Title

The Imperative for Integrated Treatment for CODs and Trauma Exposure: The Role of Psychiatric Disorders and Trauma Exposure on Residential SUD Treatment Outcomes, Aftercare Participation, and AOD Counselor Prognoses for Patients' Abstention

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A dissertation submitted in partial satisfaction of the

requirements for the degree Doctor of Philosophy

in Social Welfare

by

Ashleigh Nicole Scinta Herrera

2019

ABSTRACT OF THE DISSERTATION

The Imperative for Integrated Treatment for CODs and Trauma Exposure: The Role of Psychiatric Disorders and Trauma Exposure on Residential SUD Treatment Outcomes, Aftercare Participation, and AOD Counselor Prognoses for Patients' Abstention

by

Ashleigh Nicole Scinta Herrera
Doctor of Philosophy in Social Welfare
University of California, Los Angeles, 2019
Professor Todd M. Franke, Chair

Over 20 million American adults met the diagnostic criteria for a substance use last year, and 40% of those also have a co-occurring psychiatric condition. With the ever-rising death toll associated with alcohol and drugs, enhancing SUD treatment completion rates and promoting ongoing participation in posttreatment aftercare services to promote long term abstinence is imperative. This study attempts to identify predictive factors of residential SUD treatment completion, type of residential SUD treatment outcomes, posttreatment aftercare service participation, and AOD Counselors' positive prognoses for patient abstention from drugs and/or alcohol through binary, multivariate, and ordinal logistic regression, respectively, for 200 adults who enrolled in an abstinence-based residential SUD treatment program between August 2017 and March 2018 in Hawthorne, California. Ratings for readiness for change, presence of mental

health symptoms and treatment, number of lifetime inpatient psychiatric episodes, and past 30 day use of primary substance used at time of admission significantly influenced treatment noncompletion. Past 30 days of use of primary substance used, number of lifetime acute inpatient psychiatric episodes, and presence of mental health treatment and symptoms significantly predicted participants abandoning residential SUD treatment and receiving administrative discharges from residential SUD treatment. Longer residential treatment episodes and being homeless predicted enrollment in posttreatment outpatient SUD treatment and the Recovery Bridge Housing (RBH) program. Gender, past 30 days of use of primary substance used, type of pretreatment polysubstance use, number of acute inpatient psychiatric hospitalization episodes, and readiness for change significantly predicted AOD Counselors' ratings of patients' prognoses for abstention. These results highlight the importance of assessment for and stabilization of psychiatric symptoms as well as withdrawal symptoms from high levels of pretreatment methamphetamine use in order to enhance treatment completion rates. Furthermore, the results demonstrate the importance of assessing pretreatment readiness for change and motivation in order to successfully engage patients and use targeted interventions to enhance readiness to change, thereby improving treatment retention and completion rates. Finally, this study illustrates the value of long term residential SUD treatment episodes, as they enhance retention and likelihood of participation in posttreatment aftercare services, which serves to maintain initial treatment gains and promotes long term abstinence from drugs and alcohol.

The dissertation of Ashleigh Nicole Scinta Herrera is approved.

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2019

DEDICATION

To all of the staff and patients at Pacifica House – you forever changed my heart, my approach to treatment as a clinician, and my commitment as a researcher to improving the quality of care and advocating for integrated behavioral health treatment. Thank you for sharing your journey of recovery with me.

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Chapter One: Introduction

Significance of the Study

As defined by the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5), an individual has a Substance Use Disorder (SUD) when one's ongoing use of alcohol and/or drugs results in clinical and significant impairment, including physical or mental health problems, disability, and inability to fulfill major responsibilities in the home, school, or work (SAMHSA, 2017). Over 20 million Americans meet the DSM-5 diagnosis criteria for a SUD (SAMHSA, 2017), of which approximately 40% had both of a mental disorder and a substance use disorder simultaneously, also referred to as a co-occurring mental and substance use disorder (COD) (SAMHSA, 2014). Furthermore, the vast majority of individuals seeking SUD treatment report at least one traumatic life event, estimates ranging from 66% to 89% (Back, Dansky, Coffey, Saladin, Sonne, & Brady, 2000; Farley, Golding, Young, Mulligan, & Minkoff, 2004). Additionally, individuals with trauma histories are 1.5 to 5.5 times more likely to engage in substance use (National Research Council, 1996).

While SAMHSA (2017) estimates that approximately 1 in 13 people aged 12 and older required substance use treatment, only 1.4 percent of people aged 12 or older with substance use disorders received any form of substance use treatment within the past year, and only 0.8 percent received substance use treatment from a specialty facility, including inpatient hospitalization, drug or alcohol rehabilitation facilities for inpatient or outpatient treatment, or a mental health center. In California, 8.09% of residents aged 12 and older required treatment at a specialty facility for substance use and did not receive said treatment (SAMHSA, 2017). As a consequence, a large treatment gap for SUDs exists in the United States as well as at the state level in California and at the Los Angeles County level (NIDA, 2015).

Prior to the passage of the Patient Protection and Affordable Care Act (ACA) in 2010, the approval of California's Section 1115 Waiver, also known as Medi-Cal 2020, and the implementation of coverage for specialty SUD treatment in Los Angeles County in July 2017 under Los Angeles County's SUD System Transformation to Advance Recovery and Treatment – Organized Delivery System (START-ODS), there was a downward trend in treatment admissions for SUDs in Los Angeles County (NDEWS, 2016). In 2010, there were 48,762 admissions for treatment with admissions declining on a yearly basis and reaching an all-time low of 30,838 in 2015 (NDEWS, 2016). The declines in admission for treatment are primarily attributed to decreases in state funding for SUD treatment and changes to the service delivery model (NDEWS, 2016). As a consequence, fewer Los Angeles County residents were able to access vital SUD specialty treatment services.

The treatment gap for SUDs results in significant individual, social, and economic costs on a national scale as well as at the California and Los Angeles County level. According to the National Institute on Drug Abuse (NIDA), the abuse of illicit drugs and alcohol costs the United States approximately $460 billion annually in costs related to crime, lost productivity, and health care (2017). The healthcare costs alone for the treatment of alcohol, illicit drug, and prescription opioid abuse totals to over $64 billion annually. In 2009, the state of California's Medi-Cal spending for SUD treatment totaled to $409,019,354 (DCHS, 2012). Not only do SUDs destabilize communities, increase crime rates, result in child abuse and neglect, and increase rates of unemployment and homelessness, but they also cause devastating consequences to individuals psychologically, physiologically, and socially (NIDA, 2017).

Most tragically, SUDs can cause death. Over 152,000 Americans die annually from alcohol related causes and drug overdoses (National Institute on Alcohol Abuse and Alcoholism, 2016; NIDA, 2017). As drug overdoses continue to rapidly increase with the proliferation of

prescription opioid abuse, synthetic opioids, and heroin use (NIDA, 2017), the epidemic of SUDs in the United States demands immediate attention and evidence-based treatment modalities in order to curb the preventable deaths resulting from alcohol and drug use as well as reduce the tremendous social and economic costs of SUDs. Approximately 88,000 people in the United States die annually from alcohol-related causes, as alcohol is the third leading cause of preventable death in the nation (National Institute on Alcohol Abuse and Alcoholism, 2016). In 2017, over 72,000 people in the United States died from drug overdoses, including illicit drugs and prescription opioids, with the rates of drug overdoses nearly doubling in the past decade (NIDA, 2017).

Due to Medi-Cal expansion in California as a consequence of the ACA, there will be an additional 1.5 to 2 million enrollees in California with an estimated 113,200 to 151,000 who need SUD specialty treatment (DCHS, 2012). Furthermore, 10 counties in California, including Los Angeles County, stand to account for 50% of the increased Medi-Cal enrollments (DCHS, 2012). With the elimination of the patchwork funding sources for specialty SUD treatment, the expansion of Medicaid, and receipt of the Medi-Cal 2020 Waiver in the state of California, Los Angeles and California residents with SUDs should have greater access and fewer barriers to accessing specialty SUD treatment. Under START-ODS, Los Angeles County has altered its approach toward SUD treatment and now conceptualizes SUDs as chronic illnesses, which require medically necessary and indicated treatment and the provision of the evidence-based services (County of Los Angeles Public Health, 2017). Under Medi-Cal 2020, California residents with Medi-Cal who meet the American Society for Addiction Medicine (ASAM) criteria for residential SUD treatment are eligible for two non-continuous 90 day for adult residential services with one extension for up to 30 days beyond the maximum length of stay in a 365-day period.

While Los Angeles County and California residents have greater access to residential SUD treatment through Medicaid expansion and receipt of one of twenty-one Section 1115 Waivers with behavioral health provisions for IMD payment exclusion for SUD treatment from the Centers for Medicaid and Medicare Services (CMS), significant barriers to accessing residential SUD treatment remain throughout the majority of states across the nation. Despite the inclusion of SUD treatment as an Essential Health Benefit (EHB) under the 2010 ACA and the 2008 Mental Health Parity and Addiction Equity Act (MHPAEA), an antiquated law which has not been updated since 1988, known as the Medicaid Institutions for Mental Diseases (IMD) exclusion found in section 1905(a)(B) of the Social Security Act, precludes the use of federal Medicaid funds to provide care of patients under the age of 65 in mental health and substance use disorder residential treatment facilities with more than 16 beds. As a consequence, the demand for residential SUD treatment services far outweighs the current availability.

The National Survey of Substance Abuse Treatment Services (NSSATS) conducted in 2015 reported that the publicly funded SUD treatment system had exceeded its current capacity with 105% of residential (non-hospital) beds and 109% of hospital inpatient beds to treat SUDs were occupied. According to the most recent NSSATS, 63.9% of SUD treatment facilities, which includes outpatient, residential, and inpatient hospitalization services, accept Medicaid as payment (SAMHSA, 2018). However, only approximately 100,000 people across the United States received residential SUD treatment (non-hospital) in 2017, which includes short-term residential treatment (30 days or less), long-term residential treatment (more than 30 days), and detoxification (SAMHSA, 2018). In response to the lack of availability of publicly funded residential SUD treatment facilities and the failure of the Department of Health and Human Services (DHHS) to provide a waiver for all 50 states to eliminate the restrictions imposed by the IMD exclusion on residential SUD treatment services, countless Americans and communities

continue to suffer the tremendous social, economic, and psychological tolls related to untreated SUDs and CODs.

In response to the opioid crisis and the barriers imposed by the IMD exclusion, the 115th Congress passed and the President signed H.R. 6 – Substance Use-Disorder Prevention that Promotes Opioid Recovery and Treatment for Patients and Communities Act (SUPPORT for Patients and Communities Act) into law on October 28, 2018. Title XI – Individuals in Medicaid Deserve Care that is Appropriate and Responsible in its Execution Act (the IMD Care Act) specifically addressed the IMD exclusion for residential SUD treatment and permitted states to temporarily apply to receive federal Medicaid payment for services provided in IMDs for Medicaid recipients who meet the diagnostic criteria for substance use disorders. However, SUD treatment episodes for these eligible patients are now limited to a total of up to 30 days in a 12-month period.

The purpose of this research project, which will employ secondary data, is to assess the treatment outcomes of Los Angeles County residents who both meet the eligibility criteria for Medi-Cal and are eligible for and entered residential SUD treatment (non-hospital) between August 1, 2017, and March 1, 2018, which is subsequent to the expansion of Medi-Cal coverage, the receipt of Medi-Cal 2020, and the implementation of criteria established by START-ODS for medically necessary treatment. As the START-ODS criteria newly came into effect on July 1, 2017, this research project provides valuable demographic information about patients pursuing publicly funded SUD residential treatment services subsequent to Medi-Cal expansion and implementation of START-ODS criteria as well as the predictive factors for treatment completion, participation in aftercare services, and Alcohol and Other Drug (AOD) Counselor prognoses for patients' abstention from alcohol and drugs. Specifically, this research project explores the differential treatment outcomes and participation in posttreatment aftercare services

for patients with self-reported histories of trauma and co-occurring psychiatric disorders issues compared to those patients who do not report history of trauma and co-occurring psychiatric conditions.

As Los Angeles County, one of the earliest adopters of DMC-ODS, and an additional 40 counties throughout California stand at the forefront of publicly funded SUD treatment reform through the implementation of START-ODS and Drug Medi-Cal Organized Delivery System (DMC-ODS), respectively, this research project stands to enhance the existing literature and research studies on publicly funded SUD treatment services during this critical time of reform and service expansion for a very vulnerable and chronically affected segment of the population. As residents of Los Angeles County and California at large have the greatest access to publicly funded residential SUD treatment services through the Medi-Cal 2020 Waiver compared to the majority of residents of others states, this study highlights the vital importance of eliminating the IMD exclusion for residential SUD treatment services to increase access to potentially life-saving publicly funded SUD treatment services as well as demonstrating the importance of funding long-term residential SUD treatment for the Medicaid population who meet the diagnostic criteria for any SUD. Additionally, it may illustrate the benefits of the DMC-ODS compared to traditional Medicaid services for SUDs related to enhanced treatment retention and completion rates, participation in posttreatment aftercare services, and improved AOD Counselor prognoses for long term abstinence.

Moreover, given the prevalence of CODs and individuals with SUDs reporting history of traumatic experiences, this study adds support to the efficacy of evidence-based, specialty SUD and COD treatment as required by START-ODS and DMC-ODS, which could guide the implementation of treatment modalities for CODs and trauma throughout the United States. In particular, this study provides evidence for the need for integrated treatment for trauma and

psychiatric disorders as well and the need for greater availability of 3.7 and 4.0 American Society of Addiction Medicine (ASAM) Levels of Care (LOCs), which include medically monitored SUD treatment with daily nursing and physician care.

Even with the Medi-Cal 2020 Waiver, Los Angeles County and other counties participating in DMC-ODS in California lack adequate integrated COD treatment services, such as 3.7 and 4.0 ASAM LOCs, for patients with Serious Mental Illness (SMI) and high levels of psychiatric distress. Lack of availability of these LOCs typically results in one of two outcomes. First, the individual is deemed to require a higher level of care than residential SUD treatment services offer at the 3.1 or 3.5 ASAM LOCs and is referred back to the mental health system. Alternatively, the individual is admitted to 3.5 ASAM LOC, a clinically managed residential SUD treatment setting, which presently lacks the ability to provide integrated COD care and the necessary mental health stabilization services, with the majority of these admissions resulting in administrative discharge or the patient leaving treatment. As a consequence, the availability of specialized, evidence-based treatment for individuals with CODs warrants immediate attention, given the high risk for exacerbated psychiatric symptoms, psychiatric hospitalizations, suicide attempts, unemployment, unstable housing, infectious illness, and victimization and violence for individuals with CODs (Noordsy, Brunette, Green, & Drake, 2007).

Study Overview and Purpose

The aims of this study are threefold. First, this study seeks to further our understanding of the traumatic experiences and co-occurring psychiatric disorders related to residential SUD treatment outcomes among individuals who meet DSM-5 criteria for severe SUDs. In particular, this study aims to understand whether there is 1) a relationship between traumatic experiences and residential SUD treatment outcomes, 2) a relationship between psychiatric illness and treatment and residential SUD treatment outcomes, 3) a relationship between readiness for

change and residential SUD treatment outcomes, and 4) a relationship between self-reported history of self-medicating for psychiatric distress and residential SUD treatment outcomes. Additionally, sociodemographic variables of interest include external coercion from the criminal justice and child welfare systems, housing, age, gender, literacy levels, and race/ethnicity.

Second, this study stands to provide greater insight into the factors related to AOD Counselors' prognoses for abstention for participants at the end of their SUD treatment episodes. In addition to the relationships between traumatic experiences, psychiatric illness and treatment, readiness for change, and self-reported history of self-medication for psychiatric disorders and prognoses for abstention, respectively, this study is also interested in the role of external coercion from the criminal justice and child welfare systems, housing, age, gender, race/ethnicity, and literacy level on counselor prognoses.

Finally, this study aims to enhance the research related to predictive factors for posttreatment aftercare service enrollment for those participants who successfully completed residential SUD treatment. Similarly, this study will also examine the relationships between traumatic experiences, psychiatric illness and treatment, readiness for change, and self-reported history of self-medication for psychiatric disorders and posttreatment participation in aftercare services and residence in SLEs, respectively. Other variables of particular interest include duration of residential SUD treatment episode, external coercion from the criminal justice and child welfare systems, housing, age, gender, literacy levels, and race/ethnicity.

These analyses will be conducted using a de-identified dataset provided by a local non-profit agency, which provides publicly funded residential SUD treatment services at the 3.1 and 3.5 ASAM LOC for patients enrolled in or eligible for Medi-Cal or My Health LA in Los Angeles County. The dataset was created based on the patients' responses to the ASAM Multidimensional Assessment tool, which was developed by the Los Angeles County Substance

Abuse Prevention and Control program (SAPC) to determine patients' medical eligibility for Drug Medi-Cal services, as well as the information recorded by the patients' primary Drug and Alcohol Counselor on the SAPC Discharge Transfer form.

Organization of Study

Chapter one addresses the prevalence of SUDs and CODs, gaps in publicly funded treatment for SUDs and CODs as a consequence of federal legislation, and the significance of expanding SUD and COD treatment services, as well as the purpose of the study. Chapter two provides a review of the literature related to predictive factors of SUD treatment completion, posttreatment aftercare service enrollment, and AOD Counselor prognoses for abstention with particular attention on the role of trauma and psychiatric conditions and treatment. Chapter three introduces the Self-Medication Hypothesis (SMH), which informs the current study. Chapter four presents the research design and analysis. Chapter five reports that results from the analyses for the three research questions. Finally, chapter six discusses the present study's findings relative to previous research studies, provides recommendations for social work practice and policy advocacy related to long term residential SUD treatment and aftercare services, addresses the limitations of the present study, and outlines future directions for research in the field.

Chapter 2: Literature Review

Predictive Factors of SUD Treatment Completion

Pretreatment substance use.

Type of pretreatment substance used. A majority of studies have found that the type of substance used was predictive of SUD treatment outcomes. However, the specific type of substance identified varied amongst these studies. Several studies have identified primary use of cocaine/crack cocaine as more predictive of SUD treatment noncompletion compared to the use of other substances (Brown, 2010; Fishman, Reynolds, & Riedel, 1999; King & Canada, 2004; Siqueland, Crits-Christopher, Frank, Daley, Weiss, Chittams, et al., 1998; Veach, Remley, Kippers, & Sorg, 2000).

Opiate use also has been predictive of attrition from SUD treatment. Compared to the use of all other substances, Choi and Ryan (2006) found that use of heroin was the most predictive of SUD treatment noncompletion. In a 2002 study by Callaghan and Cunningham, opiate use as primary drug of choice (DOC) emerged as the only significant predictor of treatment noncompletion in a hospital based alcohol and drug detoxification program. In a study of parole violators in SUD treatment, those who reported the use of heroin in the past 30 days as compared to the use of any other type of substance were the least likely to complete SUD treatment (Zanis, Coviello, Lloyd, & Nazar, 2009). One study by Stahler and colleagues (2015), on the other hand, found that opioid users were more likely to complete residential treatment compared to participants who used other types of drugs or alcohol.

Several studies have documented the predictive role of MA use and SUD treatment completion and retention. A study by Evans and associates (2009) reported that participants who used MA were the least likely to drop out of treatment compared to those who reported primary use of heroin, marijuana, or cocaine. Similarly, DeVall and Lanier (2012) also found that non-

Hispanic whites who reported their DOC as MA had greater odds of completing SUD treatment. Except for participants whose DOC was alcohol, participants reporting MA as their DOC had the highest rates of treatment completion compared to participants using all other types of drugs (Anglin, Urada, Brecht, Hawken, Rawson, & Longshore, 2007).

Primary use of alcohol consistently has been related to better SUD treatment outcomes compared to the use of other substances, including cocaine, MA, marijuana, and heroin. For instance, Choi and Ryan (2006) found that participants whose DOC was alcohol were more likely to complete SUD treatment compared to those using marijuana, cocaine, or heroin. Similarly, numerous other studies over the past 20 years across different SUD treatment settings have reported the same finding that alcohol use was more predictive of SUD treatment completion compared to the use of all other substances (Bluthenthal, Jacobson, and Robinson, 2007; Callaghan, 2003; Guerrero, Marsh, Duan, Oh, Perron, & Lee, 2013; Fishman et al., 1999; King & Canada, 2004; Longinaker & Terplan, 2014; McKellar, Kelly, Harris, & Moos, 2006; Mutter, Ali, Smith, & Strashny, 2015; Scott-Lennox, Rose, Bohling, & Lennox, 2000; SAMHSA, 2009; Siqueland et al., 1998; Veach et al., 2000). However, only two studies conducted in Spain have found that alcohol as primary DOC was predictive of treatment noncompletion compared to cocaine as primary DOC (Fernandez-Montalvo & Lopez-Goni, 2010; Lopez-Goni, Fernandez-Montalvo, & Arteaga, 2012).

On the other hand, several studies have reported that the type of substance used had no effect on SUD treatment outcomes. In a 2002 study by Butzin and colleagues in which the participants predominantly reported DOC as alcohol or marijuana, the type of substance used was not predictive of SUD treatment outcomes. In a 2009 study of participants with co-occurring disorders (COD), Mangrum found that type of substance used was not related to SUD treatment

outcomes. Similarly, in Koetzle Schaffer and colleagues (2011) found that DOC did not affect SUD treatment outcomes for drug court participants.

Pretreatment polysubstance use. Pretreatment polysubstance use has been found to be predictive of poor SUD treatment outcomes. Participants who reported the use of two or more substances had a lower likelihood of SUD treatment completion (Mutter et al., 2015). Through the use of urinalysis (UA), Ohlin and colleagues (2011) recorded the number of drugs in participants' urine samples at the time of treatment entry, finding that the number of drugs in the urine sample was significantly associated with attrition from a buprenorphine maintenance treatment program in Sweden. Similarly, women reporting the use of a single substance at time of admission had better odds of completing SUD treatment than polysubstance users (Longinaker & Terplan, 2014). In an outpatient clinical trial of bupropion combined with cognitive behavioral therapy (CBT) and contingency management (CM) for MA users, frequency of polysubstance use (e.g. MA and another substance) also emerged as a variable of high importance rating in predicting noncompletion through CART analysis (Dean et al., 2009).

To date, the study of the types of substances used in combination in relation to SUD treatment outcomes has received limited attention and warrants further research. One study found that participants who reported primary MA use and secondary cocaine/crack or heroin use as compared to those with no secondary drug, were less likely to complete residential SUD treatment (Brecht et al., 2005). However, the same study also found that participants who reported primary MA use and secondary marijuana use had a lower risk for noncompletion than those with no secondary drug abuse (Brecht et al., 2005).

Frequency of pretreatment substance use. Multiple studies have consistently demonstrated that more frequent drug use was predictive of SUD treatment noncompletion. Butzin and colleagues (2002) found that using alcohol or drugs weekly or more often was more

predictive of SUD treatment dropout in a drug court diversion program compared to using alcohol or drugs monthly or less frequently. Moreover, frequency of use was found to be more predictive of SUD treatment outcomes than the type of substance used (Butzin et al., 2002). Amodeo and associates (2008) also reported that more frequent drug use was associated with attrition from residential SUD treatment. Similarly, McKellar and colleagues (2006) found that participants reporting higher frequency of drug use in the past 3 months, as recorded in a composite score created by frequency and method of administration for each type of drug reported, were significantly more likely to drop out of SUD treatment.

Similarly, studies have examined the role of number of days of primary substance use during the 30 days prior to admission related to SUD treatment outcomes. Evans and colleagues (2009) found that participants who had used drugs within the past 30 days were more likely to drop out of treatment. Similarly, Guerrero and associates (2013) reported that days of drug use prior to admission was predictive of SUD treatment noncompletion. In another study, female participants who had not used drugs in the 30 days prior to admission were more likely to complete SUD treatment (Hohman, McGaffigan, & Segars, 2000).

Multiple studies have reported poorer treatment outcomes associated with greater frequency of pre-treatment MA use (Brecht, Greenwell, & Anglin, 2005; Brecht, Greenwell, von Mayrhauser, & Anglin, 2006; Dean et al., 2009; Hillhouse, Marinelli-Casey, Gonzales, Ang, & Rawson, 2007; Maglione, Chao, & Anglin, 2000(a); Maglione, Chao, & Anglin, 2000(b); Shoptaw et al., 2008). Brecht and associates (2005) measured severity of MA use through the creation of a binary variable for daily MA use in the past 30 days versus less than daily use of MA, finding that those participants engaged in daily MA use were less likely to complete residential treatment. In two studies of MA users, those who reported using MA daily were less likely to complete SUD treatment (Maglione et al., 2000a; Maglione et al., 2000b). However,

Hillhouse and colleagues (2007) found that participants who reported 15 or more days of baseline pretreatment MA use based on their responses to the ASI had shorter lengths of retention in SUD treatment, which highlights the importance of demarcation for dichotomous variables related to pretreatment MA use in the past 30 days. In lieu of a dichotomous variable, Dean and associates (2009) measured participants' pretreatment MA use through the use of urine tests during a two week pretreatment baseline period and self-report of past 30 days of MA use in the ASI Lite, finding that more than 2 positive urine tests for MA and greater number of days of MA use were associated with noncompletion of an outpatient clinical trial for bupropion combined with CBT and CM.

Types of trauma exposure. Patients with a history of trauma exposure are highly prevalent in SUD treatment settings, with one study reporting that 89% of participants reported a traumatic event in their lifetime (Norman, Tate, Anderson, & Brown, 2007). However, many of these patients have yet to pursue mental health services or do not meet the full criteria for PTSD (Norman et al., 2007). Although patients with history of trauma exposure may experience similar functional impairment, health problems, and increased health care utilization as patients diagnosed with PTSD, they are less likely to receive mental health services and treatment for the sequelae associated with their traumatic experiences (Norman et al., 2007). As patients untreated for their history of trauma exposure may self-medicate to cope with their psychiatric distress, leading to abandonment or discharge from SUD treatment settings, the role of trauma exposure in SUD treatment outcomes warrants further attention.

While multiple studies have identified developmental trauma, acute trauma, and victimization trauma as a predictive factor in the noncompletion of SUD treatment (Claus & Kindleberger, 2002; Fernandez-Montalvo, Lopez-Goni, & Arteaga, 2015; Fernandez-Montalvo, Lopez-Goni, Arteaga, Cacho, & Azanza, 2017; Ford, Hawke, Alessi, Ledgerwood, & Petry,

2007; Kumar, Stowe, Han, & Mancino, 2016; Odenwald & Semrau, 2013; Simons, 2008), the type of trauma as well as the measures of these traumatic experiences associated with SUD noncompletion varied across these studies. However, no known studies to date have examined the role of traumatic grief in predicting SUD treatment outcomes.

