Theses and Dissertations   Graduate School

2019

Predictors of Employment in a Treatment Sample of Individuals with Substance Use Disorders

Enkelejda Ngjelina
Virginia Commonwealth University

www.manaraa.com

Predictors of Employment in a Treatment Sample of Individuals with Substance Use Disorder

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science

at Virginia Commonwealth University

By

Enkelejda Ngjelina

J.D, Tirana University, 2011

Director: Dace S. Svikis, Ph.D.

Professor, Department of Psychology

Deputy Director, VCU Institute for Women's Health

Virginia Commonwealth University

Richmond, VA

August 6, 2019

Acknowledgements

Table of Contents

iii

List of Tables

v

vi

List of Figures

Abstract

PREDICTORS OF EMPLOYMENT IN A TREATMENT SAMPLE OF INDIVIDUALS WITH SUBSTANCE USE DISORDERS

By Enkelejda Ngjelina J.D.

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science at Virginia Commonwealth University.

Virginia Commonwealth University, 2019
Director: Dace S. Svikis, Ph.D., Professor, Department of Psychology

Efforts to increase employment rates through vocational skills training and job interview skills development have yielded mixed results. While initial studies of Job Seekers Workshop (JSW) found greater employment success for participants randomized to JSW as compared to a control condition (Hall, Loeb & Norton, 1977), a more recent Clinical Trials Network (CTN) study found no differences in employment outcomes between the JSW and control groups and the rate of employment overall was substantively lower than those reported in the early studies (Svikis et al., 2012). To better understand these discrepant findings, the present study conducted secondary analyses using the 2012 RCT dataset. It examined whether JSW participants engaged in more types and higher frequencies of various job-seeking behaviors than SC controls. The study also examined the relationship between JSW intervention dose and employment outcomes. Finally, the study sought to identify individual and treatment variables associated with getting a job. The results showed comparable rates of job seeking behavior in JSW and SC controls. However, JSW intervention dose (number of sessions attended) was related to likelihood of employment at 6 month follow-up. Univariate analysis found a variety of demographic, treatment, and psychosocial variables associated with becoming employed during study follow-up. Multivariate analyses found the most parsimonious model for predicting employment during

the 6 month follow up period including being male, attending psychosocial outpatient treatment, attending more JSW sessions, submitting a job application, and living with a sexual partner or children. Future research should look more closely at barriers to employment and how to better measure client motivation to get a job.

Keywords: Employment, Substance Use Treatment, Addiction, Job Seekers Workshop

Introduction

In addiction treatment, employment is a strong predictor of positive treatment outcomes and an important goal for individuals with substance use disorders (SUD; Platt, 1995; Webster et al., 2007). Being employed provides not only economic benefits for persons in SUD treatment, but also an opportunity for social connection with those who do not have a SUD (Laudet, 2012). This is important, particularly for individuals who have experienced stigma and discrimination when looking for work because of their substance use history (Laudet & White, 2010). Further, employment is positively associated with reduction in substance use, and adds a daily work structure in the lives of individuals with SUDS (Leukefeld, McDonald, Staton & Mateyoke-Scrivner, 2004). It is particularly effective when combined with relapse prevention activities (Leukefeld et al., 2004). While employment can strengthen commitment to treatment and recovery from SUDs, still a significant percentage of individuals in treatment for SUDs remain unemployed.

Employment-focused interventions that target unemployed individuals with SUDs have had limited effects (Silverman, Holtyn & Subramaniam, 2018). The Job Seeker's Workshop (JSW) is an exception and was developed specifically to empower individuals with SUDs to successfully acquire work by increasing job-seeking skills and job-interview behaviors (e.g., completing a resume, interviewing for a position). Treatment outcome studies for JSW have yielded mixed results. While early studies found significantly higher rates of employment (86% vs 54%; Hall et al., 1981a, b) and enrollment in job training (50% vs 14%; Hall, Loeb, Norton & Yang, 1977) at 3 month follow-up for participants randomized to JSW as compared to a control condition, a more recent multi-site Clinical Trials Network (CTN) study found no JSW and Standard Care (SC) group differences and lower overall rates of job acquisition at follow-up

1

(Svikis et al., 2012). Nonetheless, approximately one-third of participants had become employed over the 6-month follow-up assessment period.

The failure of the CTN study to find group differences, combined with the lower rates of employment at follow-up, raises important research questions. First, did changes in the economy factor into the disparate results? Was it harder for persons with SUDs to obtain employment during the CTN enrollment period than it had been 25 years earlier in the original clinical trials? Did participants in the JSW group engage in more job seeking behaviors than SC controls? One way to test this would be to examine target job-seeking behaviors for JSW group participants (e.g., answering ads, going on interviews) and compare them to those same behaviors among SC controls.

Second, JSW is a three session intervention, and participation rates were also lower in the CTN study than predicted, with only 50% of the intervention group attending all 3 JSW sessions and another 20% attending only 1 or 2 sessions (Svikis et al., 2012).Was dose of the JSW intervention received associated with RCT employment outcomes? In particular, were participants who attended all 2 or 3 sessions more likely to engage in the job seeking behaviors as compared to those who attended 0 or 1 session?

Third, rates of co-morbid psychopathology have increased in persons with SUDs over time (Keyser-Marcus et al., 2015). Data from the National Treatment Outcome Research Study (NTORS) found that one in five individuals in treatment for a SUD had received previous treatment for a psychiatric health problem (Marsden, Gossop, Stewart, Rolfe, &Farrell, 2000). Also, many enrollees were still using drugs at CTN study enrollment (Svikis et al., 2012). Many had a history of incarceration, which may have further limited their ability to obtain employment

(Hall et al., 2009; Svikis et al., 2012). Such factors alone, or in combination could also have impacted upon JSW participant efforts to find and obtain gainful employment.

Finally, independent of the CTN clinical trial, one-third of participants across both study arms become employed during the 6 month follow-up period. It would be important to examine how these individuals differ from those who were unsuccessful in getting a job. Previous research has shown that client characteristics (i.e., criminal involvement, lack of motivation, poor education) contribute to treatment success and can impact employment stability (Platt, 1995; Leukefeld, et al., 2004; Laudet, 2010, Hogue et al., 2010). Hogue et al. (2010) examined multiple barriers to employment on days of work for male and female welfare work participants with a SUD. They found substantial gender differences in the number and profile of work barriers. While among men, work experience and job motivation were the only significant predictors of employment, for women time in treatment, age, ethnicity, education, treatment condition, and substance use severity were all predictors of job acquisition. Similarly, previous studies found that age and gender were associated with different employment outcomes. Specifically, being male and younger age was associated with better employment outcomes as compared to being female and of older age (Wickizer et al., 1997; Leukefeld et al., 2004). Studies also suggest that African-Americans benefit more from employment interventions compared to those with other demographic characteristics (Platt et al., 1993) and Leukefeld and colleagues (2014) affirmed that client characteristics contribute to treatment outcome with effects on employment stability.

These findings suggest that specific attributes of research participants must be considered in studies of employment-focused intervention. Given the importance of employment to individuals with SUDs, information about characteristics associated with success (and maybe

3

more importantly with failure) to find work can provide valuable data for designing more effective interventions targeting employment in a SUD treatment setting.

The present study had 3 specific aims:

Aim 1. To compare rates of job seeking behaviors in JSW and SC control participants and determine if JSW intervention dose (number of JSW sessions attended) was related to employment outcome.

Hypothesis 1: JSW group members would be more likely to engage job seeking behaviors (i.e., conducting more job calls, completing more job interviews, answering more ads), than SC control group members at both 3 and 6-month follow-up.

Hypothesis 2: JSW participants attending more sessions would be more likely to get employed or acquire a better job than those JSW participants attending fewer sessions at 6-month follow-up.

Aim 2. To identify demographic and psychosocial variables associated with becoming employed across all JSW and SC participants. Based on the existing literature, the study compared individuals who did and did not get a job or acquired a better job across the 6-month follow-up period on a variety of variables. Hypotheses tested included:

Hypothesis 3: Younger age individuals would be more likely than older age individuals to be employed or acquire a better job over the 6-month follow-up period.

Hypothesis 4: Men would be more likely than women to be employed or acquire a better job over the 6-month follow-up period.

Hypothesis 5: African-American participants would be more likely than Caucasian and other minorities to be employed or acquire a better job over the 6-month follow-up period.

4

In addition, to these hypotheses given the rarity of research on other characteristics associated with becoming employed, univariate logistic regression was used to identify other demographic, clinical and psychosocial variables correlated with being employed.

Aim 3. Establish a predictive model from individual demographic and psychosocial predictors of becoming employed during the 6-month follow-up period. Those variables identified through hypotheses testing and univariate analyses to be significant at $p<0.20$, were included in a final multivariate logistic regression.

Review of the Literature

Substance Use Disorder

Introduction. Substance Use Disorders (SUDs), including alcohol and drugs, are significant public health concerns, and cause significant harm to individuals, family and society (McLellan, Lewis, O'Brien, & Kleber, 2000; Calabria, Degenhardt, Briegleb, et al., 2010). According to the World Health Organization (WHO), 5% of the total burden of disease is caused by SUDs, with alcohol and illicit drug use accounting respectively for 4 % and 0.8% of ill-health worldwide (Fleury et al., 2016). The social and medical costs of SUDs, including alcohol and any type of illicit drugs, are considered substantial. It is estimated that abuse of tobacco, alcohol, and illicit drugs costs the United States more than $740 billion annually related to crime, lost productivity and health care (NIDA, 2017). According to the Surgeon General's Report on Alcohol, Drugs and Health, alcohol misuse and alcohol use disorders alone cost the United States an estimated $249 billion annually and illicit drug use and drug use disorders cost $193 billion annually (U.S Department of Health and Human Services, 2016). Treatment services for substance use disorders can also be costly. For example, Florence and colleagues (2016), in a

5

study on economic burden of prescription drugs on opioid overdose, abuse, and dependence in the United States, estimated that $28.9 billion per year was spent on substance abuse treatment services associated with drug and alcohol use.

Prevalence of substance use disorders. The National Survey on Drug Use and Health (NSDUH; SAMHSA, 2017a), found that approximately 20.1 million individuals aged 12 or older met DSM-IV criteria for either alcohol or other drug use disorder in the past year, including 15.1 million people with an Alcohol Use Disorder (AUD) and 7.4 million people with at least one illicit drug use disorder (2.2 million with comorbid alcohol and drug disorders). The survey found 28.6 million Americans aged 12 or older had used illicit drugs in the past month (7.9% of youth aged 12 to17, 23.2% of young adults aged 18 to 25, and 8.9% of adults over 26). Also, 136.7 million (50.7%) Americans aged 12 or older had used alcohol in the past month (9.2% of youth aged 12 to17, 57.1 % of young adult aged 18 to 25 and 54.6% of adults over 26). An estimated 65.3 million people aged 12 or older reported binge drinking (past month), defined as 5 or more drinks for males and 4 or more drinks for females on an occasion. Heavy drinking, defined as binge drinking on 5 or more days in the past month, was reported by 6.0 % of individuals aged 12 or older. Among 18 -25 year olds, the rate of binge drinking and heavy drinking were respectively, 38.4% and 10.1 % (SAMHSA, 2017).

Diagnosis. According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), Substance Use Disorder (SUD) is defined as "a cluster of cognitive, behavioral and physiological symptoms indicating that the individual continues using the substance despite significant substance-related problems" (p. 483, APA, 2013). A diagnosis of SUD can be made for 10 classes of substances: alcohol; caffeine; cannabis; hallucinogens; inhalants; opioids; sedatives/hypnotics/anxiolytics; stimulants; tobacco; and other or unknown substances. A

diagnosis requires a pathological pattern of behavior related to use with at least two of the eleven

criteria listed in Table 1 (APA, 2013). The criteria can be grouped into four categories: 1)

impaired control, 2) social impairment, 3) risky use, and 4) pharmacological symptoms.

In DSM-5, the criteria are viewed as a continuum, with severity of the disorder ranging

from mild to moderate to severe, based on the number of symptoms endorsed. Specifically, mild

SUD is indicated by the presence of two to three symptoms; moderate SUD requires four to five

symptoms and severe SUD is diagnosed when six or more criteria are met (DSM-5, APA, 2013).

Table 1

DSM -5 Criteria for Substance Use Disorder

Impaired control	**Criterion 1 to 4**
	1. The individual may take the substance in larger amounts or over a longer period than was originally intended
	2. The individual may express a persistent desire to cut down or regulate substance use and may report multiple unsuccessful efforts to decrease or discontinue use.
	3. The individual may spend a great deal of time obtaining the substance, using the substance or recovering from its effects.
	4. Craving- manifested by an intense desire or urge for the drug that may occur at any time but is more likely when in an environment where the drug previously was obtained or used.

Social Impairment	**Criterion 5 to 7**
	5. Recurrent substance use may result in a failure to fulfill major role obligations at work, school, or home.
	6. The individual may continue 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 may be given up or reduced because of substance use. The individual may withdraw from family activities and hobbies in order to use the substance.
Risky use	**Criterion 8 to 9**
	8. Recurrent substance use in situation in which it is physically hazardous.
	9. The individual may continue 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.
Pharmacological	**Criterion 10 to 11**
	10. Tolerance is signaled by required a markedly increased dose of the substance to achieve the desire effect or markedly reduced effect when the usual dose is consumed.
	11. Withdrawal is a syndrome that occurs when blood or tissue

	concentrations of a substance decline in an individual who had maintained prolonged heavy use of the substance. The individual is likely to consume the substance to relieve the symptoms.

Adapted from *DSM-5*, *p*.483-484, APA, 2013, Arlington

In 2016, it was estimated that 20.1 million Americans aged 12 or older met the DSM-IV criteria for substance abuse or dependence. Of this population, 63.3% were classified with an alcohol use disorder, 25.1% with an illicit drug use disorder, and 11.6 % with both alcohol and illicit drug use disorder (SAMHSA, 2017).

Substance Abuse Treatment

A variety of behavioral, psychosocial, and pharmacological options are available for the treatment of SUD. The 2016 National Survey of Substance Abuse Treatment Services (N-SSATS) compiled data from 14,399 substance abuse treatment facilities across the United States. Survey respondents listed Substance Abuse Counseling as the most widely used clinical/therapeutic approach to treatment followed by Relapse Prevention and Cognitive Behavioral Therapy. Among ancillary services offered, it should be noted that employment counseling was mentioned by only a third (38.6%) of participating facilities (SAMHSA, 2017b).

SUD is a chronic condition that often requires long-term management (McLellan et al., 2000). The chronic nature of the disorder makes relapse common, with recurrence rates similar to those for other chronic medical disorders that have both physiological and behavioral components (e.g., hypertension, diabetes and asthma; McLellan et al., 2000). The National

9

Institute on Drug Abuse (NIDA) 2016-2020 Strategic Plan lists "development and improvement of substance abuse treatment that will help people with SUD to achieve and maintain a meaningful and sustained recovery" as a primary goal (NIDA, 2015). While for many, SUDs can be managed successfully, available treatments appear ineffective for many others (NIDA, 2016). In addition, the majority of individuals who have SUDs never seek treatment. The national report, Behavioral Health Trends in the United States: Results from the 2016 National Survey on Drug Use and Health, examined past year substance use and mental health indicators in persons12 or older, and found that 21.0 million people were in need of substance abuse treatment. Of those, however, only 3.87 million (18%) received substance use treatment (past year) and only 2.2 million (10.5%) received substance abuse treatment at a specialty facility during that same time interval (SAMHSA, 2017).

Substance abuse treatment refers to medical treatment and/or counseling received for alcohol or illicit drug or for medical problems associated with alcohol or illicit drug use (SAMHSA, 2017). The American Society of Addiction Medicine (ASAM) describes treatment for SUD as a continuum marked by four broad of levels of services. This continuum of services ranges from outpatient (e.g., cognitive behavioral therapy, contingency management, motivational interviewing, relapse prevention) to intensive outpatient (e.g., partial hospitalization services) to residential (e.g., inpatient services), and finally medically-managed (e.g., intensive inpatient services, detoxification, buprenorphine, methadone, naloxone) (SAMHSA, 2018).

There is, currently no universally supported "gold standard" SA treatment outcome variable or set of variables (Dutra et al., 2008). Traditionally, the primary goal of SUD treatment has been achieving abstinence (McLellan et al., 2000). For many treatment stakeholders, the "effectiveness" of treatment for SUD is measured by the long-term impact of the "addiction-

10

related" problems that have limited the patient's control over their personal functioning which might become public health and safety concerns (McLellan et al., 1996).

A number of meta-analyses have confirmed the effectiveness and value of a variety of treatment interventions for SUDs (Dutra et al., 2008; Fleury et al., 2016). Dutra and colleagues (2008), in a review of 34 studies on effectiveness of psychosocial interventions for SUDs, examined a number of outcome variables, including self-reported substance use and toxicology screens. Estimates of substance use included mean and maximum number of using days throughout treatment, mean percent of days abstinent throughout treatment, percent of patients abstinent for 3 or more weeks throughout treatment, percent demonstrating posttreatment abstinence, and posttreatment severity scores on the drug scale of the Addiction Severity Index (ASI; McLellan, Luborsky, Woody, & O'Brien, 1980). Toxicology screening estimates included mean number of negative screens throughout treatment, mean percent of negative screens throughout treatment, and percent of samples demonstrating clinically significant abstinence post-treatment.

Effect sizes for illicit drugs were in the low-moderate to high-moderate range, depending on the specific SUD and treatment type. Psychosocial treatments included 14 contingency management (CM) conditions, 2 cognitive behavioral therapy/contingency management combination (CBT+CM) conditions, 13 general cognitive behavior therapy (CBT) interventions and 5 relapse prevention (RP) conditions. Contingency management demonstrated the lowest dropout out rates (29.4%), followed by CBT (35.3%) and CBT+CM (44.5%), with RP having the highest rates of dropout (57.0%). In regard to effect sizes, CM resulted in moderate-high effects (d=0.58), with RP (d=.32) and CBT (d=.28) showing low-moderate effects. CBT+CM showed the highest effect (d=1.02), but with relatively few studies of this approach (N=2), results should

11

be interpreted with caution. Abstinence rates revealed somewhat a different picture, however, ranging from relatively high in RP (39.0%), to more moderate rates in CM (31.0%), CBT (27.1%) and CBT+CM (26.5%).

