-1,500	31.34
\$1,501-3,000	26.31
\$3,001-4,500	10.07
\$4,501-6,000	8.96
\$6,000 or higher	23.32
State	
Florida	41.31
Kentucky	10.47
Pennsylvania	19.81
Texas	28.41
Substance use disorder	68.29

Mental health disorder	18.39
Co-occurring disorder	13.81
Wave 1 psychological distress (K10)	(15.16, 5.88)
Wave 1 service utilization	
Personal life skills	14.80
Mental health	11.57
Substance use	13.11
Relationships	6.46
Employment	24.95
Education	5.16
Physical health	9.56
Housing	10.17
Cognitive	2.67

Estimation of latent classes

Beginning with a one-class model for comparison, five latent class models were fitted to the data. Based on a comparison of model fit indices across the five models (see Table 4.2) and theoretical interpretability (Weller et al., 2020), the data were best represented by the three-class model. The AIC was lower in the three-class model compared to the two-class model and the BIC was lower compared to the four-class and five-class models. Additionally, the SSA-BIC was the lowest in the three-class model. The five-class model had the best entropy value (0.88), but the three-class (0.83) and four-class models (0.85) also had acceptable values (Celeux & Soromenho, 1996; Weller et al., 2020). The Lo-Mendell-Rubin Likelihood Ratio test identified the three-class model as the most parsimonious fit of the data as evidenced by a significant p -value ($p = 0.02$) and non-significant values for the four-class and five-class models.

Table 4.2. Fit indices for one-class to five-class latent class analysis models of service utilization.

Model	Fit indices				
	AIC	BIC	SSA-BIC	Entropy	LMR-LRT
1 class	3114.31	3152.87	3124.30		

2 class	2859.53	2940.93	2880.61	0.78	0.01
3 class	2827.71	2951.95	2859.89	0.83	0.02
4 class	2819.52	2986.61	2862.81	0.85	0.08
5 class	2821.69	3031.62	2876.07	0.88	0.13

Note. AIC = Akaike Information Criteria; BIC = Bayesian Information Criteria; SSA-BIC = Sample Size Adjusted Bayesian Information Criteria; LMR-LRT = p-value for the Lo-Mendell-Rubin Likelihood Ratio Test. Selected model is in bold type.

Service utilization classes

Table 4.3 displays the estimated posterior probabilities of utilizing the nine service types according to latent class membership. Figure 4.1 contains a visual plot to assist with interpretation. Class 1 comprised 9.89% of the sample, which had high probabilities of utilizing life skills services (0.63), substance use services (0.59), housing services (0.63), and cognitive services (0.62). This class is best characterized as high-need service users. Class 2 included 80.04% of the sample and exhibited low posterior probabilities for every service type (0.01-0.09), which can be best described as the “low-need service users” class. Finally, class 3 included 10.07% of the sample and had the highest probability of receiving services for substance use (1.0), but low probabilities for all over services (0.0-0.39). This class is best described as high substance use need service users. In all classes, probabilities of receiving mental health services (range 0.01-0.39), relationship services (range 0.03-0.16), employment services (range 0.04-0.31), education services (range 0.05-0.36), and physical health services (range 0-0.21) were relatively low. Of those belonging to the high-need service class, 75% have a current SUD, 21% have an SMI, and nearly 17% have CODs. In the low-need service class, nearly 68% have an SUD, nearly 19% have an SMI, and approximately 14% have CODs. In the high substance use need class, nearly 65% have an SUD, 11% have an SMI, and approximately 9% have CODs.

Table 4.3. Estimated posterior probabilities of receiving types of services.

N = 536	High-need users (9.89%)	Low-need users (80.04%)	High substance use need (10.07%)
Life skills	0.63	0.04	0.39
Mental health	0.39	0.01	0.07
Substance use	0.59	0.09	1
Relationships	0.08	0.03	0.16
Employment	0.26	0.04	0.31
Education	0.23	0.05	0.36
Physical health	0.21	0.01	0
Housing	0.63	0.06	0
Cognitive	0.62	0.07	0.04

Note. Probabilities greater than 0.4 are displayed in bold to assist with interpretation.