Developmental trauma, also known Adverse Childhood Experiences (ACEs), is a consequence of early onset exposure to trauma as an infant, child, or youth in any of the following domains: 1) abuse, including emotional, physical, and sexual abuse; 2) neglect, including physical and emotional neglect; and 3) household challenges, including witnessing intimate partner violence, household substance abuse, mental illness in household, parental separation or divorce, and criminal household member (The Centers for Disease Control and Prevention, Kaiser Permanente, 2016). Traumatic victimization, on the other hand, refers to experiences of physical or sexual abuse, assault, and coercion across the life course (Ford et al., 2007). Acute trauma, also known as single-event trauma, occurs after exposure to a single overwhelming event or experience, such as a serious accident, natural disaster, single event of abuse or neglect, sudden loss, or witnessing violence (Center for Substance Abuse Treatment, 2014). Traumatic grief may result after the sudden and unexpected death of a loved one due to suicide, violence, and an accident. It may also occur after an anticipated death due to illness (The National Child Traumatic Stress Network, 2018).

Adverse childhood experiences (ACEs). Few studies have examined the role of ACEs in treatment completion (Gutierres & Todd, 1997; Kumar et al., 2016; Palmer et al., 1995; Simons, 2008). Childhood abuse was found to be predictive of attrition from treatment in a 1995 study by Palmer and associates. However, this study neither specified the type of childhood abuse experienced by the participants, nor did it include childhood neglect in the analysis. In a more recent study by Kumar and colleagues (2016), which included childhood neglect in addition to

childhood abuse, exposure to childhood physical and emotional neglect, increased the likelihood of participants dropping out of an outpatient buprenorphine treatment program. However, experiences of childhood abuse were not predictive of treatment outcomes. Similarly, Simons (2008) found that history of emotional neglect was a barrier for African American women with co-occurring disorders to residential SUD treatment completion; however, a positive history of emotional neglect did not predict treatment noncompletion in those participants whose primary drug of choice (DOC) was crack cocaine. In an exploratory study of males and females in residential SUD treatment, childhood abuse, including physical, sexual, and emotional abuse, was not predictive of treatment outcomes (Gutierres & Todd, 1997). However, Gutierres and Todd (1997) did not examine the role of childhood neglect in their study.

Traumatic victimization. Several studies have examined the role of traumatic victimization in SUD treatment outcomes; however, limited attention has been directed toward the specific type of traumatic victimization related to SUD treatment outcomes. In a recent study by Fernandez-Montalvo and colleagues (2017a) of women in outpatient and residential SUD treatment in Spain, women reporting lifetime experiences of physical and/or sexual abuse presented with the highest dropout rates from SUD treatment compared to women without any history of victimization trauma as well as women who reported psychological abuse only. Furthermore, victims of sexual abuse had the highest rate of dropout, followed by victims of physical abuse. Based on their responses to the EuropASI to the three following questions, "has anyone abused you a) emotionally, b) physically, or c) sexually in the past thirty days or in your lifetime?," four mutually exclusive groupings of abuse were created: no abuse history, psychological abuse only, physical abuse (with or without psychological abuse), and sexual abuse (with or without psychological and/or physical abuse). Therefore, women in the sexual abuse group could have experienced three distinctly different types of victimization trauma in

their lifetime, indicating the effect of an individual experiencing multiple forms of victimization trauma on SUD treatment noncompletion.

Similarly, in another study by Fernandez-Montalvo and colleagues (2015) of men and women in outpatient SUD treatment in Spain, participants with a positive history of any victimization trauma, including lifetime psychological, physical, or sexual abuse, based on their reports to the aforementioned questions on the EuropASI were more likely to drop out of treatment than those patients who did not report a history of victimization trauma. Unlike their later study, Fernandez-Montalvo and colleagues (2015) did not differentiate between the types of victimization trauma reported. Instead, they aggregated this measure into two categories, no history of lifetime abuse and history of lifetime abuse. As a consequence, the specific type of traumatic victimization was not included as predictive factor for treatment noncompletion. Furthermore, both studies by Fernandez-Montalvo and colleagues (2015, 2017(a)) did not distinguish between experiences of traumatic victimization in adulthood and childhood and rather reported lifetime traumatic victimization experiences for the participants due to the limitations of the EuropASI for these measures.

In early study by Claus and Kindleberger (2002) of men and women in outpatient and residential SUD treatment, participants who reported a positive lifetime history of physical or sexual abuse were more likely to drop out of SUD treatment. Like the 2015 study by Fernandez-Montalvo and associates, this study neither distinguishes between the type of traumatic victimization nor whether the victimization transpired during adulthood or childhood. Instead, Claus and Kindleberger (2002) grouped all participants who reported positive lifetime histories of physical or sexual abuse into one group.

However, an earlier study conducted by Gil-Rivas and colleagues (1997) of men and women in outpatient SUD treatment found that positive lifetime history of physical or sexual

abuse was not predictive of treatment completion. Similarly, this study did not differentiate between childhood and adulthood experiences of physical and sexual abuse in the final analysis, rather the variables were grouped as ever physically abused and ever sexually abused.

Acute trauma. Two studies have identified the role of acute trauma in SUD treatment completion. Using the Trauma History Questionnaire, Odenwalk and Semrau (2013) found that participants who reported more traumatic event types were more likely to drop out of treatment than those who completed treatment. However, the findings in this study indicated that participants who experienced recent acute trauma as an adult, such as armed robbery, armed assault, theft of property, and seeing dead bodies, were more likely to drop out of treatment (Odenwalk & Semrau, 2013). This study did not identify developmental, victimization trauma, or traumatic grief as predictive of SUD treatment noncompletion.

However, in the study by Ford and colleagues (2007), only witnessing assault, an acute trauma, was predictive of treatment dropout in the some of the statistical models. This study found that none of the following experiences of traumatic grief, or acute, developmental, or victimization traumas reported were predictive of treatment noncompletion: physical abuse, sexual abuse, serious threat to life, accident/illness/disaster trauma, separation/loss trauma in childhood, witnessing nonviolent death, and emotional abuse as a child (Ford et al., 2007). As Ford and colleagues (2007) also included variables related to simple and complex PTSD, these variables were found to be of greater significance in predicting treatment outcomes than the type of psychological or victimization trauma experienced by the participants.

Co-occurring substance use and mental disorders. As reported in SAMHSA's 2014 National Survey of Drug Use and Health (NSDUH), approximately 40% of the 20.2 million Americans aged 18 years and older who met the criteria for a substance use disorder had a co-occurring mental and substance use disorders (COD). Mental disorders are conceptualized along

the lines of two broad categories: Any Mental Illness (AMI) and SMI. AMI includes all recognized mental illness, whereas SMI encompasses a smaller and more severe subgroup of AMI (NIMH, 2017). SMI is defined as a "diagnosable mental, behavior, or emotional disorder that causes serious functional impairment that substantially interferes with and limits one or more major activities" in the past 12 months (SAMHSA, 1999). The following psychiatric conditions are categorized as SMI: major depression, schizophrenia-spectrum disorders, and bipolar disorder (SAMHSA, 1999).

Of the 14.8 million Americans aged 18 and older who diagnosed with SMI, 20.3% were dependent on or abused drugs or alcohol (CBHSQ, 2001). Those with CODs, especially SMI, are more likely to experience greater adverse effects, such as psychosis, related to drugs and alcohol, even in relatively small doses, due to biological vulnerabilities (Drake et al., 1998). Given the prevalence of CODs among those with SUDs and the pronounced negative effects of drug and alcohol use among this particularly vulnerable population, research has examined the role of CODs in SUD treatment outcomes in various ways.

Psychiatric severity. Multiple studies have utilized the ASI composite score for psychiatric severity (ASI-P) to predict SUD treatment outcomes across various treatment settings, with the majority of the studies published in the past 15 years finding higher ASI-P to be predictive of dropout from SUD treatment (Amodeo, Chassler, Oettinger, Labiosa, & Lundgren, 2008; Carroll et al., 1993; Evans, Li, & Hser, 2009; Kissin et al., 2004; Lang & Belenko, 2000; McHugh, Murray, Hearon, Pratt, Pollack, Safren, et al., 2013; Perty & Bickel, 1999; Simons, 2008). Several studies conducted in Spain have also used the EuropASI composite score for psychiatric severity (Fernandez-Montalvo & Lopez-Goni, 2010; Fernandez-Montalvo et al., 2015; Fernandez-Montalvo et al., 2017(a); Fernandez-Montalvo et al., 2017(b)). However, some older studies reported that ASI-P scores were not predictive of treatment

outcomes (McCaul et al., 2001; Ryan et al., 1995; Saxon et al., 1996; Sayre et al., 2002; Tidey et al., 1998; Wallace & Weeks, 2004).

Higher ASI-P scores were predictive of treatment attrition for racial and ethnic minority populations in the United States as well. For instance, Lundgren and associates (2008) employed the ASI composite score for psychiatric severity in their study of Latino substance users in a culturally focused residential SUD treatment program, finding that participants self-reporting co-occurring disorders were 81% less likely to complete residential SUD treatment. Gender differences for ASI-P scores and treatment outcomes were detected in only one study by Green and colleagues (2002) with higher ASI-P scores related to dropout for men but not for women. No other studies reported any gender differences related to ASI-P scores and SUD treatment outcomes.

Other studies have employed different instruments to measure psychiatric severity. For instance, in a multi-site study of patients with cocaine dependence, the authors employed the Brief Symptom Invention – Global Severity Index Score (BSI), 21-item Beck Depression Inventory (BDI), the Hamilton Depression Rating Scale (HD), and the Structured Clinical Interview for DSM-IIIR (SCID) to assess psychiatric severity (Siqueland et al., 1998). Using the SCID to assess for Axis I diagnoses, which includes all diagnoses except for mental retardation and personality disorders, Siqueland and colleagues (1998) found that patients without Axis I diagnoses were almost twice as likely to drop out sooner than those patients who had Axis I diagnoses. Several studies utilized the MCMI-II and MCMI-III to assess severity of psychopathology, all of which found that severity of psychopathology was related to SUD treatment noncompletion (Fernandez-Montalvo & Lopez-Goni, 2010; Haller et al., 2002; Haller & Miles, 2004). However, in a study employing the Symptom Check List-90 (SCL-90) to assess

participants' severity of psychiatric problems, psychiatric severity was not predictive of SUD treatment outcomes (Epstein et al., 1994).

Post-traumatic stress disorder (PTSD). Post-traumatic stress disorder (PTSD) affects an estimated 3.6% of Americans aged 18 and older, and 6.8% of American adults will experience PTSD in their lifetime (NIMH, 2017). Furthermore, there is a high prevalence of co-occurring PTSD and SUD. One national epidemiologic study found that 46.4% of individuals reporting lifetime PTSD also met the criteria for SUD (Back, Waldrop, & Brady, 2009). Another study reported that 27.9% of women and 51.9% of men with lifetime PTSD also met the criteria for SUD (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Individuals with comorbid PTSD and SUD experience higher levels of psychiatric symptoms and interpersonal distress compared to those diagnosed with SUD or PTSD alone (Norman et al., 2007). Furthermore, individuals with comorbid PTSD and SUD are also more likely to relapse sooner than those diagnosed with SUD only (Norman et al., 2007).

Despite the prevalence of co-occurring PTSD and SUD, the association between a diagnosis of PTSD and SUD treatment outcomes remains unclear. While Curran and associates (2009) found that a diagnosis of PTSD was predictive of SUD treatment retention in a sample of U.S. veterans, Mangrum (2009) found that those patients diagnosed with PTSD were more likely to drop out of treatment compared with patients diagnosed with anxiety or depression. Ford and colleagues (2007) found that those patients reporting a high level of complex PTSD symptoms were less likely to complete SUD treatment.

In a systematic review conducted by Brorson and colleagues (2013), six studies examining the association between co-occurring PTSD and SUD and treatment noncompletion were identified (Anderson, Baldridge, & Stanford, 2011; Curran, Kirchner, Worley, Rookey, & Booth, 2002; Darke, Campbell, & Popple, 2012; Daughters, Richards, Gorka, & Sinha, 2009;

Hien, Nunes, Levin, & Fraser, 2000; Smith, North, & Fox, 1996). However, none of these aforementioned studies reviewed found a statistically significant association between PTSD and SUD treatment outcomes.

Anxiety disorders (AD). Anxiety disorders (AD), which now exclude PTSD and obsessive-compulsive disorder (OCD) in the DSM-5, are the most commonly occurring psychiatric disorders, with past year and lifetime prevalence of 11% and 16%, respectively (McHugh, 2015). The prevalence of co-occurring ADs and SUDs has been well established. Of those diagnosed with ADs, 15% met the criteria for a SUD in the past year (Grant, Stinson, Dawson, Chou, Dufour, Comptom, et al., 2004). Similarly, of those individuals diagnosed with SUDs, 18% had past year ADs (Grant et al., 2004). Moreover, of those individuals with SUDs who were receiving SUD treatment, 33-43% also had past year ADs (Grant et al., 2004). Given the high rates of co-occurring ADs and SUDs, especially among those individuals pursuing SUD treatment, the role of ADs in SUD treatment outcomes has received considerable attention in previous research studies.

However, inconsistent findings about the association between anxiety and SUD treatment completion have emerged. For example, Siqueland and colleagues (1998) found that patients without a current anxiety disorder were 1.5 times more likely to drop out sooner than patients who reported a current anxiety disorder. Similarly, in a 2004 study by Levin and associates, patients with anxiety were less likely to drop out of treatment early compared to those who did not report an anxiety disorder. Compared to participants reporting a COD of bipolar disorder or PTSD, participants with generalized anxiety disorder were more likely to complete SUD treatment (Mangrum, 2009).

In contrast, in a 2005 study by Doumas and colleagues of participants in intensive outpatient (IOP) services, those participants receiving higher scores on the Beck Anxiety

Inventory (BAI) were less likely to complete treatment. Additionally, Lejuez and associates (2008) found that higher scores on the Anxiety Sensitivity Index (AnxSI), which includes fears of the physical, mental, and social consequences of anxiety-related sensations, was predictive of attrition from treatment.

On the other hand, in the systematic review by Brorson and colleagues (2013), anxiety was not found to be predictive of SUD treatment outcomes in nine studies (Brady, Dansky, Back, Foa, & Carroll, 2001; Curran et al., 2002; Curran et al., 2009; Daughters et al., 2009; Darke et al., 2012; Deane, Wootton, Hsu, & Kelly, 2012; Hien et al., 2000; Lin et al., 2013; Smith et al., 1996). Given the varied approach to measuring and operationalizing anxiety in the aforementioned studies, the role of anxiety in SUD treatment outcomes warrants further attention.

***Mood disorders*.** Conflicting results exist regarding the association between mood disorders and SUD treatment outcomes. Prior to the advent of the DSM-5 (APA, 2013), the following psychiatric conditions were classified as mood disorders: bipolar I disorder, bipolar II disorder, cyclothymic disorder, major depressive disorder (MDD), and dysthymia. Subsequently, the DSM-5 separated the Mood Disorder category into two separate categories – Bipolar and Related Disorders and Depressive and Related Disorders (APA, 2013).

The prevalence of SUDs is high among those diagnosed with Depressive and Related Disorders as well as those with Bipolar and Related Disorders. In the past 12 months, 6.7% of all U.S. adults experienced at least one major depressive episode (NIMH, 2017). Approximately one third of individuals with MDD have a co-occurring SUD (Davis, Uezato, Newell, & Frazier, 2008). Those with comorbid MDD and SUD experience higher risk of suicide as well as greater social and personal impairments (Davis et al., 2008). While only 2.8% of the U.S. adult population had bipolar disorder in the past 12 months and 4.4% of U.S. adults report lifetime

experiences of bipolar disorder (NIMH, 2017), multiple research studies have found that 30 to 50% of adults with bipolar disorder will meet the criteria for a co-occurring SUD at some point in their lifetime (SAMHSA, 2016). Individuals with co-occurring bipolar disorder and alcohol use disorder have poorer treatment outcomes, are more likely to require psychiatric hospitalization, and are more likely to attempt suicide compared to those diagnosed with bipolar disorder order alone (SAMHSA, 2016). Furthermore, those with co-occurring bipolar disorder and a SUD may experience exacerbated symptoms of mania and depression (SAMHSA, 2016). However, a majority of the literature has focused on the predictive role of depression in SUD treatment outcomes and has tended to amalgamate mood disorders according to previous iterations of the DSM rather than examining bipolar disorder specifically.

Several studies have reported that higher scores of depression symptomatology were predictive of SUD treatment noncompletion. For instance, Curran and associates (2002) found that severe depressive symptomatology at intake was associated with early attrition from SUD treatment. Doumas and associates (2005) also found that participants in IOP with higher scores on the BDI at intake were less likely to complete treatment. Participants scoring higher on the Center for Epidemiological Studies-Depression Scale (CES-D) were more likely to drop out of residential SUD treatment (Lejuez, Zvolensky, Daughters, Bornovalvo, Paulson, Tull, et al., 2008). While Evans and colleagues (2008) found that experiencing depression in the past 30 days was predictive of treatment noncompletion, lifetime measures of depression were not predictive of treatment outcomes.

To the contrary, Levin and associates (2004) reported that individuals with depressive symptomatology were less likely to drop out of treatment early. Similarly, Curran and colleagues (2009) also found that in a sample of U.S. veterans those with a history of International

Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) diagnosis for MDD were more likely to remain in treatment.

However, Siqueland and colleagues (1998) found that scores on the depression scales BSI, BDI, and HD did not significantly predict SUD treatment noncompletion. Moreover, in the systematic review by Brorson and colleagues (2013), depression was not found to be predictive of SUD treatment outcomes in thirteen studies (Alterman, McKay, Mulvaney, & McLellan, 1996; Brady, Dansky, Back, Foa, & Carroll, 2001; Curran et al., 2002; Curran et al., 2009; Daughters et al., 2009; Darke et al., 2012; Deane, Wootton, Hsu, & Kelly, 2012; Hien et al., 2000; Lin et al., 2013; Marrero, Robles, Colon, Reyes, Matos, Sahai, et al., 2005; Palmer, Palmer, & Williamson, 1995; Ravndal & Vaglum, 1994; Santonja-Gomez, Sanchez-Hervas, Secades-Villa, Zacares-Romaguera, Garia-Rodriguez, & Garcia-Fernandez, 2010; Sayre, Schmitz, Stotts, Averill, Rhoades, & Grabowski, 2002; Smith et al., 1996).

Despite the abundance of studies examining the association between depression and SUD treatment outcomes, only one known study has examined the association between other mood disorders, such as bipolar disorder, and SUD treatment outcomes. In the 2009 study by Mangrum of participants with CODs enrolled in publicly funded SUD treatment services in Texas, patients with bipolar disorder were less likely to complete SUD treatment compared to patients with generalized anxiety disorder or depression. As between 20 to 70% of individuals diagnosed with bipolar disorder carry a co-occurring diagnosis of a SUD (Gold, Otto, Deckersbach, Sylvia, Nierenberg, & Kinrys, 2018), the association between bipolar disorder and SUD treatment outcomes requires special attention.

Psychotic disorders. Although only 0.25% to 0.64% of U.S. adults experience schizophrenia and related psychotic disorders, approximately 50% also have a comorbid SUD (NIMH, 2017). Moreover, individuals with co-occurring schizophrenia and other psychotic

disorders and SUDs are at higher risk for adverse outcomes across multiple domains: exacerbated psychiatric symptoms, higher rates of psychiatric hospitalization, greater susceptibility for violence and victimization, less housing stability, and lower levels of medication compliance, leading to significant social and financial costs (Noordsy et al., 2007).

Few studies have examined the association between psychosis and SUD treatment outcomes, as many studies exclude clients with acute psychotic symptoms. Curran and colleagues (2009) reported that a history of diagnosis with a psychotic disorder was predictive of attrition from SUD treatment in a sample of U.S. Veterans in IOP. Similarly, in a study 2006 study conducted by Gerra and associates, patients with schizophrenia had a much lower retention rate in an outpatient SUD treatment program than patients with depressive, anxiety, or personality disorders. Due to the small number of clients with psychotic disorders in the sample, the findings from the study by Gerra et al. (2006) may not be reliable. However, another study of participants in a highly specialized inpatient drug program did not detect a difference in retention rates for patients with psychotic disorders compared to those who did not (Galanter et al., 1996). As nearly half of people diagnosed with schizophrenia also present with a lifetime history of SUDs (Volkow, 2009), the role of psychosis and psychotic disorders in predicting treatment outcomes demands further study.

History of attempted suicide. Limited studies have examined the association between past history of attempted suicide and SUD treatment outcomes. In one study, past 30 day history of attempted suicide was found to be predictive of SUD treatment noncompletion; however, lifetime measures of attempted suicide were not predictive of treatment outcomes (Evans et al., 2008). Another study by Gil-Rivas and associates (1997) reported that suicidal ideation and history of suicide attempts negatively affect SUD treatment outcomes. Contrary to the aforementioned findings, participants with a history of prior suicide attempt were significantly

less likely to drop out of outpatient treatment for opioid use disorder with buprenorphine/naloxone (Marcovitz, McHugh, Volpe, Votaw, & Connery, 2016). History of prior suicide attempt was recorded in the initial evaluation and was operationalized as at least one previous nonfatal self-injury behavior with the intention to die.

History of diagnosed psychiatric condition. Some studies also examined participants' history of diagnosis with a psychiatric condition by a mental health professional as a predictive factor for SUD treatment outcomes. Participants carrying a psychiatric diagnosis were less likely to complete treatment and tended to stay in residential treatment fewer days compared to those participants without a psychiatric diagnosis (Amodeo et al., 2008). The 2013 study by Guerrero and colleagues of adults receiving publicly funded outpatient SUD treatment services in Los Angeles County only utilized the dichotomous variable for history of mental disorder recorded in the Los Angeles County Participant Reporting System (LACPRS) to analyze the predictive role of psychiatric conditions in SUD treatment outcomes. Participants reporting a positive history for mental disorders were less likely to complete outpatient SUD treatment as well (Guerrero et al., 2013).

In a 2009 study of U.S. veterans in IOP, Curran and colleagues obtained the participants' ICD-10 diagnosis for psychiatric conditions from the VA national database, reporting the presence of psychotic disorders, bipolar disorder, depressive disorders, anxiety disorders, or PTSD. However, the presence of any ICD-10 psychiatric condition was not predictive of SUD treatment outcomes. In fact, only the presence of a psychotic disorder was predictive of noncompletion. MDD and PTSD, on the other hand, were predictive of retention (Curran et al., 2009).

In a 2009 study by Greenfield and Wolf-Branigin, the presence of a COD was established for the participants based on their responses to the Nevada Treatment Episode Data Set (TEDS)

questions related to whether the participant had a psychiatric condition in addition to a SUD or if they received a referral from a mental health/cognitive impairment agency. Participants who reported presence of COD with both measures were significantly less likely to complete treatment than those participants who denied any indicators of COD.

In a systematic review of 122 studies on factors associated with SUD treatment outcomes, Brorson and colleagues (2013) found that 31% of the studies (n = 38) examined the association between having a COD and dropping out of SUD treatment for the following types of psychiatric conditions: mood disorders (Doumas, Blasey, & Thacker, 2005; Lejuez, Zvolensky, Daughters, Bornovalvo, Paulson, Tull, et al., 2008; Levin, Evans, Vosburg, Horton, Brooks, & Ng, 2004), anxiety (Doumas et al., 2005; Lejuez et al., 2008; Levin et al., 2004; McHugh, Murray, Hearon, Pratt, Pollack, Safren, et al., 2013), personality disorders (Doumas et al., 2005; Fernandez-Montalvo & Lopez-Goni, 2010; Lopez-Goni, Fernandez-Montalvo, & Arteaga, 2012; O'Neill, Lidz, & Heilburn, 2003; Ohlin, Hesse, Fridell, & Tatting, 2011; Ravndal, Vaglum, & Lauritzen, 2005; Samuel, LaPaglia, Maccarelli, Moore, & Ball, 2011; Smith et al., 1996), and unspecified types of COD (Amodeo et al., 2008; Brecht et al., 2005; Claus & Kinderberg, 2002; Fowler, Groat, & Ulanday, 2013; Lin, Chen, Wang, Yen, Wu, Yen, et al., 2013; McHugh et al., 2013; Simons, 2008).

History of treatment for psychiatric conditions. Various studies have examined the role of treatment of psychiatric issues related to SUD treatment outcomes. However, the manner in which these studies operationalize treatment of psychiatric issues consistently varies. For instance, Evans and colleagues (2008) used receipt of medication for psychiatric problems and found that taking medication for psychiatric problems was not predictive of SUD treatment outcomes. Four other studies also found that past mental health treatment does not affect SUD

treatment outcomes (Agoisti et al., 1996; Brady et al., 2004; Claus & Kindleberger, 2002; Hiller et al., 1999).

On the other hand, Amodeo and associates (2008) utilized participants' responses to the ASI-P regarding the number of times that they have been hospitalized or used outpatient treatment for psychiatric problems in the past year and the past five years, respectively. Participants who reported any history of treatment for psychiatric conditions in the past 5 years were less likely to complete treatment and tended to remain in treatment fewer days as compared to those participants who did not report a history of psychiatric treatment in the past 5 years (Amodeo et al., 2008). Additionally, a study by Lang and Belenko (2000) reported that a mental health treatment history was predictive of treatment noncompletion for criminal justice offenders in a residential SUD treatment setting. However, this study possesses inherent limitations related to power and multiple testing due to the large number of predictors and the small sample size.

Readiness for Change. With the exception of two studies (Blanchard, Morgenstern, Morgan, Labouive, & Bux, 2003; Burke & Gregoire, 2007), previous research has consistently found pretreatment motivation to be predictive of SUD treatment outcomes (Ali, Green, Daughters, Lejuez, 2017; Cox & Klinger, 1988; De Leon, Melnick, & Kressel, 1997; De Leon, Melnick, Kressel, & Jainchill, 1994; Joe, Simpson, & Broome, 1998; Odenwald & Semrau, 2013; Proschaska, DiClemente, & Norcross, 1992; Ryan, Plant, & O'Malley, 1995; Simpson & Joe, 1993). Low scores on motivational assessments were consistently determined to be predictive of SUD treatment noncompletion across a variety of treatment settings, including outpatient Methadone treatment (Simpson & Joe, 1993), therapeutic communities (De Leon et al., 1997, De Leon et al., 1994); and tobacco and alcohol treatment episodes (Cox & Klinger, 1988; Prochaska et al., 1992; Ryan et al., 1995). Similarly, in a study by Joe and colleagues (1998) found that pretreatment motivation was the most significant predictor of 90-day retention

in long term residential SUD treatment and 360 day outpatient methadone treatment. In a recent study (Ali et al., 2017), higher pretreatment scores related to internal motivation and greater readiness to engage in SUD treatment were significantly associated with a greater likelihood of treatment retention. However, this finding only applied to those participations with higher levels of distress tolerance (Ali et al., 2017). To the contrary, Odenwald and Semrau (2013) found that treatment motivation was only relevant for alcohol detoxification treatment completion among patients reporting a high trauma load, whereas motivation to change was not a significant predictor of treatment completion among patients reporting a low trauma load.

Demographic characteristics.