In another meta-analysis of 45 experimental studies with adolescents, Tanner- Smith and colleagues (2013) examined the effectiveness of outpatient treatment on substance use outcomes (e.g., abstinence, 30 days use, frequency of use, and problems associated with use). The investigators found that the mean effect size across controlled comparisons (e.g., group/mixed counseling, CBT, MET and PET) with no-treatment control conditions was statistically significant and favored treatment ($p<0.05$). The mean change with the pre-post effect sizes for differences in participant characteristics, type of substance use outcome, measurement characteristics and attrition showed greater substance use reduction for all treatment types (Tanner-Smith, Wilson, & Lipsey, 2013).

These findings provide evidence for the general efficacy of treatment relative to no treatment. Further, there is no indication that treatment produces worse outcomes. Still, there is no standard "pre-post" design on the effectiveness of addiction treatments due to the chronic nature of the disorder (McLellan et al., 1996).

Alcohol and other drug use disorders are chronic relapsing conditions that can persist for many years (McLellan, Lewis, O'Brien, & Kleber, 2000); in some cases decades and often until death (Silverman at al., 2002). For example, Hser et al (2008) examined 10-year long-term trajectories of drug use for primary heroin, cocaine and methamphetamine. The investigators found that drug use trajectories over 10 years following initiation demonstrated the persistence of use for all three drugs, heroin at the highest level (13 to 18 days per month), cocaine at the lowest level (8 to 11 days) and methamphetamine in between (12 days per month). In another

12

study examining the 16-year trajectories of heroin use in 471 adults enrolled in methadone treatment (Hser et al., 2001, 2007), the investigators found that most individuals (59%) maintained it stable high levels of heroin use for a16 year period; one third (32%) maintained for about 10 years but decreased their use, meanwhile only a few individuals (9%) stopped their heroin use within 3 years after initiation (cited in Silverman at al., 2012). Additionally, Grella and Lovinger (2011) examined 30-year trajectories of heroin use and other drug use in 341 adults (men and women) following methadone treatment. The study found that approximately 25% of individuals maintained stable heroin use over a 30 year period; one-third (35%) showed a gradual decrease; 15% a moderate decrease and one-fourth (25%) a rapid decrease. Similar patterns have been observed and reported by other investigators for opioids well as alcohol users (Hser at al., 2015; Vaillant, 1996).

Despite the fact that relapse remains common after SA treatment, research has shown SA treatment programs are effective, and can promote abstinence in many individuals (Silverman at al., 2012; Veilleux, Colvin, Anderson, York, Heinz, 2010). Treatment dropout rates related to negative outcomes are associated with a greater chance of overdose and return to drug dependence (Veilleux et al., 2010). For example, Galai et al. (2003) using longitudinal data investigated the 12-year behavior patterns of 1,339 heroin users, and found that about 29% of clients maintained persistent injection drug use over the 12-year period, 20% stopped injections, 14% of them relapsed once, and 37% relapsed multiple times. A further analysis conducted by Shah et al. (2006) found that 70% reported achieving at least 6-months of abstinence with no drug use injection. However, half of the individuals (50%) who achieved the abstinence relapsed to injection drug use within a year, and about 75% relapsed within 3 years (Silverman at al., 2012).

13

Further, it is well documented that poly-substance use is a predictor of poor treatment outcome because use of multiple drugs adds an additional layer of treatment complexity (Veilleux et al., 2010; Dutra et al., 2008). Studies have shown that polysubstance use is higher in methadone maintenance settings; individuals often have more than four substance use disorders including cocaine and alcohol (Brooner et al., 1997). Castells et al. (2009) systematic review and meta-analysis found that methadone was more effective than buprenorphine in promoting both heroin and cocaine abstinence, and cocaine abstinence rates improved with the addition of contingency management.

Despite the chronic nature of most SUDs, many treatments programs are designed to treat an acute problem with planned durations across treatment modalities ranging from a few weeks to a year or more (Silverman et al., 2002). In the context of high SUD morbidity and mortality, efforts to improve treatment outcomes have grown in the past decade (Fleury at al., 2016). In addressing how to improve treatment outcomes (e.g., treatment retention, participation, duration of treatment, abstinence rate), investigators have looked at additional predictors of outcome. McCaul, Svikis & Moore (2001) examined patient and substance use predictors of treatment participation and retention for adults enrolled at an urban, hospital-based SA treatment clinic. The investigators found race, gender and employment were significant predictors of treatment participation and retention, while lifetime substance use was not. These results have been reported by others as well, with patient demographics (e.g., employment, higher economic status) consistently predicting successful SUD treatment outcomes (McLellan et al., 1983; Rouse et al., 2002; Laudet et al., 2010).

Taken together, the literature shows while drug abuse treatment is effective for some, relapse rates remain high, with ample room for improvement. These findings suggest that

14

treatment interventions should tailor treatment to patients' demographics (i.e., gender, race, economic status; employment status) and vocational needs in order to improve treatment outcome. Overall, SA treatment leads to substantial improvement in the reduction of alcohol and other drug use, reduction in public health and safety threats, and improvement in personal health and social functioning (O'Brien & McLellan, 1996).

Employment

Unemployment is a major issue in addiction and many individuals enter SA treatment unemployed and with little history of employment (McCoy, Comerford & Metsch, 2007; Svikis et al., 2012; Wong & Silverman, 2007). Recent data from National Drug and Alcohol Services Information System (DASIS) confirms low rates of employment among individuals 18 to 64 years of age entering in a SUD treatment (SAMHSA, 2018). Specifically, between 2010 and 2011, more than three-quarters (77%) of SUD treatment admissions ages 18 years and older were either unemployed or not in the labor force, declining slightly to 74% in 2016 (SAMHSA, 2018).

Unemployed or underemployed (working less than 20 hours/week) individuals in treatment for SUDs face several barriers when attempting to improve their employment status (Svikis et al., 2012). Correlates of unemployment among individuals with SUDs include poor work history, low motivation to become employed, and absence of skills necessary for available positions (Svikis et al., 2012; Shepard & Reif, 2004; Silverman at al., 2002). Additionally, individuals in treatment for SUDs face barriers to employment not only on the individual level (e.g., family problems, poor social skills) but at the macro societal level as well (e.g., tight labor market, policies against hiring people with drug histories, etc.; Svikis et al., 2012).

In the United States, "welfare reform" legislation limits treatment clients' access to public assistance, and requires that people with SUDs in treatment achieve work readiness within

15

specific time frames, making employment an even higher priority than before (Magura, 2003; Montoya & Atkinson, 2002; Silverman, Holtyn, & Subramaniam, 2018). Additionally, lost productivity associated with impaired performance (i.e., at work, work-related absenteeism etc.) is seen as a major driver of the societal cost associated with excessive alcohol use and illicit substance use (Bouchery, Harwood, Sacks, Simons, & Brewer, 2011).These findings are concerning particularly because evidence found employment to be an important measure of substance use treatment success and can serve as a foundation for an effective antipoverty program (Institute of Medicine, 1990; Leukefeld, Webster, Staton-Tindall, & Duvall, 2007; Platt, 1995; SAMHSA, 2018; Silverman et al.,2018).

Employment is one of the domains of the National Outcomes Measures used for national performance monitoring and assessment of treatment effectiveness and is associated with positive treatment outcomes (i.e., Addiction Severity Index (ASI); McLellan, Luborsky, Woody, O'Brien, 1980; SAMHSA, 2015). For example, research has shown that being employed and/or providing employment services to individuals with SUDs reduces alcohol use (Laudet, 2012; Leukefield, et al., 2007; Magura, 2003; Platt, 1995; Zanis et al., 1994;), reduces injection drug use (Richardson,Wood, Li & Kerr, 2010), and helps maintain long-term heroin abstinence (Hser et al., 2001). Moreover, a stable employment history has been associated with fewer psychological problems (Mateyoke-Scrivner et al., 2004), and less depression and anxiety (Adamson, Selman, and Frampton, 2009). It serves as a foundation for enhancing job skills and for getting a better job (Leukefeld et al., 2004).

Employment provides a "gateway" into a healthier and more productive social network (Leukefeld et al., 2004). Being employed bolsters increases in self-confidence, self-efficacy, and feelings of worth in job settings (Leukefeld et al., 2004), reduces involvement in criminal

16

activities (McLellan et al.,1981; Platt, 1995; Vaillant, 1996), and increases enrollment in more comprehensive treatment programs (Lundgren, Schilling, Fergurson, Davis, & Amodeo, 2003).

Employment is important to individuals in recovery from SUDs as well (Walton & Hall, 2016). Laudet and White (2010) examined priorities among 356 individuals at different stages of recovery across a time frame from 6-month to 3-year of sobriety. Participants rated employment as the second highest priority, after recovery from SUDs. These findings suggest that individuals in treatment for SUDs are more likely to engage in an intervention if it offers a chance to work or practice job skills.

Despite this robust research supporting the role of employment in the promotion of positive outcomes, very few treatment programs include employment as an element of their treatment process (Leukefeld et al., 2007, Magura et al., 2004). Traditional SA treatment does not impact employment outcome in SUDS. For example, Reif et al (2004) national study on clients discharged from drug–free outpatient programs found no significant changes in the percentage of clients reporting employment in the year before admission versus the year after discharge (75% vs. 72%). However, unemployed participants who received employment counseling during treatment were more likely to work after discharge than participants whose needs were not met for employment counseling (Reif et al., 2004).

There are several factors that contribute to low rates of employment in individuals with SUDs including low motivation to work, lack of vocational skills for available work or insufficient skills to obtain a job (Svikis et al., 2012). Many comprehensive vocational assistance programs for individuals with SUDs have been designed and implemented (Kirdoff et al., 1998; McLellan, 1983; Platt, 1995). However, empirical support for the efficacy of such program is

17

limited, particularly for individuals in treatment for SUDs (Hubbard, Craddock, Flynn, et al., 1997).

Research on employment-focused interventions. A body of research has emerged evaluating the use of specialized vocational interventions for clients in substance abuse treatment to address the chronic nature of drug addiction (Magura et al., 2004). Leukefeld and colleagues (2004) noted that employment and vocational services enhance treatment for individuals with SUDs .Vocational training in combination with substance abuse treatment has been shown to be effective (Shepard & Reif, 2004) and to improve the duration of treatment and employment outcomes of individuals post treatment (Reif, et al, 2004).

Silverman et al. (2002) studied a simulated employment intervention (i.e., non-competitive employment in a job available in the labor market) in heroin- and cocaine-dependent unemployed pregnant and post-partum mothers engaged in SUD treatment. The primary outcome measure was drug abstinence (i.e., opiates, cocaine, and alcohol). The simulated employment intervention was based on operant conditioning, behavioral pharmacology, and integrated abstinence reinforcement contingencies of proven efficacy, now applied in an employment setting (Silverman et al., 2002). The study participants (pregnant and postpartum women, n=40) were randomly assigned to either the Therapeutic Workplace (TW) group or a usual care control group. Participants attended the therapeutic workplace intervention 3 hours per day, Monday through Friday, and received basic education and computer data entry job skills training (i.e., reading, writing, computer typing, number entry, data entry etc.). Each experiment day had a required urine drug screen. Participants who tested negative for opiates and cocaine were allowed to work for that day. Participants received escalating vouchers for on time arrival and drug abstinence.

18

Silverman et al (2002) found higher cocaine abstinence (28% vs. 54% negative) and opiate abstinence (37% vs. 60% negative) rates for TW versus control group on the basis of monthly urine sample collected at 3 years after study enrollment. In addition, findings showed a range of time periods during which participants benefitted from the intervention (e.g., some participants did not begin to maintain long periods of abstinence until 1-2 years of participation in the study). The results lend support for a long-term treatment efficacy of a therapeutic workplace intervention in a novel population such as pregnant women. However, even if efficacious, a comprehensive approach such as this is expensive to administer, making it difficult to integrate more broadly into underfunded public treatment programs (McLellan, 2001).

In another study, Leukefeld et al. (2007) conducted a randomized controlled trial (RCT) comparing tailored employment- intervention (n=238) to control group (n=239) among drug court participants on employment and criminal behaviors during 12- month post intervention. Primary outcome variables included employment (i.e., total number of jobs worked, days worked at a legal job, days worked in an illegal job, income from a legitimate job, income from an illegal job in both past year and 30 days) and criminal behaviors.

 Participants randomized to the employment intervention received the enhanced employment intervention (i.e., job-skilled training, social management, and job placement) designed to match with drug court rules (i.e., obtaining, maintaining and upgrading employment). Participants in the experimental group were further sorted into low participation (n=120) and high participation (n=118) subgroups for statistical analysis (depending on number of sessions attended).

Researchers found a significant positive relationship between intervention level and maintenance of full-time employment reported in the 12-month follow-up period. Specifically,

19

participants in high participation group showed significantly better employment-related outcomes (full-time employment, 83%) than those in lower participation (54%) or the control group (59%), as well as lower rates of substance use and decrease in criminal behavior (i.e., holding stolen goods, ever stealing something worth more than $50, and selling drugs). In addition, fewer participants were unemployed in the high participation group (4%) than in either of the other two groups (33% in the lower employment group and 25 % in the control group; Leukefeld et al., 2007).

These interventions are based on the premise that successful treatment alone (i.e., achieving abstinence) does not ensure that clients will be able to obtain employment and therefore specific vocational services are required. As a result, employment assistance and vocational training are recommended components of comprehensive treatment, particularly among publicly funded programs (Magura et al., 2004; Webster, Staton-Tindall, Dickson, Wilson, & Leukefeld, 2014).

In a recent review, Magura and colleagues (2004) evaluated published studies of innovative vocational interventions for substance abuse treatment clients from 1980-2004. They categorized the interventions into four types: work readiness/psychosocial education (i.e., prevocational programs); job-seeking skills training; job placement assistance and supported work. They found that few studies involved randomized clinical trials and many lacked comparison groups of any kind. The majority of studies took place in methadone maintenance programs where some of the weakest results were found. Only three interventions were tested in more than one study. These included vocational problem solving (Platt et al., 1993; Zanis at al., 2001); Job Seekers Workshop (Hall et al.,1977; Hall et al., 1981a, b); and Supported Work through Veterans Services (Kerrigan et al., 2004; Rosenheck and Seibyl, 1997).

20

Job Seekers Workshop

Job Seekers' Workshop (JSW) was developed particularly for drug-dependent individuals in the late 1970's by Sharon Hall and colleagues (Hall, Loeb, Norton, & Yang, 1977). The JSW was designed to target skills- needed to find and secure a job (i.e., how to conduct a job interview) as well as vocational goal setting and methods for locating available employment. The JSW was based on the idea that practice in job acquisition will increase success in job placement (Hall et al., 1977). The JSW program is based on cognitive behavioral theory; including individualized education and role play practice with videotape feedback, and rehearsing in a mock interview before a video camera. Specifically, after one group member performs a vignette, the other members view the resulting tape and then provide supportive feedback and advice. The JSW program consists of three-four hour t sessions typically completed once weekly (Hall et al., 1977).

JSW has demonstrated strong efficacy across several studies (Hall et al., 1977; Hall et al., 1981a, b; Sorensen, Hall, Loeb, Allen, 1988). The JSW was tested in three random assignment studies; two in methadone maintenance treatment programs, and one with parolees and probationers with documented histories of heroin use. The first pilot study conducted by Hall et al. (1977) randomly assigned 49 unemployed patients from different methadone treatment programs who had expressed interest in attaining a job to either a JSW or to an information-only control group. The JSW participants received information about vocational resources, opportunities available to drug treatment clients, videotape feedback of interview practice, brief relaxation training exercise and instruction in seeking jobs. The control group participants received only the vocational information resources. The study found at 3-month follow-up, JSW

21

participants were over three times more likely (50%) than controls (14%) to have a job or training placement (p< .05, Hall et al., 1977).

The other two random assignment studies tested the JSW in unemployed methadone maintenance individuals and heroin dependent parolees and probationers (Hall et al., 1981a, b; Sorensen et al., 1988). Both compared JSW to a control group (provision of vocational materials). The first study targeted 55 job-seeking unemployed parolees and probationer's participants with heroin use histories (Hall et.al, 1981a). At 3 months follow-up, JSW participants were more likely to be employed compared to control participants at (86% vs 54%, *p*< 0.03; Hall et al., 1981a).

The second study targeted 60 unemployed methadone maintenance patients. Again, more JSW participants (52%) than control (30%) participants were employed at 12-week follow-up, although the difference failed to reach statistical significance. In this study, it was noted that JSW was ineffective for patients who had not worked in the past 5 years (*p*=. 11; Hall et al., 1981b). This series of studies provides empirical support for the efficacy of a behaviorally based job seekers' workshop designed to help patients with SUD to find and obtain employment.

These results suggest that Job Seekers' Workshop should be targeted to those individuals, especially with work histories, who are motivated for work, likely abstinent from drugs and alcohol, and willing to enroll in the workshop. Although these results demonstrated the efficacy of JSW in methadone settings with opioid dependent individuals and drug offenders, high rates of job finding may also be influenced by pressure from the criminal justice system and length of abstinence from illicit drugs and alcohol due to incarceration. Moreover, these studies were conducted in one addiction treatment modality (methadone program) where alternatively, the abstinence from drugs and alcohol was a requirement before enrolling in vocational services and

less is known about the results in larger heterogeneous treatment-based samples of individuals with SUDs.

Job Seekers Workshop Clinical Trial Network

Decades later, the National Institute on Drug Abuse Clinical Trials Network (NIDA CTN), in an effort to examine the efficacy of the JSW workshop, conducted a multi-site randomized control trial (RCT; Svikis et al., 2012). The study compared employment outcomes in participants randomized either to JSW or standard care (SC) control group in a much larger and more heterogeneous treatment-based sample of individuals with SUDs. RCT outcomes were employment measured as time (days) in either a new taxed job or job training program and total hours worked in a taxed income job or spent in a skills training program. Participants (N=657) were recruited from 11 drug treatment programs; five were in methadone maintenance programs and six were psychosocial outpatient programs. All sites were participants in the NIDA CTN.