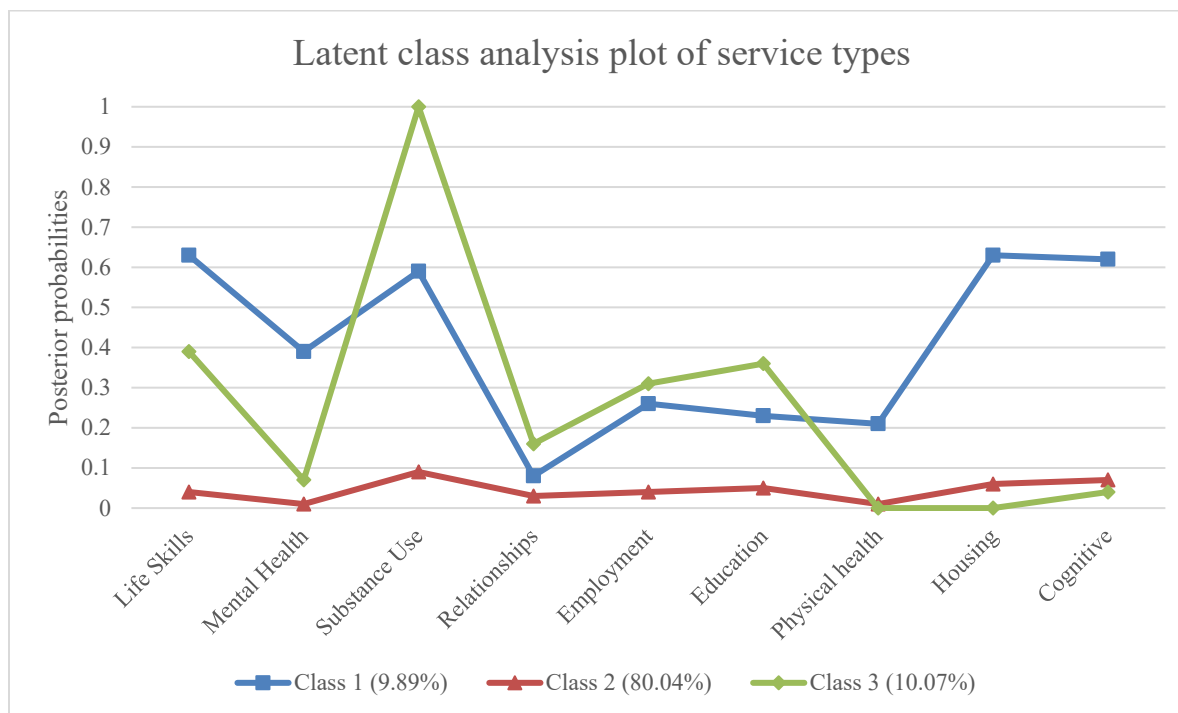


Figure 4.1. Latent class analysis plot of service types.

Mixed-effects model examining class as a predictor of psychological distress

To address the second research question of this study, mixed-effects linear regression was used to examine longitudinal relationships between class membership at wave 1 and trajectories of psychological distress at waves 2, 3, and 4. Table 4.4 presents the results of the model including whether there was a significant difference between classes in levels of psychological distress at model intercept, the predicted change across waves in psychological distress, and the interaction among predicted change in psychological distress for each wave. Controlling for current substance use disorder, mental health disorder, or co-occurring disorder at baseline and additional baseline sociodemographic characteristics, the results of the model revealed that those in the low need service user class reported significantly lower levels of psychological distress at model intercept ($b = -2.06, SE = 0.92, p < .05$), compared to those in the high need service user class. Additionally, those with a current SUD at baseline showed significantly lower psychological distress at model intercept ($b = -2.33, SE = 1.15, p < .05$), but those with a mental health disorder ($b = 0.99, SE = 0.44, p < .05$) or COD ($b = 5.44, SE = 0.97, p < .01$) had significantly higher distress at model intercept. African Americans reported significantly lower levels of psychological distress ($b = -1.25, SE = 0.49, p < .05$) compared to non-Hispanic Whites at model intercept. Those who lived in Kentucky ($b = 1.78, SE = 0.76, p < .05$) and Pennsylvania ($b = 1.77, SE = 0.56, p < .01$) reported significantly higher levels of psychological distress compared to those in Florida at model intercept. Gender, age, and income were not significantly associated with psychological distress at the model intercept.

Results also show a significant decline in psychological distress for formerly incarcerated adults at waves 2 ($b = -3.15, SE = 1.08, p < .01$) and 3 ($b = -2.52, SE = 1.15, p < .05$). Significant interaction terms suggest differences in trajectories of psychological distress over time between

latent classes. Figure 4.2 displays the cross-level interactions of psychological distress trajectories by class membership and wave. While those in the high service need class (class 1) and high substance use need class (class 3) started at higher levels of psychological distress, both experienced significant declines over time whereas the low service need class (class 2) remained more constant and slightly increased across waves.

Table 4.4. Longitudinal associations of psychological distress.