Gender. The role of gender in SUD treatment completion has produced differing results. Some studies have found that being female was more predictive of SUD treatment completion (Hohman, McGaffigan, & Segars, 2000; Maglione et al., 2000a; SAMHSA, 2009), while other studies reported that being male was more predictive of SUD treatment completion (Fernandez-Montalvo, Lopez-Goni, Azanza, Arteaga, & Cacho, 2017; Guiterres & Todd, 1997; Mangrum, 2009). Still, other studies found that gender was not predictive of SUD treatment completion (Brorson, Arnevik, Rand-Hendriksen, & Duckert, 2013; Odenwalk & Semrau, 2013; Traube, He, Zhu, Scalise, & Richardson, 2015).

Race and ethnicity. With the exception of one study of participants in a first offender drug treatment court diversion program (Butzin, Saum, & Scarpitti, 2002), the majority of studies examining the role of race/ethnicity in SUD treatment completion have consistently found that being Non-Hispanic White/Caucasian was more predictive of SUD treatment completion (Arndt, Acion, & White, 2013; SAMHSA, 2009; Stahler & Mennis, 2018; Stahler, Mennis, & DuCette, 2016). Similarly, studies have found that being African American/Black (Amodeo, Chassler, Oettinger, Labiosa, & Lundgren, 2008; Scott-Lennox, Rose, Bohling, &

Lennox, 2000) or being of non-White race/ethnicity (Brown, 2010; Guerrero et al., 2013) was more predictive of drop out from SUD treatment. Of note, the study by Traube and colleagues (2015) examining SUD treatment outcomes for substance-abusing parents involved in the child welfare system found that all other racial and ethnic groups were more likely to complete SUD treatment than non-Hispanic Whites.

Age. While both Odenwalk and Semrau (2013) found that age was not predictive of dropout from alcohol detox treatment and Traube and associates (2015) found that age was not predictive of successful treatment completion, all other studies examining the role of age in SUD treatment completion consistently reported that older age was more predictive of SUD treatment completion (Arndt et al., 2013; Green, Polen, Dickinson, Lynch, & Bennett, 2002; Mutter, Smith, & Strashny, 2015; Nellori & Ernst, 2004; Maglione et al., 2000a; SAMHSA, 2009; Stahler & Mennis, 2018; Stahler et al., 2015; Zanis, Coviello, Lloyd, & Nazar, 2009). However, the specific demarcation for higher likelihood of completion varied with one study by SAMHSA (2009) reporting that those 40 and older were more likely to complete SUD treatment and Stahler and Mennis (2018) reporting that those 50 and older were more likely to complete SUD treatment. In keeping with these findings, additional studies found that being of younger age was predictive of drop out from SUD treatment (Brecht, Greenwell, & Anglin, 2005; Brorson et al., 2013; Choi & Ryan, 2006; Scott-Lennox et al., 2000; Sinha, Easton, & Kemp, 2003; Siqueland, Crits-Christopher, Frank, Daley, Weiss, Chittams et al., 1998).

Housing. Some studies have found that those who are homeless are more likely to seek residential SUD treatment (Lundgren, Schilling, Ferguson, Davis, & Amodeo, 2003) and tend to remain in residential SUD treatment for longer durations of time compared to those who have their own housing (Amodeo, Chassler, Oettinger, Labiosa, & Lundgren, 2008). However, with the exception of a study by Mangrum (2009) of 10 state funded addiction treatment programs for

patients with COD that found that those who were homeless were more likely to complete SUD treatment than those who were not homeless, other studies addressing the role of housing in SUD treatment completion found that those who were not homeless were more likely to complete SUD treatment (Arndt et al., 2013; Mutter et al., 2015). Similarly, being homeless was more predictive of drop out from SUD treatment (Guerrero et al., 2013; Stahler et al. 2015).

Educational attainment. Studies have consistently found that those individuals with higher educational attainment, specifically the completion of 12 or more years of education, were more likely to complete SUD treatment (Arndt et al., 2013; Butzin et al., 2002; Mutter et al., 2015; SAMHSA, 2009; Stahler & Mennis, 2018). Furthermore, low educational attainment was associated with greater likelihood of drop out from SUD treatment in several studies (Brorson et al., 2013; Brecht et al., 2005; Brown, 2010; Knight, Logan, & Simpson, 2001).

Involvement in the criminal justice system. Early research initially indicated that involvement with the adult criminal justice system was negatively associated with SUD treatment completion (Brewer et al., 1998). For instance, the study by Claus and Kindleberger (2002) found individuals on probation were significantly more likely to drop out of treatment early in both outpatient and residential SUD treatment settings. However, research over the past 15 years has consistently demonstrated that individuals involved with the criminal justice system or referred or coerced by the criminal justice system to participate in SUD treatment programs were more likely to complete SUD treatment (Arndt et al., 2013; Beynon, Bellis, & McVeigh, 2006; Choi & Ryan, 2006; Brecht et al., 2005; Daughters, Stipelman, Sargeant, Schuster, Bornovalova, & Lejuez, 2008; Guerrero et al., 2013; Harrison, Toriello, Pavluck, Ellis, Pedersen, Gaiennie et al., 2007; Lejuez et al., 2008; Maglione et al., 2000a; Mutter et al., 2015; Perron & Bright, 2008; Simons, 2008; Stahler & Mennis, 2018). These findings apply to females involved in the criminal justice system as well. In a study of over half a million female participants in

SUD treatment, females who had been referred or coerced to participate in SUD treatment had greater odds of completing SUD treatment than those female participants who entered treatment voluntarily (Longinaker & Terplan, 2014).

However, in the study by Traube and colleagues (2015), substance-abusing parents involved in the child welfare system with active criminal justice cases or those who were on probation were less likely to complete SUD treatment. As these participants were interacting with three service delivery systems, the complexity of navigating all of these services simultaneously may have negated the positive effect of criminal justice referral and coercion on SUD treatment completion evidenced in other studies. To date, there is limited research on SUD treatment outcomes for individuals interacting with three service delivery systems simultaneously, SUD treatment, criminal justice system, and child welfare system.

Involvement in the child welfare system. While the study by Choi and Ryan (2006) sought to identify the predictive factors of SUD treatment completion among substance-abusing parents whose children were part of the child welfare system, their study did not explore involvement in the child welfare system as a predictive factor for completing SUD treatment. The study by Traube and colleagues (2015) also examined the predictive factors of SUD treatment completion among substance-abusing parents whose children were part of the child welfare system. Participants with an active court case in the child welfare system were more likely to complete treatment than those participants who did not have an active court case in the child welfare system (Traube et al., 2015). However, all participants had history of involvement with the child welfare system even if they did not have an active court case. Similarly, in a study by Scott-Lennox and associates (2000), African American women who had children placed in foster care were more likely to complete treatment compared to African American women in general and women of other races and ethnicities who had children in the foster care system. In

a 2008 study by Worcel and colleagues, substance-abusing parents who received services through Family Treatment Drug Courts (FTDCs) were more likely to complete SUD treatment compared to substance abusing parents who received traditional child welfare services. The results from these studies indicate a tendency for child welfare referral and coercion to be predictive of SUD treatment completion and the importance of further exploring this variable. However, most studies examine the role of SUD treatment completion in child reunification outcomes (Choi, Huang, & Ryan, 2012; Gifford, Eldred, Vernerey, & Sloan, 2014; Green, Rockhill, & Furrer, 2007; Grella, Needell, Shi, & Hser, 2009; Oliveros & Kaufman, 2011), rather than the role of child welfare referral and coercion in SUD treatment completion.

Predictive Factors of Posttreatment Aftercare Service Participation

Participation in long-term continuing care, also known as posttreatment aftercare, following initial inpatient or residential SUD treatment supports individuals in sustaining their recovery efforts (Fiorentine & Hillhouse, 2000; Gossop, Harris, Best, Man, Manning, Marshal, et al., 2003; Hambley, Arbour & Sivagnanasundaram, 2010; McKay, McLellan, Alterman, Rutherford, & O'Brien, 1998; Moos & Moos, 2007). Aftercare services include both professional care and informal support, such as structured outpatient SUD treatment, 12-step meetings (e.g. Alcoholics Anonymous [AA], Narcotics Anonymous [NA]), and post-treatment individual counseling (Arbour, Hambley, & Ho, 2011). Due to the well-established role of aftercare participation in long-term recovery, the factors associated with aftercare participation warrant attention.

Demographic characteristics. Research studies have examined a limited number of demographic variables, including age, educational attainment, criminal justice involvement, gender, substance use, duration of residential/inpatient SUD treatment episode, and CODs, in relationship to aftercare participation. However, no known studies have focused on the role of

race/ethnicity, housing, involvement with the child welfare system, or trauma in predicting participation in aftercare services following intensive SUD treatment, such as inpatient or residential SUD treatment.

Few studies have addressed the predictive role of age, educational attainment, or criminal justice involvement in continuation of services. In a study by Arbour and colleagues (2011), age was not predictive of aftercare participation. While one study found that educational attainment was not associated with aftercare participation (Arbour et al., 2011), higher educational level was associated with engagement in 12-step and individual counseling engagement for patients with alcohol use disorder who completed inpatient hospital detoxification services in Brazil (Terra et al., 2007). In a study by McKay and associates (1998), greater current legal problems were predictive of 12-step aftercare participation. Given the limited study of these demographic variables, further study is merited.

Research on gender as a predictor of aftercare participation is inconsistent. Several studies have examined the role of gender in 12-step meeting participation. While gender did not affect AA attendance, females had higher AA affiliation, in terms of having a sponsor, reading AA material, and meeting service activities in one study (Bodin, 2006). Similarly, another study found that older, female participants had a greater likelihood of aftercare participation compared to younger males (Sannibale, Hurkett, Van Den Bossche, O'Connor, Zador, Capus, et al., 2003). However, other studies have not found gender to be predictive of aftercare service participation (Arbour et al., 2011).

Pretreatment substance use. Research has examined the role of pretreatment substance use in participation in aftercare services; however, these studies have yielded mixed results. One study by Connors and colleagues (2001) reported that pretreatment substance use was associated with AA aftercare participation. On the other hand, pretreatment substance use was not

predictive of self-help group participation in two other studies (McKay et al., 1994; Morgenstern et al., 1997).

Similarly, Arbour and colleagues (2011) found that the longer the problematic substance use history, the more likely one was to participate in 12-step aftercare. Another study also reported that greater length of pretreatment cocaine use was predictive of 12-step aftercare participation (McKay et al., 1998). However, type of substance used was not associated with aftercare participation (Arbour et al., 2011), except for individuals with CODs (Stahler et al., 2007; Stahler et al., 2009). Patients with co-occurring psychiatric and opioid use disorders were the least likely to participate in aftercare services (Stahler et al., 2007; Stahler et al., 2009).

Pretreatment substance use severity as measured by the Rutgers Consequences of Use questionnaire (RCU) was found to be predictive of 12-step aftercare affiliation (Morgenstern et al., 1997). Similarly, higher pretreatment substance use severity was predictive of aftercare program retention for offenders who had completed SUD treatment in prison and were transitioning back to the community (Houser, Salvatore, & Welsh, 2012). The differing substance use variables and measures examined in the aforementioned studies illustrates the importance of further study of the role of primary substance used, pretreatment substance use severity, polysubstance use, and total length of abstinence in aftercare participation.

Length of SUD treatment episode. Several studies have demonstrated the predictive role of length of SUD treatment episode in aftercare service participation. Longer treatment duration has been positively associated with participation in aftercare (Fiorentine & Hillhouse, 2000; Claus, Orwin, Kissin, Krupski, Campbell, & Stark, 2007). Another study by Arbour and associates (2011) found that each additional day the participants spent in residential treatment increased their odds of attending 12-step meetings and post-treatment individual counseling.

Co-occurring substance use and mental disorders. Overall, participants with SUDs only were more likely to utilize aftercare services compared to participations with CODs. For instance, participants without a co-occurring psychiatric disorder were more likely to attend structured outpatient SUD treatment after completing residential SUD treatment in a study by Arbour and colleagues (2011). Similarly, individuals who completed inpatient detoxification and subsequently participated in aftercare services were less likely to have previous history of treatment for psychiatric conditions (Blondell et al., 2006).

Research has also demonstrated that the type of co-morbid psychiatric condition also affects participation in aftercare services. While participants with a co-morbid depressive disorder were more likely to attend post-treatment individual counseling, participants reporting a substance-induced anxiety disorder were less likely to attend post-treatment individual counseling (Terra et al., 2007). Similarly, participants diagnosed with co-occurring depression were more likely to receive aftercare services (Dewa et al., 2012), than those diagnosed with schizophrenia (Dewa et al., 2012) or personality disorders (Gotor & Gonzalez-Juarez, 2004). Additionally, participants with CODs who previously received mental health services were more likely to pursue aftercare services (Stahler et al., 2007) as opposed to those with no previous mental health treatment (Gotor & Gonzalez-Juarez, 2004). These findings suggest that participants actively treating their co-occurring psychiatric disorders and with less disruptive psychiatric conditions, such as depression, are more likely to engage in aftercare services. As approximately 8 million adults in the United States have CODs and are disproportionately represented in the criminal justice system and affected by homelessness (SAMSHA, 2016), greater attention on CODs in relationship to aftercare service participation is warranted, due to its potential to promote long term recovery in this highly vulnerable population.

Readiness for Change. While previous research has explored readiness for change as a predictive factor of aftercare participation, the findings have varied. In terms of 12 step meeting attendance, Morgenstern and colleagues (1997) found that pretreatment motivation significantly predicted AA affiliation. Similarly, another study on aftercare initiation in a prison-based population determined that pretreatment motivation was associated with enrollment in posttreatment aftercare services (De Leon, Melnick, Thomas, Kressel, & Wexler, 2000). However, a study McKay and associates (1994) did not report any significant effects of motivation in participation in aftercare services. Moreover, in a recent study by Arbour and colleagues (2011) of predictive factors of aftercare participation for patients completing residential SUD treatment, pretreatment motivation was not a significant predictor variable of attendance in any of the three types of aftercare, which included individual counseling, 12 step meeting attendance, and outpatient SUD treatment. Given these mixed results, pretreatment readiness for change should be examined as a potential predictive factor of posttreatment aftercare participation.

Sober living environments (SLEs).

However, no studies to date have explored the predictive factors of residing in sober living environments (SLE) after completing residential or inpatient SUD treatment. With the advent of Recovery Bridge Housing (RBH) in Los Angeles County under START-ODS in July 2017, individuals with "minimal risk with regard to acute intoxication/withdrawal potential, biomedical, and mental health conditions" are now eligible for county-subsidized, abstinence-based, peer supported housing while enrolled in concurrent treatment in a variety of outpatient SUD treatment services (Los Angeles County Department of Public Health Substance Abuse Prevention and Control [SAPC], 2017). In contrast with other SLE models, RBH requires concurrent outpatient treatment; RBH does not require self-pay from residents to cover the cost

of room and board; subsidized RBH is no longer limited to perinatal and criminal-justice involved populations; RBH is time limited and available for a period of 3 to 6 months with the exception of pregnant and perinatal patients; and RBH providers must be SAPC contracted providers with membership in recovery housing organizations (SAPC, 2017). In RBH, the following services may be available to residents: peer support, group and house meetings, self-help, and life skills development; however, treatment services are not a faucet of RBH (SAPC, 2017). As individuals with SUDs experience better long term recovery outcomes when they are stably housed (SAPC, 2017), the predictive factors of entering a SLE after the completion of residential or inpatient treatment warrants study.

Predictive Factors of AOD Counselor for Prognoses for Patients' Abstention

To date, only one known study has examined the predictive factors related to AOD counselor's prognoses for abstention from drugs and alcohol for patients who completed SUD treatment. In the 1997 study by Gutierres and Todd of men and women receiving residential SUD treatment in Phoenix, men were more likely to receive positive prognoses for abstention than their female counterparts. However, a positive history of ACEs for abuse experiences was not predictive of positive prognoses for abstention for males or females (Gutierres & Todd, 1997).

Chapter Three: Theoretical Framework

Self-Medication Hypothesis

The Self-Medication Hypothesis (SMH) of addictive disorders informs the current study hypotheses about the relationship between self-reported experiences of trauma and psychiatric conditions and residential SUD treatment outcomes, aftercare participation, and AOD counselor prognoses for abstention from drugs or alcohol. Dr. Khantzian initially developed the Self-Medication Hypothesis (SMH) of addictive disorders in 1985, to provide an explanation of the relationship between individuals diagnosed with psychiatric disorders and their propensity to use drugs and alcohol to relieve their attendant symptoms. Khantzian developed the SMH through clinical observations and interactions based on a modified psychodynamic psychotherapeutic treatment approach with his patients. The initial version of the SMH (Khantzian, 1985) was comprised of three central postulates. First, the causation postulate asserts that individuals will attempt to alleviate distressing psychiatric symptoms through the use of alcohol and/or drugs. Second, the specificity postulate claims that an individual's DOC corresponds to one's psychiatric disorder. Finally, the treatment postulate implies that addressing the underlying psychiatric symptoms will improve the symptoms related to the addiction and decrease drug use.

While the SMH has been highly influential in the fields of substance use disorders and mental health, the SMH in its original iteration received significant criticism (Drake & Wallach, 1989; Nunes, Quitkin, Brady, & Stewart, 1991; Weiss, Griffin, & Mirin, 1992), which led Dr. Khantzian to revise aspects of the SMH in 1997. The two primary criticisms of the original SMH, which center on the causation postulate, are as follows. First, critics claim that many people experience discomfort, confusion, and pain; however, they either do not use drugs or use drugs without becoming addicted to them. Second, critics assert that drug addiction inevitably causes equal or greater levels of distress than drug use relieves. While Khantzian (1997)

addresses criticism related to the causation and specificity postulates of the original SMH, he does not modify the treatment postulate, nor does he discuss treatment implications based on his revised SMH.

According to the 1997 version of the SMH, individuals self-medicate with alcohol and/or drugs in response to a variety of subjective symptoms and feelings of distress, regardless of the presence of psychiatric disorders meeting clinical criteria (Khantzian, 1997). Self-medication typically transpires as a consequence of the following self-regulation contexts: difficulties in regulating emotional affects, interpersonal relationships, self-care, and self-esteem (Khantzian, 1997). Khantzian (1997) asserted that individuals will use alcohol and/or drugs as a maladaptive response to experiencing painful affect states, psychological suffering, or absence of emotions. He further argues that the high prevalence of co-occurring mental health and substance use disorders among psychiatric patients is attributable to their experiences of "prodromal, sub-threshold, and/or chronic dysphoria" (Khantzian, 1997). In its present conceptualization, the SMH expanded the original causation postulate to include feelings of distress, painful affect states, absence of emotions, and dysphoria even among patients who do not meet clinical criteria for psychiatric conditions rather than just distressing symptoms related to psychiatric conditions as a cause of substance use. According to Khantzian (1997), substance use functions to relieve suffering and control suffering and confusing feelings beyond one's understanding and control, which are often linked to sequelae from early-life trauma.

The updated SMH modifies the original specificity postulate, which predicts that the type of psychopathology is related to DOC. For instance, Khantzian (1985) claimed that patients meeting the criteria for Attention Deficit Hyperactive Disorder would be more likely to use cocaine, as they experienced "improved interpersonal relations, more purposeful, focused activity, and improved capacity for work." Khantzian (1997) subsequently revised the specificity

postulate to assert that DOC is more closely related to the prevailing affect state or symptoms and corresponding distress for the individual at that moment. This present conceptualization of the specificity postulate explains the high occurrence of polysubstance use among individuals with SUDs (Lembke, 2012). Accordingly, an individual could be experiencing distressing symptoms of hyperactivity, for which he would "self-medicate" with a stimulant, such as cocaine or amphetamines, as well as insomnia, for which he would self-medicate at night time with marijuana or alcohol, accounting for his polysubstance use to address the distressing symptoms he was experiencing throughout the course of the day.

Furthermore, the revised SMH also examined the role of psychological distress and suffering in relationship to nicotine dependence as well as schizophrenia and post-traumatic stress disorder (PTSD) co-occurring with a SUD (Khantzian, 1997). Based on his clinical interactions and observations and previous research on the relationship between PTSD and SUDs, Khantzian (1997) asserts that there is a high risk for individuals with PTSD to develop SUDs. According to the DSM-5 (American Psychiatric Association, 2013), individuals with PTSD experiencing a range of pervasive and significant psychological suffering ranging from re-experiencing trauma (e.g. recurrent dreams, memories, or related psychological distress), ongoing avoidance or numbing behaviors (e.g. avoidance of thoughts or feelings related to the trauma, amnesia related to the traumatic event(s), restricted affect, feelings of detachment, lower levels of interest in important activities), and hyperarousal (e.g. irritability and anger, poor ability to concentrate, hypervigilance, sleep disturbances, and increased startle response). As alcohol and drugs provide short-term relief to both the painful positive (e.g. panic, anxiety, rage) and negative (e.g. anhedonia, affective flattening, and anergia) affect states experienced by individuals reporting positive histories of trauma, individuals with PTSD tend to self-medicate

with drugs and alcohol to cope with the pain related to these aforementioned symptoms (Khantzian, 1997).

In his discussion of the tendency for individuals with PTSD to self-medicate with alcohol and drugs, Khantzian (1997) reviews the applicability of his revised specificity postulate for the prevailing symptoms of PTSD. Given the wide array of symptoms experienced by trauma survivors and those diagnosed with PTSD, the SMH (Khantzian, 1997) addresses how drug preference and use is dictated by "whatever symptoms of cluster of symptoms (and associated distress) predominated for any given individual (and/or at any given time)," accounting for the prevalence of polysubstance abuse along this population in particular. In the revised SMH, Khantzian (1997) outlines which substances provide temporary relief for the positive and negative symptoms associated with PTSD. For example, Khantzian (1997) recounts how many of his patients who were veterans diagnosed with PTSD would use opiates to soothe and subdue their feelings of rage. Likewise, alcohol used in high, "hypnotic" doses as well as benzodiazepines can serve to dampen the emotional flooding experienced by trauma survivors, whereas low to moderate doses of alcohol ameliorate the feelings of estrangement and detachment as well as psychic numbing. Finally, stimulants, such as cocaine and amphetamines, including MA, serve to counter the feelings of anhedonia and deactivation experienced by individuals with PTSD. The revised SMH specifically addresses the role of trauma and PTSD in the development of SUDs, continued and chronic use of alcohol and drugs, and episodes of relapse after periods of abstinence, which is the primary interest of this proposed study.

Given the high prevalence of traumatic experiences among patients seeking SUD treatment services, Khantzian's revised SMH (1997) elucidates the connection between experiences of trauma and its associated sequelae of symptoms and the tendency to self-medicate with drugs and/or alcohol to cope with the symptoms of psychological distress. Despite self-

reported experiences of trauma and symptoms of psychological distress, many patients with SUDs have never previously received mental health services or are not currently receiving mental health services at the time they enter residential SUD treatment. According to the treatment postulate of the original SMH (Khantzian, 1985), treating the underlying psychiatric problems and painful emotional states, including history of trauma and PTSD, is imperative to the recovery process from SUDs.

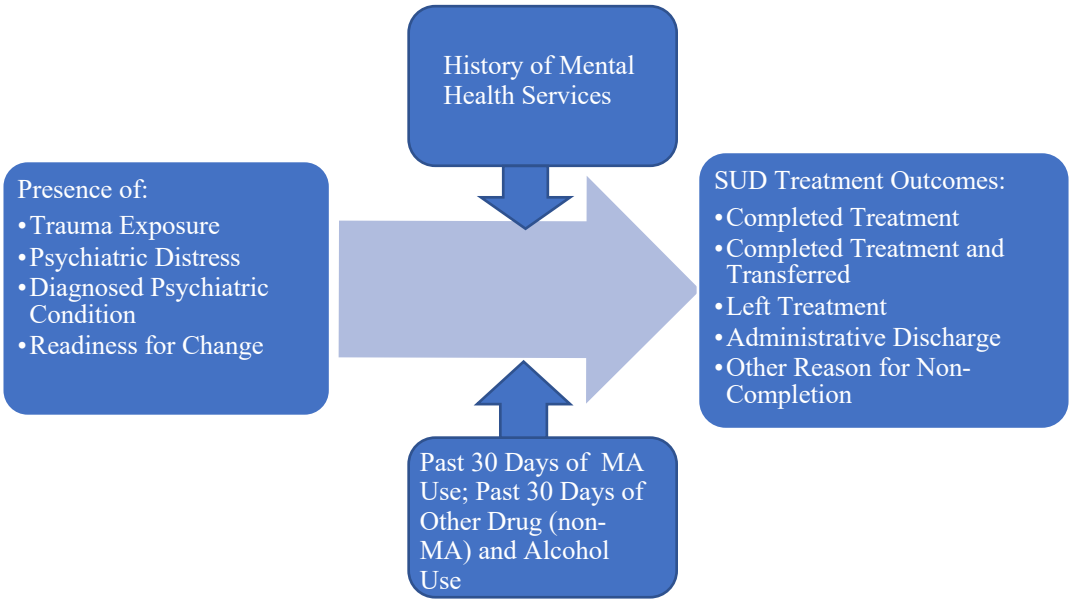
Conceptual Framework

The present study's conceptual framework, displayed in Figure 4.1 below, illustrates how trauma exposure, current symptoms of psychiatric distress, and history of diagnosed psychiatric conditions have the potential to increase the likelihood of negative SUD treatment outcomes, including leaving treatment or administrative discharge from treatment. Based on the treatment postulate of the SMH, the relationship between pretreatment trauma, psychiatric conditions, psychiatric distress, and readiness for change and SUD treatment outcomes is hypothesized to be moderated by history of treatment for psychiatric conditions (e.g. outpatient mental health services, psychiatric hospitalization, and use of psychotropic medication) as well as the number of days of MA or other drug and alcohol use in the past 30 days.

Chronic and severe use of alcohol and drugs, including MA, results in significant reduction in D2 receptor levels in the brain, which persist even after periods of protracted abstinence (Volkow, Wang, Fowler, & Telang, 2008). As a consequence of compromised D2 receptors, individuals become less sensitive to rewards, less motivated, and more likely to find the world dull (Volkow et al., 2008). Furthermore, low levels of D2 receptors cause decreased activity in the prefrontal cortex, impairing one's ability to think critically and exercise restraint (Volkow et al., 2008). Therefore, these individuals have a greater likelihood of seeking out drugs and alcohol to enhance everyday life, resulting in potentially negative treatment outcomes.

Research has consistently demonstrated that high levels of pretreatment MA use compromises brain integrity and creates both short-term and long-term neurotoxicity, including psychiatric disturbances, such as anergia, dysphoria, lack of mental energy, insomnia, psychotic or violent behavior, auditory hallucinations, anxiety, irritability, and paranoia as well as neuropsychological disturbances, including impairment of perceptual speed, information manipulation, reaction time, working memory, concentration, and coping skills (Chang, Smith, LoPresti, Yonekura, Kuo, Walot, & Ernst, 2004; Ernst, Chang, Leonido-Yee, & Speck, 2000; London et al., 2005; Paulus, Hozack, Zauscher, Frank, Brown, Braff, & Schuckit, 2002; Ornstein, Iddon, Baldacchino, Sahakian, London, Everitt, & Robbins, 2000; Sekine et al., 2001; Simon, Dacey, Gylnn, Rawson, & Ling, 2004; Volkow et al., 2001a; Volkow et al., 2000b; Volkow et al., 2000d). As a consequence, patients reporting high levels of pretreatment MA use in the past 30 days may experience a high level of difficulty functioning in a SUD treatment environment, leading to potentially poorer treatment outcomes compared to patients with low levels or no pretreatment MA use in the past 30 days.