Participants completed a baseline assessment and follow-up at 4, 12 and 24 weeks post-randomization. Follow-up assessments included the ASI-Lite, Vocational Survey and the Timeline Follow Back Interview for Employment. The JSW participants were trained in job-seeking skills and job interview behaviors. JSW and SC control participants were offered only information about job placement and vocational training resources specific to their local communities. Svikis et al. (2012) found no differences in rates of employment/ job training program enrollment for the two groups. Rates of employment were lower than in previous studies, with less than one-fourth of participants in both the JSW (20.1%) and SC (24.3%) groups obtaining a taxed job/training during 1-12 weeks post-intervention and a third in both the JSW (31.4%) and SC (31.9%) obtaining a taxed job/training during 1-24 weeks post-intervention. Rates of full-time job (taxed or untaxed) for SC control and JSW participants did

not differ either after 12-week follow-up period (6.1% vs. 6.7%, *p*=0.7) and at 24-week follow-up period (5.2% vs. 6.0%, *p*=0.6). Nonetheless, approximately one-third of rates participants in both groups 52.5% to 47.5 % became employed over the 24-week follow-up assessment period (Svikis et al., 2012).

NIDA CTN conducted a second JSW efficacy study with unemployed American Indian individuals (indigenous people) in treatment with SUDs (Foley et al., 2010). The study examined the efficacy of JSW by offering participants in residential treatment three sessions of JSW or a 40-minute Job Interviewing Video (JIV). Employment measured as either the number of days / total hours worked in a new taxed job or enrollment in a job-training program was the primary outcome. The researchers found rates of employment did not differ for participants in the JSW (43%) compare to JIV groups (47%) at 3-month follow-up (*p*=0.84). Again, consistent with the previous research (Svikis et al. 2012), JSW participants were no more likely than SC controls to become employed.

These recent CTN studies differed from the earlier studies of JSW in several ways. First, the earlier studies found higher rates of employment (Hall et al., 1981a, b) and employment/training (Hall et al., 1977) at 3 month follow-up for JSW than SC participants. Second, the absolute rates of employment were higher in the earlier studies.

This failure of the CTN study to find group differences combined with lower rates of employment at follow-up could be explained by many factors including rates of comorbid psychopathology (e.g., depression, anxiety etc.) in substance use disorder, motivation or criminality activities, (Svikis et al., 2012; Magura et al., 2004; Keyser-Marcus et al., 2015). In addition, earlier studies of the Job Seekers' Workshop were conducted during a different time period, in a single geographical region, with probation and parolees only, making them not

24

directly comparable with the CTN studies (Hall et al., 1977; 1981a, b; Magura et al., 2004). Further, limited education, job experiences, and negative impacts of the macro labor-market might have impacted job opportunities, especially for individuals with SUDs. In addition, education credentials and skills requirements for most jobs have increased for both primary (i.e., professional) and secondary labor markets (i.e., semi-and unskilled; Gold, 2004), and making an inconsistency between the jobs that people in SUD treatment want versus their current job skillset (Silverman et al., 2018; Svikis et al., 2012).

While primary labor market jobs often come with career advancement opportunities (i.e., insurance, health benefits), these jobs frequently lie beyond the reach of those with SUDs (e.g., part-time or temporary job without career advancement). Further, impairments and consequences related to alcohol and drugs interfere with potential labor force success, including disruption to obtaining advanced education, job skills, and career development. Although employment is associated with less criminal activity (Inciardi, Surrat, Martin, and Hooper, 2002), having a significant legal history can exclude individuals with SUDs from many labor force sectors and types of employment (Gold, 2004).

Motivation to work is another important and understudied factor for SUDs population. Although low motivation is not counted as a barrier to employment (Hogue et al., 2010), motivation to change is considered a key element of client readiness for treatment among SUDs (Miller & Rollnick, 2012). Few studies have examined whether baseline motivation to work predicts employment among individuals in treatment for SUDs. Those studies that have examined this variable have found that stronger initial motivation to work is associated with better employment outcomes (Zanis, Coviello, Alterman, & Appling, 2001; Lee & Vinokur, 2007).

25

To date, no studies have identified predictors of employment outcomes in a heterogeneous sample of persons with SUDs. Studies with heterogeneous client samples generally do not break down their data by client characteristics (e.g., gender, race, treatment modality; Magura et al., 2004). Additionally, few studies have examined possible moderators (e.g., motivation to work, or employment history) or mediators (e.g., skills acquisition, length of participation, program attendance) of employment outcomes (Zanis et al., 2001; Magura et al., 2004; Lidz et al., 2004).

Research Participant Characteristics

Research on participant characteristics associated with obtaining employment while in SUD treatment remains sparse and even less is known about how substance use severity and comorbid factors impact a person's ability to get a job. Understanding such factors in studies of employment-focused interventions is particularly important. For example, evidence for the efficacy of the employment as a positive predictor of treatment outcome is well established (SAMHSA, 2008; Prat, 1995; Leukefeld et al., 2007), however, employment interventions have been found to be less effective for participants with SUDs who have comorbid psychiatric disorders (Kashner et al., 2002) and for individuals who have been unemployed for an extended period of time (Liu et al., 2014).

There are inconsistencies currently in the scientific literature regarding employment findings as results of demographic characteristics such as gender and age. The overall evidence from previous research suggests that employment interventions are more beneficial for younger (age <35) than for older (age > 50) job seekers. Also, being male and being Caucasian are associated with better outcomes (Henkel, 2011; Liu et al., 2014; Laudet, 2012). However, most of the employment intervention literature to date has been conducted with homogenous

26

populations of either male or female samples or the data are not disaggregated by gender (Lee & Vinokur, 2007; Walton & Hall, 2016). For example, Hogue et al. (2010) examined multiple barriers to employment on work days for male and female welfare work participants with an SUD. The study found substantial gender differences in the number and profile of work barriers. While among men, work experience and job motivation were the only significant predictor of employment, for women the time in treatment, age, ethnicity, education, treatment condition, and substance use severity were all predictors of job acquisition.

Further, Laudet (2012) examined predictors of employment among formerly polysubstance dependent urban individuals in recovery and found that being male and Caucasian were associated with twice greater odds of being employed compared to female and being non-white. While having a comorbid chronic physical and or mental health conditions halved the odds of employment, *substance use history* itself did not predict employment status. These findings suggest that sample characteristics are important to study in order to better understand factors associated with a positive employment intervention for people in treatment with SUDS. Such information on factors can inform policy and the development of training and other employment-intervention services.

Henkel (2011) review of the literature on employment and substance use found that unemployed adolescents and young adults are more likely to engage in problematic behaviors such as harmful drinking, illicit drug use, cannabis dependence, and smoking compared to employed individuals. While correlations exist between employment and substance use, many of the studies did not control for potential covariates including age, race, overall attitudes about employment (i.e., motivation; Hogue et al., 2010) and employment history (Henkel, 2011). This is surprising because such measures have been associated with employment outcome.

27

The duration of unemployment (i.e., number of days unemployed) plays an important role in the job search process. Previous research shows that employment interventions may be less effective for individuals who have been unemployed for an extended period of time (Liu et al., 2014). Further, long term unemployment is associated with lower level of reading and writing skills (van den Berg & van der Veer, 1992), education and self-control (Kokko, Pulkkinen, & Puustinen, 2000), which are important for obtaining employment (Liu, et al., 2014). Clearly, the impact of length of unemployment on future job acquisition with SUD populations warrants further attention.

Lastly, despite the severity of substance use and mental health status in individuals in treatment for SUDs, few studies have examined how they relate to employment outcomes (Danziger et al., 2000; Hogue et al., 2010; Morgenstern et al., 2009). It is well established that severe and persistent mental health illness is a significant barrier to employment (Hogue et al., 2010). Most remarkably, substance use severity, and baseline alcohol consumption are often not included as predictors or covariates of treatment outcome.

Statement of the Problem and Hypotheses

The existing literature supports the use of employment interventions for psychiatric populations (Catty et al., 2008; Drake & Bond, 2011). For example, supported employment, an evidence-based practice for individuals with severe mental illness, has shown to improve not only employment outcome (Bond, 2004; Bond, Drake, & Becker, 2012) but self-esteem, life satisfaction and reduction of psychiatric symptoms (Bond et al., 2011). Similarly, participant demographic characteristics (i.e., age, gender, race) and other social characteristics are related to work outcomes (Cook and Burke, 2002; Burke-Miller, et al., 2006). While interventions that use

28

employment to promote effective relapse preventions are well studied among individuals with serious mental health, employment-focused interventions that target unemployed individuals with SUDs have had limited effects (Silverman et al., 2018).

Finding a job is a goal for many individuals in treatment for SUDs and having a job might protect against relapse (Walton & Hall, 2016). Employment provides not only a source of income but also helps to establish a daily social structure network essential for individuals in treatment for SUDs (e.g., keep busy and less free time to relapse; Leukefeld, et al 2004). Leukefeld and colleagues (2004) found that full- time employment improved treatment retention for SUDs by providing a productive social network. Similarly, Laudet and colleagues (2002) found employment to be an indicator of recovery for individuals with SUDs. Efforts to increase employment rates have yield mixed results, ranging from intensive vocational skills training (Silverman et al.,2001,2002) to job interview skill development (e.g., Job Seekers Workshop (JSW) Svikis et al., 2012).

While initial studies of JSW found greater employment success for participants randomized to JSW as compared to a control condition (Hall et al., 1977, Hall et al., 1981a), a more recent Clinical Trails Network (CTN) study found no differences in employment outcomes between the JSW and control group and the rate of employment overall was substantively lower than those reported in the early studies (Svikis et al., 2012). Little attention has been paid to the individual (e.g., greater psychiatric comorbidity) and societal (e.g., weaker economy) factors that may have contributed to the change in intervention efficacy, as well as differences in study design (e.g., active drug use at time of study enrollment). Nonetheless, one-third of participants in both the JSW (31.4%) and SC (31.9%) control groups became employed during the 6-month follow-up period. Little was known about this group and how it may have differed from those

who remained under- or unemployed throughout the follow-up period. Given the importance of employment to individuals in SUDs treatment, such information on factors associated with becoming employed can provide valuable data for designing more effective interventions targeting employment in a SUD treatment setting.

The study examined participant characteristics and psychosocial variables associated with becoming employed in a secondary analysis of the 2008 NIDA CTN clinical trial of the JSW. Participants (N=628) were recruited from 11 treatment programs, and both unemployed and underemployed individuals were eligible for the RCT. Information was collected at baseline, 1, 3 and 6-months post-intervention. Assessments focused on patient demographics, employment/work history, alcohol and drug use, and psychosocial functioning. Our primary outcome variable was "employed" (yes/no) and the secondary outcome was "improved/acquired a better job" or "enrolled in job training."

The specific aims of the study were to:

Aim 1

Compare rates of job seeking behaviors in JSW and SC control participants and determine if JSW intervention dose (number of sessions attended) was related to employment outcome. Hypothesis tested included:

Hypothesis 1: JSW group members would be more likely to engage in more job seeking behaviors (i.e., conduct more job calls, complete more job interviews, answer more ads), than SC control group members at 3 and 6 month follow-up period.

Hypothesis 2: JSW participants attending more sessions would be more likely to get employed or acquire a better job compared to those JSW participants attending fewer sessions at 3 and 6-month follow-up period.

30

Aim 2

Identify demographic and psychosocial variables associated with becoming employed across all study participants (both JSW and SC). Based on the existing literature, the study compared individuals who did and did not get a job as well as those who were underemployed and acquired a better job across the 6 month follow-up period on a variety of variables. Hypotheses tested include:

Hypothesis 3: Younger age individuals would be more likely than older age individuals to be employed or acquire a better job over the 6-month follow-up period.

Hypothesis 4: Men would be more likely than women to be employed or acquire a better job over the 6-month follow-up period.

Hypothesis 5: African-American participants would be more likely than Caucasian and other minorities to be employed or acquire a better job over the 6-month follow-up period.

In addition, given the rarity of research on other characteristics associated with becoming employed, univariate logistic regression was used to identify other demographic, clinical and psychosocial variables correlated with being employed.

Aim 3

Establish a predictive model for becoming employed over the 6-month follow-up period using individual demographic and psychosocial predictor variables. Variables identified through hypotheses testing $p<0.05$ and univariate analyses to be significant at $p<0.20$, were included in a final multivariate logistic regression.

Methods

This study was a secondary analysis of data from a multi-site randomized clinical trial conducted under the provisions of the NIDA Clinical Trial Network (CTN; Svikis et al., 2012).

Participant recruitment occurred at eleven community treatment programs participating in the network. Clients providing informed consent were randomized to receive standard care (SC) or standard care plus the Job Seekers Workshop (JSW). Employment-related outcome measures were assessed at 12 and 24 weeks post intervention.

Participants

Participants were *N*=628 men and women who met RCT inclusion criteria and consented to research participation at community treatment programs affiliated with CTN. Recruitment sites included six psychosocial counseling (*n*=327) and five methadone maintenance (*n*=301) treatment programs. As shown in Figure 1, 657 individuals provided initial informed consent, but N = 22 (3.3%) subsequently failed to meet RCT inclusion criteria and N = 7 (1.1%) did not return for baseline assessment, leaving a final sample of N = 628.

Inclusion criteria. Participants were eligible to participate in the study if they met the following criteria: a) 18 years of age or older; b) met DSM-IV diagnostic criteria for Substance Abuse or Dependence (lifetime); c) had been enrolled in a psychosocial counseling or methadone maintenance outpatient treatment program for a minimum of 30 days following admission; d) unemployed (i.e., reported no taxed or non-taxed work in the four weeks prior to study enrollment) or underemployed (i.e., reporting having worked no more than 20 hours per week in the four weeks prior to study enrollment); and e) reported interest in obtaining employment.

Exclusion criteria. Participants were ineligible for the study if they were unable to provide informed consent due to cognitive impairment, psychiatric instability, and/or language barriers. Ability to provide informed consent required a score of 80% or above on a 10-item, true-false exam that assessed client understanding of the research design and study procedures.

The study was reviewed and approved by Institutional Review Boards (IRBs) of all participating Universities and their CTP affiliates prior to implementation under RCT Protocol Number: NIDA-CTN-0020. A National Data Safety Monitoring Board was assembled by the National Institute on Drug Abuse (NIDA) to review study progress and monitor adverse events.

33

```
┌─────────────────────────────────┐
│        Informed Consent         │
└─────────────────────────────────┘

┌─────────────────────────────┐      ┌──────────────────────────────┐
│   Screen for RCT (n=657)    │      │     Excluded (n=29)          │
│                             │──────│  Failed to meet RCT          │
└─────────────────────────────┘      │  inclusion criteria (n=22)   │
                                     │  Did not return for baseline │
┌─────────────────────────────┐      └──────────────────────────────┘
│   Randomization (n=628)     │
└─────────────────────────────┘
```

JSW (n=299)		Standard Care SC (n=329)
Lost to Follow up (n=53)	Follow-up:12	Lost to Follow-up (n=55)
Lost to follow-up (n=58)	Follow-up:24	Lost to follow-up (n=59)
Analyzed (n=299)	Data	Analyzed (n=329)
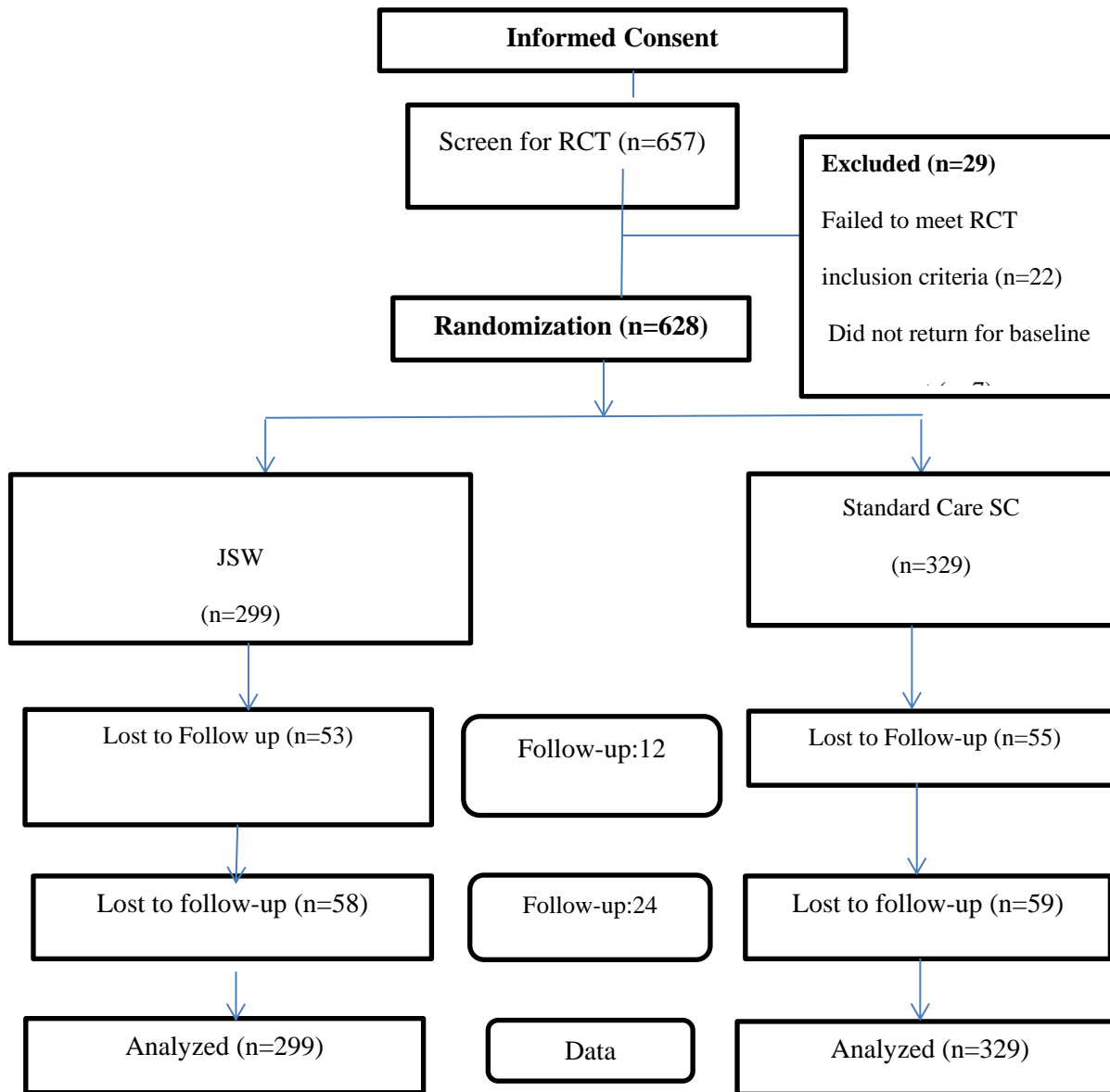
The Flow diagram of eligibility, enrollment, treatment and follow-up rates. JSW=Job

Seekers Workshop; SC=Standard Care

Figure 1. CONSORT Diagram of Eligibility, Enrollment, Treatment and Follow-up Rates
(adapted from**,** Svikis et al., 2012)

34

Study setting. Eleven treatment programs participating in the NIDA CTN served as recruitment sites for the study. Both urban and rural localities were represented with six outpatient psychosocial and five methadone maintenance programs. Specifically, outpatient psychosocial programs were located in Virginia, Michigan, Massachusetts, New Mexico, South Carolina and Oregon; methadone maintenance programs were based in Maryland (2 sites), Michigan, Massachusetts and California.