N = 536	b	SE
Class		
High service need users (class 1)	-	-
Low service need users (class 2)	-2.06*	0.92
High substance use need users (class 3)	-1.25	1.2
Wave		
2 (4 months post-release)	-3.15**	1.08
3 (8 months post-release)	-2.52*	1.15
4 (15 months post-release)	-1.06	1.21
Class X wave (class 1 as reference)		
Class 2 X wave 2	4.19**	1.15
Class 2 X wave 3	3.19*	1.28
Class 2 X wave 4	0.93	1.25
Class 3 X wave 2	3.14*	1.58
Class 3 X wave 3	2.63	1.62
Class 3 X wave 4	0.12	1.64
Substance use disorder (Yes)	-2.33*	1.15
Mental health disorder (Yes)	0.99*	0.44
Co-occurring disorder (Yes)	5.44**	0.97
Race/ethnicity		
White non-Hispanic	-	-
African American	-1.25*	0.49
Hispanic	-1.06	1.01
Other	-0.15	0.79
Gender (Female)	0.31	0.75
Age (in years)	0.02	0.02
Income		
\$0-1,500	-	-
\$1,501-3,000	-0.19	0.51
\$3,001-4,500	-0.51	0.7
\$4,501-6,000	-0.71	0.78

	\$6,000 or higher	-0.61	0.57
State	Florida	-	-
	Kentucky	1.78*	0.76
	Pennsylvania	1.77**	0.56
	Texas	0.73	0.48

Note. Unstandardized coefficients presented; * = $p < .05$, ** = $p < .01$

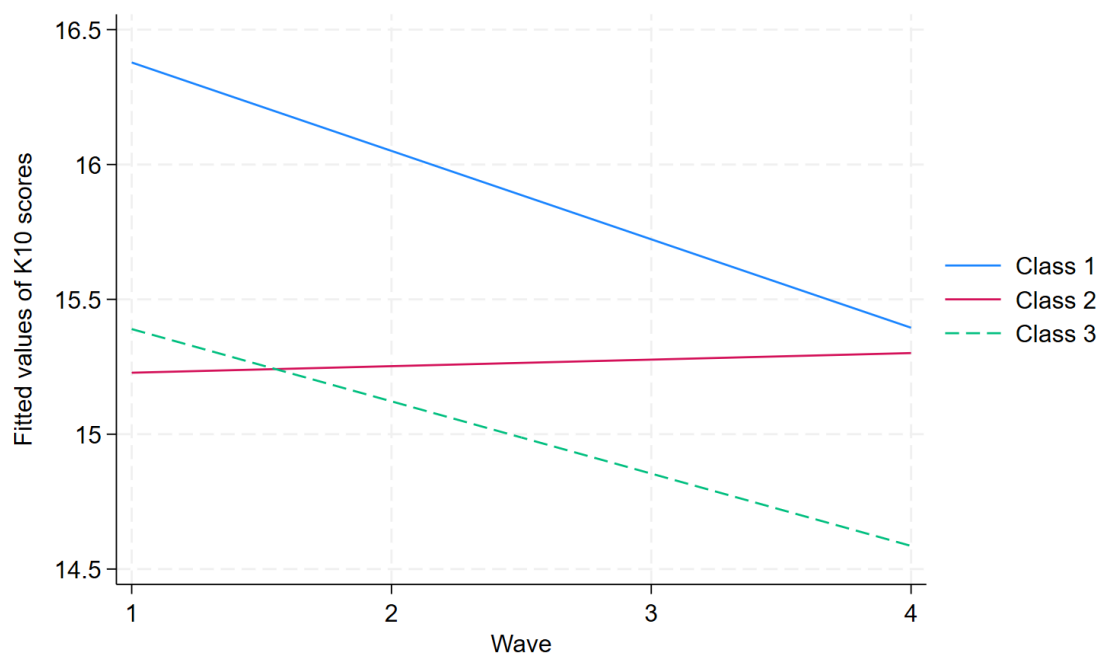


Figure 4.2. Trajectories of psychological distress by class membership.

Discussion

This study identified latent classes based on service utilization patterns and examined longitudinal associations of psychological distress among a sample of reentering criminal justice-involved adults. Based on the LCA, three distinct profiles emerged: a high service need class, a low service need class, and a high substance use service need class. The results of the LCA provide a novel, person-centered typology of reentry service utilization and contribute to the growing literature base utilizing these methods with justice-involved individuals to better

understand unique patterns and experiences among this heterogenous group (Edwards et al., 2022; Morrison et al., 2023; Timko et al., 2022). While prior studies have examined latent classes of service usage among adolescents with trauma-exposure (Choi et al., 2018) and adults with SUDs (Crable et al., 2022), this is the first study to the author's knowledge that extends this analysis to service use among reentering justice-involved individuals.