FIGURE 4.1



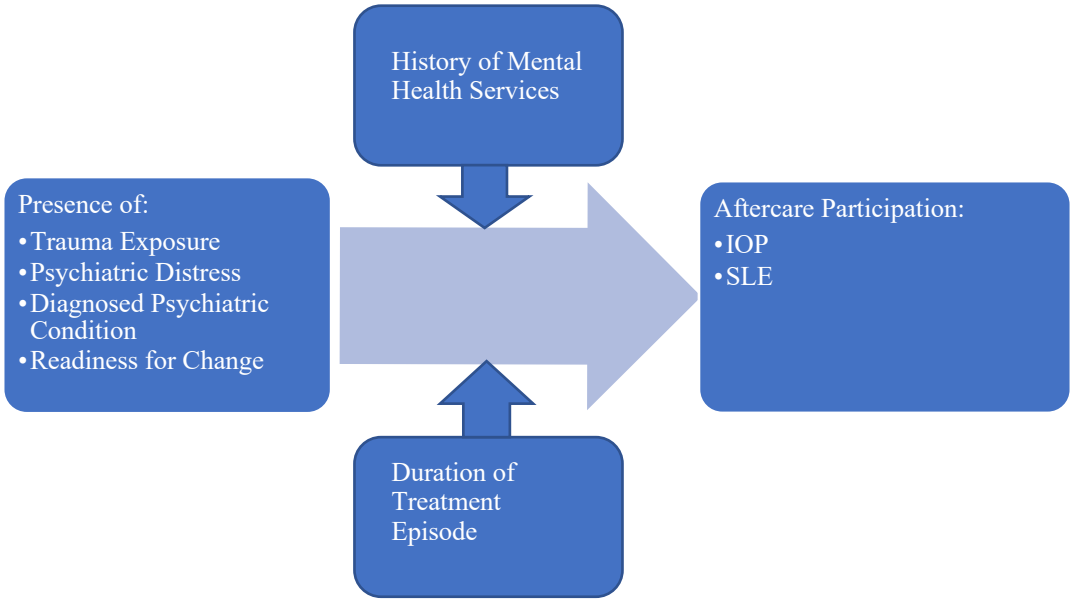
Based on this preliminary conceptual framework, the present study aims to address the following research question: What is the role of pretreatment substance use, trauma, mental health, readiness for change, and self-medication for psychiatric distress domains for adult patients who meet the DSM-5 criteria for a severe substance use disorder (SUD) and the ASAM Criteria for residential SUD treatment in residential SUD treatment outcomes?

The conceptual framework illustrated below in Figure 4.2, demonstrates how pretreatment trauma exposure, current symptoms of psychiatric distress, poor ratings related to readiness for change, and history of diagnosed psychiatric conditions have the potential to decrease the likelihood of posttreatment aftercare participation, including enrollment in IOP and a SLE, following the successful completion of residential SUD treatment. Based on the treatment postulate of the SMH, the relationship between trauma, psychiatric conditions, psychiatric distress, and readiness for change is hypothesized to be moderated by history of treatment for psychiatric conditions (e.g. outpatient mental health services, psychiatric hospitalization, and use of psychotropic medication) as well as the duration of residential SUD treatment episode.

Several research studies have demonstrated improved brain functioning with abstinence from MA. Partial recovery to the neocortical regions (Berman et al., 2008b) and thalamus (Wang et al., 2004) has been documented following one and nine months of abstinence from MA, respectively. Two studies have noted that MA abstinence also resulted in relatively higher global and parietal cortex glucose metabolism (Berman et al., 2008b; Volkow et al., 2001). Furthermore, duration of MA abstinence was positively correlated with partial normalization of the anterior cingulated cortex, demonstrating the potential for neuronal recovery with extended abstinence from MA (Nordahl et al., 2005). As a consequence, patients reporting longer duration of abstinence from alcohol and drugs, especially MA, during their residential SUD treatment episode as verified by negative UA tests may experience improved neurocognitive and

psychiatric functioning, improving their likelihood of participating in aftercare services, such as IOP and SLE.

FIGURE 4.2



Based on this preliminary conceptual framework, the present study aims to address the following research question: What is the role of pretreatment substance use, trauma, mental health, readiness for change, and self-medication for psychiatric distress domains for adult patients who meet the DMS-5 criteria for a severe substance use disorder (SUD) and the ASAM Criteria for residential SUD treatment and who successfully complete residential SUD treatment in their subsequent enrollment in posttreatment aftercare services?

Finally, the SMH and the research related to the neurobiological, cognitive, and psychiatric effects of chronic alcohol and drug use guides the present study's aim to explore the following research question: What is the role of pretreatment substance use, trauma, mental health, readiness for change, and self-medication for psychiatric distress for adult patients who meet the DSM-5 criteria for a severe substance use disorder (SUD) and the ASAM Criteria for

residential SUD treatment in AOD Counselors' ratings for patients' prognoses for abstention from drugs alcohol at the conclusion of their residential SUD treatment episodes?

Chapter Four: Methodology

Introduction

According to the most recent National Survey on Drug Use and Health conducted by Substance Abuse and Mental Health Services Administration (SAMHSA), 20.1 million people aged 12 and older met the DSM-5 criteria for a SUD (Stimulant Use Disorder) in the United States (SAMHSA, 2017). Similarly, 8.45% of California residents aged 12 and older met the criteria for a SUD (SAMHSA, 2017), and an estimated 702,746 Los Angeles County residents aged 12 and older met the criteria for a SUD (NDEWS, 2016).

Compared to trends in types of illicit substances used across the United States, the use of methamphetamines (MA) is overrepresented in the American West, especially in California and Los Angeles County. As a consequence, 59.5% of participants in the sample reported that their DOC was MA and were diagnosed with Stimulant Use Disorder – Amphetamine-Type Substance/Severe. MA use seems to be overrepresented in the present study, as MA only accounted for 25% of treatment admissions in Los Angeles County in 2015 (NDEWS, 2016); however, this calculation included outpatient SUD services in addition to residential SUD services. MA was ranked first among drugs in Los Angeles County, totaling to 38.7% of drug reports by NFLIS (NDEWS, 2016). As the price of MA continues to decrease in Los Angeles County from $250 per 1/8 ounce in 2008 to an all-time low of $80 to $140 per 1/8 ounce in 2015 (NDEWS, 2016), the expected use and proliferation of the drug is expected to increase due to its ready accessibility and low cost compared to other drugs.

Sample

Inclusion criteria. The sample includes all patients who possessed or were eligible for Medi-Cal, My Health LA, or participants in another Los Angeles County funded program (CalWORKs, DCFS, General Relief, and Assembly Bill 109); aged 18 and older; and were

residents of Los Angeles County. Additionally, all of the patients in the sample consented to participate in the American Society of Addiction Medicine (ASAM) Multidimensional Assessment in order to determine their eligibility to receive residential SUD treatment services and were admitted into a residential drug treatment facility in Hawthorne, California, between August 1, 2017, and March 1, 2018. The sample size includes 200 patients (n = 200).

This sample only includes individuals who meet the criteria for a DSM-5 SUD with a moderate or severe specifier and who were admitted to residential SUD treatment. Additionally, all participants responded to the ASAM Assessment item related to experiences with trauma with 76.5% of participants reporting experiencing any form of trauma in their lifetime as well as the ASAM Assessment items related to emotional, behavioral, or cognitive conditions with 53% of the participants reporting a history of treatment for psychiatric problems. However, the sample is comprised solely of low-income and indigent adults aged 18 and older residing in Los Angeles County for at least the past 60 days prior to their assessment, as the participants must possess or be eligible for Medi-Cal, My Health LA, or other Los Angeles County funded programs in order to fund their residential SUD treatment services. Similarly, this sample predominantly had a low level of educational attainment with 75% of the participants obtaining a 12^{th} grade education or less. Additionally, 60% of the sample reported being homeless at the time of the assessment.

This sample also included participants involved with the criminal justice system with 30% of the participants on probation, 10% of the participants completing their jail sentence in residential SUD treatment through the START program, and 11% reporting that they were court mandated to attend residential SUD treatment. Additionally, 13.5% of the sample indicated that they had an open Department of Children and Family Services (DCFS) case and had been required to complete a SUD treatment program as part of their parent reunification plan through Edelman's Children's Court. Therefore, this sample is not representative of the greater

population of individuals who meet the criteria for SUDs in terms of the high level of criminal justice and child welfare system involvement.

Exclusion criteria. The sample does not reflect the socio-economic status of the greater SUD population who meet the criteria in the United States, as individuals with incomes that exceeded Medi-Cal eligibility categories are required to pay a fee for service programming totaling to over $5000 per month in out of pocket cost. As this residential SUD treatment facility is not authorized to provide services to minors, no minors were included in the sample. Patients seeking treatment who tested positive for opiates, alcohol, or benzodiazepines at the time of assessment were also excluded from this study, as they were referred to treatment at facilities licensed to provide withdrawal management (WM) services. Furthermore, this residential SUD treatment facility operates in English; therefore, there were no monolingual non-English speakers receiving services at this facility.

The de-identified dataset was obtained from a non-profit agency, which provides SUD treatment and prevention services in Los Angeles County. Based on the information provided by the patients during their ASAM Multidimensional Assessment with a LPHA (Licensed Professional of the Healing Arts), the Substance Abuse Prevention and Control (SAPC), Discharge Transfer forms completed by their respective Drug and Alcohol Counselors at the time of their completion, discharge, or transfer from the program a de-identified database was developed. The CEO of the agency granted me written permission to utilize this data. The letter was subsequently submitted as part of an IRB application, and this study received a letter of exemption from the IRB (see Appendix A).

Procedures

A large, non-profit SUD treatment provider in Los Angeles County collected and compiled the dataset used in this study. When a patient was scheduled for intake at the

residential SUD treatment center in Hawthorne, CA, the Licensed Professional of the Healing Arts (LPHA) performed a full paper version of the SAPC Assessment Tool for Adults with the patient, which typically took an hour to an hour and a half to complete. When a patient's treatment episode ended, the patient's primary AOD Counselor completed the SAPC Discharge/Transfer Form, which described the treatment disposition, the patient's prognosis, and aftercare plan for the patient. All of this data is stored at the agency's corporate headquarters. A database was developed by the agency to include all of the information recorded in the ASAM Multidimensional Assessment and the treatment disposition, prognosis, and aftercare services listed in the Discharge/Transfer Form. However, this database does not contain any identifying information and is organized by the agency's patient ID numbering system.

Instruments

The paper version of the SAPC Assessment Tool for Adults is 14 pages long and is based on the ASAM Criteria (3rd Edition) Multidimensional Assessment (Appendix B). The SAPC Assessment Tool includes the six dimensions of the ASAM Criteria in order to create a comprehensive, biopsychosocial assessment of individuals pursuing SUD treatment, which is utilized to determine level of care based on the "degree of direct medical management provided, the structure, safety, and security provided and the intensity of treatment services provided" (American Society of Addiction Medicine, 2018) as well as guide service planning, determination of continued stay, and discharge/transfer of patients with addiction and co-occurring disorders. The six dimensions of the Multidimensional Assessment found in the SAPC Assessment Tool are as follows: Dimension 1 – Acute Intoxication and/or Withdrawal Potential, Dimension 2 – Biomedical Conditions and Complications, Dimension 3 – Emotional, Behavioral, and Cognitive Conditions and Complications, Dimension 4 – Readiness for Change, Dimension 5 – Relapse, Continued Use, or Continued Problem Potential, and Dimension 6 –

Recovery/Living Environment (ASAM, 2018). The ASAM's treatment criteria for adults currently are required in over 30 states (ASAM, 2018).

However, the SAPC Assessment Tool is less comprehensive than the ASAM Continuum, and no research studies to date have examined the reliability or validity of this tool in determining the severity levels of the six dimensions and the assignment of level of care placement.

Existing studies have only examined the reliability and the validity of two computer-driven software version of the ASAM Multidimensional Assessment, the multiple iterations of the ASAM Patient Placement Criteria (PPC, PPC-1, PPC-2, PPC-2R) (Baker & Gastfriend, 2003; Angarita et al., 2007; Magura et al., 2003; Sharon et al., 2003; Boltaev et al., 2004; Deck et al., 2003; Turner et al., 1999) and its successor, the ASAM Continuum (Stallvik, Gastfriend, & Nordahl, 2014; Stallvik & Gastfriend, 2014). These aforementioned studies demonstrate that the ASAM Criteria Software, which is utilized by all iterations of PPC and the Continuum, show face validity, good reliability and feasibility through the use of standardized computer assessment instruments, good concurrent validity compared to other instruments, and predictive validity in terms of time frames, outcomes, and heroin, cocaine, and comorbidity. Both the computer-driven software versions of the ASAM Multidimensional Assessment and the paper version include all six of the aforementioned dimensions and include items related to the Emotional, Behavioral, and Cognitive Conditions. The computer software version of the ASAM Multidimensional Assessment contains similar items as the paper version; however, the computer software versions include a greater number of questions and is more comprehensive. On the other hand, the paper version captures a greater amount of information related to lifetime experiences of trauma and abuse, whereas the computer driven tool only asks about experiences of emotional, sexual, or physical abuse in the past 30 days.

Dependent Variables

The first dependent variable of interest in this study was residential SUD treatment outcome. The outcome was recorded in the SAPC Discharge and Transfer Form (Appendix C), which is completed by the AOD Counselors when the participants' treatment episodes ended. The form includes ten possible categorical outcomes, including 1 = Completed treatment goals/plan at this level of care, 2 = Completed treatment goals/plan at this level of care and transferred, 3 = Left before completing treatment goals/plan, 4 = Left before completing treatment goals/plan and transferred, 5 = Voluntary, 6 = Administrative discharge, 7 = Discharged into other, more appropriate system of care, 8 = Death, 9 = Incarceration, and 10 = Other. Categories with less than 10% of the sample population (n = 20) were collapsed. As a result, the following five categories remained: 1 = Completed treatment goals/plan at this level of care, 2 = Completed treatment goals/plan at this level of care and transferred, 3 = Left before completing treatment goals/plan, 4 = Administrative Discharge, and 5 = Other.[1]

The second dependent variable of interest in this study, an ordered categorical variable, was the patients' prognosis rating assigned by their primary AOD Counselor when the participants' treatment episode ended. The AOD Counselors had the option of assigning ratings based on a three-point Likert scale, lower scores representing better prognosis. These ratings were coded as the following three categories: 1 = good, 2 = fair, and 3 = poor.

The third dependent variable of interest in this study for those patients who successfully completed residential SUD treatment, a categorical variable, was patients' enrollment in aftercare services, which was documented by their primary AOD Counselor on their SAPC Discharge/Transfer form (Appendix C). The following categorical outcomes were recorded: 1 =

[1] This outcome variable was further collapsed into 1 = Completed treatment and 2 = Did not complete treatment in order to conduct binary logistic regression analyses.

no aftercare services, 2 = outpatient SUD treatment services, and 3 = outpatient SUD treatment services and sober living environment (SLE).

Independent Variables

The independent variables utilized in this study were conceptually organized in 6 domains support by the literature. In addition, several sociodemographic variables were also included into a seventh "domain." This yields a total of thirty-four variables. Several of the independent variables were created through a data reduction approach. In this case, the cluster analysis approach used was based on Ward's minimum variance method was used to create the measures below. Ward's minimum variance criterion minimizes the total within-cluster variance. This process begins with each observation as a singleton. Individuals are combined in such a way that it leads to minimum increase in total within-cluster variance.

Pretreatment substance use.

Types of Polysubstance Use was constructed through performing Ward's Method of Cluster Analysis. Four distinct classifications of combinations of types of substances used emerged. The first grouping included participants who reported predominantly using MA and alcohol. The second grouping included participants who reported predominantly using alcohol and marijuana. The third grouping included participants who reported predominantly using MA and marijuana. The fourth grouping included participants who reported predominantly using MA, alcohol, heroin, and marijuana.

Primary Substance Used was constructed based on participants' reported primary substance used during the intake process. Participants were able to select MA, marijuana, alcohol, heroin/opiates, cocaine/crack cocaine, sedatives, PCP, and other. Categories with less

than 10% of the sample size (n = 20) were collapsed. As a result, the following categories remained: MA, marijuana, alcohol, heroin/opiates, and other.[2]

Number of days of MA use in past 30 days was a continuous variable constructed for all participants who reported MA as either their primary or secondary DOC and the corresponding number of days they reported using MA out of the past 30 days.

Number of days of primary substance use in past 30 days was a continuous variable constructed for all participants based on the number of days they reported using their primary substance used out of the past 30 days.

Presence of active withdrawal symptoms was a dichotomous variable constructed based on participants' responses to, "Are you currently experiencing withdrawal symptoms?" The variable was coded 1 for participants who responded yes and reported withdrawal symptoms. The variable was coded 0 for participants who responded no and did not report any active withdrawal symptoms.

Trauma.

Type of Trauma was categorical variable constructed through performing Ward's Method of Cluster Analysis. Five distinct trauma classifications emerged. The first grouping included participants reporting limited trauma exposure. The second grouping included participants who predominantly reported experiences of intimate partner violence and sexual assault as an adult as well as loss/separation from a child (e.g. death, loss of child custody). The third grouping included participants who had reported only experienced the deaths of family members, which significantly affected them emotionally. The fourth grouping included participants who identified several instances and types of non-abuse trauma transpiring in adulthood, including

[2] Primary Substance Used was further collapsed into 1 = Depressants (e.g. alcohol, marijuana, heroin/opiates, and sedatives) and 2 = Stimulants (e.g. MA, cocaine/crack cocaine, and PCP), which was used in analyses involving smaller sample sizes and/or dependent variables with multiple categorical or ordinal outcomes.

death of family, death of close friends, and witnessing violence (watching others get stabbed or shot; discussed in terms of community violence as well as in the course of participating in criminal/gang activity or while incarcerated). The fifth grouping included participants who reported both childhood abuse and IPV and sexual assault in adulthood as well as loss/separation from a child (e.g. death or loss of child custody).

History of Abuse was a dichotomous variable constructed based on participants' responses to, "Have you ever experienced physical, emotional, or sexual abuse in your lifetime?" The variable was coded 0 = no, for participants who did not report a history of abuse, and 1 = yes, for participants who reported a history of abuse.

History of Significant Trauma was a dichotomous variable constructed based on participants' responses to, "Have you ever experienced a traumatic event in your lifetime?" The variable was coded 0 = no, for participants who did not report a history of traumatic events, and 1 = yes, for participants who reported a history of traumatic events.

Mental health.

Presence and Treatment of Psychiatric Conditions was a categorical variable constructed through performing Ward's Method of Cluster Analysis. Four distinct classifications emerged regarding the presence and treatment of psychiatric conditions. The first grouping included participants who did not report any significant psychiatric symptoms or history of receipt of mental health services. The second grouping included participants who reported psychiatric symptoms, including psychotic symptoms, and had a history of receipt of mental health services. The third grouping included participants who reported psychiatric symptoms, excluding psychotic symptoms, and had a history of receipt of mental health services. The fourth grouping included participants who reported psychiatric symptoms but denied a history of mental health services.

Score on Mood Symptoms was constructed by creating a composite score (sum) based on the number of mood symptoms out of a list of eight symptoms the participant agreed in the affirmative that they had experienced in the past 30 days. These mood symptoms included "depression/sadness," "loss of pleasure/interest," "hopelessness," "irritability/anger," "impulsivity," "pressured speech," "grandiosity," and "racing thoughts." Participants received a composite score ranging from 0 to 8 based on the presence of the number of mood symptoms they reported.

Score on Anxiety Symptoms was constructed by creating a composite score (sum) based on the number of anxiety symptoms out of a list of four symptoms the participant agreed in the affirmative that they had experienced in the past 30 days. These anxiety symptoms included "anxiety/excessive worry," "obsessive thoughts," "compulsive behaviors," and "flashbacks." Participants received a composite score ranging from 0 to 4 based on the presence of the number of anxiety symptoms they reported.

Score on Psychotic Symptoms was constructed by creating a composite score (sum) based on the number of psychotic symptoms out of a list of three symptoms the participant agreed in the affirmative that they had experienced in the past 30 days. These psychotic symptoms included "paranoia," "delusions," and "hallucinations." Participants received a composite score ranging from 0 to 3 based on the presence of the number of psychotic symptoms they reported.

Score on PTSD Symptoms was constructed by creating a composite score (sum) based on the number of PTSD symptoms out of a list of seven symptoms the participant agreed in the affirmative that they had experienced in the past 30 days. These PTSD symptoms included "sleep problems," "anxiety," "problems with memory/concentration," "irritability," "obsessive thoughts," "compulsive behaviors," and "flashbacks." Participants received a composite score ranging from 0 to 7 based on the presence of the number of PTSD symptoms they reported.

Number of Inpatient Psychiatric Hospitalizations was continuous variable constructed for all participants based number of days they reported previous inpatient psychiatric hospitalizations in their lifetime.

History of Diagnosis with a Psychiatric Condition was a dichotomous variable constructed based on participants' responses to, "Have you ever been diagnosed with a mental illness?" The variable was coded 0 = no, for participants who did not report a history of diagnosis with a psychiatric condition, and 1 = yes, for participants who reported a positive history of psychiatric condition(s).

History of Treatment for a Psychiatric Condition was a dichotomous variable constructed based on participants' responses to, "Have you previously received treatment for psychiatric or emotional problems?" The variable was coded 0 = no, for participants who did not report a history of treatment for a psychiatric condition, and 1 = yes, for participants who reported a history of treatment for a psychiatric condition.

Need for Psychiatric Assessment was a dichotomous variable constructed based on the response provided by the clinician, who conducted the ASAM Assessment with the participant, to the question, "Is further assessment of mental health needed?" The variable was coded 0 = no, for participants who did not require a psychiatric assessment at time of intake based on the clinician's judgment, and 1 = yes, for participants who required a psychiatric assessment at the time of intake based on the clinician's judgment.

Current Mental Health Provider was a dichotomous variable constructed based on participants' responses to, "Are you currently receiving treatment for psychiatric or emotional problems?" The variable was coded 0 = no, for participants who did not have a mental health provider at the time of intake, and 1 = yes, for participants who had a mental health provider at the time of intake.

Current Psychotropic Medication was a dichotomous variable constructed based on participants' responses to, "Are you currently taking medication for a psychiatric condition?" The variable was coded 0 = no, for participants who were not taking psychotropic medication at the time of intake, and 1 = yes, for participants who were taking psychotropic medication at the time of intake.

Self-medication for psychiatric distress.

Triggers to Use – Mental Health Symptoms was a dichotomous variable constructed based on participants' responses to, "Are you aware of your triggers to use alcohol or drugs?" One of the triggers listed was "Mental Health." The variable was coded 0 = no, for participants who reported that mental health symptoms were not a trigger for substance, and 1 = yes, for participants who reported that mental health symptoms were a trigger for substance use.

Triggers to Use – Negative Intrapersonal Contexts was a dichotomous variable constructed based on participants' responses to, "Are you aware of your triggers to use alcohol or drugs?" One of the triggers listed in was "Negative Emotions." The variable was coded 0 = no, for participants who reported that negative emotions were not a trigger for substance, and 1 = yes, for participants who reported that negative emotions were a trigger for substance use.

Barriers to Recovery – Mental Health was a dichotomous variable constructed based on participants' responses to, "What are potential barriers to your recovery?" in Dimension 4, Readiness for Change, in the SAPC ASAM Assessment Tool. The variable was coded 0 = no, for participants who did not verbalize mental health symptoms as a barrier to their recovery as well as for those participants who could not identify any barriers to recovery. The variable was coded 1 = yes, for participants who explicitly stated that mental health symptoms would be a barrier to their recovery.

Barriers to Recovery – Negative Intrapersonal Contexts was a dichotomous variable constructed based on participants' responses to, "What are potential barriers to your recovery?" The variable was coded 0 = no, for participants who did not verbalize negative emotions as a barrier to their recovery as well as for those participants who could not identify any barriers to recovery. The variable was coded 1 = yes, for participants who explicitly stated that negative emotions would be a barrier to their recovery.

Readiness for change.

Dimension 4 Severity Rating was a categorical variable coded as 0 = None – "Willing to engage in treatment," 1 = Mild – "Willing to enter treatment but ambivalent to the need to change," 2 = Moderate – "Reluctant to agree to treatment; low commitment to change substance use; passive engagement in treatment," 3 = Severe – "Unaware of need to change; unwilling or partially able to follow through with recommendations for treatment," and 4 = Very Severe – "Not willing to change; unwilling/unable to follow through with treatment recommendations." Each participants was assigned one of the aforementioned ratings based on the clinician's perception of one's "Readiness to Change." Categories with less than 10% of the sample size (n = 20) were collapsed. As a result, the following categories remained: None, Mild, Moderate, and Severe.[3]

Importance of SUD Treatment was a categorical variable constructed based on participants' responses to, "How important is it for you to receive treatment for alcohol and/or drug problems?" The variable was coded 0 = "Not at all important," 1 = "Slightly important," 2 = "Moderately important," 3 = Considerably important," and 4 = "Extremely important."

[3] Readiness to Change was further collapsed into 0 = None, 1 = Mild to Moderate, and 2 = Severe to Very Severe, which was used in analyses involving smaller sample sizes and/or dependent variables with multiple categorical or ordinal outcomes. The variable was later collapsed into 1 = Low – Willingness to participate in treatment (e.g. those participants who had been rated None to Moderate) and 2 = High – Limited to no willingness to participate in treatment (e.g. those participants who had been rated Severe to Very Severe).

Categories with less than 10% of the sample size (n = 20) were collapsed. As a result, the following categories remained: “Not at all to slightly important,” “Moderately to considerably important,” and “Extremely important.”

History of SUD Treatment was a dichotomous variable constructed based on participants’ responses to, “Have you received help for alcohol and/or drugs in the past?” The variable was coded 0 = no, for participants who never previously received any form of SUD treatment, and 1 = yes, for participants who previously received SUD treatment.

Duration of Participation in Residential SUD Treatment

Duration of Participation in Residential SUD Treatment was a continuous variable calculated by subtracting the participants’ intake dates from their completion dates.

Sociodemographic Variables

Gender was a dichotomous variable was coded male = 1, female = 2. Since only one MTF and no FTMs entered treatment during the course of the study, “MTF” was collapsed into the category “female.”

Race/ethnicity was a categorical variable constructed from participants’ responses to “How do you identify in terms of race or ethnicity?” The variable was coded as 1 = Caucasian, 2 = Black, 3 = Hispanic, 4 = Asian/Pacific Islander, 5 = Native American, 6 = Multiracial, and 7 = Other. Categories with less than 10% of the sample population (n = 20) were collapsed. As a result, the following four categories remained: 1 = Caucasian, 2 = Black, 3 = Hispanic, and 4 = Other.[4]

Age was a continuous variable calculated by subtracting birth year, month, and day from the intake date to residential SUD treatment.