Study Procedures

Recruitment. Study recruitment took place over a 13-month period (November 2004 to December 2005). The flow of participants from screening and informed consent through 24-week follow-up assessment is shown in Figure 1. Participant recruitment took place on site at each Community Treatment Program (CTP) in designated research space. Participants were ascertained through both self- and counselor-based referrals. IRB-approved flyers and posters describing the study and offering a phone number to contact research staff about study participation was also posted in public areas (e.g., waiting rooms, bulletin boards; for more details see Figure 2). Research staff (RAs) regularly attended treatment team meetings to remind CTP staff about the study and encourage patient referrals. Once identified, participants met briefly with the RAs to learn more about the study procedures. Those who continued to express interest (N=657) in the study completed informed consent procedures and eligibility survey, followed by baseline assessment.

35

Looking for a Job?

You may be eligible to participate in a research study if you-

✓ **Are unemployed or work less than 20 hours a week**

✓ **Are at least 18 years of age**

✓ **Have been in treatment for at least 30 days**

You could earn up to $155 for your time and effort and you may have a chance to be in

the Job Seekers' Workshop. If you are interested in hearing more about the study, please

talk to your counselor or a member of our research staff at: (804) 827-1742

Figure 2. Job Seeker's Workshop Study Flyer.

Screening and informed consent. Potential participants met with RAs to review the
IRB-approved consent form. RAs provided potential subjects with an overview of the study, and
then read the consent form aloud, clarifying and answering questions as needed. RAs made sure
study participants understood what they were being asked to do. The IRB-approved consent form
described study purpose and procedures, including limits of confidentiality. To ensure
understanding of study procedures, a 10-item, true-false exam was administered and only those
scoring 80% and above proceeded with informed consent process. Individuals interested in study
participation signed the consent form witnessed by the RA.

36

Baseline assessment. Baseline assessment took place on the same day as study recruitment. Assessment measures were administered by trained RA's and included the CTN Common Assessment Battery (CAB): demographic form, Addiction Severity Index (ASI-lite) and Alcohol and Drug Modules of the Composite International Diagnostic Interview (CIDI-2.1). In addition, protocol-specific assessments were also administered: Wide Range Achievement Test (WRAT-3), Vocational Survey (VS) and the Timeline Follow-Back Interview for employment-(TLFB-E) (for more study details see Svikis et al., 2012). Baseline assessment domains included patient demographics, employment/work history, alcohol and drug use diagnosis, and psychosocial functioning. Urine samples were collected in temperature-monitored test cups to assay drug use. Urine toxicology tested for the presence of: cocaine, opiates, methadone, phencyclidine (PCP) and tetrahydrocannabinol, amphetamines and benzodiazepines. Recent alcohol use was assessed with Alcosensor breathalyzer. Baseline measures are summarized in the appendix.

Random assignment. Following baseline assessment, participants (N=628) were randomly assigned to either Job Seekers' Workshop (JSW) or the Standard Care (SC) control group. Stratification variables included: employment history (yes/no response to the question "were you employed at all in the past 5 years?") and current employment status (unemployed or underemployed in 4 weeks prior to study enrollment). Unemployed was defined as *no taxed or untaxed work* during the 4 weeks prior to study enrollment. Underemployed was defined as worked *no more than 20 hours/week* during the 4 weeks prior to enrollment.

Study Groups

J.S.W. intervention. This 3-session employment-focused intervention was developed by Sharon Hall and colleagues (1977) specifically for drug dependent individuals. The JSW

intervention seeks to improve job-seeking skills and job-interview behavior using focused, individualized education and practice, with videotape feedback and small group discussion (Svikis et al., 2012). Participants randomized to JSW participate in three group sessions (4 hours/session) focused on locating available jobs, making "cold calls" to potential employers, and rehearsing job interview skills. A primary component of the intervention is the individualized videotape feedback. During each session, participants learn how to conduct a job-interview through role-play. This allows them to practice and improve their job interview skills. Each role play is videotaped, then replayed to give participants an opportunity to watch themselves while receiving feedback from other JSW group members and the facilitator (for more study design see Svikis at al., 2012).

In the present study JSW participants also had access to all components of treatment as usual. In addition, JSW sessions were scheduled consecutively, one session per week, for the first three weeks of every month. Then, in week 4 of every month, make-up sessions occurred as needed to allow for missed sessions. Snacks and beverages were provided to ensure participant comfort during the 4-hour long JSW sessions and to maximize attendance adherence for all 3 sessions.

Standard care control group. Participants randomized to the control group received standard care or treatment as usual at the program where they were receiving treatment. SC study components were nonspecific and were designed to represent "standard care" as it existed within each participating Community Treatment Program (CTP; Svikis et al., 2012). Given the variability across eleven participating CTPs, SC procedures were not outlined in detail. Each CTP was free to offer vocational programs according to their usual care practices. SC services

38

typically included individual and/or group counseling as well as therapeutic adjuncts (e.g., parenting education, transportation).

For the RCT, however, one standardized element was added to SC across all participating CTPs and that was a Community Job Resources Brochure (CJRB). The CJRB provided tailored information about job placement and vocational training resources specific to each CTP's local community (Svikis et al., 2012). Each site's CJRB provided tailored information with names, addresses and telephone numbers, for services and resources from local providers as well as basic information relevant to both getting a job and keeping a job. All participants (JSW and SC) received the CJRB following randomization.

Follow-up assessments. Follow-ups were conducted by RAs with all study participants at the end of the 4 week intervention period and at 3 and 6 months post intervention. Follow-up assessment measures included: ASI-Lite follow-up items, Vocational Survey Follow-up (VSF) and The Timeline Follow Back Interview for Employment (TLFB-E) for the time that had passed since the previous assessment. Those randomized to JSW and SC had 82.3% and 83.3% follow-up rates at 3 months and 80.6% and 82.1% at 6 months post-intervention (Svikis at al., 2012). A table of follow-up assessments can be found in the Appendix.

Compensation. Participants were compensated in gift certificates for completing study assessments but they were not paid to attend JSW sessions. Participants received $25 for baseline; $20 for 1-month follow-up; $30 for 3-month follow-up and $40 for 6-month follow-up. In addition, a $40 bonus was earned by those participants who completed all three follow-up assessments as scheduled. Taken together, all study participants could earn up to $155 in gift certificates for their time and efforts.

39

Measures

The study used existing data from the multi-site randomized clinical trial conducted under the provisions of the NIDA Clinical Trials Network (CTN). The database included the CTN Common Assessment Battery (CAB) with measures collected across all CTN clinical trials as well as Study Specific assessment measures. The study drew items from both the CAB and Study Specific measures summarized below.

Independent variables.

Common assessment battery measures.

Demographics form. Demographic variables include: age, sex, race, ethnicity, and time in treatment prior to enrolment in the clinical trial.

The Addiction Severity Index-Lite (ASI-Lite). The Addiction Severity Index (ASI) is a widely used, semi-structured interview that assesses seven domains of psychosocial functioning commonly affected by alcohol and drug use (McLellan et al., 1992). The ASI-Lite is an amended version of the ASI (McLellan, Luborsky, Woody, & O'Brien, 1980) and was developed specifically for CTN studies. ASI-Lite domains include: medical, employment, alcohol and drug use, legal, family/social and psychiatric (McLellan at al., 1985; McLellan et al., 2006). Assessment focuses on the number, intensity and duration of problem behaviors across two time frames: past 30 days and lifetime. The ASI-Lite contains 22 fewer questions than the ASI, and omits items relating to severity ratings and family history. The ASI-lite has demonstrated good reliability and validity (Alterman at al., 2001; Cacciola, Alterman, McLellan, Lin, & Lynch, 2007). It was administered at baseline and all three follow-up visits. This study focused on

40

variables related to mental health, social support, social-economic status and family history of substance use and mental health issues.

Urine drug screen (UDS). Urine drug toxicology tested for the recent use of methadone, cocaine metabolites, opiates/ morphine, phencyclidine and tetrahydrocannabinol. UDS was obtained at baseline.

Alcohol breathalyzer (AB). To assess for recent alcohol use, participants completed a breathalyzer assessment to estimate Blood Alcohol Concentration (BAC). Breathalyzer testing for alcohol provides an estimate of the BAC but does not measure the severity of the alcohol use (Strid & Litten, 2003). The breathalyzer was used to ensure the participants were not intoxicated during the study and to verify self-report of alcohol use. This measure was administered at baseline, 1, 3 and 6 month follow-up visits.

Study specific measures.

Vocational survey (VS). The Vocational Survey (VS) is a study specific measure developed for the JSW NIDA CTN study. It is an interviewer-administered survey of each participant's vocational history. The VS was administered at baseline, and at all three follow-up visits. It consists of 11 questions focused on job seeking behavior. The data provide information about the extent to which JSW participants are engaging in job search activities compared to control group. The measure provides information about a variety of potential job search activities (i.e., looked for ads in newspapers for job opening, search in internet, went on a job interview, submitted resume etc.). Participants were asked whether they engaged in each activity at all during the past 3 month period. If

41

they reported "yes" then they were asked about number of times they engaged in each of the activities.

Job Seekers Workshop Attendance (JSWA). Treatment attendance for participants in the JSW group can range from zero (no attendance) to a maximum of three sessions. Participants randomized to the JSW group completed an attendance *form* for each of the three JSW sessions they attended. In addition, there were surveyed about the intervention overall at one month follow-up visit. JSWA forms were interviewer administered by the RA.

Dependent variables.

Timeline follow back interview for employment (TLFB-E). The original TLFB was developed to measure quantity and frequency of alcohol consumption in problem drinkers (Sobell, & Sobell, 1992). It subsequently expanded to include other drugs of abuse and has demonstrated moderate *r=.79* to high *r=. 98* levels of reliability when used to measure substance use (Sobell et al., 1996). In a recent meta-analysis of 29 published studies, agreement between TLFB and biological measures was estimated to range from 79.3% to 94% across illicit substances (Hjorthøj, Hjorthøj, & Nordentoft, 2012). The TLFB also has good reliability across a variety of settings and diverse populations when measuring other high-risk behaviors (i.e., smoking, violence, gambling behavior; Brown, Burgess, Sales, Whiteley, Evans, Miller, 1998; Caetano, Schafe, & Cunradi, 2001).

The TLFB-E used standard data collection procedures but focused instead on quantity and frequency of work behavior. Using a calendar, RA interviewers query participants about their vocational activities on every day of the assessment period (Svikis et al., 2012). Using a semi-structured interview format, RA's collected data about

42

onset of employment and hours worked each day across all three post-intervention
follow-up visits.

Variables for the Present Study

Using the original dataset, the following measures were abstracted or created:

      Baseline demographics and other client characteristics. Demographic
variables included: Age in years, gender (0=male, 1=female), race (1=Caucasian, 2=
African American, 3=Other), and education in years.

      Other client variables included:

      1) Time in treatment at study enrollment as a categorical variable (0=1 to 6
months and 1= more than 6 months)

      2) Recent employment history past 4 weeks (0=unemployed, 1=
underemployed*) *Unemployed was defined as *no taxed or non-taxed work* during the 4
weeks prior to study enrollment. Underemployed was defined as working no *more than
20 hours/week* during the 4 weeks prior to enrollment.

      3) Recent drug use as measured by urine toxicology obtained at baseline
assessment. Drugs assessed included: cocaine; opiates, methadone, THC, PCP,
amphetamines, barbiturates, methamphetamines, and benzodiazepines. This variable was
treated as dichotomous with 0= no drug positive results and 1=positive for one or more
substances.

      4) Treatment modality a dichotomous categorical variable (1=Methadone
Maintenance, 2= Psychosocial Outpatient Treatment).

Predictors of employment. Potential baseline predictors of employment were examined in these ASI domains: alcohol/drug use, medical, psychological, legal, family/social and employment/financial support.

Substance use variables assess for both recent (past 30 days) and lifetime (regular use, 3 or more days a week, for 6 months or longer). The variables examined included: alcohol (any amount); heavy alcohol (to intoxication*), heroin; methadone; other opiates; barbiturates; sedatives/hypnotics; cocaine; amphetamines; cannabis; hallucinogens; inhalants; and nicotine. *ASI defines to intoxication as 3 or more drinks per occasion.* All variables were recoded as dichotomous variables for ease of interpretation. Specifically, the variables that assess both recent use and lifetime regular use of substances were recoded to indicate any use for each substance (recent) or any regular use (lifetime) (1=yes, 0=no).

Recent alcohol problems (e.g., craving, withdrawal, loss of control) and drug problems variable (e.g., craving, withdrawal, loss of control, overdose) were recoded as number of days (past 30) each person experienced these problems. These variables were treated as continuous measures with values ranging from 0 to 30 days.

Self-report of any drug use (past 30 days) variable was coded yes if participant reported any days use of any drug not by prescription in the categories described above. No= if participants reported no drug use= 0.

Medical Domain variables included: 1) any chronic medical problem(s) 0= no, 1=yes; 2) number of times hospitalized for medical problems (lifetime) as a continuous variable, 3) having a medical disability (yes= if the participant reports receiving a pension for a physical disability and no=if participant does not, and 4) Recent days with medical problems (past 30) = number of days participant experienced any chronic or acute medical problems. Recent medical problems

44

(past 30 days) variable was recoded as a categorical variable (0=experienced no medical problem and 1=yes, experienced medical problems) due to non-normality issues.

Psychological Domain variables included: 1) serious depression (past 30 days and lifetime); 2) anxiety (past 30 days and lifetime); 3) hallucinations (past 30 days and lifetime) 4) cognitive memory issues (past 30 days, and lifetime); 5) trouble controlling violent behavior (past 30 days and lifetime); 6) suicidal thoughts (lifetime); 7) suicide attempt (lifetime); and 8) prescribed medication for a psychological disorder (past 30 days and lifetime). All variables were categorical and indicate whether someone has experienced or not the problem (0=no, 1=yes). In addition, number of days experiencing any of these psychological problems (0-30) past 30 days was treated as a continuous variable and cases with missing data were excluded in the analysis.

Number of times treated for a psychological problem* looking separately at inpatient and outpatient, was re-coded into dichotomous variables due to non-normality (1=Yes, 0=No). Cases with missing data were excluded in the analysis. *Does not include substance abuse, employment, or family counseling. Treatment episode*=a series of more or less continuous visits or treatment days, not the number of visits or treatment days.

Legal Domain variables included: 1) In treatment prompted by the criminal justice system; 2) recent legal status (Yes/currently on parole/ probation=1, No=0); 3) lifetime illegal activities (e.g., number of times arrested and charged with each of the following offences: shoplifting, parole violations, drug charges, forgery, burglary, robbery, assault, rape, prostitution, weapons offense, homicide, contempt of court, disorderly conduct, DWI, and major driving violations) were re-coded as dichotomous

45

variables (Yes=1, No=0) to help in the ease of comparisons between groups; 4) number of months incarcerated (lifetime) was re-coded as a dichotomous variable to a history of incarceration (yes=1, no=0); 5) days detained or incarcerated (values ranging from 0-30, past 30); 6) engaged in illegal activities in past 30 days (yes=1, no=0).

Family/social domain variables included:

1) Marital status (recoded into these categories: 1=married/Living as married; 2=divorced/widowed/separated, and 3=single)

2) Living situation. Usual living arrangements (past 3 years) was recoded into these categories: 1=alone; 2=controlled environment/no stable arrangement; 3= with sexual partner/children; 4) with family/parents/friends.

3) Participant satisfaction with this arrangements (satisfied=1, dissatisfied=0 and indifferent=1)

4) Living with someone who has a current drug problem (yes=1, no=0)

5) Living with someone who has a current alcohol problem (yes=1, no=0)

6) Experienced past 30 days and lifetime conflicts*:* with mother/father/ sister/ brother/ sexual partner/ children (yes=1, no=0). Missing values were excluded from analyses.

Employment/Financial Support Domain variables included:

1) Having a valid driver's license (1=yes and 0=no)

2) Auto available for use (1=yes and 0=no)

3) Longest full time job (responses were coded into total months)

4) Number of days paid for working in the past 30 days with values ranging from 0 to 30

46

5) Receiving any regular financial support (e.g., cash, food, housing from family/friend not-institutional; 1=yes and 0=no)

6) Money earned through illegal activities treated as a continuous variable

7) Recent employment problems*:* number of days (past 30 days) experienced employment problem (e.g., inability to find work, or problems with present job in which that job is jeopardized; 1=yes and 0=no)

8) How important is counseling for these employment problems was re-coded as a dichotomous variable with 0= not at all and 1= any/slightly/extremely important.

The initial examination of the longest full-time job variable was not normal. First, z-scores were calculated to determine outliers and those with score above 3.29 were coded as missing (n=18). Skewness and kurtosis was assessed with the outliers removed. Descriptive statistics were re-run, and the data remained normal. The recent days with employment problems (past 30 days) and importance of employment counseling were recoded into dichotomous variable to aid in the ease of comparisons between groups. Also, number of days paid for working in the past 30 days variable was too skewed and kurtotic and was re-coded into a dichotomous variable from number of days into paid for working (past 30 days; No=0, Yes=1).

Employment outcomes. Job-seeking behaviors were drawn from the Vocational survey administered at baseline, and at 3 and 6-month follow-up. The variables included:
1) Taken any steps to obtain employment (Yes/No) for each item.