The LCA examined probabilities of utilizing nine reentry-related services post-release, which are often thought to be highly needed among this group and essential to successful reentry (Visher et al., 2017). Among service use classes, the high service class included approximately 10% of the sample and showed elevated probabilities of engaging with services, particularly those targeting basic life skills, substance use, housing, and cognitive thinking. The second identified class was characterized as the low service class as demonstrated by miniscule probabilities of engaging with services of any kind, which included the vast majority of the sample (80%). Finally, the third identified class, the high substance use class included the remaining 10% of the sample and was characterized by an extremely high probability for engaging with substance use services, but modest to low probabilities for other services.

Prominent engagement with substance use treatment among classes found in this research is supported by previous research on substance use prevalence and self-identified needs of this population (Gill & Wilson, 2017; NIDA, 2014; Puglisi et al., 2022; Taxman et al., 2007; Timko et al., 2022). Additionally, it is important to note that the current study measured service use as an observed admission of service engagement from participants as opposed to any reflection of attitudes or perceived needs. For example, of those in the densely populated low service class, nearly 68% met criteria for a current substance use disorder at baseline and approximately 14% met criteria for co-occurring disorders. This suggests that many of those who may have benefited

from substance use services abstained or were unable to utilize them. Similarly, across all classes, a sizable number of individuals met criteria for a mental health disorder, but probabilities for engaging in mental health services were quite low. Moreover, previous research has identified that justice-involved populations, specifically with behavioral health disorders, have frequently unmet needs, increasing the potential for relapse and reincarceration (Gill & Wilson, 2017; Grecco & Chambers, 2019; Lurigio, 2011; National Research Council and Institute of Medicine, 2013). Continued research efforts are needed to disentangle appropriate assessment and matching of services at reentry as well as deeper exploration and mitigation of barriers to service access.

The second aim of this research also revealed significant findings. The service utilization profiles identified by the LCA were associated with longitudinal differences in psychological distress. Compared to those in the high service class, those in the low service class reported lower levels of psychological distress initially, but over time, both classes with higher service utilization observed significantly steeper declines in psychological distress when controlling for behavioral health disorders and sociodemographic characteristics. The low service class revealed more constant, and even slightly increasing, levels of psychological distress over time. This finding is salient given that justice system-involvement is associated with greater psychological distress and the overall disproportionate representation of mental health disorders among the justice-involved population compared to the general population (Flores et al., 2023; Lamb & Weinberger, 2020; Prins, 2014). Additionally, serious psychological distress indicates a high level of nonspecific symptoms of stress that corresponds with Diagnostic and Statistical Manual of Mental Disorders (DSM-5-TR) (APA, 2022) like depression and anxiety (Anderson et al., 2013; Flores et al., 2023; Swartz & Jantz, 2014). This is supported by the positive associations found

with mental health disorder and co-occurring disorder covariates in this research. Thus, sharper decreases in psychological distress observed in high service utilization classes compared to the low service class may suggest that services play a significant role in improving psychological well-being over time.

Prior examinations of reentry services on recidivism suggest that there are differing effects between services that promote individual change (e.g., mental health, substance use, cognitive thinking, education, etc.) and services for practical needs (e.g., employment, housing, life skills, etc.), with those directed at individual change more beneficial in reducing recidivism (Andrews & Bonta, 2010; Lipsey & Cullen, 2007; MacKenzie, 2006, 2012; Visser et al., 2017). However, in this examination of psychological distress, both higher service use classes showed decreases in psychological distress over time, despite differing probabilities of engaging with various services. It may be useful for future research to examine what combinations of services are most impactful for improving psychological well-being, but the results of this study suggest that service usage, of various kinds, relates to alleviating psychological distress compared to little or no service use. It is also essential to consider appropriately tailoring services to the level of needs (Gill & Wilson, 2017), but individuals who are unaware or in denial of their needs may still benefit from services and additional efforts may be necessary to effectively include their voices while enhancing intrinsic motivation and readiness to change (Friedmann et al., 2008; Gill & Wilson, 2017).