[4] Race/ethnicity was further collapsed into a dichotomous variable coded as 1 = non-Hispanic white and 2 = all other races/ethnic groups (except for non-Hispanic white), which was used in analyses involving smaller sample sizes and/or dependent variables with multiple categorical or ordinal outcomes.

Housing was categorical variable coded as 1 = homeless, 2 = independent living, and 3 = other. As none of the participants reported "other," the variable was collapsed into 1 = homeless and 2 = independent living.

Literacy Level was a categorical variable initially coded as 1 = high, 2 = moderate, and 3 = low.

Criminal justice status was a categorical variable constructed based on participants' responses to "Are you currently involved with social services or the legal system (e.g. DCFS, court mandated, probation, Parole)?" The variable was coded as 1 for participants who responded that they were on probation or parole, had been court mandated to SUD treatment, or were participants in the START program. The variable was coded 0 for participants who denied any type of forensic involvement.

Child welfare status was dichotomous variable constructed based on participants' responses to, "Are you currently involved with social services or the legal system (e.g. Department of Children and Family Services [DCFS], court mandated, probation, Parole)?" The variable was coded as 1 for participants who responded that they had an open DCFS case and 0 for participants who denied that they had an open DCFS case.

Analysis

Descriptive analysis. Descriptive information including means, standard deviations and frequencies were generated for all variables in the dataset. These descriptive statistics were reported in the Results Chapter.

Relationships/Associations. Correlations and/or associations were produced for all the variables (dependent, independent) in the study (see Appendices E, F, G, and H). Since the majority of the variables were categorical (both ordered and unordered) comprise the existing dataset, associations were presented. For the continuous variables, correlations were provided.

Inferential analysis. Binary and multinomial logistic regression were used to determine the predictors of residential SUD treatment disposition for research question 1 (see Tables 1 and 2). This study examined the role of substance use, trauma, mental health, readiness for change, and self-medication for psychiatric distress to predict treatment disposition. The following sociodemographic variables also were included in the analysis: gender, race/ethnicity, age, living arrangements, educational attainment, forensic status, and DCFS status.

Multinomial logistic regression was used to determine the predictors of enrollment in aftercare services for those who completed residential SUD treatment for research question 2 (see Table 3). This study explored the role of substance use, trauma, mental health, readiness for change, duration of participation in residential SUD treatment, and self-medication for psychiatric distress to predict enrollment in aftercare services. The following sociodemographic variables also were included in the analysis: gender, race/ethnicity, age, living arrangements, educational attainment, forensic status, and DCFS status.

Ordinal logistic regression was used to determine the predictors of the patients' assigned prognosis at the end of the treatment episode for research question 3 (see Table 4). This study examined the role of substance use, mental health trauma, readiness to change, and self-medication for psychiatric distress to predict patients' assigned prognosis at the end of the treatment episode. The following control variables also were included in the analysis: gender, race/ethnicity, age, living arrangements, educational attainment, forensic status, and DCFS status. SPSS 25 was used to conduct the statistical analyses.

Variable selection approach. The number of variables in this study were considerable, let alone the number of parameter estimates. As a result, user determined hierarchical regression was conducted (see Appendices I, J, and K). Variables significant at $p < .05$ for each conceptual domain were included in the full model for each respective research question.

Chapter 5: Results

Descriptive Statistics

The final sample of 200 participants consisted of mostly males (60%). The participants reported their race/ethnicity as White (29%), Black (28.5%), Hispanic (36%), and Other (6.5%). Ages ranged from 20 to 83 years, with an average age of 36.6 years. A majority of the participants (60.5%) did not have stable living arrangements and reported being homeless. Only 18% of the participants had attended some college or higher, while the majority of the participants (54.5%) had obtained their high school diploma/GED and 25% had less than a high school education/no GED. Almost half of the participants (45%) identified that they were currently involved with the criminal justice system (e.g. probation, parole, court ordered to treatment, or START program participants). However, only 14% of the participants reported that they had an open DCFS case.

	Means/SD or percent (n)
Gender	
Male	60% (120)
Female	40% (80)
Race/Ethnicity	
Caucasian	29% (58)
Black	28.5% (57)
Hispanic	36% (72)
Other	6.5% (13)
Age	
	36.62; SD = 11.20
Living Arrangements	
Homeless	60.5% (121)
Independent Living	39.5% (79)
Educational Attainment	
Less than High School Diploma/GED	25% (50)
High School Diploma/GED	54.5% (109)
Some College and Higher	18% (36)
Missing	2.5% (5)
Forensic Status	
Yes	45% (90)
No	55% (110)
DCFS Status	
Yes	14% (28)
No	86% (172)

A majority of the participants (59.5%) were admitted for stimulant use disorder - amphetamine type substance followed by alcohol use disorder (17%). Most of the participants identified using MA in combination with other illicit drugs or alcohol (75%). For the 30 days prior to entering treatment, participants reported an average of 14.6 days in which they used their primary substance and an average of 9.5 days in which they used MA, respectively. Less than half of the participants (41.5%) reported that they were experiencing withdrawal symptoms at the time of intake to residential SUD treatment. Most participants (73.5%) had attempted SUD treatment in the past.

	Means/SD or percent (n)
Primary Substance Used	
Alcohol	17% (34)
Marijuana	5.5% (11)
Cocaine/Crack Cocaine	8% (16)
Methamphetamine	59.5% (119)
Heroin/Opiates	8.5% (17)
Other	1.5% (3)
Combination of Substances Used	
MA and Alcohol Use	28% (56)
Alcohol and Marijuana Use	25% (50)
MA and Marijuana Use	25.5% (51)
MA, Alcohol, Heroin, and Marijuana Use	21.5% (43)
Past 30 Day Use of Primary Substance Used	
	14.6; SD = 11.95
Past 30 Days of MA Use	
	9.51; SD = 12.27
Active Withdrawal Symptoms	
Yes	41.5% (83)
No	58.5% (117)

Approximately 54% of participants were identified as being in need of a psychiatric assessment; however, only 48% of participants reported a history of diagnosis with a psychiatric condition. At time of intake, participants reported an average of 3.39 mood symptoms (SD = 2.439), 1.57 anxiety symptoms (SD = 1.351), .62 psychotic symptoms (SD = 1.031), and 3.08 PTSD symptoms (SD = 2.182). While 31% of participants indicated that they had a current mental health provider, 16% were taking psychotropic medication at time of intake to residential

SUD treatment. A majority of participants (53.5%) reported history of at least one mental health treatment service with an average of 1.04 (SD = 3.228) acute inpatient psychiatric hospitalization episodes. While 21.5% of participants reported history of few to no psychiatric symptoms, 20.5% reported symptoms of serious mental illness and were not receiving mental health services. The remainder of the participants (n = 98) reported symptoms of serious or any mental illness and had history of mental health services.

	Means/SD or percent (n)
Presence and Treatment of Psychiatric Conditions	
No Psychiatric Symptoms/ No History of MH Services	35.5% (71)
Psychiatric Symptoms (w/ psychosis) and MH Services	19% (38)
Psychiatric Symptoms (w/o psychosis) and MH Services	30% (60)
Psychiatric Symptoms/No MH Services	15.5% (31)
Score on Mood Symptoms	
	3.39; SD = 2.439
Score on Anxiety Symptoms	
	1.57; SD = 1.351
Score on Psychotic Symptoms	
	0.62; SD = 1.031
Score on PTSD Symptoms	
	3.08; SD = 2.182
Need for Psychiatric Assessment	
Yes	54% (108)
No	46% (92)
History of Diagnosis with Psychiatric Condition	
Yes	48% (96)
No	52% (104)
History of Treatment for a Psychiatric Condition	
Yes	53.5% (107)
No	46.5% (93)
Current Mental Health Provider	
Yes	31% (62)
No	69% (138)
Current Psychotropic Medication	
Yes	16% (32)
No	84% (168)
Number of Inpatient Psychiatric Episodes	
	1.04; SD = 3.288

Almost half of the participants (46.5%) reported a history of abuse. Furthermore, the vast majority of the participants (77%) reported that they had experienced a significant trauma. In terms of types of traumatic experiences, 11.5% reported experiencing abuse in adulthood, 7.5%

reported experiencing both abuse in adulthood and childhood, 17.5% reported the death of family members, 10.5% reported some type of non-abuse trauma in adulthood, and 53% reported limited trauma exposure.

	Percent (n)
Type of Trauma	
Limited Trauma Exposure	53% (106)
Adult Trauma (Abuse)	11.5% (23)
Death of Family Members	17.5% (35)
Adult/Recent (Non-Abuse) Trauma	10.5% (21)
Childhood and Adult Trauma (Abuse)	7.5% (15)
History of Abuse	
Yes	46.5% (93)
No	53.5% (107)
History of Significant Trauma	
Yes	77% (154)
No	23% (46)

A majority of the participants (56.5%) indicated that mental health issues were a trigger to use alcohol and/or drugs. Similarly, a vast majority of participants (81%) identified negative intrapersonal contexts as a trigger to use alcohol and/or drugs. However, only 10% of participants identified mental health issues as a barrier to their recovery, and only 16% identified negative intrapersonal contexts as a barrier to their recovery.

Triggers to Use – Mental Health	Percent (n)
Yes	56.5% (113)
No	43.5% (87)
Triggers to Use – Negative Intrapersonal Contexts	
Yes	81% (162)
No	19% (38)
Barriers to Recovery – Mental Health	
Yes	10% (20)
No	90% (180)
Barriers to Recovery – Negative Intrapersonal Contexts	
Yes	16% (32)
No	84% (168)

At baseline, almost half of the participants (47%) received a severity rating of "mild," willing to enter treatment but ambivalent to the need to change, on Dimension 4 – Readiness for Change. Only 15.5% of participants received a severity rating of "none," willing to engage in

treatment. On the other hand, 32% of participants received a rating of "moderate," reluctant to agree to treatment or low commitment to change, and 5.5% of participants received severity ratings of "severe or very severe," unaware of need to change or unwilling to change. The vast majority of participants (86.5%) reported that SUD treatment was "extremely important."

Importance of SUD Treatment	Mean/SD
Not at All to Slightly Important	4.5% (9)
Moderately to Considerably Important	9.0% (18)
Extremely Important	86.5% (173)
Dimension 4 Severity Rating	
None	15.5% (31)
Mild	47% (94)
Moderate	32% (64)
Severe	5.5% (11)

The number of days that the participants spent in residential treatment ranged from 0 to 110 days, with an average treatment duration consisting of 42.6 days. Almost half of the participants (47.5%) successfully completed their residential SUD treatment episode. However, 33% of the participants left treatment, 11.5% received an administrative discharge from treatment, and 8% of the participants were unable to complete treatment for other reasons.

Treatment Disposition	Percent (n)
Completed treatment goals/plan at this level of care	20.5% (41)
Completed treatment goals/plan at this level of care and transferred	27% (54)
Left before completing treatment goals/plan	33% (66)
Administrative Discharge	11.5% (23)
Other	8% (16)

Only those patients who successfully completed residential SUD treatment (n = 95) were eligible to participate in the post-treatment aftercare services offered through Drug Medi-Cal and SAPC, which included intensive outpatient treatment (IOP) and sober living at no cost through the Recovery Bridge Housing (RBH) program. In terms of post-treatment aftercare attendance, 41% of participants enrolled in two types of aftercare - outpatient SUD treatment and RBH. Comparatively, only 16% of participants enrolled only in outpatient SUD treatment (no RBH

component). However, 43% of participants did not enroll in any form of aftercare services following the successful completion of their residential SUD treatment episode.

Type of Aftercare Service Participation	Percent (n)
Participation in Aftercare Services – IOP and RBH	41% (39)
Participation in Aftercare Services – IOP Only	16% (15)
None	43% (41)

All participants received a rating of "good," "fair," or "pair" related to their prognoses for abstention from their primary AOD Counselor at the termination of their treatment episode. Correspondingly, just under half of the participants (47%) received a rating of "poor" related to their prognosis for abstention. On the other hand, 39% received a rating of "good" and 14% received a rating of "fair," respectively.

Prognosis for Abstention	Percent (n)
Good	39% (78)
Fair	14% (28)
Poor	47% (94)

Associations

When examining the associations and correlations between the variables in the full model for the binary logistic regression analysis for residential SUD treatment completion vs. noncompletion, the results of Eta and Cramer's V (Cramer, 1946) associations indicated that there were multiple significant positive associations (see Appendix D). The following positive associations were significant between: Readiness for Change and Treatment Outcomes (V = .284), Mental Health Treatment and Symptoms and Treatment Outcomes (V = .270), Gender and History of Abuse (V = .467), Race and Living Arrangement (V = .202), Race and Mental Health Treatment and Symptoms (V = .182), Race and History of Abuse (V = .217), Race and Primary Substance Used (V = .248), Living Arrangement and Mental Health Treatment and Symptoms (V = .209), Living Arrangement and History of Abuse (V = .241), Readiness to Change and Mental Health Treatment and Symptoms (.178), Mental Health Treatment and Symptoms and

History of Abuse (V = .331), Age and Primary Substance Used (η = .486), Number of Lifetime Inpatient Psychiatric Hospitalizations and History of Abuse (η = .347), Number of Lifetime Inpatient Psychiatric Hospitalizations and Readiness for Change (η = .355), Number of Lifetime Inpatient Psychiatric Hospitalizations and Mental Health Treatment and Symptoms (η = .303), and Past 30 Day Use of Primary Substance Used and Race (η = .458), respectively.

In terms of the significant associations between the variables in the full model for the multinomial logistic regression analysis for residential SUD treatment outcomes, the results of Eta and Cramer's V association indicated that there were several notable significant positive associations (see Appendix E). These significant positive associations are as follows between: Treatment Outcome and Living Arrangement (V = .217), Treatment Outcome and Readiness for Change (V = .261), Treatment Outcome and Mental Health Treatment and Symptoms (V = .196), Living Arrangement and Race (V = .188), Primary Substance Used and Mental Health Treatment and Symptoms (V = .221), Past 30 Days of Use of Primary Substance Used and Race (η = .494), and Number of Lifetime Acute Psychiatric Hospitalizations and Mental Health Treatment and Symptoms (η = .294), respectively.

Numerous significant associations were also found for the full model for the multinomial logistic regression for type of aftercare service participation (see Appendix F). These significant positive associations included the following between: Type of Aftercare Service Participation and Living Arrangement (V = .381), Gender and Living Arrangement (V = .213), Gender and History of Abuse (V = .531), Living Arrangement and History of Abuse (V = .293), Living Arrangement and Current Mental Health Provider (V = .222), Race and Current Mental Health Provider (V = .252), and History of Abuse and Current Mental Health Provider (V = .292). There was also a significant negative correlation between Past 30 Days of Use of Primary Substance Used and Duration of Participation in residential SUD treatment (*r* = -.208), respectively.

In relation to the variables in the full model for the ordinal logistic regression for AOD Counselor prognoses for patient abstention, the results of Cramer's V association revealed multiple significant positive associations (see Appendix G). These significant positive associations included between: AOD Counselor prognosis for patient abstention and Mental Health Treatment and Symptoms (V = .198), AOD Counselor prognosis for patient abstention and Readiness for Change (V = .185), Gender and History of Abuse (V = .467), Living Arrangement and Race (.202), Living Arrangement and History of Abuse (V = .241), Living Arrangement and Mental Health Symptoms and Treatment (V = .209), Race and History of Abuse (V = .217), Race and Mental Health Symptoms and Treatment (V = .182), Race and Combination of Substances Used (V = .222), History of Abuse and Mental Health Treatment and Symptoms (V = .331), Mental Health Treatment and Symptoms and Readiness for Change (V = .193), Combination of Substances Used and Readiness for Change (V = .187), Number of Lifetime Inpatient Psychiatric Episodes and Gender (η = .307), Number of Lifetime Inpatient Psychiatric Episodes and History of Abuse (η = .347), Number of Lifetime Inpatient Psychiatric Episodes and Mental Health Treatment and Symptoms (.303), Past 30 Days of Use of Primary Substance Used and Gender (η = .458), and Past 30 Days of Use of Primary Substance Used and Combination of Substances Used (η = .417), respectively.

Inferential Statistics

Predicting residential SUD treatment completion vs. noncompletion. Given the relatively large number of predictors, binary logistic regression was conducted for each of the six conceptual blocks (e.g. sociodemographic, substance use, mental health, traumatic exposure, readiness for change variables, and self-medication for psychiatric distress, respectively) (see Appendix H). Within each of the blocks, those predictors that were significantly associated with treatment noncompletion at the $p < .05$ level were entered into the corresponding binary logistic

regression analysis. From the sociodemographic conceptual block, only living arrangement was significant ($p < .026$). In terms of the substance use conceptual block, past 30 days of primary substance used ($p < .003$) was significant. From the mental health conceptual block, number of inpatient psychiatric episodes ($p < .015$) and mental health symptoms and treatment ($p < .003$) were significant. From the readiness for change conceptual block, only Dimension 4 Severity rating ($p < .003$) was significant. However, none of the variables in the traumatic exposure block were significant. Similarly, none of the variables in the self-medication for psychiatric distress block were significant.

A test of the model using all of the aforementioned predictor variables as well as race, gender, type of primary substance used, and history of abuse was significant ($p < .001$) with a R^2 value of .419 (Nagelkerke, 1991). This model shown in Table 1 correctly predicted whether participants completed or did not complete residential SUD treatment for 74.5% of the participants.

TABLE 1. Binary logistic regression of treatment completion

Variable	Odds Ratio	Significance	Lower	Upper
Gender (Male – Reference)	.511	.140	.210	1.246
Age	1.011	.550	.976	1.047
Race – Non-Hispanic White (Reference)		.136		
Black	1.933	.208	.693	5.391
Hispanic	3.075	.019	1.204	7.855
Other	1.902	.397	.430	8.408
Living Arrangement (Not Homeless – Reference)	1.295	.497	.614	2.730
Readiness for Change (None: Willing to Enter Treatment – Reference)		**.029**		
Mild: Willing to Enter Treatment, Ambivalent to Need to Change	1.411	.534	.477	4.176
Moderate: Reluctant to Enter Treatment, Low Commitment to Change, Passive Engagement in Treatment	3.222	**.043**	1.082	10.018
Severe: Unaware of Need to Change/Not Willing to Change, Unwilling or Unable to Follow through with Treatment Recommendation	9.949	**.027**	1.336	76.218
Mental Health Treatment and Symptoms – (No Psychiatric Disorders, No History of Treatment – Reference)		**.009**		
Serious Mental Illness (including psychosis) and History of Mental Health Treatment	.711	.542	.239	2.122
Serious Mental Illness (including psychosis) and No Mental Health Treatment	5.238	**.008**	1.549	17.715

Variable	Odds Ratio	Significance	Lower	Upper
Any Mental Illness (excluding psychosis) and History of Mental Health Treatment	2.096	.127	.760	5.422
Number of Inpatient Psychiatric Episodes	1.375	**.018**	1.056	1.789
History of Abuse	1.992	.148	.782	5.072
Primary Drug of Choice (Alcohol -Reference)		.068		
Marijuana	6.597	.046	1.035	42.050
Methamphetamine	3.480	.019	1.228	9.865
Heroin/Opiates	7.853	.009	1.689	36.508
Other Drugs	2.825	.163	.657	12.153
Past 30 Day Use of Primary DOC	1.069	**>.001**	1.035	1.104

*The base category is Completed Treatment.

	Completed Treatment	Did Not Complete Treatment	Percentage Correct
Completed Treatment	69	26	72.6%
Did Not Complete Treatment	25	80	76.2%
Overall Percentage			74.5%

Significant predictor variables of residential SUD treatment noncompletion at $p < .05$ were past 30 days of use of primary substance used reported at intake (OR = 1.069, $p < .001$), mental health treatment and symptoms ($p < .01$), number of inpatient psychiatric episodes (OR = 1.375, $p < .019$), and readiness for change ($p < .03$).

When considering the past 30 days of use of primary substance used, the odds ratio of 1.069 reveals that for each additional day the participant used one's primary substance in the past 30 days, one's odds of not completing residential SUD treatment increases by 6.9%. Therefore, a 10-day increase in primary substance use out of the past 30 days would increase an individual's chances of not completing treatment by approximately 95%. In comparison to those participants who reported no history of psychiatric symptoms or treatment, participants who reported symptoms of serious mental illness and no history of mental health treatment were 5.238 times more likely ($p < .009$) to not complete residential SUD treatment. However, participants who reported both serious mental illness and any mental illness and a history of mental health treatment were not significantly more likely to be unable to complete residential SUD treatment.

For number of inpatient psychiatric episodes, the odds ratio of 1.375 indicates that for each additional inpatient psychiatric episode, the individual's odds of not completing residential SUD treatment increases by 37.5%. In regard to readiness for change, patients who received a rating of "Moderate" (Reluctant to Enter Treatment, Low Commitment to Change, Passive Engagement in Treatment) were 3.222 times more likely ($p < .043$) to not complete residential SUD treatment compared to patients who received a rating of "None" (Willing to Enter Treatment). Furthermore, patients who received a rating of "Severe" (Unaware of Need to Change/Not Willing to Change, Unwilling or Unable to Follow through with Treatment Recommendation) were 9.949 times more likely ($p < .027$) to fail to complete residential SUD treatment compared to patients who received a rating of "None" (Willing to Enter Treatment).

Predicting type of residential SUD treatment outcome. The same significant variables that emerged from the aforementioned six conceptual blocks were included in the multinomial logistic regression. The four treatment outcomes for this analysis included completed residential SUD treatment, completed residential SUD treatment and transferred to a lower level of SUD care, left residential SUD treatment, and administrative discharge from residential SUD treatment. As a consequence, those participants who left residential SUD treatment and transferred to another treatment facility, were incarcerated, or hospitalized were not included in this analysis, resulting in only 184 of the 200 participants being included in this analysis.

A test of the model using all of the aforementioned predictor variables as well as race, gender, and history of abuse was significant ($p < .001$) with a R^2 value of .376 (Nagelkerke, 1991), as seen in Table 2. Based on the likelihood ratio tests, the following variables were found to be significant in predicting participants' treatment outcomes: past 30 days of use of primary substance used reported at intake ($p < .002$), number of inpatient psychiatric episodes ($p < .002$), and mental health treatment and symptoms ($p < .048$).

TABLE 2. Multinomial logistic regression of type of treatment outcome

Pseudo R-Square

Nagelkerke	.376

Likelihood Ratio Tests

Primary DOC Days of Use (Past 30 Days)	**.001**
Living Arrangement (Not Homeless – Reference)	.055
Race (White – Reference)	.062
Readiness for Change Severity Level (Low: Willing to Enter Treatment – Reference)	.098
Number of Inpatient Psychiatric Episodes	**.001**
Primary Drug of Choice (Reference – Depressants)	.502
Mental Health Treatment and Symptoms	**.047**

Variable	Odds Ratio	Significance	Lower	Upper
Completed Treatment and Transferred				
Primary DOC Days of Use	.993	.704	.956	1.031
Living Arrangement (Not Homeless – Reference)	2.360	.053	.988	5.636
Race (White – Reference)	.887	.805	.343	2.298
Readiness for Change – (Low: Willing to Participate – Reference)	.947	.914	.335	2.528
Primary DOC (Reference – Depressants)	1.328	.524	.555	3.182
Number of Inpatient Psychiatric Episodes	1.346	.295	.771	2.350
Serious Mental Illness with Treatment	.580	.387	.170	1.988
Limited Mental Health Symptoms w/ no History of Treatment	1.055	.923	.353	3.157
Serious Mental Illness without Treatment	2.228	.407	.336	14.782
Any Mental Illness with Treatment - Reference				
Left Treatment				
Primary DOC Days of Use	1.058	**.005**	1.017	1.101
Living Arrangement (Not Homeless – Reference)	2.645	.040	1.045	6.693
Race (White – Reference)	1.814	.262	.640	5.139
Readiness for Change – (Low: Willing to Participate – Reference)	2.218	.112	.830	5.923
Primary DOC (Reference – Depressants)	1.090	.854	.435	2.736
Number of Inpatient Psychiatric Episodes	1.865	**.025**	1.080	3.219
Serious Mental Illness with Treatment	.198	**.019**	.052	.764
Limited Mental Health Symptoms w/ no History of Treatment	.544	.289	.177	1.675
Serious Mental Illness without Treatment	2.843	.251	.477	16.930
Any Mental Illness with Treatment - Reference				
Administrative Discharge				
Primary DOC Days of Use	1.068	**.014**	1.013	1.126
Living Arrangement (Not Homeless – Reference)	4.842	.015	1.355	17.306
Race (White – Reference)	5.506	.035	1.126	26.910
Readiness for Change – (Low: Willing to Participate – Reference)	3.176	.067	.922	10.938
Primary DOC (Reference – Depressants)	.551	.357	.155	1.958
Number of Inpatient Psychiatric Episodes	1.898	**.026**	1.080	3.336
Serious Mental Illness with Treatment	.051	**.017**	.004	.592
Limited Mental Health Symptoms w/ no History of Treatment	.426	.254	.099	1.844

Variable	Odds Ratio	Significance	Lower	Upper
Serious Mental Illness without Treatment	2.739	.330	.361	20.791
Any Mental Illness with Treatment - Reference				

*The base category is Completed Treatment.

There were no significant predictors for participants who completed residential SUD treatment and transferred to a lower level of SUD care compared to those participants who completed residential SUD treatment and did not pursue aftercare services. However, past 30 days of use of primary substance used reported at intake, number of inpatient psychiatric episodes, and mental health treatment and symptoms predicted treatment outcomes for participants who left residential SUD treatment and those who received an administrative discharge from residential SUD treatment compared to those participants who completed residential SUD treatment and did not pursue aftercare services.

Predictive factors of leaving residential SUD treatment. For past 30 days of use of primary substance used, the odds ratio of 1.058 reveals that for each additional day the participant used one's primary substance in the past 30 days, one's odds of leaving residential SUD treatment increases by 5.8% compared to those participants who completed residential SUD treatment. Therefore, a 10-day increase in primary substance use out of the past 30 days would increase an individual's chances of leaving residential SUD treatment by 75% compared to participants who completed residential SUD treatment. In regards to number of inpatient psychiatric episodes, the odds ratio of 1.865 indicates that for each additional inpatient psychiatric episode, the individual's odds of leaving residential SUD treatment increases by 86.5% in comparison to those participants who completed residential SUD treatment. In contrast to participants with history of any mental illness and mental health services, participants with history of serious mental illness and mental health services were significantly less likely to leave residential SUD treatment (OR = .19) when compared to participants who completed SUD treatment.