(i)   **Baseline** (past 3 month)

(ii)   **3 and 6-month follow-up** any steps during the study days that coincide with this follow-up, since the previous assessment time-point (Yes=1, No=0)

2) Steps taken towards obtaining employment

47

i)   **<u>Baseline</u>**

ii)   **<u>3 and 6-month follow-up</u>** included steps taken during the study

days since the previous assessment time-point, and were measured by number of times

participants were engaged in each activity. The steps towards obtaining employment

variables included number of times participants:

A) Looked in the newspaper for openings

B) Searched Internet for job opening

C) Talked with friends or relatives about job leads

D) Contacted employment agency/job finding center

E) Telephoned a prospective employer

F) Submitted an application for a job opening

G) Submitted resume to prospective employer

H) Went to job interviews*

I) Received a job offers**

All variables were continuous, too skewed and kurtotic and due to non-normality the data

was transformed from continuous to dichotomous variables history of obtaining

employment (e.g., "how many times looked in the newspaper" was re-coded as "Looked

in the newspaper for job openings" Yes=1, No=0). All missing data were excluded from

the analysis *Interviews were defined as face-to-face meetings with one or more

individuals from the company offering the work position. **Job offers were verbal or

written offers of employment.

Obtaining a new job. Using the Timeline Follow Back Interview (TLFB-E) at

each follow-up assessment, participants were asked to recall for each day, how many

48

hours they worked. The assessment covered the time since the previous assessment time-point, approximately 12 weeks at 3-month follow-up (weeks 1-12) and 12 weeks at 6 months follow-up (weeks 13-24). The TLFB collected all employment data, including working non-taxed (off the books), full-time jobs, or part time-jobs at each follow-up (3 and 6 months). Working was defined as paid for working in a taxed/ untaxed job*/ or enrollment in a job training. *Non-taxed job was defined as "a job in which no income tax is withheld by the employer (e.g., pay is made by check or cash 'under the table').

A dichotomous primary outcome variable number "Employed" was created using the following definition:

1) Employed (35+within a week) in a new taxed/non-taxed job/acquired a better job or enrollment in job training program at 3-month (1-12 weeks) follow-up period (Yes=1, No=0)

2) Employed (35+within a week) in a new taxed/non-taxed job/ acquired a better job or enrollment in job training program at 6-month follow-up (1-24 weeks) period (Yes=1, No=0)

JSW Session Attendance for participants in the JSW groups**,** number of sessions attended ranged from 0 to 3. Because, it was highly skewed, the attendance variable was transformed into a categorical variable where 0= 0 to 1 session attended and 1= 2 to 3-sessions attended.

Data Analysis Plan

Demographics and initial analyses. Statistical analyses were performed using SPSS version 24 (SPSS Ins., Chicago, IL, USA). The data set for this secondary data analysis had already been prepared for use (see Svikis et al., 2012). Descriptive analyses were run to

summarize demographic characteristics including age, race, gender, and education. Employment was defined as employed in a new taxed/untaxed job/better job or enrolled in job training and was treated as a categorical variable. Comparisons of participant characteristics between JSW and SC were performed using *t*-test and chi-square analyses. Similarly, t-test and chi-square analyses with odds ratio and 95% confidence intervals were conducted to identify variables associated with being employed during the 6- month follow-up period. Multivariate analysis was performed to identify the most parsimonious model with predictors of employment. Frequency distributions of all continuous variables were examined for normality and outliers. To assure the data set was the same and to provide sample characteristics, the demographic and baseline characteristics for the JSW and SC groups (N=618) were examined and results were consistent with those previously reported in the primary paper (see, Svikis et al., 2012).

Aim1. To examine relationship whether individuals randomized to JSW engaged in more job seeking activities than SC groups and to determine if dose of JSW intervention received (sessions attended) was related to employment outcome. Two specific hypotheses were tested.

For Hypothesis 1. JSW group members will be more likely to engage in each of the job seeking behaviors activities (i.e., conduct job calls, complete job interviews, answer more ads), than SC control group members over the 3 and 6-month follow-up period.

Chi-square analyses were used to test this hypothesis, comparing number of JSW and SC participants engaging in each job seeking behaviors (i.e., have conducted job calls, completed job interviews, submitted job resume etc.) at 3 and 6-month follow-up. For this analysis, variables were coded as dichotomous (Yes, conducted job calls=1, No=0) and all missing values were excluded from the analysis. Independent t-tests were also used to examine the mean differences between the two groups frequencies on each of the job seeking behaviors activities.

50

For Hypothesis 2: JSW participants attending more sessions would be more likely to get employed or acquire a better job than those JSW participants attending fewer sessions at 6-month follow-up.

To test this hypothesis, a logistic regression analysis was run to determine whether session attendance (0, 1, 2, 3 dose intervention) predicted employment outcome (1=employed, 0=not-employed) over the 6-month follow-up in JSW group participants. The outcome of interest was employed or not during the 6-months follow-up period.

Aim 2. To examine the association between demographics and psychosocial variables and employment outcomes over the 6-month follow-up period, univariate regression was used. All JSW and SC participants were included in the analyses. Chi-square independent tests were used for categorical variables and independent *t*-tests were performed to examine differences in mean frequency scores for continuous variables between the two groups (employed *vs* not-employed).

First, three hypotheses were tested: **Hypothesis 3**: For age, it was hypothesized that younger age individuals will be more likely than older age individuals to be employed at 6-month follow-up. **Hypothesis 4:** For gender, it was hypothesized that men will be more likely than women to be employed at 6-month follow-up. **Hypothesis 5:** For race, it was hypothesized that African-American participants will be more likely than Caucasian and other minorities to be employed at 6-month follow-up.

Next, univariate logistic regressions were used to identify other potential correlates of becoming employed. These variables were drawn from baseline ASI domains of alcohol/drug use, medical health, legal, family/social support, psychological problems and employment/financial support, and selected subsets of variables based on literature and original

51

study protocol. Significance was set at p< 0.05 for all univariate analyses and p<0.20 in preparation for multivariate analysis.

Aim 3. To identify the most parsimonious model from individual demographic and psychosocial predictors of becoming employed during the 6-month follow-up period. To examine this aim, a multivariate logistic regression, with backward elimination was run to identify the predictors of employment identified through hypotheses testing at p<0.05 and univariate analyses significant at p<0.20, at 6-month follow-up period. The final model was achieved by eliminating covariates, one by one, that were not significant at the p<0.05. The data was treated as is, with any missing values excluded from the analyses.

Results

Outliers and Tests of Normality

Frequency distributions of continuous variables that represented employment outcomes were examined for evidence of non-normality and outliers. If the data contained outliers (anything with Z-score greater than 3.29) and there was a meaningful rationale to remove them (e.g., outliers were not expected), they were coded as missing. If by removing outliers the data were normal, no further changes were made to the variable. Specifically, for demographic variables, only years of education were too skewed and kurtotic and z-scores above 3.29 were coded as missing (n=4). The data were normally distributed remaining slightly kurtotic but below 1.5, with average education 12.00 years (SD=2.34). For substance use measures, non-normality was found for all recent (days) use and lifetime regular (years) of use variables. Therefore, all items were re-coded from continuous to categorical variables. For medical problems measures, only number of times hospitalized was found to be too skewed and kurtotic with n=8 coded as missing. For job-seeking behaviors measures, only the job-seeking activities items were

52

transformed and re-coded from continuous to categorical variables due to non-normality issues. Missing values were excluded from these analyses.

Descriptive Statistics

      Demographics. Overall, more than half the sample was female (53.2%) with an average age of 41.12 (SD= 10.71) years (See Table 2). Over 40 percent identified as Caucasian (40.9%) and 38.9 % identified as African-American. Participants reported a mean of 11.98 years formal education (SD=2.34); nearly half were never married (46.6%); and over half of the sample was living with parents/family/friends (58.3%). Also, nearly two-thirds of the sample had held a full time job in the past 5 years (61.0%). There were no statistically significant differences for demographic variables between the JSW and SC group (all p>.05).

      SUD treatment variables. Treatment and diagnostic data at baseline are also summarized in Table 2. JSW and SC groups did not differ on any variable. In both groups, over half of participants had been in treatment for 1-6 months (57.2 - 60.5%) as compared to more than 6 months (42.8-39.5%) and just over half of the sample screened positive for recent substance use by urine drug assay at time of study enrollment (52%).

53

Table 2

Baseline Characteristics of JSW and SC Groups (N=628)

Variable	JSW (N=299)	SC (N=329)	*p*-value
Age (group)			.200
18-29	46(15.4%)	72 (21.9%)	
30-39	64 (21.4%)	70 (21.3%)	
40-49	113 (37.8%)	114 (34.7%)	
50+	76 (25.4%)	73 (22.2%)	
Gender (%)			.520
Male	144 (48.2%)	150 (45.6%)	
Female	155 (51.8%)	179 (54.4%)	
Race (%)			.476
African American	123 (41.1%)	121 (36.8%)	
Caucasian	120 (40.1%)	137 (41.6%)	
Other (incl multi-racial)	56 (18.7%)	71 (21.6%)	
Education (%)			.236
less than high school	90 (30.1%)	109 (33.1%)	
12 years	127 (42.5%)	118 (35.9%)	
13+ years	82 (27.4%)	102 (31.0%)	
Recent Employment (past 4 weeks)			.523
Unemployed	247 (82.6%)	278 (84.5%)	
Underemployed	52 (17.4%)	51(15.5%)	
Employed at all in the past 5 years			.231
Yes	234 (78.3%)	270 (82.1%)	
No	65 (21.7%)	59 (17.9%)	
Time in treatment at study enrollment			.402
1-6 months	171 (57.2%)	199 (60.5%)	
> 6months	128 (42.8%)	130 (39.5%)	
Modality			.834
Psychosocial Outpatient	157 (52.5%)	170 (51.7%)	
Methadone Maintenance	142 (47.5%)	159 (48.3%)	
Drug screen on intake[b]			.828
Positive	158 (52.8%)	171 (52.0%)	
Negative	141 (47.2%)	158 (48.0%)	
DSM-IV Abuse/Dependence			

54

Diagnosis (Lifetime) [a]			
Alcohol	202 (67.8%)	236 (71.7%)	.282
Cocaine/other stimulants	224 (74.9%)	252 (76.6%)	.624
Opioids	189 (63.2%)	230 (69.6%)	.075
Marijuana	159 (53.2%)	176 (53.5%)	.936

Note: [a] Based on DSM-IV diagnosis; [b] excluding methadone. ** *denotes statistical significance p<0.05*

Alcohol/Drug use and problems. Baseline recent and lifetime ASI alcohol and drug use variables and recent problems for the JSW and SC groups are summarized in Table 3. For all variables, percentages represent the number of participants per group who endorsed each item. For recent use, the most frequently endorsed substances included: methadone (prescribed) (47.5-48.9%) followed by alcohol (26.7-27.4%), cocaine (24.3-26.8%) and sedatives (17.0-22.4%). For lifetime regular use, most commonly used substances included alcohol (any amount) (68.9-68.4%); heavy alcohol (3+ drinks/day) (63.5- 62.5 %), cannabis (66.2-65.0%), cocaine (64.7-65.2%), and heroin (53.2-60.2%). In addition, over three-fourths of the sample reported recent use of nicotine (79.6%-80.9%) and almost the same percentage endorsed lifetime daily use of nicotine (87.0-88.4%). JSW and SC groups reported similar recent days with alcohol problems t (626) =. -551, *p*=. 582, two tailed), and recent days with drug problems, t (626) =1.295, *p*=. 196, two tailed). There were no statistically significant baseline group differences for any of the variables assessed in this domain (all p>.05).

Table 3

Recent and Lifetime Substance Use and Recent Problems in JSW and SC Groups

Variable	JSW (N=299)	SC (N=329)	*p-value*
Substance Use History			
Alcohol (any)			
Past 30 days	82 (27.4%)	88 (26.7%)	. 849
Lifetime**	206 (68.9%)	225 (68.4%)	.891

Variable	JSW (N=299)	SC (N=329)	*p-value*
Alcohol (heavy)			
Past 30 days	45 (15.1%)	42 (12.8%)	.408
Lifetime	190 (63.5%)	206 (62.5%)	.809
Heroin			
Past 30 days	27 (9.0%)	44 (13.4%)	.086
Lifetime	159 (53.2%)	198 (60.2%)	.077
Methadone (prescribed)			
Past 30 days	142 (47.5%)	161 (48.9%)	.717
Lifetime	132 (44.1%)	146 (44.4%)	.954
Other opiates			
Past 30 days	43 (14.4%)	42 (12.8%)	.555
Lifetime	81 (27.1%)	92 (28.0%)	.807
Other sedatives			
Past 30 days	67 (22.4%)	56 (17.0%)	.089
Lifetime	82 (27.4%)	71 (21.6%)	.088
Cocaine			
Past 30 days	80 (26.8%)	80 (24.3%)	.483
Lifetime	195 (65.2%)	213 (64.7%)	.901
Amphetamines*			
Lifetime	72 (24.1%)	72 (21.9%)	.513
Cannabis			
Past 30 days	56 (18.7%)	59 (17.9%)	.797
Lifetime	198 (66.2%)	214 (65.0%)	.757
Hallucinogens*			
Lifetime	51 (17.1%)	53 (16.1%)	.750
Nicotine			
Past 30 days	242 (80.9%)	262 (79.6%)	.682
Lifetime	260 (87.0%)	291 (88.4%)	.569
Days Alcohol Problems			
Past 30 days	1.79 (SD=5.92)	1.55 (SD=5.09)	.582
Days Drug Problems*			
Past 30 days	4.63 (SD=9.03)	5.60 (SD=9.67)	.196
Alcohol Problems Troubled	.44 (SD=1.006)	.44 (1.034)	.963
Drug Problems Troubled	1.04 (SD=1.478)	1.22 (SD=1.520)	.117

Note: *Recent Amphetamines and Hallucinogens (past 30 days) not included in the analyses due to low frequencies of item endorsement ** Lifetime use =regular use

Medical domain. Baseline ASI medical variables for the two study conditions are

summarized in Table 4. More than half of the sample had a chronic medical problem (57.8-

56

58.5%), and less than one fifth had a medical disability (14.4-16.7%). JSW and SC group participants did not differ on any of the baseline medical domain variables (all p>.05). Respectively, no significant differences were found on recent days with medical problems, t (626) = -.203, p=. 840), chronic medical problems (57.8% -58.5%, χ^2 (1, N=628) =. 039, p=. 844), number of times hospitalized for medical problems (lifetime) t (618) =-1.607, p=. 109), or medical disability (14.4%-16.7%) χ^2 (1, N= 628) = .484, p=. 487 Continuity Correction).

Table 4

Baseline Medical Domain Variables in JSW and SC Groups

Variables	JSW (N=299)	SC (N= 329)	*p*-value
Chronic Medical Problem	175 (58.5%)	190 (57.8%)	.844
Number Times Hospitalized for Medical Problems (lifetime)	3.32 (SD=4.28)	2.83 (SD=3.41)	.109
Qualify for Medical Disability	43 (14.4%)	55 (16.7%)	.487
Recent Problems Days with Medical Problems (past 30)	10.33 (SD=12.33)	10.13 (SD=12.07)	.840

Mental health domain. Baseline ASI mental health measures for the two groups are summarized in Table 5. About two-thirds of the sample had experienced lifetime mental health problems. Most common psychological problems endorsed included depression (66.7% - 69.3%) and anxiety (66.1% -69.3%). In all cases, comparisons of the JSW and SC groups found no statistically significant differences (all p>.05).

57

Table 5

Baseline Mental Health Domain Variables in JSW and SC Groups

Variables	JSW (N=299)	SC (N=329)	*p*-value
Qualify for Psychiatric Disability	26 (8.7%)	34 (10.3%)	.485
Depression			
Past 30 days	116 (38.9%)	134 (40.7%)	.645
Lifetime	198 (66.7%)	228 (69.3%)	.480
Anxiety			
Past 30 days	138 (46.3%)	157 (47.7%)	.724
Lifetime	197 (66.1%)	208 (63.2%)	.451
Hallucinations			
Past 30 days	16 (5.4%)	20 (6.1%)	**.**696
Lifetime	48 (16.1%)	65 (19.8%)	.228
Memory Problems			
Past 30 days	96 (32.2%)	123 (37.4%)	.175
Lifetime	140 (47.0%)	160 (48.6%)	.679
Trouble, Controlling Violence			
Past 30 days	19 (6.4%)	27 (8.2%)	.380
Lifetime	127 (42.6%)	127 (38.6%)	.306
Suicidal Ideation			
Past 30 days	10 (3.4%)	10 (3.0%)	.822
Lifetime	102 (34.2%)	129 (39.2%)	.197
Suicide Attempt*			
Lifetime	73 (24.6%)	99 (30.1%)	.123
Prescription for Psychiatric Medication	86 (28.9%)	85 (25.8%)	.396
Past 30 days	161 (54.0%)	188 (57.1%)	.433
Lifetime			

Note: * Suicide attempt (past 30 days) not included due to low frequency of item endorsement

Legal domain. Baseline ASI legal measures for the two groups are summarized in Table

6. For the dichotomous (yes/no) variables, percentages represent the number of participants per

group who endorsed this variable and for the continuous variables; means and standard deviations are shown. About one-fourth of the sample was prompted by the criminal justice system to initiate in the current treatment episode. Most common charges for past arrests included drug charges (47.4%-50.5%); parole violation (35.5%-35.9%); major driving violation (33.4%-34.7%) and shoplifting (28.1%-31.3%). Over half of the sample had been incarcerated (53.8%-58.5%) and about 10% of the sample was awaiting trial or sentencing at the time of study enrollment. Group differences at baseline were found for history of being arrested and charged for prostitution with 9.7% of JSW participants endorsing this item as compared to 4.0% of SC group, χ^2 (1, N= 628) = 8.29, p=. 004). Also, almost one-third of JSW reported it was important to receive counseling or referral for legal problems (28.4%) as compared to (20.1%) of SC group, $\chi2$ (1, N=628) = 6.01, p= .014. There were no additional statistically significant group differences for the remaining legal variables.