Surprisingly, this research also found that African Americans had significantly lower psychological distress compared to non-Hispanic Whites at model intercept. This finding diverges somewhat from previous research (Flores et al., 2023), but rates of mental health disorders among African Americans tend to be similar or lower than among non-Hispanic White

individuals (Mouzon et al., 2016). Additionally, African Americans comprised 52% of the entire sample and made up nearly 51% of those in the low service class, which reflects the disproportionate representation of African Americans in the criminal justice system and lower rates of access to services (Crangle et al., 2022; Flores et al., 2023; Mouzon et al., 2016). Given structural differences in the experiences of African Americans in both the justice and behavioral health systems (Williams & Mohammed, 2013), greater attention is needed with respect to racial disparities in service access and utilization at reentry, and the intersection with additional social and environmental factors. Similarly, geographic location may contribute to differing reentry experiences given broader differences in resource availability, economic conditions, and racial demographics (Carpenter et al., 2017; Clark et al., 2018). This research found that those in Kentucky and Pennsylvania had significantly higher psychological distress compared to those in Florida, which highlights the importance of accounting for regional variation in reentry research and assessing nuanced interactions in a given area (Graves et al., 2023).

Limitations

While this study offers a novel person-centered methodological classification of service use among returning citizens and examination of longitudinal associations with psychological distress, several limitations should be noted. The data collected by the original evaluation team was intended to be representative of characteristics found in the national prison and reentering population, aside from an overrepresentation of African Americans and underrepresentation of Hispanic individuals (Morrison et al., 2023). However, this means that females were a small percentage of the sample (8%). Yet, women have unique experiences in the criminal justice system, differing treatment needs, and higher mortality risk in the first year of reentry (Binswanger et al., 2007; Finkelstein, 2011; Goldstein et al., 2012; Morse et al., 2017). As such,

the sample of this study may not have been able to fully assess gender-based differences in reentry service experiences and psychological distress. Additionally, the sample had a high rate of attrition from baseline interviews during incarceration to post-incarceration interviews at wave 1 as well as a high degree of missingness in K10 measures across waves. However, this study's use of multiple imputation was able to effectively preserve information and sample size, producing more accurate estimates (Enders, 2022; Huque et al., 2018; Huque et al., 2020). Finally, being a secondary analysis of a parent study, some measures are limited to the information originally collected. For example, questions about service utilization were self-report, which could contain some bias, and only indicated whether the participant received services, but not to the extent of service duration or dosage. Despite this, a strength of this research includes a clean approach to estimating initial service use at the point of reentry and how initial service utilization patterns predict psychological distress over the span of more than a year. Future studies may seek to expand this approach and assess how changes in service utilization are associated with changes in well-being outcomes.

Conclusion

Within five years of being released from incarceration, nearly 80 percent of returning citizens will be rearrested (Travis et al., 2014). Rehabilitative reentry services are essential in helping returning citizens meet the multi-faceted challenges that arise in the community, not only to ultimately reduce future involvement with the justice system, but also to improve overall well-being and realizing their full societal potential. This work applied person-centered methods, an underutilized approach with justice-involved populations, to assess and classify typologies of reentry service utilization patterns and how specific patterns of service use may contribute to differences in psychological distress. The results of this research suggest that different patterns of

initial service use exist and that those with higher use patterns see declines in psychological distress over time. Future reentry research and service efforts should seek to disentangle mechanisms that match returning citizens to services and reduce barriers to service access, particularly among historically marginalized communities with lower rates of access. Social workers and other related practitioners in criminal justice and reentry settings may benefit from this work, as substance use treatment needs remain high among this population and individuals require additional education and inclusion in the reentry process to ascertain salient needs, and how service use may benefit long-term psychological outcomes.

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CHAPTER 5

CONCLUSION

The era of mass incarceration has produced an increased scholarly, policy, and programmatic focus on community reentry. More than 95 percent of incarcerated individuals will be eventually released back into their communities with an estimated 650,000 individuals reentering from prisons each year (Carson, 2021; Pettus et al., 2021). However, within five years of being released from incarceration, nearly 80 percent of returning citizens will be rearrested (Travis et al., 2014). The cycle of imprisonment and repeated justice system involvement is further complicated by disproportionate rates of substance use and mental illness, which often go underrecognized and undertreated in both correctional and community-based settings (Peters et al., 2015, 2017). This dissertation has contributed to the growing body of research on this topic by examining developmental trajectories of depressive symptoms from young adulthood to mid-life among individuals with early justice involvement, identifying predictors of positive problem-focused coping strategies among incarcerated adults with CODs preparing for reentry, and empirically establishing profiles of service utilization among returning citizens. Collectively, these studies sought to build a cohesive research narrative that focused on individuals experiencing criminal justice involvement, substance use, and mental illness, with a particular emphasis on the reentry period. This concluding section provides a summary of findings from the three studies as well as implications for social work research, theory, practice, and policy.