Predictive factors of administrative discharge from residential SUD treatment. For past 30 days of use of primary substance used, the odds ratio of 1.068 reveals that for each additional day the participant used one's primary substance in the past 30 days, one's odds of receiving an administrative discharge from residential SUD treatment increases by 6.8% compared to those participants who completed residential SUD treatment. As a consequence, a 10-day increase in primary substance use out of the past 30 days would increase an individual's chances of receiving an administrative discharge from residential SUD treatment by 93% compared to participants who completed residential SUD treatment. In regards to number of inpatient psychiatric episodes, the odds ratio of 1.898 indicates that for each additional inpatient psychiatric episode, the individual's odds of receiving an administrative discharge from residential SUD treatment increases by 89.8% in comparison to those participants who completed residential SUD treatment. Compared to participants with history of any mental illness and mental health services, participants with history of serious mental illness and mental health services were significantly less likely to receive an administrative discharge from residential SUD treatment (OR = .051).

Predicting Aftercare Service Enrollment

Given the relatively large number of predictors, multinomial logistic regression was conducted for each of the seven conceptual blocks (e.g. sociodemographic, substance use, mental health, trauma, readiness for change variables, self-medication for psychiatric distress, and duration of participation in residential SUD treatment, respectively) (see Appendix I). Within each of the blocks, those predictor variables that significantly predicted type of aftercare participation at the $p < .05$ level were entered into the corresponding multinomial logistic regression analysis. From the sociodemographic conceptual block, only living arrangement was significant ($p < .003$). In terms of the substance use conceptual block, none of the variables were

significant. From the mental health conceptual block, current mental health provider ($p < .013$) was significant. None of the variables from the readiness for change conceptual block were significant. Similarly, none of the variables in the traumatic exposure block were significant, nor were any of the variables in the self-medication for psychiatric distress block. However, duration of participation in treatment ($p < .004$) was significant.

The three types of aftercare participation included completed residential SUD treatment and did not pursue aftercare services, completed residential SUD treatment and enrolled in intensive outpatient services, and completed residential SUD treatment and enrolled in intensive outpatient services and RBH. As this analysis only included those participants who completed residential SUD treatment and were eligible to enroll in intensive outpatient treatment and/or sober living, only 95 of the 200 participants were included in this analysis.

A test of the model using all of the aforementioned predictor variables as well as race, gender, past 30 day use of primary substance used, combination of substances used, history of abuse, and Dimension 4 Severity rating was significant ($p < .025$) with a R^2 value of .408 (Nagelkerke, 1991), as shown in Table 3. Based on the likelihood ratio tests, the following variables were found to be significant in predicting participants' treatment outcomes: living arrangement ($p < .003$) and duration of participation in treatment ($p < .012$).

TABLE 3. Multinomial logistic regression for type of aftercare service participation

Pseudo R-Square

Nagelkerke	.408

Likelihood Ratio Tests

Gender (Reference – Male)	.931
Living Arrangement (Reference – Not Homeless)	**.002**
Race (Reference – White)	.417
History of Abuse	.942
Current Mental Health Provider	.429
Duration of Participation in Treatment	**.011**
Primary DOC Past 30 Days of Use	.713
Combination of Substances Used	.527
Dimension 4 Severity Rating (Reference – Low)	.898

Variable	Odds Ratio	Significance	Lower	Upper
Intensive Outpatient Treatment Only				
Gender (Reference – Male)	.929	.929	.185	4.668
Living Arrangement (Reference – Not Homeless)	.642	.554	.148	2.786
Race (Reference – White)	2.510	.318	.412	15.299
History of Abuse	.790	.792	.136	4.575
Current Mental Health Provider	2.736	.214	.558	13.411
Duration of Participation in Treatment	.959	.082	.914	1.005
Primary DOC Past 30 Days of Use	1.020	.512	.961	1.083
Methamphetamine and Alcohol	3.610	.327	.277	46.967
Alcohol and Marijuana	1.833	.628	.158	21.214
Methamphetamine and Marijuana	1.054	.970	.072	15.252
Methamphetamine, Alcohol, Heroin, and Marijuana	0[a]			
Intensive Outpatient Treatment and RBH				
Gender (Reference – Male)	1.247	.708	.393	3.960
Living Arrangement (Reference – Not Homeless)	5.442	**.003**	1.758	16.848
Race (Reference – White)	.744	.603	.243	2.274
History of Abuse	1.100	.880	.318	3.803
Current Mental Health Provider	1.535	.480	.467	5.052
Duration of Participation in Treatment	1.025	.089	.996	1.056
Primary DOC Past 30 Days of Use	.992	.754	.942	1.044
Methamphetamine and Alcohol	3.505	.143	.656	18.732
Alcohol and Marijuana	2.737	.247	.497	15.063
Methamphetamine and Marijuana	.970	1.032	.195	5.462
Methamphetamine, Alcohol, Heroin, and Marijuana	0[a]			

*The base category is No Aftercare Services.

Compared to participants who completed residential SUD treatment and did not pursue aftercare services, participants who were homeless were 5.442 times more likely to participate in intensive outpatient treatment and RBH. However, there were no significant predictors of participation in intensive outpatient treatment compared to those who completed residential SUD treatment and did not pursue aftercare services.

Factors Influencing AOD Counselor Prognoses for Patients' Abstention

As a consequence of the relatively large number of predictors, ordinal logistic regression was conducted for each of the six conceptual blocks (e.g. sociodemographic, substance use, mental health, trauma, self-medication for psychiatric distress, and readiness for change variables, respectively) (see Appendix J). Within each of the blocks, those predictor variables that significantly predicted counselors' prognoses for abstention (good, fair, or poor) at the $p < .05$ level were entered into the corresponding ordinal logistic regression analysis. From the

sociodemographic conceptual block, only living arrangement ($p < .009$) and age ($p < .037$) were significant. In terms of the substance use conceptual block, past 30 days of use of primary substance used ($p < .004$) and combination of substances used – alcohol and marijuana ($p < .022$) were both significant. From the mental health conceptual block, mental health symptoms and treatment – serious mental illness with treatment ($p < .03$) was significant. In the readiness for change conceptual block, Dimension 4 Severity rating – None ($p < .003$) and Dimension 4 Severity rating – Mild to Moderate ($p < .006$) were significant. However, none of the variables in the traumatic exposure block were significant. Similarly, none of the variables in the self-medication for psychiatric distress block were significant.

A test of the model using all of the aforementioned predictor variables as well as race, gender, number of inpatient psychiatric episodes, and history of abuse was significant ($p < .001$) with a R^2 value of .299 (Nagelkerke, 1991), as seen in Table 4.

TABLE 4. Ordinal logistic regression of counselor prognoses for patients' abstention

Pseudo R-Square

Nagelkerke	.299

Variable	Odds Ratio	Significance	Lower	Upper
Primary DOC Past 30 Days of Use	.952	**.001**	.925	.979
Age	1.022	.135	.993	1.053
Gender (Reference – Male)	2.30	**.027**	1.099	4.811
Living Arrangement (Reference – Not Homeless)	.627	.151	.331	1.186
History of Abuse	.582	.172	.268	1.266
Number of Inpatient Psychiatric Episodes	.880	**.025**	.787	.984
Methamphetamine and Alcohol	1.525	.37	.606	3.842
Alcohol and Marijuana	2.933	**.026**	1.138	7.569
Methamphetamine and Marijuana	.993	.988	.395	2.494
Methamphetamine, Marijuana, Heroin, and Alcohol (Reference)	0[a]			
Serious Mental Illness with Treatment	2.166	.087	.894	5.249
Limited Psychiatric Symptoms with No History of Treatment	1.837	.128	.839	4.027
Serious Mental Illness without Treatment	.693	.503	.237	2.026
Any Mental Illness with Treatment - Reference				
Readiness for Change – None	2.643	**.045**	1.023	6.835
Readiness for Change – Mild to Moderate	2.221	**.024**	1.112	4.437
Readiness for Change – Severe to Very Severe (Reference)	0[a]			
White	2.620	.15	.705	9.728

Variable	Odds Ratio	Significance	Lower	Upper
Black	.862	.835	.216	3.452
Hispanic	1.030	.963	.285	3.732
Other Race (Reference)	0[a]			

*Test of Parallel Lines: p > .05; the base category is "Poor."

Significant predictor variables of counselor prognoses included gender (p < .028), past 30 days of use of primary substance used reported at intake (p < .001), number of inpatient psychiatric episodes (p < .026), use of alcohol and marijuana in combination (p < .026), readiness to change – no severity (p < .046), and readiness for change – mild to moderate severity (p < .025). Being female was significantly associated with a greater likelihood of being rated "good" or "fair" as compared to being rated "poor" (OR = 2.30).

Participants who reported polysubstance use of alcohol and marijuana in comparison to those participants who reported polysubstance use of heroin, alcohol, methamphetamine, and marijuana were significantly more likely to be rated "good" or "fair" compared to being rated "poor" (OR = 2.933). For past 30 days of use of primary substance used, the odds ratio of .952 reveals that for each additional day the participant used one's primary substance in the past 30 days, one's odds of receiving a rating of "good" or "fair" decreased by 4.8% for each day of use. Consequently, a 10-day increase in primary substance use out of the past 30 days would decrease an individual's chances of receiving a rating of "good" or "fair" by 61.6%.

Participants who received a severity rating of "None – Willing to Engage in Treatment" in comparison to those participants who received a severity rating of "Severe to Very Severe – Unaware of Need for Change or Unwilling to Change" for the Readiness to Change Dimension of the ASAM Assessment were significantly more likely to be rated "good" or "fair" compared to "poor" (OR = 2.634). Similarly, participants who received a severity rating of "Mild to Moderate – Ambivalent to Change or Reluctant to Enter Treatment" in comparison to those participants who received a severity rating of "Severe to Very Severe – Unaware of Need for Change or Unwilling to Change" for the Readiness to Change Dimension of the ASAM

Assessment were significantly more likely to be rated “good” or “fair” compared to “poor” (OR = 2.221).

In regards to number of inpatient psychiatric episodes, the odds ratio of .88 indicates that for each additional inpatient psychiatric episode, the individual’s odds of receiving a rating of “good” or “fair” decreased by 12%.

Chapter 6: Discussion

The purpose of the current study was to identify predictive factors of residential SUD treatment completion, type of treatment outcome, type of aftercare service participation, and counselor prognoses for patient abstention from alcohol and/or drugs, respectively. With the exception of the model for the type of aftercare service participation, the findings for the other three models consistently highlight the importance of number of lifetime inpatient psychiatric episodes and past 30 day use of primary substance used reported by the participants during their assessments significantly. Additionally, the results from the models for both treatment completion and AOD Counselor prognoses for patient abstention indicate that ratings for readiness for change significantly affects participant's treatment completion and the prognoses they received from their primary AOD Counselors, respectively. Finally, the presence of mental health symptoms and treatment also emerged as a significant predictor for determining both type of treatment outcome as well as AOD Counselor prognoses for patient abstention.

Predicting Residential SUD Treatment Completion vs. Noncompletion

The findings from the bivariate model for predicting residential SUD treatment noncompletion indicate that ratings for readiness for change, presence of mental health symptoms and treatment, number of lifetime inpatient psychiatric episodes, and past 30 day use of primary substance used at time of admission significantly influenced treatment noncompletion.

The final bivariate model indicates that treatment non-completers are more likely to receive a rating of "Moderate: Reluctant to Enter Treatment, Low Commitment to Change, Passive Engagement in Treatment," or "Severe: Unaware of Need to Change/Not Willing to Change, Unwilling or Unable to Follow through with Treatment Recommendation" as compared to participants who received ratings of "None: Willing to Enter Treatment" or "Mild: Willing to

Enter Treatment, Ambivalent to Need to Change." With the exception of two studies that found that pretreatment measures of readiness to change were not predictive of SUD treatment outcomes (Blanchard et al., 2003; Burke & Gregoire, 2007), the results from the present study coincide with the majority of previous research, which consistently found higher pretreatment motivation to be predictive of treatment retention and completion (Ali et al., 2017; Cox & Klinger, 1988; De Leon et al., 1994, De Leon et al., 1997; Joe et al., 1998; Odenwald & Semrau, 2013; Prochaska et al., 1992; Ryan et al., 1995; Simpson & Joe, 1993; Simpson et al., 1997).

The results reveal that treatment non-completers are more likely to present with symptoms of serious mental illness and have no history of mental health treatment compared to participants who do not present with symptoms of mental illness or have symptoms of serious mental illness or any mental illness, but who have a history of mental health treatment. These findings are consistent with the majority of previous reports, which found that patients diagnosed with co-occurring SUDs and Bipolar Disorder (Mangrum, 2009) and patients diagnosed with co-occurring SUDs and psychotic disorders (Curran et al., 2009; Gerra et al., 2006) were less likely to complete SUD treatment compared to patients without a history of psychiatric conditions or with diagnoses of anxiety or depressive disorder. Such findings suggest that the stabilization of severe psychiatric symptoms and the provision of mental health services prior to entering a residential SUD treatment episode might improve residential SUD treatment completion for patients with CODs.

Similarly, the results also indicate that for each additional acute inpatient psychiatric hospitalization episode, participants were 37.5% more likely to not complete treatment. A previous study by Amodeo and colleagues (2008) also found that patients with history of psychiatric inpatient hospitalization or outpatient mental health services in the past five years was predictive of treatment attrition. However, in the study by Amodeo and colleagues the

number of times the participants received acute inpatient psychiatric care in the past 5 years was collapsed into a dichotomous summary variable, which also included utilization of outpatient mental health services. Typically, only acutely ill psychiatric patients are admitted for acute inpatient psychiatric hospitalization. Criteria for admissions include, "(1) imminent danger to oneself and others, (2) acute impairment of ability to perform activities of daily life, (3) impulsive or assaultive behavior, and (4) management of withdrawal states" (Prunier & Buongiorno, 1989). Therefore, repeated need for acute psychiatric hospitalization indicates a high severity of mental illness as well as ongoing difficulty in stabilizing psychiatric symptoms. The results from the present study related to greater likelihood of poor treatment outcomes among participants with history of acute psychiatric hospitalizations suggest that patients diagnosed with SMI who complete acute inpatient psychiatric hospitalization episodes, transition to residential mental health treatment in the community, and subsequently initiate outpatient mental health services may experience greater mental health stability and a greater likelihood of successfully completing residential SUD treatment episodes subsequent to the stabilization of their psychiatric symptoms and participation in ongoing outpatient mental health services.

Finally, the results suggest that for each additional day of use of the participant's primary substance used in the 30 days prior to admission, participants were 6.9% more likely to not complete treatment. These findings are consistent with previous research findings, which have overwhelmingly established higher frequency of pretreatment substance use as a predictive factor of attrition from SUD treatment (Brecht et al., 2005; Brecht et al., 2006; Dean et al., 2009; Evans et al., 2009; Guerrero et al., 2013; Hillhouse et al., 2007; Hohman et al., 2000; Maglione et al., 2000(a); Maglione et al., 2000(b); Shoptaw et al., 2008). The findings from the present study and the previous research illustrate the importance of patients who have been using their primary substance for the majority of the past 30 days to initiate WM services prior to

transitioning to residential SUD treatment in order to minimize their withdrawal symptoms, severe cravings, and improved neurological functioning.

Treatment noncompletion was not predicted by socio-demographics of the participants, nor was it impacted by their primary substance used. With the exception of gender being nonpredictive of noncompletion, these results are somewhat surprising given that past research has consistently established that younger age (Brecht et al., 2005; Brorson et al., 2013; Choi & Ryan, 2006; Scott-Lennox et al., 2000; Sinha et al., 2003; Siqueland et al., 1998), identifying as a person of color (Amodeo et al., 2008; Brown, 2010; Guerrero et al., 2013; Scott-Lennox et al., 2000), and being homeless (Guerrero et al., 2013; Stahler et al. 2015), respectively, were predictive of treatment noncompletion. To the contrary, the present study's finding of gender being nonpredictive of treatment noncompletion coincides with previous research (Brorson et al., 2013; Odenwalk & Semrau, 2013; Traube et al., 2015). While previous research has established that participants whose primary substance used was alcohol had a greater likelihood of completion treatment (Bluthenthal et al., 2007; Callaghan, 2003; Guerrero et al., 2013; Fishman et al., 1999; King & Canada, 2004; Longinaker & Terplan, 2014; McKellar et al., 2006; Mutter et al., 2015; Scott-Lennox et al., 2000; SAMHSA, 2009; Siqueland et al., 1998; Veach et al., 2000), primary substance used was not predictive of attrition from residential SUD treatment in this study. However, the present finding that frequency of use was more predictive of residential SUD treatment outcome than the type of substance used supports the earlier findings of Butzin and colleagues (2002). These findings are encouraging as ascribed characteristics and circumstances outside of a patient's immediate control were not shown to affect one's ability to successfully complete residential SUD treatment among Medi-Cal eligible patients with severe SUDs at this facility in Los Angeles County.

Predicting Type of Residential SUD Treatment Outcome

There were no predictive factors for participants completing treatment and transferring to a lower level of care as compared to completing treatment. However, the findings from the multivariate logistic regression model indicate that past 30 days of use of primary substance used, number of lifetime acute inpatient psychiatric episodes, and presence of mental health treatment and symptoms significantly predicted participants abandoning residential SUD treatment and receiving administrative discharges from residential SUD treatment compared to participants completing treatment, respectively.

For each additional day of use of the primary substance used, participants were 5.8% more likely to abandon residential SUD treatment and 6.8% more likely to receive an administrative discharge from residential SUD treatment compared to participants who completed residential SUD treatment. These results further reinforce the importance of WM for patients who report a high level of pretreatment substance use in the 30 day preceding their assessment. Proper WM protocol would assist participants to manage the physiological and psychological symptoms of withdrawal and enhance their level of stability and functioning prior to transitioning to a residential SUD treatment setting and increase their likelihood of successfully completing residential SUD treatment. For patients reporting high pretreatment levels of MA use in terms of frequency and dose, for whom withdrawal symptoms typically resolve within 14 days, 3.2 WM would provide a 24 hour controlled, drug-free environment to safely cope with the withdrawal symptoms of hypersomnia, anhedonia, anxiety, irritability, aggression, and depressive symptoms (Courtney & Ray, 2014). For patients reporting high pretreatment levels of MA as well as symptoms of drug-induced psychosis, such as paranoia, delusions, and hallucinations, the availability of 3.7 WM and 4.0 WM is vital to ensuring safety and initiating the process of psychiatric stabilization while promoting abstinence. Based on the present findings related to past 30 day pretreatment substance use and previous research findings,

clinicians and AOD Counselors responsible for screening, assessing, and referring patients to SUD treatment in Los Angeles County as well as other California counties participating in DMC-ODS with WM services as part of their ASAM Continuum of Care should strongly consider referring Medi-Cal eligible patients with high pretreatment levels of drug and/or alcohol use in the past 30 days to 3.2 WM, 3.7 WM, or 4.0 WM prior to commencing residential SUD treatment episodes.

For each additional acute inpatient psychiatric episode reported, participants were 86.5% more likely to abandon residential SUD treatment and 89.98% more likely to receive an administrative discharge from residential SUD treatment, respectively. As patients with a history of multiple acute psychiatric hospitalizations struggle to remain in a clinically managed residential SUD treatment setting, such as 3.1 and 3.5 LOC, patients who report repeated psychiatric hospitalization at time of assessment should be referred to 3.3 LOC facilities in Los Angeles and other California counties participating DMC-ODS, clinically managed population-specific high intensity residential. While some states offer 3.7 LOC, medically monitored intensive inpatient services, and 4.0 LOC, medically managed intensive inpatient services, respectively, many states, including California, do not. Furthermore, states with a sizeable population of indigent residents with co-occurring SMI and severe SUDs should submit proposals for waivers for behavioral health provisions to include 3.7 and 4.0 LOCs in the continuum of care offered to Medicaid patients with SUDs in their respective states. As California's Medi-Cal 2020 Waiver expires at the end of 2020, California should expand the continuum of care offered to include 3.7 and 4.0 LOCs in its subsequent behavioral health waiver proposal to provide the most appropriate care for patients with co-occurring SUDs and SMIs, given the results from the present study related to increased likelihood of discharge and attrition from treatment among patients with history of acute psychiatric hospitalizations.

The results indicate that participants who report that they have been diagnosed with a SMI and were receiving treatment for their psychiatric condition(s) at the time of treatment were significantly less likely to abandon residential SUD treatment or to receive an administrative discharge from residential SUD treatment. While previous studies have found that history of mental health services was not predictive of treatment noncompletion (Agoisti et al., 1996; Brady et al., 2004; Claus & Kindleberger, 2002; Hiller et al., 1999), no previous studies have established that mental health treatment for patients with SMI decreased the likelihood of attrition. The findings from the present study demonstrate that patients who utilized mental health services and were actively treating their psychiatric symptoms were able to successfully function in this residential SUD treatment setting. Future research should continue to examine the role of mental health stabilization in residential SUD treatment outcomes. Furthermore, these findings may support the importance of decreasing barriers and increasing access to mental health services for the Medicaid population to ensure that patients with CODs can realize the benefits of their residential SUD treatment episodes. Possible approaches include the use of case managers, community mental health workers, and social workers as well as assistance for patients in acute psychiatric settings to enroll in residential and outpatient mental health services following their discharge and promotion of the use of long-term injectables for patients with psychotic symptoms.

Predicting Aftercare Service Enrollment

The results indicate that participants who identified as being "homeless" were significantly more likely to participate in intensive outpatient treatment and enroll in the RHB program compared to participants who completed treatment and did not pursue any form of aftercare services. To date, no other research studies have examined the role of participants' living arrangements and housing in their participation in aftercare services, including enrollment

in a sober living environment, following their completion of residential SUD treatment. These findings illustrate the importance of providing transitional housing like RBH, which is contingent on ongoing participation in SUD treatment on an outpatient basis, in order to promote posttreatment aftercare service participation among a population facing housing instability in Los Angeles County. Transitional housing programs to promote ongoing recovery may prove to be of particular importance in cities, like Los Angeles, which had 49,955 homeless people in 2018 of which 75.2% were unsheltered homeless people, and the state of California at large, in which nearly one quarter of all homeless people including half of all unsheltered homeless people reside (The U.S. Department of Housing and Urban Development, 2018).

Results from the multinomial logistic regression analysis revealed that for each additional day the participants spent in residential SUD treatment, participants were 7% more likely to enroll in outpatient SUD treatment and RBH as compared to participants who enrolled only in outpatient SUD treatment. As longer treatment durations increased the likelihood of aftercare participation and aftercare participation has been shown to be associated with higher rates of long-term recovery (Arbour et al., 2011), the findings from the present study highlight the importance of the length of residential SUD treatment episodes for unstably housed patients diagnosed with severe SUDs. Additionally, the results from the present study illustrate the crucial connection between the residential component of SUD treatment and the subsequent transition to aftercare, particularly among a very vulnerable segment of the population – indigent, unstably housed, Medicaid recipients with severe SUDs. Furthermore, these findings should guide publicly funded treatment providers in Los Angeles County to encourage patients to maximize their Medi-Cal benefits by remaining in treatment for at least 90 days to enhance their likelihood of ongoing participation in aftercare services, including outpatient SUD treatment and SAPC's RBH program, in order to enhance their recovery efforts. Finally, these

findings highlight that the SUPPORT for Patients and Communities Act limitation of residential SUD treatment episodes to 30 days may require further attention and revision to increase the length of residential SUD treatment episodes covered by Medicaid, especially for unstably housed patients with severe SUDs. In the interim, states that are in the process of submitting waivers for behavioral health provisions subject to the new legislation should consider the use state and local funds to cover the cost of residential SUD treatment beyond the first 30 days covered by Medicaid for unstably housed patients with severe SUDs.

Aftercare service participation was not predicted by the socio-demographics of the participants, with the exclusion of participants' living arrangement, which coincides with the majority of findings from previous research (Arbour et al., 2011; Bodin, 2006; Terra et al., 2007). While participants without a psychiatric comorbidity were found to be more likely to participate in outpatient treatment following the completion of their residential SUD treatment in previous studies (Arbour et al., 2011; Blondell et al., 2006), the mental health variables (e.g. history of abuse and current mental health provider) were not significant in the current study. Additionally, participants with a current mental health provider were not more likely to participate in aftercare services contrary to the findings in previous studies (Gotor & Gonzalez-Juarez, 2004; Stahler et al., 2007). As found by Arbour and colleagues (2011), type of primary substance used also was not a significant predictor of aftercare service participation. Unlike previous studies which found that pretreatment substance use severity was a significant predictor of aftercare participation (Houser et al., 2012; Morgenstern et al., 1997), past 30 days of use of primary substance used at time of admission was not significant in this study. While two previous studies found pretreatment motivation to be predictive of posttreatment aftercare participation (De Leon et al., 2000; Morgenstern et al., 1997), the results from the present study support the findings of Arbour and colleagues (2011) and McKay and associates (1994), in

which pretreatment motivation was not a significant predictor of posttreatment aftercare service participation.

Factors Influencing AOD Counselor Prognoses for Patients' Abstention

Contrary to the findings by Gutierres and Todd (1997), women were significantly less likely to receive ratings for prognoses for abstention of "fair" or "poor" than "good" compared to their male counterparts. In this sample, the female participants tended to be more likely to be consumers of mental health services in their lifetime than their male counterparts. Furthermore, male participants were more likely to be involved with the criminal justice system and required to participate in SUD treatment than their female counterparts. On the other hand, female participants were more likely to be involved with the child welfare system and required to participate in SUD treatment as a component of their parental reunification plan than their male counterparts. These differences related to historical utilization of mental health services and external pressure from the criminal justice system as opposed to the child welfare system in this sample may have affected participants' treatment engagement and progress, which in turn affected their AOD Counselors' prognoses for their ongoing abstention from drugs and/or alcohol. However, no other socio-demographic variables were significant predictors of AOD Counselor prognoses for patients' abstention.

Both measures related to substance use were significantly predictive of AOD Counselor prognoses for patients' abstention. For each additional day of use of primary substance used, participants were 4.8% less likely to be rated "good" or "fair." While no other studies have previously addressed past 30 days of use of primary substance used related to AOD Counselor prognoses for patients' abstention, this measure has been found to be significantly predictive of SUD treatment outcomes (Brecht et al., 2005; Brecht et al., 2006; Dean et al., 2009; Evans et al., 2009; Guerrero et al., 2013; Hillhouse et al., 2007; Hohman et al., 2000; Maglione et al.,

2000(a); Maglione et al., 2000(b); Shoptaw et al., 2008). As higher rates of pretreatment substance use, especially among methamphetamine users, cause greater neurocognitive impairment and psychiatric symptoms such as depression, anxiety, hallucinations, paranoia, irritability, anhedonia, hypersomnia, and aggression (Courtney & Ray, 2009), it is not surprising that pretreatment substance use in the 30 days preceding residential SUD treatment affects participants' treatment engagement and progress, which in turns affects the prognoses for abstention that they receive from their primary AOD Counselor. Given the importance of pretreatment substance use on patients' treatment engagement and progress in residential SUD treatment settings, the present findings suggest that patients who indicate a high level of pretreatment substance use and positive UA or breathalyzer test at time of assessment for SUD treatment may benefit from receiving WM services prior to engaging in a clinically managed residential SUD treatment setting to enhance their physiological and psychological functioning.