Table 6

Baseline Legal Domain Variables in JSW and SC Group

Variable	JSW (N=299)	SC (N=329)	*p*
Legal Status			
Treatment entry by the criminal justice system	65 (21.7%)	79 (24.0%)	.499
Currently Legal Status: Parole Probation Neither	23 (7.7%) 56 (18.8%) 219 (73.5%)	21 (6.4%) 71 (21.6%) 236 (72.0%)	.588

Variable	JSW (N=299)	SC (N=329)	p
Lifetime Illegal Activities			
Shoplifting	84 (28.1%)	103 (31.3%)	.379
Parole violation	106 (35.5%)	118 (35.9%)	.914
Drug charges	151 (50.5)	156 (47.4%)	.440
Forgery	26 (8.7%)	39 (11.9%)	.194
Burglary	42 (14.0%)	56 (17.0%)	.305
Robbery	23 (7.7%)	14 (4.3%)	.068
Assault	73 (24.4%)	79 (24.0%)	.906
Prostitution	29 (9.7%)	13 (4.0%)	.004**
Contempt of Court	25 (8.4%)	28 (8.5%)	.946
Disorderly Conduct	67 (22.4%)	59 (17.9%)	.162
DWI Charges	80 (26.8%	72 (21.9%)	.155
Major Driving Violation Charges	100 (33.4%)	114 (34.7%)	.750
Awaiting Charges, Trial	34 (11.4%)	32 (9.7%)	.502
Ever Incarcerated (lifetime)	175 (58.5%)	177 (53.8%)	.233
Total Months Incarcerated	17.30 (SD=29.79)	15.78 (SD=28.70)	.516
Days detained/incarcerated in the past 30 days	.17 (SD=1.84)	.24 (SD=1.59)	.613
Engaged in illegal activities in the past 30 days	12 (4.0%)	17 (5.2%)	.491
Important to receive counseling for legal problems			.014**
Not at all	214 (71.6%)	263 (79.9%)	
Slightly/Moderately/ Considerably/Extremely	85 (28.4%)	66 (20.1%)	

*Note: ** denotes statistical significance at p<0.05*

Family/Social Support Domain. JSW and SC baseline data for ASI family and social

support variables are summarized in Table 7. About half of the sample was never married

(45.2%-47.9%) and living with their family/parent/friends (57.4%-59.2%). Nearly, three-fourths

of JSW reported being satisfied (68.9%) with current living arrangements compared to three-

fifths of SC (60.2%) group, χ^2 (2, N=628) = 6.01, *p*=. 049. More than half of the sample reported

experiencing serious conflict with others in their lifetime. Such conflicts most frequently

involved spouse/sexual partner (53.4%-56.4%), mother (38.0%-37.5%); father (32.0-35.5%), or

60

brother/ sister (33.0%-36.2%). SC group members were nearly twice as likely to report conflict

with a sibling in the past 30 days (12.7%) compared to JSW group members (7.0%), χ^2 (1,

N=510)= 4.53, *p*=. 033) No other group differences were found at baseline (all p>.05).

Table 7

Baseline Family/Social Variables in JSW and SC Groups

Variable	JSW (N=299)	SC (N=329)	*p-value*
Marital Status			
Married/Living as Married	44 (14.7%)	38 (11.6%)	.762
Divorced/Separated/Widow	69 (23.1%)	81 (14.7%)	
Never Married	135 (45.2%)	157 (47.9%)	
Usual Living Situation (past 3 years)			.819
Alone	48 (16.1%)	54 (16.4%)	
Controlled environment/ no	22 (7.4%)	31 (9.4%)	
stable arrangement	52 (17.4%)	55 (16.7%)	
With sexual partner/children	177 (59.2%)	189 (57.4%)	
With family/ parents/ friends			
Satisfaction with living situation			
No	79 (26.4%)	105 (31.9%)	.049**
Indifferent	14 (4.7%)	26 (7.9%)	
Yes	206 (68.9%)	198 (60.2%)	
Living with someone who			
Has an alcohol problem	31 (10.4%)	32 (9.7%)	.789
Has a drug problem	35 (11.7%)	33 (10.1%)	.508
Experienced serious conflict with			
Mother			
Past 30 days	13 (7.1%)	18 (8.7%)	.553
*Lifetime	113 (38.0%)	123 (37.5%)	.888
Father			
Past 30 days	10 (8.3%)	20 (12.9%)	.219
Lifetime	89 (32.0%)	109 (35.5%)	.373
Brother/Sister			
Past 30 days	17 (7.0%)	34 (12.7%)	.033**
Lifetime	96 (33.0%)	113 (36.2%)	.405
Sexual Partner/Spouse			
Past 30 days	36 (16.7%)	37 (15.4%)	.700
Lifetime	168 (56.4%)	175 (53.4%)	.448
*Children**			

61

Lifetime	49 (20.0%)	48 (19.6%)	.910

Note: **denotes statistical significance *p*<0.05, *Children (past 30 days) not included due to low frequency of item endorsement * Lifetime=regular conflict

Employment/Financial support. The ASI-Lite baseline employment/financial support variables for the JSW and SC groups are shown in Table 8. Between 39.2-48.6% of participants had a valid driver's license and about one-fourth of those individuals had a car available for their use (29.4%-25.8%). Nearly half received regular support (i.e., cash, food, housing) from family/friend (46.5- 46.8%), less than one-fifth of the sample (15.5%- 17.4%) had been paid for working in the past 30 days, and over half (57.2-59.3%) reported feeling troubled by recent employment problems. There were no significant JSW and SC group differences at baseline for any of the variables (all p>.05).

Table 8

Baseline Employment/ Financial Support Variables in JSW and SC Groups

Variable	JSW (N=299)	SC (N=329)	*p*-value
Valid Driver's License	122 (40.8%)	129 (39.2%)	.745
Automobile Available	88 (29.4%)	85 (25.8%)	.314
Longest Full-Time Job/Year Ever	5.30 (SD=5.41)	4.75 (SD=4.59)	.177
Days paid for working (past 30 days)	52 (17.4%)	51 (15.5%)	.596
*Receiving any regular financial support	139 (46.5%)	154 (46.8%)	.936
Any money earned through illegal activities (past 30 days)	11(3.7%)	16 (4.9%)	.465
Recent employment problems (past 30 days)	171 (57.2%)	195 (59.3%)	.598
Important employment counseling			.678
Not at all	107 (35.8%)	123 (37.4%)	
Any/Slightly Through Extremely	192 (64.2%)	206 (62.6%)	

Note: *Receiving any regular financial support such as cash, food, and housing from family / friend, non-institutional

62

Job-Seeking behavior and employment history (baseline). JSW and SC baseline group comparisons on employment history and job seeking behaviors are summarized in Table 9. Over three-fourths of the sample had worked in a job (full or part-time) the past 5 years and nearly three-fourths of participants reported making some effort in the past three months to obtain employment. Most common job-seeking behaviors included looking at ads in the newspaper (80-84.3%) and submitting a job application (62.6-63.4%). JSW and SC groups differed at baseline on only one job seeking behavior (past 3 months), with JSW participants looking more often at newspaper job ads than SC controls, t (444)= -2.177, p=0.035

Table 9

Baseline Employment History and Job Searching Behaviors Variables in JSW and SC groups

Variable	JSW N=299	SC N=329	*p*-value
Total jobs since their 18th years old	9.21 (SD=7.07)	9.58 (SD=7.71)	.536
Worked in any job (past 5 years)	78.3% (234)	82.1 % (270)	.273
Lost a job due to alcohol/drug use	37.6% (112)	43.2% (142)	.155
Received job assistance through a service (past 3 months)	11.0% (33)	10.9% (36)	.970
Taken any steps to obtain employment	72.2% (216)	69.9% (230)	.520
If yes, which of the following steps have you taken			
Looked at ads in the newspaper	84.3% (182)	80.0% (184)	.241
Number of times looked at newspaper for job ads	22.47 (SD=30.81)	16.89 (SD=24.67)	.035
Searched for jobs in internet	28.7% (62)	32.2% (74)	.426

Variable	JSW N=299	SC N=329	*p*-value
Contacted an employment agency	40.3% (87)	41.3% (95)	.826
Number of times	3.74 (SD=12.157)	2.46 (SD=8.46)	.195
Submitted a job application	63.4% (137)	62.6% (144)	.858
Went on a job interview	36.6% (79)	38.7% (89)	.644
Received a job offer	11.2% (50)	11.7% (52)	.982

Aim 1: Hypothesis 1. JSW group members will be more likely to engage in job-seeking

behaviors (i.e., conducting job calls, completing job interviews, answering ads in the newspaper

etc.) than SC group members at both 3 and 6-month follow-up. For this analysis, Chi-square tests

of independence looking at separately each job seeking behavior (yes/no) found no significant

JSW and SC group differences at either the 3 or 6-month follow-up (all p >. 05, See Tables 10

and 11). Independent t-tests also found no group differences on mean frequency scores for any of

the job seeking behaviors.

Frequency of engagement in each job-seeking behavior at 3 and 6-month follow-up are

shown in Tables 10 and 11. At 3-month follow-up, three-fourths of the sample (68.3-71.6%) had

taken one or more steps to obtaining employment. These activities included looking at ads in the

newspaper (70.9-78.9%), submitting a job application (75.9%-75.7%), and talking with friends

(76.5-81.6%). At 6-month follow-up, nearly two-thirds of JSW and SC group (61.1-62.0%) had

taken steps to obtain employment. The types of job-seeking behaviors reported were similar for

both groups at 6-month follow-up and included looking at ads in the newspaper (85.6%-86.9%),

submitting a job application (78.9%-84.2%), and talking with friends (73.8%-75.3%).

64

Table 10

Job Seeking Behaviors in JSW and SC Groups at 3- Month (weeks 1-12) Follow- Up

Variable	JSW (N=299)	SC (N=329)	*P*-value
Taken any steps to obtain employment	71.6% (179)	68.3% (190)	.416
If yes, which of the following steps have you taken			
Looked for ads in Newspaper	70.9% (127)	78.9% (150)	.076
How many times	12.17 (SD= 17.07)	12.94 (SD=16.71)	.662
Searched internet	55.2% (165)	58.7% (193)	.379
How many times	4.55 (SD=11.89)	3.21 (SD=10.19)	.243
Talked with friends	76.5% (137)	81.6% (155)	.288
How many times	8.31 (SD=15.24)	7.09 (SD=10.07)	.361
Contacted an employment agency	59.5% (178)	64.1% (211)	.236
How many times	1.77 (SD=4.97)	1.52 (SD=3.78)	.595
Submitted a job application	75.9% (227)	75.7%(249)	.945
How many times	4.12 (SD=7.89)	3.74 (SD=7.17)	.623
Went on a job interview	60.5% (181)	59.9% (197)	.867
How many times	0.87 (SD=2.02)	0.61 (SD=1.18)	.129
Received a job offer	61.5% (184)	56.8% (187)	.232
How many times	0.50 (SD=0.90)	0.35(SD=0.83)	.099

65

Table 11

Job Searching Behavior in JSW and SC groups at 6-Months (13-24 weeks) Follow- Up

Variable	JSW (N=299)	SC (N=329)	*P*-value
Taken any steps to obtain employment	66.1% (160)	62.0% (165)	.387
If yes, which of the following steps have you taken			
Looked for ads in Newspaper	85.6% (256)	86.9% (286)	.633
How many times	16.60 (SD=24.48)	14.21 (SD=20.06)	.336
Searched internet	60.5% (181)	63.5%(209)	.440
How many times	3.50 (SD=9.26)	2.84 (SD=8.34)	.502
Talked with friends	73.8% (118)	75.3% (125)	.846
How many times	10.64 (SD=21.27)	8.08 (SD=13.14)	.192
Contacted an employment agency	66.9% (200)	70.2% (231)	.370
How many times	2.63 (SD=7.90)	2.50 (7.26)	.885
Submitted a job application	78.9% (236)	84.2% (277)	.088
How many times	4.16 (SD=10.05)	4.73 (SD=7.06)	.553
Went on a job interview	65.9% (197)	68.1% (224)	.558
How many times	0.97 (SD=2.74)	0.76 (SD=1.36)	.379
Received a job offer	64.2% (192)	65.7% (216)	.706
How many times	0.43(SD=0.77)	0.49 (SD=1.31)	.584

66

Hypothesis 2. Participants in the JSW group attending more JSW sessions will be more

likely to become employed over the 6-month follow-up than those attending fewer JSW sessions.

The JSW session's attendance frequencies and employment rate are summarized in Table 12.

Over one-fourth of the JSW did not attend any session (28.8%) and about half attended all three

JSW sessions (48.5%).

Table 12

Sessions Attendance and Employment Rate in the JSW Group

Workshop Attendance Session	JSW Group Attendance (N=299)	JSW Employed (N=149)
0	86 (28.8 %)	19.5% (29)
1	41 (13.7 %)	12.8% (19)
2	27 (9.0 %)	6.7% (10)
3	145 (48.5 %)	61.1% (91)

The relationship between JSW session attendance and becoming employed over the 6-

month follow-up was examined and shown in Table 13. A logistic regression analysis found a

difference by session attendance and employment status at 6-month follow-up among JSW group

members supporting our 2nd hypothesis. Specifically, as the number of sessions attended

increases by JSW participants, the odds of becoming employed increases with 1.44 time, χ^2 (1,

N=299) =18.07, OR=1.46, 95% CI = [1.225, 1.756].

Table 13

Session Attendance predictor of Employment at 6 month follow-up

Session Attendance Variable	B	S.E	p-value	Exp *(B)*	*Odds Ratio CI*

Session 0, 1, 2 3	.383	.092	.001*	1.466	1.225, 1.756
Constant	-.689	.204	.001	.502	

Note: *p<.01

Correlates of Employment in RCT Participants

Univariate Analyses. Using chi-square analyses for categorical variables and t-tests for continuous measures the relationships between demographic, psychosocial and treatment variables and becoming employed over the 6- month follow-up were examined.

Demographics. Based on the literature review, three hypotheses were tested looking at age, gender and race. These are shown in Table 14. The remaining comparisons between ASI domain variables and becoming employed were exploratory and not hypotheses driven.

Hypothesis 3. Younger age individuals will be more likely than older age individuals to be employed or acquire a better job over the 6-month follow-up period. As hypothesized, participants with employment during the 6-month follow-up were significantly younger (M=39.91, SD=10.62) than those with no employment (M=42.17, SD=10.68) during the same time interval, t (626) = 2.65, *p* =. 008). This supported Hypothesis 3. However, the magnitude of the group differences in means was quite small (eta squared=. 012; Cohen, 1988), accounting for only 12% of the variance in the outcome measure.

Hypothesis 4.Men would be more likely than women to be employed or acquire a better job at 6- month follow-up period. A chi-square test of independence (with Continuity Correction) found men were 1.3 times more likely than women to have positive employment outcomes throughout the 6-month follow-up period (χ^2(1, N=628) =10.078, *p*=. 002; OR=1.3, 95% CI [1.116, 1.563] Cramer's V=0.130). This supported Hypothesis 4.

68

Hypothesis 5. African-American participants would be more likely than Caucasian and other minority group participants to be employed or acquire a better job over the 6-month follow-up period. Chi-square analysis found a relationship between race and employment status over the 6-month follow-up period. The hypothesis was not supported by the data, however, as African-Americans were less likely to be employed (40.2%) over the 6-month follow-up period than Caucasian (52.5%) and other racial groups (46.5%), χ^2(2, N=628) = 7.69, p =. 021.

Associations between demographic and SUD treatment variables and becoming employed at 6- month follow-up are also summarized in Table 14. Only five variables were associated with becoming employed. They included: years of education, t (625) =-2.022, p=. 044; treatment modality with, participants in outpatient psychosocial treatment being 2.2 times more likely to have positive employment outcomes than those in methadone maintenance (χ^2 (1, N=628) =25.37, p=0.001,OR=2.21, 95% CI =[1.668, 3.171] Cramer's V=. 204); time in treatment at study enrollment, with individuals in treatment from 0 to 6 months being 1.7 times more likely to be employed than those in treatment for more than 6-months (χ^2 (1, N=628) = 11.62, p=. 001, OR=1.7, 95% CI= [1.267-.2.421] Cramer's V=. 136); employed at all (past 5 years) with individuals who had worked at some point during the last 5 years being 2.9 times more likely to have a positive employment outcome than those who did not work at all in the past 5 years, χ^2 (1, N=628)= 16.04, p= .000, OR=2.9, 95% CI= [1.887-4.503], Cramer's V=0.198) (Continuity Correction) and lifetime opioid abuse/dependence, with not-employed individuals being twice as likely to have a lifetime diagnosis Opioid Abuse Dependence than employed individuals χ^2 (1, N=628) = 10.76, p=.001(Continuity Correction).

69

Table 14

Association of Demographic and Treatment Variables and Employment* at 6-month Follow-Up (weeks 1-24)

Variable	Employed (292)	Not Employed (N=336)	*p*-value
Age (years)	39.91 (10.62)	42.17 (10.69)	0.008**
Gender (%)			0.002**
Male	53.4 % (157)	46.6% (137)	
Female	40.4% (135)	59.6 % (199)	
Race (%)			0.021*
African American	40.2% (98)	59.8% (146)	
White	52.5% (135)	47.5% (146)	
Other (multi-racial)	46.5% (59)	53.5% (68)	
Education (years)	12.15 (SD=2.23)	11.78 (SD=2.27)	.004**
Recent employment (past 4 weeks)			.100
Unemployed	80.8% (236)	86.0% (289)	
Underemployed	19.2% (56)	14.0% (47)	
Time in treatment at study enrollment			.001**
0-6 month	52.2% (193)	47.8% (177)	
> 6month	38.4% (99)	61.6% (159)	
Modality			.000**
Psychosocial Outpatient	56.3 (184)	43.7 (143)	
Methadone Therapy	35.9 (108)	64.1 (193)	
Drug screen on intake			
Positive	43.2% (142)	56.8% (187)	.093
Negative	50.2% (150)	49.8 % (149)	
DSM-IV Diagnosis Abuse/Dependence/Lifetime			
Alcohol	47.0% (206)	53.0% (232)	.725
Cocaine/Stimulant	44.7% (213)	55.3% (263)	.120*
Opioid	41.8% (175)	58.2 % (244)	.001**
Marijuana	49.3% (165)	50.7% (170)	.139*
Employed at all in the past 5 years			.001**
Yes	51.4% (259)	48.6% (245)	
No	26.6% (33)	73.4% (91)	

Note: *employment=employed in new taxed/ nontaxed job or enrolment in a job training program (weeks 1-24)

70

Alcohol/Drug use and problems. Association between alcohol/drug use (recent and

lifetime)**,** recent problems associated with alcohol/drug use, and employment over 6-month

follow-up are summarized in Table 15. For this analysis, substance use variables were

dichotomized. Illicit methadone (30 days and lifetime), amphetamines (past 30 days) and

hallucinogens (30 days) variables were not reported in the analysis due to low frequencies. Only

four variables from this set were associated with employment and met the inclusion criteria for

multivariate analysis. They included: any heroin use (past 30 days) and regular/lifetime), χ^2 (1,

N=628) = 4.626, p=. 031 and, χ^2 (1, N=628) = 14.402, p=. 000; any methadone (prescribed) use

(past 30 days and regular/lifetime), χ^2 (1, N=628) = 24.453, p=. 000 and χ^2 (1, N=628) = 19.995,

p= .000; any cocaine use (past 30 days and regular/lifetime), χ^2 (1, N=628) = 13.344, p=. 000 and

χ^2 (1, N=628) = 4.191, p= 041 and cannabis regular lifetime, χ^2 (1, N=628) =5.507, p=. 019. No

other significant associations were found between becoming employed and this set of variables

(all p>.05).