Summary of Findings

In Chapter 2, the first study of this dissertation utilized three waves of data from the National Longitudinal Study of Adolescent to Adult Health (Add Health) and multilevel growth curve modeling to: 1) examine trajectories of depressive symptoms from young adulthood to mid-life among a representative sample of adults with early criminal justice involvement, 2) examine whether there were significant associations with various forms of substance use, and 3) test whether gender impacted trajectories across time.

Findings from study 1 revealed significant linear trajectories of depressive symptoms from Wave III (ages 18-26) to Wave V (ages 33-43) among the total sample. Additionally, at model intercept, there were significant associations between depressive symptoms and gender, alcohol use of 1 or 2 days a week, past 30-day cannabis use, race, previous major depression diagnosis, and past-year financial strain. Results of the interaction between gender and time revealed that women reported significantly higher levels of depressive symptoms over time when controlling for sociodemographic, clinical, and strain-related covariates. Women exhibited some slight decreases over time, while men showed slight increases over time. However, women were significantly higher than men in depressive symptoms across all three waves. Overall, the findings from this study suggest that justice-involved women have unique experiences of depression over time and remain a vulnerable group during reentry. Gendered applications of theory, treatment, and examinations of co-occurrence are needed.

In Chapter 3, the second study utilized data from Phase 1 of the 5-Key Model for Reentry and regression modeling to: 1) examine the extent to which justice-involved adults with co-occurring substance use and mental health disorders (CODs) utilize problem-focused coping strategies, and 2) examine what coping resources make the use of problem-focused coping strategies more likely among this group.

Findings from study 2 showed that the sample reported relatively high levels of engaging in problem-focused coping. Further, results suggest significant associations between personal, material, social coping resources, and the use of problem-focused coping. Specifically, personal resources including emotional well-being and overall health positively predicted the use of problem-focused coping. For material resources, only higher income predicted problem-focused coping. Social coping resources, namely strong relationship depth, also predicted elevated utilization of problem-focused coping strategies. These findings illustrate that a variety of resources are needed to better facilitate the use of positive coping mechanisms, which promote a key indicator of improving well-being during reentry. Additionally, significant differences were identified for race/ethnicity, such that African Americans and other racial/ethnic groups that were not Hispanic reported significantly higher levels of engaging in problem-focused coping, compared to non-Hispanic Whites. As a result, it is important to better understand unique stressors related to experiences of discrimination and how this may impact the usage of problem-focused coping among various racial and ethnic groups, particularly for those with justice involvement and CODs.

Finally, in Chapter 4, the third study used four waves of data from Phase 1 of the 5-Key Model for Reentry, latent class analysis, and multilevel mixed-effects regression modeling to: 1) identify person-centered latent classes of service utilization patterns among a sample of reentering justice-involved adults, and 2) examine whether service utilization class membership predicts levels of psychological distress over time. Through the latent class analysis, results of study 3 found that three distinct profiles of service utilization emerged: a high service need class, a low service need class, and a high substance use service need class. Among service classes, the low service need class comprised approximately 80% of the sample and showed low

probabilities of engaging with any of the nine service types. The high service class showed elevated probabilities of utilizing basic life skills, substance use, housing, and cognitive thinking services. The high substance use need class showed an extremely high probability for using substance use services and modest to low probabilities for other types of service use.

Findings from the mixed-effects regression in study 3 revealed significant longitudinal differences in psychological distress by class membership. Compared to those in the high service class, those in the low service class reported lower levels of psychological distress initially, but over time, both classes with higher service utilization observed significantly steeper declines in psychological distress when controlling for behavioral health disorders and sociodemographic characteristics. Additionally, those with co-occurring disorders demonstrated significantly higher levels of psychological distress at model intercept. Few studies, if any, have used person-centered methods to examine service utilization patterns among reentering justice-involved adults and assess the impacts of service use class on subsequent well-being outcomes. Overall, study 3 results suggest that additional applications of person-centered methods are needed among this group and that service use during early reentry can be an important protective factor against psychological distress over time.

Implications for Social Work

There is still much to be done to improve the delivery of care for reentering criminal justice-involved adults with CODs. Co-occurring substance use and mental health challenges are complex and deeply interwoven developmental processes over the life course, which encapsulate a range of etiological factors spanning genetic, neuroscientific, biological, and environmental origins (Balhara et al., 2017; Gandal et al., 2018; Hartwell et al., 2009). Results from study 1 suggest that justice-involved women experience higher levels of depressive symptoms across

time, compared to justice-involved men. As a growing segment of the criminal justice population, women experience more pronounced degrees of depression and co-occurring substance use, which require gender-specific approaches to applications of theory and treatment.