Participants who reported using alcohol and marijuana in combination were significantly more likely to receive ratings of "good" or "fair" as opposed to "poor" compared to participants who used any combination of substances, all of which included MA. Although no previous known studies have examined the effect of pretreatment polysubstance use and AOD Counselor prognoses for patients' abstention, the literature has consistently established that patients who report alcohol as their primary substance used are more likely to complete SUD treatment compared to participants who reported use of any other type of substance (Bluthenthal et al., 2007; Callaghan, 2003; Guerrero et al., Lee, 2013; Fishman et al., 1999; King & Canada, 2004; Longinaker & Terplan, 2014; McKellar et al., 2006; Mutter et al., 2015; Scott-Lennox et al., 2000; SAMHSA, 2009; Siqueland et al., 1998; Veach et al., 2000). These findings further support the negative and highly disruptive effects of pretreatment MA use on SUD treatment engagement and progress as noted in previous research, which is reflected in patients' prognoses

for ongoing abstention from drugs and/or alcohol. As prolonged MA causes significant neurocognitive deficits and neurotoxic effects (Courtney & Ray, 2014) as well as physiological decline (Darke, Kaye, McKentin, & Duflou, 2008) and has been linked to high rates of relapse (Brecht & Herbeck, 2014), additional clinical trials to explore MAT options for MA users warrant ongoing funding and support.

For each additional episode of acute inpatient psychiatric hospitalization, participants were 12% less likely to receive a rating of "good" or "fair." As previously discussed, repeated need for acute psychiatric hospitalization indicates a high severity of mental illness as well as ongoing difficulty in stabilizing psychiatric symptoms. Based on the findings from the present study, patients with high levels of psychiatric distress and difficulty managing their psychiatric symptoms at time of assessment may struggle to adjust and function in a clinically managed residential setting, such as 3.1 and 3.5 LOCs, which, in turn, influences the AOD Counselors' prognoses for their ongoing abstention from drugs and/or alcohol. Expanding the ASAM LOC Continuum in Los Angeles County, California, and throughout the United States to include 3.7 and 4.0 LOCs would enable patients with co-occurring SUDs and SMIs with high levels of psychiatric distress to receive medically managed and monitored residential care and adequately stabilize their psychiatric symptoms prior to transitioning to a clinically residential SUD treatment setting, such as 3.1 or 3.5 LOCs, which may improve their subsequent treatment engagement and progress and corresponding prognoses for abstention from their AOD Counselors. However, presence and treatment of mental health symptoms was not a significant predictive factor of AOD Counselor prognoses for patients' abstention.

In keeping with the findings by Gutierres and Todd (1997), history of abuse was not significantly predictive of AOD Counselor prognoses for patients' abstention. As history of traumatic exposure can significantly influence mental health (Center for Substance Abuse

Treatment, 2014), participants' current level of psychiatric distress and lifetime history related to mental illness and treatment more significantly predict their ability to cope and function in a clinically managed residential SUD treatment facility and serve as a more relevant predictive factor of AOD Counselors' prognoses for abstention than participants' history of abuse alone without information related to their current psychological well-being and functioning. As a recent SAMHSA (2019) publication addresses the role of trauma as a social determinant of SMI, this finding supports the imperative for early childhood intervention and treatment for children who experience abuse in order to enhance their ability to cope with emotional dysregulation and cognitive impacts of trauma in order to promote long-term mental health stability and mitigate risk for the onset of SMI.

Participants who received an overall rating of "None" or "Mild to Moderate" for Readiness to Change were significantly more likely to receive ratings for prognoses for abstention of "good" or "fair" as compared to "poor" as opposed to those participants who received an overall rating of "Severe to Very Severe" for Readiness for Change. While no previous studies have examined the role of patients' internal motivation related to AOD Counselor prognoses for abstention, this study reveals the importance of assessing patients' motivational levels for participating in residential SUD treatment, as addressed by the ASAM Multidimensional Assessment in Dimension 4 – Readiness for Change. Participants' level of internal motivation significantly affects participants' treatment engagement and progress during their residential SUD treatment episodes, which informs their AOD Counselors' prognoses for their continued abstention from drugs and/or alcohol. Participants determined to have "Severe" or "Very Severe" ratings based on ASAM Multidimensional Assessment criteria for Dimension 4 should be targeted for increased levels of contact and individual counseling sessions with AOD Counselors and clinicians through motivational interviewing, which has been found to be an

effective evidence-based treatment for SUDs (Lundahl, Kunz, Brownwell, Tollefson, & Burke, 2010).

Limitations

The present study was limited in that participants were derived from one residential SUD treatment facility in Hawthorne, California. As this program only accepted participants who were Los Angeles County residents with Medi-Cal or MyHealthLA, the results may not be applicable to participants with higher income levels and who are attending private-pay residential SUD treatment facilities. Furthermore, the findings may be limited to Los Angeles County, and possibly other counties in California, which elected to participate in DMC-ODS, as most states have not elected to expand behavioral health services, including residential SUD treatment and the adoption of ASAM criteria and LOCs, through Section 1115 Waivers with behavioral health provisions.

Additionally, the participants in this sample overwhelmingly reported MA as their primary substance used. This fact may be attributed to the relatively low cost and ready availability of methamphetamine in the American West. Furthermore, methamphetamine users may have been overrepresented at this facility as WM services were not available at this treatment facility. As the other residential SUD treatment facilities operated by this non-profit agency had onsite WM units, these facilities may have been more likely to admit higher percentage of patients with severe opioid and alcohol use disorders, respectively, to residential SUD treatment after they successfully completed WM.

Finally, as the research question addressing aftercare service enrollment only included those participants who successfully completed residential SUD treatment, the sample size was relatively small (n = 95). As a consequence, the number of parameter estimates included in the

full model based on their significance in the conceptual blocks was fairly high. Therefore, the findings should be applied cautiously.

Conclusions

In summary, the present study investigated a wide variety of predictive factors of residential SUD treatment outcomes, type of aftercare service enrollment, and AOD Counselor prognoses for patients' abstention. To date, only one other study has examined factors influencing AOD Counselor prognoses for patients' abstention. Therefore, this study's findings significantly add to the literature and illuminate how AOD Counselors perceive their patients treatment engagement and progress and their likelihood for long term abstinence from drugs and/or alcohol.

Additionally, very few studies have addressed the predictive factors of aftercare service enrollment and the types of aftercare services patients pursue. These findings can assist AOD Counselors and clinicians to be able to better engage patients in aftercare services, which has been linked to lower likelihood of future relapse (Arbour et al., 2011). As Los Angeles County has adopted a novel initiative through the RBH program by providing sober living free of cost for those patients who pursue aftercare services, the present study suggests that the RBH program provides a strong inducement for patients who struggle with housing instability to participate in aftercare services following the completion of their residential SUD treatment episodes.

The findings indicate that pretreatment assessment factors related primarily to the severity of substance use and untreated psychiatric symptoms, respectively, were highly predictive of both treatment completion as well as type of treatment outcome. Therefore, AOD Counselors and clinicians should focus on these factors in determining the proper LOC, as patients whose withdrawal symptoms and/or psychiatric symptoms have not been sufficiently

stabilized prior to entering residential SUD treatment tend to receive administrative discharges or abandon treatment. Moreover, the present study raises broader questions regarding the imperative for integrated behavioral health care for patients with co-occurring disorders.

Social Work Practice and Policy Implications

As previously discussed, the present study raises important social work practice and policy implications. First, patients reporting high levels of pretreatment substance use, including MA, at time of assessment should be referred to WM, when available, to decrease the likelihood of treatment noncompletion. Second, residential SUD treatment facilities serving the Medicaid population should provide integrated behavioral health care by becoming Co-Occurring Enhanced facilities. Accordingly, facilities should have on-site mental health clinicians, higher staff to patient ratios, access to a psychiatrist, expanded evidence-based curriculum addressing co-occurring disorders and trauma, and ongoing training for AOD Counselors to enhance their competency and understanding of patients with COD and history of trauma exposure and relevant treatment interventions. Finally, patients with CODs preparing to discharge from inpatient psychiatric hospitalization episodes should be linked to residential mental health treatment facilities or outpatient mental health providers and have scheduled follow-up visits prior to the completion of their treatment episodes to enhance the continuity of their care.

The findings of the present study also have important policy implications related to the expansion of ASAM LOCs, the length of residential SUD treatment episodes, the provision of no-cost sober living programs to patients with housing instability, and states' submission of 1115 Section Waivers for residential mental health treatment facilities as well as IMD Care proposals to increase availability of SUD treatment services, including residential SUD treatment. First, the SUPPORT for Patients and Communities Act should be revised to mandate that states provide at least one ASAM level of inpatient care, either 3.7 or 4.0 LOC. Second, the SUPPORT for

Patients and Communities Act's provision for only short-term residential SUD treatment (30 days or less in a 12 month period) should be reviewed and further studied to determine whether long term residential SUD treatment episodes should also be covered for Medicaid recipients, as the literature has consistently established that 90 day and longer residential SUD treatment episodes were positive predictors of posttreatment abstinence (Hubbard, Craddock, Flynn, Anderson, & Etheridge, 1997; Hser, Joshi, Anglin, & Fletcher, 1999). Third, as only Vermont has applied for and received an IMD Payment Exclusion for mental health treatment to enhance access to residential mental health treatment for the Medicaid population (Kaiser Family Foundation [KFF], 2019), other states, especially those with high percentages of indigent residents with SMI, must follow suit and submit these waivers to decrease barriers to patients with SMI from receiving the appropriate mental health services. Finally, less than half of the states currently possess IMD Payment Exclusions for SUD treatment (KFF, 2019). As the SUPPORT for Patients and Communities Act decreases barriers to the expansion of SUD treatment, more states should submit proposals to expand their behavioral health services for the Medicaid population and participate in Medicaid expansion.

Future Research Directions

Future studies with larger sample sizes should continue to explore factors associated with aftercare service participation. With the advent of the RBH program, longitudinal studies regarding the length of time to relapse among RBH participants versus participants who completed residential SUD treatment and did not pursue aftercare services should be conducted to determine the efficacy of the RBH program in promoting long term abstinence from drugs and/or alcohol. Due to the overwhelming tendency for patients with high pretreatment severity of substance use and untreated psychiatric symptoms to receive an administrative discharge or to abandon treatment, future research should record if patients were entering residential SUD

treatment directly from WM treatment episodes or inpatient psychiatric hospitalization episodes. As all Los Angeles County residential SUD treatment providers have now transitioned to the use of the ASAM Continuum, future research should explore treatment outcomes for participants based on the recommended LOC and the actual LOC received.

Appendix A

University of California Los Angeles
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http://ora.research.ucla.edu/ohrpp
General Campus IRB: (310) 825-7122
Medical IRB: (310) 825-5344

NOT HUMAN SUBJECTS RESEARCH
DETERMINATION: UCLA IRB REVIEW NOT REQUIRED

DATE:	4/16/2018
TO:	ASHLEIGH SCINTA, BA, MSW SOCIAL WELFARE
FROM:	TODD FRANKE, PhD Chair, NGIRB
RE:	IRB#18-000586 Treatment Outcomes for Residential Substance Use Disorder Treatment Post-START ODS Waiver Implementation

Based on the information provided in the webIRB application, the UCLA Office of the Human Research Protection Program has determined that the above-named project does not meet the definition of human subjects research. The workspace for this project is now located in your archive folder.

Appendix B

ASSESSMENT TOOL- ADULTS (PAPER VERSION)

Based on the ASAM Criteria [3rd Edition] Multidimensional Assessment

SUBMIT THE FULL ASSESSMENT FORM TO THE SUBSTANCE ABUSE PREVENTION AND CONTROL:
Fax: (323)-725-2045
Phone: (626)-299-4193

Demographic information		
Name:	**Date:**	**Phone Number:** **Okay to leave voicemail?** ☐ Yes ☐ No
Address:		
Date of Birth:	**Age:**	**Gender:**
Race/Ethnicity:	**Preferred Language:**	**Medi-Cal ID #:** **Other ID# (Plan):**
Insurance Type: ☐ None ☐ MyHealthLA (Plan): ☐ Medicare (Plan): ☐ Medi-Cal (Plan): ☐ Private (Plan): ☐ Other (Plan):		
Living Arrangement: ☐ Homeless ☐ Independent living ☐ Other (specify):		
Referred by (specify):		

Explanation of why patient is currently seeking treatment: Current symptoms, functional impairment, severity, duration of symptoms (e.g., unable to work/school, relationship/housing problems):

Dimension 1: Substance Use, Acute Intoxication and/or Withdrawal Potential

1. **Substance use history:**

Alcohol and/or Drug Types	Recently Used? (Past 6 Months)	Prior Use? (Lifetime)	Route (Inject, Smoke, Snort)	Frequency (Daily, Weekly, Monthly)	Duration (Length of Use)	Date of Last Use
Amphetamines (Meth, Ice, Crank)						
Alcohol						
Cocaine/Crack						
Heroin						
Marijuana						
Opioid Pain Medications Misuse or without prescription						
Sedatives (Benzos, Sleeping Pills) Misuse or without prescription						
Hallucinogens						
Inhalants						
Over-the-Counter Medications (Cough Syrup, Diet Aids)						
Nicotine						
Other:						

Client Name: _____ **Medi-Cal ID:**_____

Treatment Agency: _____

Additional Information:

2. **Do you find yourself using more alcohol and/or drugs than you intend to?** ☐Yes ☐No
   Please describe:

3. **Do you get physically ill when you stop using alcohol and/or drugs?** ☐ Yes ☐ No
   Please describe:

4. **Are you currently experiencing withdrawal symptoms, such as tremors, excessive sweating, rapid heart rate, blackouts, anxiety, vomiting, etc.?** ☐ Yes ☐ No
   Please describe specific symptoms and consider immediate referral for medical evaluation:

5. **Do you have a history of serious withdrawal, seizures, or life-threatening symptoms during withdrawal?** ☐ Yes ☐ No
   Please describe and specify withdrawal substance(s):

6. **Do you find yourself using more alcohol and/or drugs in order to get the same high?** ☐ Yes ☐ No
   Please describe:

7. **Has your alcohol and/or drug use changed recently (increase/ decreased, changed route of use)?** ☐ Yes ☐ No
   Please describe:

8. **Please describe family history of alcohol and/or drug use:**

Client Name: _____ **Medi-Cal ID:**_____

Treatment Agency: _____

Please circle one of the following levels of severity

Severity Rating- Dimension 1 (Substance Use, Acute Intoxication and/or Withdrawal Potential)				
0 None	1 Mild	2 Moderate	3 Severe	4 Very Severe
No signs of withdrawal/intoxication present	Mild/moderate intoxication, interferers with daily functioning. Minimal risk of severe withdrawal. No danger to self/others.	May have severe intoxication but responds to support. Moderate risk of severe withdrawal. No danger to self/others.	Severe intoxication with imminent risk of danger to self/others. Risk of severe manageable withdrawal.	Incapacitated. Severe signs and symptoms. Presents danger, i.e. seizures. Continued substance use poses an imminent threat to life.

Additional Comments:

Dimension 2: Biomedical Conditions and Complications

9. **Please list known medical provider(s)**

Physician Name	Specialty	Contact Information

10. **Do you have any of the following medical conditions**:

☐ Heart Problems	☐ Seizure/Neurological	☐ Muscle/Joint Problems	☐ Diabetes
☐ High Blood Pressure	☐ Thyroid Problems	☐ Vision Problems	☐ Sleep Problems
☐ High Cholesterol	☐ Kidney Problems	☐ Hearing Problems	☐ Chronic Pain
☐ Blood Disorder	☐ Liver Problems	☐ Dental Problems	☐ Pregnant
☐ Stomach/Intestinal Problems	☐ Asthma/Lung Problems	☐ Sexually Transmitted Disease(s): _____	
☐ Cancer (specify type[s]):_____		☐ Infection(s): _____	
☐ Allergies: _____		☐ Other: _____	

Client Name: _____ **Medi-Cal ID:**_____

Treatment Agency: _____

11. **Do any of these conditions significantly interfere with your life?** ☐ Yes ☐ No
Please describe:

12. **Provide additional comments on medical conditions, prior hospitalizations (include dates and reasons):**

13. **<u>Question to be answered by interviewer</u>: Does the patient report medical symptoms that would be considered life-threatening or require immediate medical attention?** ☐ Yes ☐ No

** If yes, consider immediate referral to emergency room or call 911*

14. **List all current medication(s) for medical condition(s):**

Medication	Dose/Frequency	Reason	Effectiveness/Side Effects

<u>Please circle one of the following levels of severity</u>

Severity Rating- Dimension 2 (Biomedical Conditions and Complications)				
0	1	2	3	4
None	Mild	Moderate	Severe	Very Severe
Fully functional/ able to cope with discomfort or pain.	Mild to moderate symptoms interfering with daily functioning. Adequate ability to cope with physical discomfort.	Some difficulty tolerating physical problems. Acute, nonlife threatening problems present, or serious biomedical problems are neglected.	Serious medical problems neglected during outpatient or intensive outpatient treatment. Severe medical problems present but stable. Poor ability to cope with physical problems.	Incapacitated with severe medical problems.

Additional Comments:

Dimension 3: Emotional, Behavioral, or Cognitive Conditions and Complications

Client Name: _____ **Medi-Cal ID:**_____

Treatment Agency: _____

15. **Do you consider any of the following behaviors or symptoms to be problematic?**

Mood			
☐ Depression/sadness	☐ Loss of Pleasure/Interest	☐ Hopelessness	☐ Irritability/Anger
☐ Impulsivity	☐ Pressured Speech	☐ Grandiosity	☐ Racing Thoughts
Anxiety			
☐ Anxiety/Excessive Worry	☐ Obsessive Thoughts	☐ Compulsive Behaviors	☐ Flashbacks
Psychosis			
☐ Paranoia	☐ Delusions: _____	☐ Hallucinations: _____	
Other			
☐ Sleep Problems	☐ Memory/Concentration	☐ Gambling	☐ Risky Sex Behaviors

☐ Suicidal Thoughts: please describe

☐ Thoughts of Harming Others: please describe

☐ Abuse (physical, emotional, sexual): please describe

☐ Traumatic Event(s): please describe

☐ Other:

16. **Have you ever been diagnosed with a mental illness?** ☐Yes ☐No ☐Not Sure
Please describe (e.g., diagnosis, medications?)

17. **Are you currently or have you previously received treatment for psychiatric or emotional problems?** ☐ Yes ☐ No
Please describe (e.g., treatment setting, hospitalizations, duration of treatment):

18. **Do you ever see or hear things that other people say they do not see or hear?** ☐ Yes ☐ No
Please describe:

19. **<u>Question to be answered by interviewer</u>: Based on previous questions, is further assessment of mental health needed?** ☐ Yes ☐ No
Please describe:

20. **List all current medication(s) for psychiatric condition(s):**

Medication	Dose	Reason	Effectiveness/Side Effects

21. **Please list mental health provider(s):**

Provider Name	Contact Information

<u>Please circle one of the following levels of severity</u>

Severity Rating- Dimension 3 (Emotional, Behavioral, or Cognitive Conditions and Complications)				
0 None	1 Mild	2 Moderate	3 Severe	4 Very Severe
Good impulse control and coping skills. No dangerousness, good social functioning and self-care, no interference with recovery.	Suspect diagnosis of EBC, requires intervention, but does not interfere with recovery. Some relationship impairment.	Persistent EBC. Symptoms distract from recovery, but no immediate threat to self/others. Does not prevent independent functioning.	Severe EBC, but does not require acute level of care. Impulse to harm self or others, but not dangerous in a 24-hr setting.	Severe EBC. Requires acute level of care. Exhibits severe and acute life-threatening symptoms (posing imminent danger to self/others).

Client Name: _____ **Medi-Cal ID:**_____

Treatment Agency: _____

Additional Comments:

Dimension 4: Readiness to Change

22. **Is your alcohol and/or drug use affecting any of the following?**

☐ Work	☐ Mental Health	☐ Physical Health	☐ Finances
☐ School	☐ Relationships	☐ Sexual Activity	☐ Legal Matters
☐ Handling Everyday Tasks	☐ Self-esteem	☐ Hygiene	☐ Recreational Activities
☐ Other:			

23. **Do you continue to use alcohol or drugs despite having it affect the areas listed above?** ☐ Yes ☐ No
Please describe:

24. **Have you received help for alcohol and/or drug problems in the past?** ☐ Yes ☐ No

Please list treatment provider(s)

Provider Name	Contact Information

25. **What would help to support your recovery?**

26. **What are potential barriers to your recovery (e.g., financial, transportation, relationships, etc.)?**

27. **How important is it for you to receive treatment for:**

Alcohol Problems:	☐ Not at all	☐ Slightly	☐ Moderately	☐ Considerably	☐ Extremely
Drug Problems:	☐ Not at all	☐ Slightly	☐ Moderately	☐ Considerably	☐ Extremely

Please describe:

Please circle one of the following levels of severity

Severity Rating- Dimension 4 (Readiness to Change)				
0 None	1 Mild	2 Moderate	3 Severe	4 Very Severe
Willing to engage in treatment.	Willing to enter treatment, but ambivalent to the need to change.	Reluctant to agree to treatment. Low commitment to change substance use. Passive engagement in treatment.	Unaware of need to change. Unwilling or partially able to follow through with recommendations for treatment.	Not willing to change. Unwilling/unable to follow through with treatment recommendations.

Additional Comments:

Dimension 5: Relapse, Continued Use, or Continued Problem Potential

28. **In the last 30 days, how often have you experienced cravings, withdrawal symptoms, disturbing effects of use?**

Alcohol:	☐ None	☐ Occasionally	☐ Frequently	☐ Constantly
Drug:	☐ None	☐ Occasionally	☐ Frequently	☐ Constantly

Please Describe:

29. **Do you find yourself spending time searching for alcohol and/or drugs, or trying to recover from its effects?**

☐Yes ☐No

Please describe:

30. **Do you feel that you will either relapse or continue to use without treatment or additional support?** ☐ Yes ☐ No
Please describe:

31. **Are you aware of your triggers to use alcohol and/or drugs?** ☐ Yes ☐ No
Please check off any triggers that may apply:

☐ Strong Cravings	☐ Work Pressure	☐ Mental Health	☐ Relationship Problems
☐ Difficulty Dealing with Feelings	☐ Financial Stressors	☐ Physical Health	☐ School Pressure
☐ Environment	☐ Unemployment	☐ Chronic Pain	☐ Peer Pressure
☐ Other: _____			

32. **What do you do if you are triggered?**

33. **Can you please describe any attempts you have made to either control or cut down on your alcohol and/or drug use?**

34. **What is the longest period of time that you have gone without using alcohol and/or drugs?**

35. **What helped and didn't help?**

Please circle one of the following levels of severity

Severity Rating- Dimension 5 (Relapse, continued Use, or Continued Problem Potential)				
0 None	1 Mild	2 Moderate	3 Severe	4 Very Severe
Low/no potential for relapse. Good ability to cope.	Minimal relapse potential. Some risk, but fair coping and relapse prevention skills.	Impaired recognition of risk for relapse. Able to self-manage with prompting.	Little recognition of risk for relapse, poor skills to cope with relapse.	No coping skills for relapse/ addiction problems. Substance use/behavior, places self/other in imminent danger.

Additional Comments:

Dimension 6: Recovery/Living Environment

36. **Do you have any relationships that are supportive of your recovery? (e.g., family, friends)**

37. **What is your current living situation (e.g., homeless, living with family/alone)?**

38. **Do you currently live in an environment where others are using drugs?** ☐ Yes ☐ No
Please describe:

39. **Are you currently involved in relationships or situations that pose a threat to your safety?** **☐ Yes ☐ No**
Please describe:

40. **Are you currently involved in relationships or situations that would negatively impact your recovery?** ☐ Yes ☐ No
Please describe:

41. **Are you currently employed or enrolled in school?** ☐ Yes ☐ No
Please describe (e.g., where employed, duration of employment, name and type of school):

42. **Are you currently involved with social services or the legal system (e.g., DCFS, court mandated, probation, parole)?**
Please describe: ☐ Yes ☐ No

If on parole/probation:

Name of Probation/Parole Officer	Contact Information

Please circle one of the following levels of severity

Severity Rating- Dimension 6 Recovery/Living Environment				
0	1	2	3	4
None	Mild	Moderate	Severe	Very Severe
Able to cope in environment/ supportive.	Passive/disinterested social support, but still able to cope.	Unsupportive environment, but able to cope with clinical structure most of the time.	Unsupportive environment, difficulty coping even with clinical structure.	Environment toxic/hostile to recovery. Unable to cope and the environment may pose a threat to safety.

Additional Comments:

Summary of Multidimensional Assessment					
Dimension	**Severity Rating** (Based on Ratings Above)				**Rationale**
Dimension 1 Substance Use, Acute Intoxication and/or Withdrawal Potential	☐ 0 None	☐ 1 Mild	☐ 2 Moderate	☐ 3-4 Severe	
Dimension 2 Biomedical Condition and Complications	☐ 0 None	☐ 1 Mild	☐ 2 Moderate	☐ 3-4 Severe	
Dimension 3 Emotional, Behavioral, or Cognitive Condition and Complications	☐ 0 None	☐ 1 Mild	☐ 2 Moderate	☐ 3-4 Severe	
Dimension 4 Readiness to Change	☐ 0 None	☐ 1 Mild	☐ 2 Moderate	☐ 3-4 Severe	
Dimension 5 Relapse, Continued Use, or Continued Problem Potential	☐ 0 None	☐ 1 Mild	☐ 2 Moderate	☐ 3-4 Severe	
Dimension 6 Recovery/Living Environment	☐ 0 None	☐ 1 Mild	☐ 2 Moderate	☐ 3-4 Severe	

Client Name: _____ **Medi-Cal ID:**_____

Treatment Agency: _____

Diagnosis: Diagnostic Statistical Manual, 5th Edition (DSM-5)
Criteria For Substance Use Disorder

Please check off any symptoms that have occurred in the <u>past 12 months</u>.

	Substance Use Disorder Criteria (DSM-5)	Name of Substance(s)		
		#1: _____	#2: _____	#3: _____
1	Substance often taken in larger amounts or over a longer period than was intended.	☐	☐	☐
2	There is a persistent desire or unsuccessful efforts to cut down or control substance use.	☐	☐	☐
3	A great deal of time is spent in activities necessary to obtain the substance, use the substance, or recover from its effects.	☐	☐	☐
4	Craving, or a strong desire or urge to use the substance.	☐	☐	☐
5	Recurrent substance use resulting in a failure to fulfill major role obligations at work, school, or home.	☐	☐	☐
6	Continued substance use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the substance.	☐	☐	☐
7	Important social, occupational, or recreational activities are given up or reduced because of substance use.	☐	☐	☐
8	Recurrent substance use in situations in which it is physically hazardous.	☐	☐	☐
9	Continued substance use despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance.	☐	☐	☐
10	Tolerance, as defined by either of the following: - A need for markedly increased amounts of the substance to achieve intoxication or desired effect. - A markedly diminished effect with continued use of the same amount of the substance.	☐	☐	☐
11	Withdrawal, as manifested by either of the following: - The characteristic withdrawal syndrome for the substance. - Substance (or a closely related substance) is taken to relieve or avoid withdrawal symptoms.	☐	☐	☐
	Total Number of Criteria			

List of Substance Use Disorder(s) that Meet DSM-5 Criteria and Date of DSM-5 Diagnosis (specify severity level)**:**

_____

_____

_____

***** The presence of **<u>at least 2</u>** of these criteria indicates a **substance use disorder**.

****** The severity of the substance use disorder is defined as:

- **Mild**: Presence of **<u>2-3 criteria</u>**
- **Moderate**: Presence of **<u>4-5 criteria</u>**
- **Severe**: Presence of **<u>6 or more criteria</u>**

Client Name: _____ **Medi-Cal ID:**_____

Treatment Agency: _____

ASAM LEVEL OF CARE DETERMINATION TOOL

Instructions: For each dimension, indicate the least intensive level of care that is appropriate based on the patient's severity/functioning and service needs.