Table 15

Baseline Alcohol/Drug Use and Problems Correlates of Employment (at 6-month Follow-up)

Variable	Employed (N=292)	Not-Employed (N=336)	*p-value*
Substance Use History			
Alcohol (any)			
Past 30 days	25.7% (95)	28.3% (75)	.466
Lifetime*	67.5% (197)	69.6% (234)	.558
Alcohol (heavy)			
Past 30 days	13.7% (40)	14.0% (47)	.917
Lifetime	63.0 % (184)	63.1% (212)	.983
Heroin			
Past 30 days	8.2% (24)	14.0% (47)	.031**
Lifetime	48.6% (142)	64.0% (215)	.000**

71

Methadone (prescribed)			
Past 30 days	37.7% (110)	57.4% (193)	.000**
Lifetime	34.6% (101)	52.7% (177)	.000**
Other opiates			
Past 30 days	14.0% (41)	13.1% (44)	.730
Lifetime	27.7% (81)	27.4% (92)	.920
Other sedatives			
Past 30 days	19.2% (56)	19.9% (67)	.810
Lifetime	24.7% (72)	24.1% (81)	.873
Cocaine			
Past 30 days	18.5% (54)	31.5% (106)	.000**
Lifetime	60.6% (177)	68.8% (231)	.033**
Amphetamines*			
Lifetime	21.9% (64)	23.8% (80)	.574
Cannabis			
Past 30 days	17.5% (51)	19.0% (64)	.609
Lifetime	70.5% (206)	61.3% (206)	.015**
Hallucinogens*			
Lifetime	17.1% (50)	61.3% (54)	.724
Nicotine			
Past 30 days	79.5% (232)	81.0% (272)	.638
Lifetime	86.6% (253)	88.7% (298)	.435
Days Alcohol Problems			
Past 30 days	1.50 (SD= 4.94)	1.81 (SD=5.94)	.473
Days Drug Problems*			
Past 30 days	4.43 (SD=8.71)	5.76 (SD= 9.89)	.077*

*Note: **denotes statistical significance p<0.05*

* denotes meeting inclusion criteria for multivariate model p<0.20

*Amphetamines and Hallucinogens (past 30 days) not included in the analyses due to low frequency in this item *Lifetime=regular use

Medical problems. Associations between medical domain items and employment are

summarized in Table 16. Three variables met criteria for potential inclusion in the multivariate

analysis: experienced medical problems past 30 days χ^2 (1, N=628) = 4.448, p=. 035; chronic

medical problems χ^2 (1, N=628) = 9.707, p= 0.002 and qualify for medical disability χ^2 (1,

N=628) = 14.157, p=0.001.

Table 16

72

Correlations for Medical Domain Variables and Employment

Variables	Employed N=292	Not-Employed N=336	*p*-value
Chronic Medical Problem			.002**
Yes	41.1% (150)	58.9 % (215)	
No	54.0% (142)	46.0% (121)	
Number Times Hospitalized for Medical problems	3.54(SD=8.95)	3.71 (SD=5.39)	.767
Qualify for Medical Disability			.000**
Yes	28.6% (28)	71.4% (70)	
No	49.8% (264)	50.2% (266)	
Experienced Medical Problems (past 30)			.035**
Yes	43.1.9% (169)	56.9% (223)	
No	52.1% (123)	47.9% (113)	

Note: **denotes statistical significance p<0.05

Mental health variables. Associations between mental health items and employment are

summarized in Table 17. Hallucinations and suicidal attempt (past 30 days) variables were not

included in the analyses due to low frequencies. Only two variables met criteria for potential

inclusion in the multivariate analysis. Psychiatric disability with χ^2 (1, N=628) = 4.054, *p*=0.044

and lifetime hallucinations with χ^2 (1, N=628) =7.945, *p*=. 005. No other significant associations

were found between becoming employed and this set of variables (all p>.05).

Table 17

Correlations for Mental Health Correlates and Employment

Variables	Employed (N=292)	Not Employed (N=336)	*p*-value
Qualify for Psychiatric Disability	6.8% (20)	11.9% (40)	.044**
Treated for a psychological problem	31.8% (93)	29.5% (99)	.518
Inpatient	58.6% (171)	58.9% (198)	.926
Outpatient			

73

Variables	Employed (N=292)	Not Employed (N=336)	*p*-value
Time treated for psychological problem			
Inpatient	0.9 (SD=2.51)	1.53 (SD=6.14)	.112*
Outpatient	1.71 (SD=3.05)	1.81 (SD=3.68)	.732
Depression			
Past 30 days	39.0% (114)	40.6%(136)	.691
Lifetime	67.1% (196)	68.9% (230)	.704
Anxiety			
Past 30 days	45.9%(134)	48.1%(161)	.587
Lifetime	65.4% (191)	63.9% (214)	.689
Hallucinations			
Lifetime	13.4% (39)	22.1% (74)	.005**
Memory Issues			
Past 30 days	33.2% (97)	36.4% (122)	.402
Lifetime	50.7% (148)	45.4% (152)	.184
Trouble, Controlling Violence			
Past 30 days	6.8% (20)	7.8% (26)	.662
Lifetime	41.8% (122)	39.4% (132)	.545
Suicidal Thought			
Past 30 days	2.7% (8)	3.6% (12)	.549
Lifetime	36.0% (105)	37.6% (126)	.669
Suicide Attempt			
Lifetime	24.3% (71)	30.2% (101)	.098*
Prescription Medication for a psychologies disorder			
Past 30 days	26.7% (78)	27.6%(93)	.769
Lifetime	54.8% (160)	56.4% (189)	.683
Number of days experiencing these emotional problems	8.61 (SD=11.19)	8.78 (SD=11.17)	.847

Note: **denotes statistical significance at p<0.05 * denotes meeting inclusion criteria p<0.20 for multivariate analysis

Legal problems. Associations between legal domain variables and becoming employed

are shown in Table 18. Only three variables met criteria for potential inclusion in the multivariate

analyses. They were: treatment prompted by the criminal justice system, χ^2 (1, N=626) =12.456,

74

$p=$. 000; currently on parole or probation, χ^2 (1, N=626) =12.593, $p=$. 000; and ever had major

driving violation, χ^2 (1, N=628) =5.582, $p=$ .018. No other associations were found between any

legal variables and becoming employed (p>.05).

Table 18

Associations Between Legal Variables and Employment

Variable	Employed	Not-Employed	*p*-value
Treatment entry by the criminal justice system	29.5% (86)	17.3% (58)	.001**
Currently on Parole or Probation	38.6% (83)	21.4% (88)	.001**
Lifetime Illegal Activities for:			
Shoplifting	26.7% (78)	32.4% (109)	.139*
Parole violation	37.3% (109)	34.2% (115)	468
Drug charges	48.8% (164)	49.0% (143)	1.000
Forgery	8.9% (26)	11.6% (39)	.328
Burglary	17.1% (50)	14.3% (48)	.386
Robbery	6.5% (19)	5.4% (18)	.542
Assault	27.4% (80)	21.4% (72)	.099*
Prostitution	4.5% (13)	8.6% (29)	.054*
Contempt of Court	7.2 (21)	9.5 (32)	.366
Disorderly Conduct	18.8% (55)	21.1% (71)	.538
DWI Charges	27.4% (80)	21.4% (72)	.099*
Driving/Violation Charges	39.0% (114)	29.8% (100)	.018**
Awaiting Charges/Trial	12.3% (36)	8.9% (30)	.209
Incarcerated Lifetime	55.1% (161)	56.8% (191)	.727
Engaged in illegal activities in the past 30	4.5% (13)	5.4% (18)	.732

Variable	Employed	Not-Employed	*p*-value
days			
Importance of Counseling for these legal problems	25.7% (75)	22.6% (76)	.422

Note: **denotes statistical significance p<0.05 *denotes meeting inclusion criteria p<0.20 for Multivariate Model

Family/Social support. Association between family/social support variables and employment are shown in Table 19. Experienced serious problems past 30 days (i.e., mother, father, brother, partner) variable was not included in analyses due to low frequencies on these items. Only one variable from this set met criteria for potential inclusion in the multivariate analyses. Living situation; χ^2 (3, N=628) = 36.411, *p*=. 000. No other associations were found between any family/social support variables and becoming employed (p>.05).

Table 19

Family Social Support Correlates of Employment at 6-month Follow-up

Variable	Employed (N=292)	Not-Employed (N=336)	*p-value*
Marital Status			
Married/Living as Married	14.8% (43)	11.6% (39)	.390
Divorced/Separated/Widow	38.1% (111)	42.3% (142)	
Never Married	47.1% (137)	46.1% (155)	
Usual living situation			
Alone	14.4% (42)	17.9% (60)	.001**
Controlled environment	11.0% (32)	6.3% (21)	
With sexual partner and children	8.2% (24)	24.7% (83)	
With family/parents/friends	66.4% (194)	51.2% (172)	
Do you live with anyone who			
Has alcohol problem	12.0% (35)	8.3% (28)	.166*
Has drug problem	12.0% (35)	9.9% (33)	.466
Experienced lifetime serious conflict with			
Mother	38.8% (112)	36.9%(124)	.694
Father	36.4% (100)	31.6% (98)	.261
Brother/Sister	37.0% (104)	32.6% (105)	.295

76

Variable	Employed (N=292)	Not-Employed (N=336)	*p-value*
Sexual Partner/Spouse	58.2% (170)	51.8% (173)	.126*
Children	19.1% (42)	20.4% (55)	.811

Note: **denotes statistical significance at p<0.05* denotes meeting inclusion criteria p<0.20 for Multivariate analysis

Employment/Financial support. Association between employment/ financial support variables and becoming employed are summarized in Table 20. Four variables from this domain met criteria for potential inclusion in the multivariate analysis. These variables included: having a driver's license χ^2 (1, N=628) = 5.075, *p*=. 024; having an automobile available χ^2 (1, N=628) = 11.651, *p*=. 001; receiving any regular income support, χ^2 (1, N=628) = 8.579, *p*=. 003, and recent days experiencing employment problems, *t* (626) =-4.210, *p*=. 001. No other associations were found between any employment/financial variables and becoming employed (p>.05).

Table 20

ASI Employment/Financial Support correlates of Becoming Employed at 6-month follow-up

Variable	Employed (N=292)	Not-Employed (N=363)	*P* -value
Valid Driver's License	44.9% (131)	35.7% (120)	.024**
Automobile Available	34.2% (100)	21.7% (73)	.001**
Longest Full-Time Job/Year	5.35 (SD=5.26)	4.72 (4.73)	*.118*
Days paid for working in the past 30 days	1.24 (SD=3.57)	1.16 (SD=3.78)	.798
*Receiving any regular income support	53.1% (155)	41.1% (138)	.003**
Money earned through illegal activities 1=more than 10$	3.4% (10)	5.1% (17)	.418
Experienced employment problems (past 30 days)	12.58 (SD=13.00)	8.41 (SD=11.79)	.001**

Note: **denotes statistical significance at p<0.05 * denotes meeting inclusion criteria at p<0.20 for multivariate analysis*: *Receiving any regular financial support such as cash, food, and housing from family / friend, non-institutional

Baseline Job-Seeking Behaviors. Association between baseline job seeking behavior

variables and becoming employed at 6-month follow-up are summarized in Table 21.Test of

normality indicated a non-normal distribution (Kolmogorov-Smirnov statistic p<. 05) and all the

variables were transformed into categorical dichotomous variables. Only four variables met

criteria for potential inclusion in the multivariate analysis. These variables included: taken any

steps towards employment, χ2 (1, N= 628) =16.63, p= 0.001, Cramer's V= .166 (Continuity

Correction); looked for ads in newspaper, χ2 (1, N= 446) =7.97, p= 0.005, Cramer's V=

.134(Continuity Correction); searched internet for jobs, χ2 (1, N= 446) =7.79, p= 0.007,

Cramer's V= .132 (Continuity Correction); and contacted an employment agency χ2 (1, N= 446)

=6.03, p= 0.018, Cramer's V= .116 (Continuity Correction). No other associations were found

between any baseline job-seeking behaviors and becoming employed (p>.05).

Table 21

*Baseline Employment-History and Job-Seeking Behaviors correlates of Becoming Employed at
6-month follow-up*

Variable	Employed (N=292)	Not-Employed (N=363)	*p*-value
Lost a job due to alcohol/drug	48.0% (122)	52.0% (132)	.502
Taken any steps to obtain employment	79.1% (231)	64.0% (215)	.001*
If yes, which of the following steps have you taken			
Looked for ads in the newspaper	87.0% (201)	76.7% (165)	.005*
Searched for jobs in internet	36.4% (84)	24.25 (52)	.007*
Talked with friends	86.6% (200)	82.8% (178)	.327
Contacted an employment agency	46.3% (107)	34.9% (75)	.018*
Telephoned a prospective employer	56.7% (131)	47.9% (103)	.078**

78

Variable	Employed (N=292)	Not-Employed (N=363)	*p*-value
Lost a job due to alcohol/drug	48.0% (122)	52.0% (132)	.502
Submitted a job application	67.1% (155)	58.6% (126)	.079**
Submitted a resume	32.9% (76)	25.6% (55)	.111**
Went on a job interview	41.6% (96)	33.5% (72)	.097**
Received a job offer	24.7% (57)	20.9% (45)	.408

Note: **denotes statistical significance at p<0.05 * denotes meeting inclusion criteria at p<0.20 for multivariate analysis

Multivariate Analyses. All variables included in the univariate analyses are summarized in Table 22, with the variables selected for the multivariate italicized. All study participants are included in the session attendance variable, with SC participants coded as 0. To address issues of multicollinearity, variables that were highly associated with one another were not included (p<.000). To determine the most parsimonious model to predict employment over the 6-months follow-up period, the backward elimination included 21 iterations. Based on a classification threshold predicted probability of becoming employed of 0.5, the overall model was statistically significant, χ^2 (9, N=433) = 88.96, p< .001. The model as a whole accounted for between 18.6 % (Cox and Snell R Square) and 24.8% (Nagelkerke pseudo R2) of the total variance in becoming employed. Classification success for the cases, based on a classification cutoff value of 0.5 for predicting becoming employed, was moderately high, with an overall prediction success rate of 66.7% and correct prediction rate of 70.3 % for employed participants and 62.7 % for those who were unemployed.

As shown in Table 24, JSW session attendance, gender, being in psychosocial outpatient treatment, submitting a job application, and living with sexual partner/children were all

79

associated with becoming employed at 6 month follow-up. Specifically, being male was associated with 1.88 times greater likelihood of being employed at 6 month-follow-up, $p = .004$; b = .631; 95% CI = [1.223, 2.888], psychosocial treatment modality was associated with twice greater likelihood to become employed compared to the methadone maintenance modality, p=.002,b=1.42, OR= 2.02, 95% CI=[1.290, 3.164]. Also, submitting an application had an odds ratio of 1.6 of becoming employed, p= .030, b=1.422, OR=1.63, 95% CI= [1.048, 2.557] and for those living with sexual partner/children, the odds of becoming employed was 6 times greater compared to those living alone or with no stable condition. Meanwhile looking at ads in newspaper for job opening and receiving income support was not associated with employment over the 6 month follow-up period (p>.05).