Gender-based theoretical approaches, like gendered general strain theory (GGST; Broidy & Agnew, 1997), may be particularly useful in understanding varied responses to strain, experiences of negative emotions, and subsequent substance use or criminal behaviors among justice-involved women. Similarly, justice-involved women report higher levels of experiencing barriers to treatment related to childcare and family, relationships, stigma, and mental health (Agterberg et al., 2020), which suggests that approaches to community-based treatment should holistically target behavioral health needs in addition to gender-specific concerns. Future research examining COD treatment implementation and effectiveness should account for contrasting realities among justice-involved men and women, including societal norms and processes of socialization, varied experiences and responses to strain, and increased likelihoods of co-occurrence. Social workers in criminal justice and reentry settings are uniquely situated to address gender-based disparities and lived experiences, through the commitment to emphasize marginalized experiences of women, particularly women of color, and the recognition of unique service needs during the reentry process.

With the lack of holistic, integrated community-based treatment that cohesively addresses co-occurring substance use, mental illness, and the inequitable collateral consequences stemming from justice involvement, there is substantial room for improvement during the reentry stage. Indeed, the theoretical lens of this work has been largely guided by the well-being development model (WBDM) (Pettus et al., 2021), which takes a strengths-based approach focusing on the five key facilitators to enhance well-being and societal engagement, and deeply aligns with

explicit values of social work. The core of WBDM asserts that social, economic, and racial/ethnic disparities cumulatively and negatively impact justice-involved populations (Lopez-Aguado, 2016; Pettus, 2013; Soss et al., 2011; Wacquant, 2009), creating significant barriers that are left unaddressed by current deficits-based reentry models (Pettus et al., 2021). However, the WBDM is a recent contribution to the reentry literature and requires further evaluation, much like the broader development and implementation of strengths-based rehabilitative frameworks in criminal justice settings that operate beyond the often prioritized, sole outcome of recidivism.

Study 2 highlights the need for personal, material, and social resources in the promotion of positive, problem-focused coping strategies among justice-involved adults with CODs. Future reentry research and programmatic efforts should highlight the use of problem-focused coping but should also look to improve physical and emotional health as well as relationship quality to increase the likelihood of healthy coping mechanisms. Holistic care for justice-involved adults with CODs, addressing both behavioral health and system-induced needs, remains a serious concern. Additionally, racial differences found in study 2 indicate that future research should account for varied experiences of discrimination with respect to coping and examine larger samples of justice-involved racial and ethnic groups with co-occurrence to better understand differences in coping strategies. For social workers in reentry service settings, it is essential to recognize varied lived experiences among marginalized racial and ethnic groups, how these experiences may influence the use of a range of coping strategies, and employ resilience-based, proactive strategies to help individuals recognize areas in their lives that are changeable. As such, social workers should become leaders in the promotion, application, and evaluation of strengths-based reentry frameworks, like the WBDM, to meet the needs of justice-involved individuals with CODs. Effective coping strategies is one key facilitator of developing well-

being, but interrelated facilitators of healthy thinking patterns, meaningful work trajectories, positive social engagement, and interpersonal relationships should also be empirically evaluated and collectively targeted in programming.

Study 3 also focused on reentry and used person-centered methods to identify a typology of reentry service utilization and examined how service use patterns impacted psychological well-being. Ultimately, findings from study 3 suggest that reentry service use, of various combinations, may serve to reduce levels of psychological distress over time, but future research efforts are needed to disentangle appropriate assessment and matching of services at reentry as well as deeper exploration and mitigation of barriers to service access. Additionally, it may be useful for future research to examine what combinations of services are most impactful for improving psychological well-being. Unsurprisingly, those with CODs exhibited significantly higher levels of psychological distress at model intercept, which further illustrates the intensified behavioral health needs among this group. Social workers should strive to better identify justice-involved individuals who are unaware or in denial of their needs, as they may still benefit from services. Equally as important, social workers are best suited to employ additional efforts that incorporate the voices of reentering individuals with CODs during the treatment process, as well as focusing on individuals' readiness to change.

In conclusion, this dissertation contributed to the growing research base on justice-involved individuals with co-occurring mental health and substance use, but the work in this area is still in a nascent stage. Moving beyond traditional punitive approaches to substance use and mental illness, the disproportionate co-occurrence of these conditions among justice-involved individuals should be treated as a unique treatment profile among a heterogenous group that is distinct from other justice-involved groups, including those with one form of disorder. Ongoing

efforts are needed to better assess and treat co-occurrence as well as to implement novel, non-system affiliated, well-being-oriented approaches during reentry. In order to reduce future involvement with the justice system, community-based social workers and service providers should emphasize evidence-based interventions to enhance multiple indicators of well-being that help individuals increase societal inclusion and engagement.