ASAM Criteria Level of Care- Withdrawal Management	ASAM Level	Dimension 1 Substance Use, Acute Intoxication and/or Withdrawal Potential				Dimension 2 Biomedical Condition and Complications				Dimension 3 Emotional, Behavioral, or Cognitive Condition and Complications				Dimension 4 Readiness to Change				Dimension 5 Relapse, Continued Use, or Continued Problem Potential				Dimension 6 Recovery/Living Environment			
Severity / Impairment Rating		None	Mild	Mod	Sev	None	Mild	Mod	Sev	None	Mild	Mod	Sev	None	Mild	Mod	Sev	None	Mild	Mod	Sev	None	Mild	Mod	Sev
Ambulatory Withdrawal Management without Extended On-Site Monitoring	1-WM																								
Ambulatory Withdrawal Management with Extended On-Site Monitoring	2-WM																								
Clinically Managed Residential Withdrawal Management	3.2-WM																								
Medically Monitored Inpatient Withdrawal Management	3.7-WM																								
Medically Managed Intensive Inpatient Withdrawal Management	4-WM																								
ASAM Criteria Level of Care- Other Treatment and Recovery Services																									
Severity / Impairment Rating		None	Mild	Mod	Sev	None	Mild	Mod	Sev	None	Mild	Mod	Sev	None	Mild	Mod	Sev	None	Mild	Mod	Sev	None	Mild	Mod	Sev
Early Intervention	0.5												Consider referral to mental health facility												
Outpatient Services	1																								
Intensive Outpatient Services	2.1																								
Partial Hospitalization Services	2.5																								
Clinically Managed Low-Intensity Residential Services	3.1																								
Clinically Managed Population-Specific High-Intensity Residential Services	3.3																								
Clinically Managed High-Intensity Residential Services	3.5																								
Medically Monitored Intensive Inpatient Services	3.7																								
Medically Managed Intensive Inpatient Services	4																								
ASAM Criteria Level of Care- Other Treatment and Recovery Services																									
Severity / Impairment Rating		None	Mild	Mod	Sev	None	Mild	Mod	Sev	None	Mild	Mod	Sev	None	Mild	Mod	Sev	None	Mild	Mod	Sev	None	Mild	Mod	Sev
Opioid Treatment Program	OTP																								

Would the patient with alcohol or opioid use disorders benefit from and be interested in Medication-Assisted Treatment (MAT)? ☐ Yes ☐ No Please describe:

_____

Client Name: _____ **Medi-Cal ID:**_____

Treatment Agency: _____

Placement Summary

Level of Care: Enter the ASAM Level of Care (e.g., 3.1, 2.1, 3.2, W.M) number that offers the most appropriate treatment setting given the patient's current severity and functioning:

Level of Care Provided: If the most appropriate Level of Care is not utilized, then enter the next appropriate Level of Care and check off the reason for this discrepancy (below):

Reason for Discrepancy:

☐ Not Applicable	☐ Service Not Available	☐ Provider Judgment	☐ Patient Preference
☐ Transportation	☐ Accessibility	☐ Financial	☐ Preferred to Wait
☐ Language/ Cultural Considerations	☐ Environment	☐ Mental Health	☐ Physical Health
☐ Other: _____			

Briefly Explain Discrepancy:

Designated Treatment Location and Provider Name:

_____

Counselor Name (if applicable) **Signature** **Date**

_____

Licensed-eligible LPHA Name (if applicable) **Signature** **Date**

_____

***Licensed LPHA Name** **Signature** **Date**

Licensed-eligible LPHA's are psychological assistants, associate social workers (ASWs), marriage and therapy family interns (MFTI/IMFT), professional clinical counselor interns (PCCIs).

A Licensed LPHA is required to sign the ASAM assessment. Licensed LPHA (Licensed Practitioner of the Healing Arts) includes: Physicians, Nurse Practitioners, Physician Assistants, Registered Nurses, Registered Pharmacists, Licensed Clinical Psychologists (LCPs), Licensed Clinical Social Workers (LCSWs), Licensed Professional Clinical Counselors (LPCCs), and Licensed Marriage and Family Therapists (LMFTs).

Client Name: _____ **Medi-Cal ID:**_____

Treatment Agency: _____

Appendix C

COUNTY OF LOS ANGELES Public Health

SUBSTANCE ABUSE PREVENTION AND CONTROL
DISCHARGE AND TRANSFER FORM-ALL LEVELS OF CARE EXCEPT RBH

1.Today's Date:	2. ☐ Grace Period: Length of Stay ≤ 7 days? Specify number of days: _____		
PATIENT INFORMATION			
3. Name (Last, First, Middle):	4. Date of Birth: (MM/DD/YY):	5. Medi-Cal or MHLA Number:	
6. Address:			
7. Phone Number:	Okay to Leave a Message? ☐ Yes ☐ No	8. Gender:	
9. Admission Date:	10. Discharge or Transfer Date:	11. Discharge or Transfer Diagnosis:	
DISCHARGING PROVIDER	**ACCEPTING PROVIDER (IF TRANSFERRED)**		
12. Provider Agency Name:	16. Provider Agency Name:		
13. Address:	17. Address:		
14. Contact Person:	18. Contact Person:		
15. Contact Person Phone Number:	19. Contact Person Phone Number:		
REASON FOR DISCHARGE OR TRANSFER			
20. ☐ Completed treatment goals/plan at this level of care ☐ Completed treatment goals/plan at this level of care and transferred ☐ Left before completing treatment goals/ plan ☐ Left before completing treatment goals/plan and transferred ☐ Voluntary (Specify): ☐ Administrative discharge (Specify):	☐ Discharged into other, more appropriate system of care (e.g., mental health, acute care hospital) Specify: ☐ Incarceration ☐ Death ☐ Other (Specify):		

21. If transferred to another level of SUD care, please check if: ☐ Transferred to a **higher** level of SUD care ☐ Transferred to a **lower** level of SUD care
22. A description of each trigger for relapse, and a relapse prevention plan for each trigger (please use additional sheets if necessary):
23. Justification for Transfer or Discharge:
24. A narrative summary of the treatment episode including prognosis:
25. Prescriber Name and Medications (Including dosage):
26. Has the Patient Been Screened for Whole Person Care (WPC)? ☐Yes ☐ No If no, is the Patient Interested?
27. Has a copy of the Discharge and Transfer Form been given to the patient or guardian? ☐ Yes ☐ No. If no, please explain:

28. Counselor or LPHA Printed Name:	29. LPHA License #
30. Counselor or LPHA Signature:	31. Date:

Appendix D

	1	2	3	4	5	6	7	8	9	10	11
(1) Treatment Outcome											
(2) Gender	.061										
(3) Age	.462	.438									
(4) Race	.077	.047	.559								
(5) Living Arrangement	.133	.075	.467	.202 *							
(6) Readiness for Change	.284 *	.116	.536	.143	.139						
(7) Mental Health Treatment and Symptoms	.270 *	.148	.427	.182 *	.209 *	.178 *					
(8) # of Inpatient Psychiatric Episodes	.250	.230	.054	.208	.252	.255 *	.303 *				
(9) History of Abuse	.024	.467 *	.511	.217 *	.241 *	.136	.331 *	.347 *			
(10) Primary DOC	.207	.142	.486*	.248 *	.090	.154	.154	.295	.148		
(11) Past 30 Day Use of Primary DOC	.428	.421	-.041	.458 *	.383	.391 *	.405	-.054	.317	.399	

Appendix E

	1	2	3	4	5	6	7	8
(1) Treatment Outcome								
(2) Primary DOC Days of Use	.434							
(3) Living Arrangement	.217*	.392						
(4) Race	.147	.494*	.188*					
(5) Readiness for Change	.261*	.388	.097	.034				
(6) Primary DOC	.062	.400	.000	.016	.117			
(7) # of Inpatient Psychiatric Episodes	.248	.025	.270	.262	.224	.202		
(8) Mental Health Treatment and Symptoms	.196*	.398	.183	.188	.195	.221*	.294*	

Appendix F

	1	2	3	4	5	6	7	8	9	10
(1) Type of Aftercare Participation										
(2) Gender	.173									
(3) Living Arrangement	.381*	.213*								
(4) Race	.176	.017	.151							
(5) History of Abuse	.220	.531*	.293*	.134						
(6) Current Mental Health Provider	.165	.140	.222*	.252*	.292*					
(7) Duration of Participation in Treatment	.338	.673	.644	.652	.689	.628				
(8) Primary DOC Past 30 Days of Use	.545	.533	.477	.544	.451	.478	-.208*			
(9) Combination of Substance Use	.143	.191	.098	.241	.118	.234	.667	.569		
(10) Dimension 4 Severity	.079	.004	.081	.026	.020	.039	.648	.381	.238	

Appendix G

	1	2	3	4	5	6	7	8	9	10	11
(1) AOD Counselor Prognosis for Patient Abstention											
(2) Gender	.107										
(3) Living Arrangement	.151	.075									
(4) Race	.089	.047	.202*								
(5) Age	.532	.438	.467	.559							
(6) History of Abuse	.006	.467*	.241*	.217*	.511						
(7) Number of Inpatient Psychiatric Episodes	.254	.307*	.252	.208	.054	.347*					
(8) Mental Health Symptoms and Treatment	.198*	.148	.209*	.182*	.427	.331*	.303*				
(9) Primary DOC Past 30 Days of Use	.408	.421	.383	.458*	-.041	.317	-.054	.405			
(10) Combination of Substance Use	.146	.056	.112	.222*	.477	.093	.299	.130	.417*		
(11) Readiness for Change	.185*	.046	.120	.072	.537	.101	.180	.193*	.365	.187*	

Appendix H

Individual Binary Logistic Regression			Sociodemographic Block Binary Logistic Regression		
Variable	Odds Ratio	Significance	Variable	Odds Ratio	Significance
Age	.991	.493	Age	.983	.236
Gender (Male-Reference)	.778	.386	Gender	.722	.322
Race/Ethnicity – Non-Hispanic White (Reference)		.758	Race/Ethnicity – Non-Hispanic White (Reference)		.627
Black	1.369	.401	Black	1.567	.271
Hispanic	1.435	.308	Hispanic	1.420	.375
Other	1.340	.635	Other	1.921	.327
Living Arrangement (Homeless – Reference)	**1.725**	**.062**	**Living Arrangement (Homeless – Reference)**	**2.198**	**.015**
Educational Attainment (Less than HS Diploma – Reference)		.320	Educational Attainment (Less than HS Diploma – Reference)		.273
HS Diploma/ GED	1.271	.484	HS Diploma/ GED	1.423	.339
More than HS Diploma/ GED	.714	.445	More than HS Diploma/ GED	.742	.535
Forensic Involvement	.904	.722	Forensic Involvement	.462	.837
Child Welfare Involvement	.637	.273	Child Welfare Involvement	.229	.589

Individual Variable Binary Logistic Regression			Substance Use Block Binary Logistic Regression		
Variable	Odds Ratio	Significance	Variable	Odds Ratio	Significance
Past 30 Days of Methamphetamine Use	1.037	**.003**	Past 30 Days of Methamphetamine Use	.961	.307
Primary Drug - Alcohol (reference group)		.087	Primary Drug - Alcohol (reference group)		.135
Marijuana	5.576	.026	Marijuana	5.953	.042
Methamphetamine	2.517	.024	Methamphetamine	3.613	.040
Heroin/Opiates	3.833	.032	Heroin/Opiates	3.459	.134
Other	2.323	.152	Other	3.755	.044
Type of Polysubstance Use – Alcohol and Marijuana (reference)		.068	Type of Polysubstance Use – Alcohol and Marijuana (reference)		.360
Methamphetamine and Alcohol	.947	.889	Methamphetamine and Alcohol	1.601	.318
Methamphetamine and Marijuana	1.321	.468	Methamphetamine and Marijuana	1.947	.183
Methamphetamine, Alcohol, Marijuana, Heroin	2.709	.032	Methamphetamine, Alcohol, Marijuana, Heroin	2.586	.089
Past 30 Days of Primary Drug of Choice Use	1.055	**.000**	Past 30 Days of Primary Drug of Choice Use	1.086	**.002**
Current Withdrawal Symptoms	1.859	**.034**	Current Withdrawal Symptoms	1.266	.491

Individual Variable Binary Logistic Regression			Mental Health Block Binary Logistic Regression		
Variable	Odds Ratio	Significance	Variable	Odds Ratio	Significance
Anxiety Score	1.171	.138	Anxiety Score	.794	.396
Mood Score	1.13	**.040**	Mood Score	1.024	.809
PTSD Score	1.138	.052	PTSD Score	1.111	.592
Psychosis Score	1.192	.212	Psychosis Score	.939	.768
Number of Inpatient Psychiatric Episodes	1.276	**.018**	Number of Inpatient Psychiatric Episodes	1.323	**.015**
Mental Health Treatment and Symptoms - No Symptoms, No Treatment (Reference)		**.003**	Mental Health Treatment and Symptoms - No Symptoms, No Treatment (Reference)		**.003**
History of Symptoms (including psychotic symptoms), History of Treatment	.485	.086	History of Symptoms (including psychotic symptoms), History of Treatment	.699	.515
History of Symptoms (including psychotic symptoms), No History of Treatment	.460	**.030**	History of Symptoms (including psychotic symptoms), No History of Treatment	5.278	**.007**
History of Symptoms (excluding psychotic symptoms), History of Treatment	2.286	.101	History of Symptoms (excluding psychotic symptoms), History of Treatment	1.720	.207

Individual Binary Logistic Regression			Trauma Block Binary Logistic Regression		
Variable	Odds Ratio	Significance	Variable	Odds Ratio	Significance
History of Abuse	1.099	.739	History of Abuse	1.289	.488
History of Significant Trauma	.722	.339	History of Significant Trauma	.611	.228
Type of Trauma		.940	Type of Trauma		.940
Limited Exposure to Trauma	.747	.603	Limited Exposure to Trauma	.818	.703
Adult Trauma (Abuse)	.611	.464	Adult Trauma (Abuse)	1.192	.678
Adult/Recent (Non-Abuse) Trauma	.792	.709	Adult/Recent (Non-Abuse) Trauma	1.006	.991
Childhood and Adult/Recent Trauma	.606	.464	Childhood and Adult/Recent Trauma	1.368	.613

Individual Variable Binary Logistic Regression			Readiness for Change Block Binary Logistic Regression		
Variable	Odds Ratio	Significance	Variable	Odds Ratio	Significance
History of SUD Treatment	.719	.309	History of SUD Treatment	.654	.225
Importance of SUD Treatment – Not at All to Slightly (Reference Group)		.726	Importance of SUD Treatment – Not at All to Slightly (Reference Group)		.799
Moderately to Considerably Important	1.257	.782	Moderately to Considerably Important	1.529	.634
Extremely Important	.848	.810	Extremely Important	1.666	.560
Dimension 4 Severity Rating – None (Reference Group)		**.002**	**Dimension 4 Severity Rating – None (Reference Group)**		**.002**
Mild	1.771	.191	Mild	1.827	.171
Moderate	**4.300**	**.002**	**Moderate**	**4.604**	**.001**
Severe	**9.450**	**.010**	**Severe**	**11.044**	**.009**

Individual Binary Logistic Regression			Self-Medication for Psychiatric Distress Block Binary Logistic Regression		
Variable	Odds Ratio	Significance	Variable	Odds Ratio	Significance
Barriers to Recovery – Negative Emotions	1.030	.938	Barriers to Recovery – Negative Emotions	.747	.514
Barriers to Recovery – Mental Health	1.776	.243	Barriers to Recovery – Mental Health	1.940	.242
Triggers to Use – Mental Health	1.465	.182	Triggers to Use – Mental Health	1.677	.105
Triggers to Use – Difficulty Dealing with Emotions	.668	.273	Triggers to Use – Difficulty Dealing with Emotions	.500	.081

Appendix I

Pseudo R-Square

Nagelkerke	.286

$p < .041$

Likelihood Ratio Tests

Living Arrangement	**.002**
Age	.925
Gender	.158
Race/Ethnicity	.452
Forensic Involvement	.218
Open DCFS Case	.075

Variable	Odds Ratio	Significance	Lower	Upper
Intensive Outpatient Treatment Only				
Living Arrangement (Reference – Not Homeless)	.559	.436	.129	2.417
Age	1.010	.786	.943	1.081
Gender (Reference – Male)	.537	.415	.121	2.393
White	.609	.724	.039	9.536
Black	1.440	.773	.120	17.213
Hispanic	1.989	.598	.154	25.675
Other Race – Reference	0[a]			
Forensic Involvement	.793	.744	.197	3.191
Open DCFS Case	1.999	.499	.268	14.887
Intensive Outpatient Treatment and Sober Living				
Living Arrangement (Reference – Not Homeless)	5.177	**.004**	1.685	15.907
Age	.994	.831	.940	1.051
Gender (Reference – Male)	2.195	.155	.743	6.485
White	5.722	.194	.413	79.366
Black	2.861	.441	.197	41.502
Hispanic	7.325	.140	.521	102.934
Other Race – Reference	0[a]			
Forensic Involvement	.398	.087	.138	1.145
Open DCFS Case	.217	.069	.042	1.124

*Base category is No Aftercare Services.

Pseudo R-Square

Nagelkerke	.115

$p < .622$

Likelihood Ratio Tests

Primary DOC Past 30 Days of Use	.251
Methamphetamine Past 30 Days of Use	.778
Current Withdrawal Symptoms	.245
Combination of Substances Used	.668

Variable	Odds Ratio	Significance	Lower	Upper
Intensive Outpatient Treatment Only				
Primary DOC Past 30 Days of Use	1.023	.563	.948	1.104
Methamphetamine Past 30 Days of Use	.999	.986	.924	1.081
Current Withdrawal Symptoms	2.430	.206	.613	9.633
Methamphetamine and Alcohol	5.530	.173	.473	64.627
Alcohol and Marijuana	4.937	.206	.415	58.731
Methamphetamine and Marijuana	3.121	.385	.240	40.583
Heroin, Alcohol, Methamphetamine, and Marijuana - Reference	0[a]			
Intensive Outpatient Treatment and Sober Living				
Primary DOC Past 30 Days of Use	.964	.249	.905	1.026
Methamphetamine Past 30 Days of Use	1.022	.528	.956	1.091
Current Withdrawal Symptoms	2.217	.141	.768	6.394
Methamphetamine and Alcohol	3.194	.140	.684	14.917
Alcohol and Marijuana	2.811	.202	.575	13.747
Methamphetamine and Marijuana	1.698	.521	.337	8.551
Heroin, Alcohol, Methamphetamine, and Marijuana - Reference	0[a]			

*Base category is No Aftercare Services.

Pseudo R-Square

Nagelkerke	.213

$p < .080$

Likelihood Ratio Tests

History of Diagnosis with a Psychiatric Condition	.403
History of Mental Health Treatment	.624
Number of Inpatient Psychiatric Episodes	.124
Need for Psychiatric Assessment	.470
Current Psychotropic Medication	.284
Current Mental Health Provider	**.012**

Variable	Odds Ratio	Significance	Lower	Upper
Intensive Outpatient Treatment Only				
History of Diagnosis with a Psychiatric Condition	1.945	.693	.072	52.844
History of Mental Health Treatment	.436	.648	.012	15.289
Number of Inpatient Psychiatric Episodes	.793	.633	.306	2.055
Need for Psychiatric Assessment	2.024	.371	.431	9.492
Current Psychotropic Medication	3.478	.252	.412	29.338
Current Mental Health Provider	1.082	.934	.167	7.022
Intensive Outpatient Treatment and Sober Living				
History of Diagnosis with a Psychiatric Condition	.283	.280	.029	2.790
History of Mental Health Treatment	.307	.339	.027	3.451
Number of Inpatient Psychiatric Episodes	1.721	.102	.898	3.300
Need for Psychiatric Assessment	1.925	.284	.580	6.387
Current Psychotropic Medication	.561	.540	.088	3.573
Current Mental Health Provider	10.998	**.011**	1.742	69.455

*Base category is No Aftercare Services.

Pseudo R-Square

Nagelkerke	.062

p < .265

Likelihood Ratio Tests

History of Abuse	.077
History of Other Significant Trauma	.747

Variable	Odds Ratio	Significance	Lower	Upper
Intensive Outpatient Treatment Only				
History of Abuse	.571	.433	.141	2.318
History of Other Significant Trauma	1.235	.793	.256	5.970
Intensive Outpatient Treatment and Sober Living				
History of Abuse	2.444	.088	.876	6.822
History of Other Significant Trauma	.681	.555	.190	2.439

*Base category is No Aftercare Services.

Pseudo R-Square

Nagelkerke	.020

p < .806

Likelihood Ratio Tests

Dimension 4 Severity Level (Low: Willing to Participate – Reference)	.675
History of SUD Treatment	.596

Variable	Odds Ratio	Significance	Lower	Upper
Intensive Outpatient Treatment Only				
Readiness for Change (Low: Willing to Participate – Reference)	.614	.514	.142	2.655
History of SUD Treatment	2.273	.335	.428	12.080
Intensive Outpatient Treatment and Sober Living				
Readiness for Change (Low: Willing to Participate – Reference)	.663	.442	.232	1.892
History of SUD Treatment	1.204	.726	.426	3.402

*Base category is No Aftercare Services.

Pseudo R-Square

Nagelkerke	.031

$p < .957$

Likelihood Ratio Tests

Triggers – Mental Health Problems	.807
Triggers – Difficulty Dealing with Negative Emotions	.712
Barriers to Recovery – Negative Emotions	.945
Barriers to Recovery – Mental Health	.827

Variable	Odds Ratio	Significance	Lower	Upper
Intensive Outpatient Treatment Only				
Triggers – Mental Health Problems	1.528	.525	.413	5.651
Triggers – Difficulty Dealing with Negative Emotions	2.378	.449	.253	22.332
Barriers to Recovery – Negative Emotions	1.063	.945	.184	6.138
Barriers to Recovery – Mental Health	1.657	.654	.182	15.100
Outpatient Treatment Only and Sober Living				
Triggers – Mental Health Problems	1.043	.929	.415	2.621
Triggers – Difficulty Dealing with Negative Emotions	1.227	.741	.365	4.123
Barriers to Recovery – Negative Emotions	.821	.776	.211	3.193
Barriers to Recovery – Mental Health	.790	.821	.103	6.086

*Base category is No Aftercare Services.

Appendix J

Pseudo R-Square

Nagelkerke	.099

$p < .066$

Variable	Odds Ratio	Significance	Lower	Upper
Gender (Reference – Male)	.687	.216	.379	1.245
Living Arrangement (Reference – Not Homeless)	2.226	**.008**	1.232	4.015
Age	.971	**.036**	.946	.998
Literacy Level	1.374	.172	.871	2.168
Open DCFS Case	.630	.294	.266	1.495
Forensic Involvement	.984	.955	.565	1.714
White	.558	.34	.168	1.852
Black	1.016	.979	.306	3.380
Hispanic	.822	.744	.254	2.662
Other Race (Reference)	0[a]			

*Base category is prognosis of "Good."

Pseudo R-Square

Nagelkerke	.128

$p < .002$

Variable	Odds Ratio	Significance	Lower	Upper
Primary DOC Past 30 Days of Use	1.057	**.003**	1.019	1.095
Methamphetamine Past 30 Days of Use	.984	.351	.951	1.018
Current Withdrawal Symptoms	1.377	.294	.757	2.507
Methamphetamine and Alcohol	.584	.196	.259	1.318
Alcohol and Marijuana	.375	**.021**	.162	.864
Methamphetamine and Marijuana	1.085	.848	.468	2.522
Methamphetamine, Marijuana, Alcohol, and Heroin (Reference)	0[a]			

*Base category is prognosis of "Good."

Pseudo R-Square

Nagelkerke	.105

$p < .016$

Variable	Odds Ratio	Significance	Lower	Upper
Number of Inpatient Psychiatric Episodes	1.106	.087	.985	1.241
Number of Mood Symptoms	1.059	.519	.890	1.261
Number of Anxiety Symptoms	.882	.610	.544	1.430
Number of Psychotic Symptoms	1.023	.904	.708	1.477
Number of PTSD Symptoms	1.042	.820	.733	1.481
Serious Mental Illness with Treatment	.366	**.030**	.148	.907
Limited Mental Health Symptoms w/ No History of Treatment	.547	.126	.253	1.185
Serious Mental Illness without Treatment	1.685	.292	.638	4.450
Any Mental Illness with Treatment	0[a]			

*Base category is prognosis of "Good."

Pseudo R-Square

Nagelkerke	.026

$p < .594$

Variable	Odds Ratio	Significance	Lower	Upper
History of Abuse	1.206	.589	.612	2.375
History of Significant Trauma	.791	.543	.373	1.680
Limited Exposure to Trauma	.689	.534	.213	2.230
Adult Trauma (Abuse)	.342	.099	.095	1.224
Death of Family Member(s)	.602	.415	.178	2.038
Adult/Recent (Non-Abuse) Trauma	.477	.297	.119	1.919
Childhood and Adult Trauma (Abuse) - Reference	0[a]			

*Base category is prognosis of "Good."

Pseudo R-Square

Nagelkerke	.079

p < .008

Variable	Odds Ratio	Significance	Lower	Upper
History of SUD Treatment	.779	.433	.417	1.455
Importance of SUD Treatment (Low Importance – Reference)	1.408	.962	.537	1.723
Dimension 4 Severity Rating - None	.265	**.002**	.115	.611
Dimension 4 Severity Rating – Mild to Moderate	.419	**.005**	.229	.770
Dimension 4 Severity Rating – Severe to Very Severe (Reference)	0[a]			

*Base category is prognosis of "Good."

Pseudo R-Square

Nagelkerke	.035

p < .191

Variable	Odds Ratio	Significance	Lower	Upper
Barriers – Negative Emotions	.934	.87	.412	2.117
Barriers – Mental Health Problems	1.702	.314	.604	4.797
Triggers – Negative Emotions	.483	.053	.231	1.010
Triggers – Mental Health Problems	1.556	.141	.864	2.801

*Base category is prognosis of "Good."

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