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APPENDICES

Appendix A.

Item wording for problem-focused coping strategies.

- 1 I concentrate my efforts on doing something to change the situation I am in.
 - 2 I take action to try to make my situation better.
 - 3 I get help and advice from other people.
 - 4 I try to come up with ideas about what to do.
 - 5 I find comfort in my religion or spiritual beliefs.
 - 6 I get advice or help from other people about what to do.
 - 7 I think hard about what steps to take.
 - 8 I pray or meditate.
-

Values: 1 = Never, 2 = Rarely, 3 = Often, 4 = Always

Appendix B.

Item wording and responses for RAND SF-36 Health subscales.

Item	Response
Physical role limitations	
<i>During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?</i>	
1 Cut down on the amount of time you spent on work or other activities	
2 Accomplished less than you would like	
3 Were limited in the kind of work or other activities	
4 Had difficulty performing the work or other activities (for example, it took extra effort)	
	0 = No, 1 = Yes (recoded where 0 = 25 and 1 = 0)
Emotional well-being	
<i>These questions are about how you feel and how things have been with you during the past 4 weeks. Please give the one answer that is closest to the way you have been feeling for each item. Just focus on how you feel, not how it impacts your activities.</i>	
1 Have you been a very nervous person?	
2 Have you felt so down in the dumps that nothing could cheer you up?	
3 Have you felt calm and peaceful?	
4 Have you felt discouraged and blue?	
5 Have you been a happy person?	
	1= all of the time, 2= most of the time, 3= a good bit of the time, 4= some of the time, 5= a little of the time, 6= none of the time Items 3 & 5 recoded as (1=100), (2=80), (3=60), (4=40), (5=20), (6=0) Items 1, 2, & 4 recoded as (1=0), (2=20), (3=40), (4=60), (5=80), (6=100)
Overall health	
1 In general, would you say your physical health is:	
	1=Excellent, 2=Very good, 3=Good, 4=Fair, 5=Poor Recoded as (1=100) (2=75) (3=50) (4=25) (5=0)
<i>How TRUE or FALSE is each of the following statements for you?</i>	
2 I seem to get sick a little easier than other people	
3 I am as healthy as anybody I know	
4 I expect my health to get worse	
5 My health is excellent	
	1=Definitely true, 2=Mostly true, 3=Neither true nor false, 4=Mostly false, 5=Definitely false Items 3 & 5 recoded as (1=100) (2=75) (3=50) (4=25) (5=0) Items 2 & 4 recoded as (1=0) (2=25) (3=50) (4=75) (5=100)

Appendix C.Item wording for service utilization.

- 1 Since the last interview, did you get help for things like budgeting, time management, understanding your credit score, shopping for food, or other similar activities?
- 2 Since the last interview, did you get help for things like emotional problems, therapy, personal recovery-oriented services/clubhouse, or other similar activities?
- 3 Since the last interview, did you get help for things like drug use, alcohol use, or other similar activities?
- 4 Since the last interview, did you get help for things like anger management, problem solving, communication, or other similar activities?
- 5 Since the last interview, did you get help for things like getting a job, completing a job resume, completing a job interview, or other similar activities?
- 6 Since the last interview, did you get help for things like GED/Hi-SAT, finishing school, enrolling in college/university, enrolling in community college, enrolling in trade school, or other similar activities?
- 7 Since the last interview, did you get help for things like dental care, seeing a doctor/physician, going to the hospital, going to emergent care, or other similar activities?
- 8 Since the last interview, did you get help for things like completing a housing application, applying for rental assistance, purchasing a home, finding a place to live, knowing your tenant rights, or other similar activities?
- 9 Since the last interview, did you get help for things like criminal thinking, going to day report, or other similar activities?

Values: 0 = No, 1 = Yes

Appendix D.Item wording for Kessler Psychological Distress Scale.

- 1 How often have you felt tired out for no good reason?
 - 2 How often have you felt nervous?
 - 3 How often have you felt so nervous that nothing could calm you down?
 - 4 How often have you felt hopeless?
 - 5 How often have you felt restless or fidgety?
 - 6 How often have you felt so restless you could not sit still?
 - 7 How often have you felt depressed?
 - 8 How often have you felt that everything took a lot of effort?
 - 9 How often have you felt so sad that nothing could cheer you up?
 - 10 How often have you felt worthless?
-

Values: 1 = None of the time, 2 = A little of the time, 3 = Some of the time, 4 = Most of the time, 5 = All of the time.