Table 22

Variables Reaching Significance to be Included in Multivariate Analyses

Demographics	Substance Use *(Past 30 days/lifetime)*	Mental Health	Medical Problems
Age (years) *Gender* *Race* **Education** **Employment categorization** *Time in Treatment* *Treatment Modality* **Drug Screen on Intake** *DSM-IV- Abuse/Dependence Diagnosis* *Opioid* **Cocaine** **Cannabis**	*Heroin* *Methadone (prescribed)* *Cocaine Cannabis (lifetime)* *Hallucinogens* **Experienced drug problems (past 30 days)**	*Qualify for Psychiatric Disability* *Experiencing Hallucinations (lifetime)* **Time Treated for Psychological problem (inpatient)** **Suicide Attempt**	*Experienced Medical Problems (past 30 days)* *Chronic Medical Problem* *Qualify for Medical Disability*
Legal Issues *In treatment prompted*	**Family/Social**	**Job Search Behaviors**	**Employment Financial support**

80

by the criminal justice system	*Usual living arrangement*	*Taken any steps to obtain employment*	*Driver's License*
Currently on parole or probation	**Experiencing conflict with spouse (lifetime/regular)*	*Looked for ads in newspaper*	*Automobile available*
Ever arrested/charged with:	**Live with someone with alcohol/drug problems*	*Searched for jobs in internet*	*Receiving any income support*
Driving/Violation		*Contacted an employer agency*	*Experienced employment problems (past 30 days)*
**Shoplifting*		**Went on a job interview*	**Longest Full-Time Job*
**DWI-Charges*		**Submitted a job application*	
**Prostitution*		**Submitted resume*	
**Assault*		**Telephoned a prospective employer*	
Session Attendance *Number of session attended (0,1,2,3)*	**Employment History** *Employed at all in the past 5 years*		

Note: *variables significant at p<0.05 included in the Multivariate Analysis
**Variables significant at p<0.20 and included in the Multivariate Analysis

Table 23

Variables included in the Multivariate Analyses

Demographics	**Substance Use** *(Past 30 days/lifetime)*	**Mental Health**	**Medical Problems**
Age (years) *Gender* *Race* *Education* *Employment categorization* *Treatment Modality* *Drug Screen on Intake*	*Experienced drug problems (past 30 days)*	*Qualify for Psychiatric Disability Time Treated for Psychological problem (inpatient)*	*Chronic Medical Problem Qualify for Medical Disability*
Legal Issues *Currently on parole or*	**Family/Social**	**Job Search Behaviors**	**Employment Financial support**

81

probation	*Usual living arrangement*	*Taken any steps to obtain employment*	*Automobile available*
Ever arrested/charged with:	*Live with someone with alcohol/drug problems*	*Looked for ads in newspaper*	*Receiving any income support*
*Driving/Violation		*Searched for jobs in internet*	*Experienced employment problems (past 30 days)*
**Prostitution		*Contacted an employer agency*	*Longest Full-Time Job*
		Submitted a job application	
		Submitted resume	
*Session Attendance *Number of session attended (0,1,2,3)*	**Employment History** *Employed at all in the past 5 years*		

Table 24

Multivariate Logistic Regression

Variable	Estimate	Standard Error	p-value	Odds Ratio	95% Confidence Interval
Gender	.631	.219	.004*	1.879	1.223, 2,888
Modality	1.422	.229	.002*	2.020	1.290, 3.164
Session attendance	.239	.090	.008*	1.270	1.064, 1.515
Looked at newspaper for job opening	4.184	.287	.057	1.727	0.984, 3.030
Submitted a job application	2.028	.228	.030*	1.636	1.048, 2.557
Receiving any support/income	2.439	.267	.070	1.506	0.967, 2.347
Usual Living arrangements			.001		
Usual Living arrangements (Alone)	1.655	.341	.850	1.066	0.906, 2.079

82

Variable	Estimate	Standard Error	p-value	Odds Ratio	95% Confidence Interval
Usual Living arrangements (controlled environment)	1.200	.510	.103	0.434	0.160, 2.079
Usual Living arrangements (Sexual partner/children)	0.554	.325	.001*	6.097	3.215, 11.494
Constant	.697	.251	.005	2.008	

*Note: * statistically significant at p<.05*

<center>**Discussion**</center>

The present study examined demographic, psychosocial and mental health variables associated with becoming employed over the 6-month follow-up period. The present study utilized existing data from N=628 individuals with substance use disorders who participated in a clinical trial of an employment intervention (Svikis et al., 2012). While the primary outcome paper reported negative findings, with similar rates of employment for JSW (31.4%) and SC (31.9%) controls over the 6 month follow-up, the present study sought to better understand these findings. Three research questions were examined to further compare JSW and SC outcomes as well as to look more closely at participants who did and did not become employed over the 6 month follow-up period. Specifically, 1) while the intervention was not associated with higher rates of employment, did participants in the JSW group engage in more job seeking behaviors (e.g. answering newspaper ads) than SC controls? 2) Was number of JSW sessions attended or dose of the intervention received related to RCT employment outcomes? And 3) what demographic and psychosocial variables were associated with becoming employed during the follow-up period?

This section will summarize study findings and discuss implications of the findings for treatment providers, as well as directions for future research. Study limitations will also be discussed.

Summary and Discussion of Findings

Hypothesis 1. The first hypothesis that JSW group members would engage in a greater variety and more frequent job-seeking behaviors (i.e., conducting job calls, job interviews, submitting a resume etc.) than SC controls at 3 and 6- month follow-up was not supported. The job-seeking behavior engagement rates were almost identical for JSW and SC members.

<center>84</center>

Several study-designed factors may have contributed to these results. First, responses relied entirely on participant memory and self-report. Participants were asked to report on a variety of job seeking behaviors over broad periods of time (3 months). Validity of patient recall may be limited and may have influenced responses, especially when both groups may have wanted to present themselves in a positive way to research staff (Svikis et al., 2012). Also, the eligibility criterion of only 30 days in treatment may have been too short, particularly for those with a premature focus on employment rather than alcohol or drug addiction. Often, vocational training and placement services require at least a 6 month period of abstinence from alcohol/drugs before enrolling individuals in such programs. This may also have limited the effective use of JSW skills in the present study.

Second, another inclusion criterion, "interest in getting a job," was not operationally defined. While many consider it a proxy for motivation, it is unclear whether this was the case in the present RCT. Client interest in study participation and opportunity to receive compensation for study participation may have led to enrollment of individuals with lower interest in obtaining a job than was the intent of the yes/no question about "are you interested in getting a job?" A previous meta-analysis found that commitment to employment goals and motivation are positively associated with job search intensity and success (Kanfer et al., 2001). Specifically, motivation to get a job was positively associated with job-seeking behaviors (i.e., number of job offers, number of job calls) and employment outcomes. Similarly, other studies have demonstrated that a persons' knowledge, skills (i.e. performance capacity) and task motivation can determine the effectiveness of their work performance (Karoly, 1993) Specifically, conducting a job search requires considerable motivational resources which are difficult to sustain at a high level over time (Liu et al., 2014). For example, Wanberg and colleagues (2005)

85

found that job search intensity and motivation decreased over time in a sample of unemployed job seekers. This reduction in motivation may have contributed to many delays during job searches as well as increased feelings of insecurity. Further, studies should look more closely at both motivation to get a job and self-efficacy.

Third, the lack of promoting goal-setting regarding job search activities among study participants (e.g., planning a schedule of job applications in advance) may have contributed to negative study findings. Goal-setting theory suggests that when individual's goals are specific, when they make a commitment to reach those goals, and when they receive feedback on their progress, their efforts are more likely to be effective (Locke & Latham, 1990). In line with this, Van Hoye and Saks (2008) found that developing a specific employment goal was positively associated with six job-search behaviors activities, including viewing job ads, contacting employers, contacting agencies, networking, visiting job sites, and submitting applications. Similarly, Cote, Saks & Zikic (2006) found significant positive associations between job search goal clarity and job search intensity, which was then positively associated with employment outcomes. Specifically, job search interventions with the general population that included promoting goal-setting were more effective, with participants in the experimental group having an odds ratio of 4.6 vs. controls for obtaining employment (Liu, Huang, & Wang, 2014). However, in the current study this component was not included and it is unknown how active participants might have been in searching for jobs.

Finally, the absence of these elements may have reduced rates of employment at 6 month follow-up. Specifically, Liu et al. (2014) meta-analysis of 47 experimental or quasi-experimental studies evaluated the overall effect of job search interventions on obtaining employment. The investigators found job search interventions to be more effective when specific components such

86

as job search skills, promoting goal setting, and social support were incorporated into the intervention. That is, when job search skills and motivation were enhanced simultaneously, the job search intervention had higher positive employment outcomes. The odds of obtaining employment were 3.3 times higher for job-seekers in this intervention group as compared to the control group. The current study did not include goal setting and social support elements that previous studies have found to be essential to success in obtaining a job.

Hypothesis 2. The second hypothesis that JSW participants who attended more JSW sessions will have higher rates of employment than those who attended fewer sessions was supported. Specifically, as number of sessions attended increased, the odds of becoming employed increased 1.3 times. Prior research has also suggested a positive dose-response relationship between the number of sessions attended and treatment response (Lambert, Hansen, & Finch, 2001). For example, Hien et al (2012) examined the impact of attendance patterns on in-treatment and post-treatment substance use outcomes using the Seeking Safety protocol as well as women's substance abuse education groups. The authors found three different attendance patterns: completers who finished all sessions, "titrators" who moderated session attendance after a period of stability, and "droppers" – most of whom dropped out after the first session. Among the groups, droppers had significantly worse alcohol use outcomes (30 day averages) than either titrators or completers. Results were similar but non-significant for cocaine use. The findings suggest that may be a sufficient dose of treatment to produce positive change in substance use patterns, even if participants do not attend all sessions.

In the current study, approximately half of JSW group members attended all three sessions (48.5%) and one-fourth (28.8%) attended no sessions. Hall et al., (1981) found a similar attendance pattern in their JSW group, with an attrition rate of 17 % among JSW participants

87

(N=27). Similar attendance patterns have been observed in mental health settings. For example, 15-25% of patients are estimated to quit mental health outpatient treatment attendance prematurely in the US (Olfson et al, 2009), and approximately the same rates are reported in trauma-focused treatments for PTSD (18%; Imel et al., 2013).

Further, intent-to-treat (ITT) effectiveness studies such as this one are generally considered to more accurately reflect realities of community-based interventions (such as relatively low participation rates), and to be more conservative than efficacy studies. However, as they are more biased toward null hypotheses, they may not accurately reflect the actual impact the intervention could have with full participation (Rnganathan, Pramesh, & Aggarwal, 2016). Given the better outcomes among participants who attended all sessions, it may be that better outcomes could be achieved in future studies by simply increasing attendance as compared to changing the intervention itself).

Another strategy to improve attendance would be contingency management, with the target behavior of session attendance. . Prior research has shown that contingency management is an effective approach for improving attendance of counseling sessions (e.g., Svikis, Lee et al., 1997) and reinforcing drug abstinence (Silverman et al., 2001) as well as job skills training (Silverman et al., 2001). For example, Koffarnus and colleagues (2013) compared similar productivity and base-pay conditions in 42 opioid-dependent adult who participated in therapeutic workplace. They found that participants completed more work hours and completed more training-program steps, when they earned productivity and base pay, than when they only earned base pay alone. Their findings suggested that participants attended training when offered stipends for attendance and performance on those programs. Silverman et al (2018) similarly found in their review that people who have limited employment histories often participate at

88

lower levels in job-skills training, and fail to follow-through with job searches without clear incentives in place. In the present study, participants did not receive monetary reinforcement for attending JSW sessions; compensation was offered only for participation in research assessments for the study at baseline and follow up visits. This decision was made because compensation for attending such groups is unlikely to transfer beyond the research setting.

Lastly, the literature also shows that individuals who have social environmental difficulties such as mental health or substance use may be less likely to attend intervention sessions (Mattson et al., 1998). In the current study, both groups JSW and SC control reported relatively high rates of recent medical problems (M=10.33, past 30 days), having chronic medical problems (58.5% *vs.*57.8%) and experiencing psychological problems such as depression and anxiety (66% and 70%) which may have lowered participation in JSW interventions sessions.

Demographic Hypotheses (H3:H4:H5). The present study findings supported the hypotheses that age and gender were associated with a positive employment outcome. Specifically, younger participants were more likely to be employed than older participants, and men were more likely than women to be employed over the 6-month follow-up period. While race was associated with becoming employed, it was not in the hypothesized direction of African-American participants becoming more likely to be employed than Caucasian and other racial minorities. Instead, Caucasian and minorities other than African-American were more likely to become employed than African-Americans participants.

Hypothesis 3.The hypothesis that younger individuals were more likely to be employed than older individuals at 6 month follow-up was supported. Specifically, participants with employment during the 6 month follow-up were significantly younger (39.91 years) than those

89

with no employment during the same time interval (42.12 years). This finding is consistent with prior literature. For example, Hogue et al (2010) examined predictors of employment in substance-using male and female welfare recipients. They found that younger individuals were working more than older participants at 6-month follow-up. Similarly, Laudet (2012) found that being of younger age was associated with positive results in employment outcomes. This is also supported by meta-analysis that found job-search interventions to be more beneficial for young job-seekers individuals than older (middle-age) ones (Liu et al., 2014). Specifically, the odds of obtaining employment were 4.05 times higher for younger job-seekers in the intervention group than in the control group, while for the older participants the odds of obtaining employment were 1.8 times higher in the intervention group than controls. These findings may be because younger individuals tend to benefit more because of their training needs, particularly when they lack experience and skills in conducting a job-search (Liu et al., 2014). On the other hand, older job seekers face negative employer stereotypes and related age discrimination as they were looking for employment (Wang & Shultz, 2010; Liu et al., 2014).The findings suggest that these variables are important to identify effective design intervention strategies to enhance employment among individuals with substance use disorders.

Hypothesis 4. The hypothesis that men will be more likely to become employed during 6 month follow-up than women was supported. Men were 1.3 times more likely than women to have positive employment outcomes through the 6-month follow-up period. Prior literature found gender to be a strong predictor of employment, with higher pots-treatment rates and greater readiness to work among males (Hogue et al., 2010; Morgenstern et al., 2009; Oggins, Guydish, & Delucchi, 2001). Oggins et al (2001) study on gender differences and income among individuals in substance abuse treatment found that men reported more days of work than women

90

at 18 months post-treatment. Similarly, Hogue et al (2010) found greater gender differences on employment outcomes, with an average of 14.0 days of work for men and 3.7 days of work for women. One factor may be that women face multiple work barriers including poor physical health, low labor capital, housing, and motivation to work. Specifically, women worked less if they were African Americans, had fewer years of education, were in methadone treatment, in unstable housing, and were less motivated to abstain from substance use (Hogue at al., 2010; Jancaitis et al., 2019).). Another study with females' recipients confirms the stability of the work barriers model for women on public assistance. The authors found that women benefited when assigned to case management program compared to those who did not attend the program (Morgenstern et al., 2009). Other factors related with becoming employed for women might be factors not measured in the current study such as perceived discrimination, lack of access to child-care, or problems with transportation (Danziger et al., 2000). Finally, women may be more impacted by the minimal time in treatment before study enrollment. In the current study participants were enrolled if they had been in treatment for at least 30 days and for women this might have been too soon and they would have benefitted from more time in treatment addressing their physical and psychological health needs. In an earlier analysis of the same data set used in the current study, Keyser-Marcus et al. (2015) found that women experienced an estimated at two to five times physical and sexual trauma than men (Keyser-Marcus, et al., 2015). These are the same barriers women face for SUD treatment engagement and retention (Polak et al, 2015; McCaul et al., 2000).

Hypothesis 5. The hypothesis that African-Americans will be more likely to be employed than Caucasians and/or other racial minority was not supported. Instead, Caucasian and minorities other than African-American were more likely to become employed. Data from

91

the U.S. Department of Labor Statistics (2012) report estimated that the rates of unemployment among African-Americans ranged from 8.3% to 15.8% (in 2007) versus 4.4% to 8.5% among Caucasian. Similarly, prior research found that being Caucasian doubles the odds of being employed in a sample of participants in recovery from substance use and African-Americans showed lower rated of employment than those classified as "others" or Caucasians in a sample of welfare recipients (Hogue at al., 2010; Laudet, 2012). McCaul et al (2000) examined psychosocial characteristics and outpatient treatment participation as a function of patients' lifetime substance use status. They found that patients who were Caucasian were retained longer in treatment and participated in more treatment services than African-American patients. A related issue is the high prevalence of medical problems as well as untreated psychological problems among African-Americans participants (McCaul et al., 2000). It is possible that substance use, health and mental health challenges, and discrimination combined together to diminish employment outcomes for African-American participants. The study findings suggest that these demographic characteristics are important to consider when designing intervention strategies to enhance employment among individuals with substance use disorders.

Other correlates of employment. Additional univariate analyses found a number of demographic and psychosocial variables associated with becoming employed over the 6-month follow-up.

Treatment modality and length of treatment. The present study found that treatment modality and time in treatment prior to study enrollment were related to employment outcomes. Employed individuals were more likely to be in psychosocial outpatient treatment vs. methadone treatment. They were also more likely to report less than 6 months in treatment at time of RCT enrollment. These two variables are often related, in that methadone maintenance treatment is

92

generally long-term treatment recognizes addiction as a chronic relapsing disorder and provides long-term ongoing treatment (NIDA, 2016). Psychosocial programs, in contrast, are often only 6-12 months in duration. This finding is consistent with prior research that methadone clients have modest to poor work outcomes (e.g., Zanis et al., 2001, Hogue et al., 2010), but better treatment retention (Svikis et al., 1997).

Use of contingency management strategies (i.e., using monetary vouchers, or methadone delivery alterations – e.g., take home vs. clinic) may help increase participation. For example, Silverman et al (1996) found that unemployed methadone patients were more likely to attend a computer skills training course when they received high vs. low voucher-payment for participation. As greater participation is associated with increased employment outcomes, this specific addition seems worth exploring in future studies. While this approach may be difficult to implement in community settings, the clinic-based incentive (methadone delivery alterations-an incentive for finding a job) may be more achievable for implementation in clinical settings.

Alcohol/Drug use and problems. The present study found an association between substance use and employment outcome with individuals who reported less heroin, cocaine, and cannabis use being more likely to have positive employment outcomes at 6-month follow-up than those with greater severity of SUD. As almost half of our sample (57.2- 60.5%) was in treatment for less than 6 months, this may explain the use of substances. The literature demonstrated mixed results on the impact of alcohol/drug use on employment status. For example, Kidorf et al (1998) in a study giving information on increasing employment of opioid patients, found those patients who met employment goals and those who failed to meet employment goals had no significant differences in proportions of overall drug use (although group means suggested greater drug use among patient who failed to report a positive

93

employment outcome). Similarly, substance use indicators (past 30 days and lifetime) were not associated with employment outcomes among formerly polysubstance abusing individuals in recovery (Laudet et al., 2012). There is however, evidence for an association between substance use patterns and employment (Danziger et al., 2000). For example, Houge et al. (2010) study on predictors of employment found lower levels of drug use associated with higher levels of employment. Also, Dennis and colleagues on examining relationship between the duration of abstinence and recovery found that longer periods of abstinent were associated with more days of work (Dennis et al., 2007).

Mental health and medical problems. The present study found that having a psychiatric disability, lifetime hallucinations, experiencing medical problems (past 30 days) and chronic medical problems as well as qualify for a medical disability were all associated with lower odds of being employed. This is consistent with previous literature. For example, Laudet (2012) found both, mental and medical health indicators associated with employment. Specifically, being on a regimen of prescribed medication for an ongoing medical condition halved the odds of being employed. Also, individuals diagnosed with a mental health disorder were half as likely to become employed as those without a diagnosis. In the current study, having a chronic medical condition, having a medical disability and experiencing medical problems (past 30 days) increased the odds of being unemployed. These findings may be explained by many factors, such as lifestyle and medical regimens. Prior literature found substance use associated with lower access to health care and often with high rates of non-adherence to medical regimens (Laudet, 2012). Usually individuals with SUD often report non-stable lives that focus on finding and using drugs (Samet et al., 2007). In this circumstance, taking care of physical health is not a priority and usually is neglected. Therefore, medical health, especially physical health is an

94

important predictor that requires ongoing management as it may negatively impact functioning in individuals receiving SUD treatment.

Family social support. Previous literature suggests housing status can be a strong predictor of employment outcomes For example, Hogue et al (2010) found living situation to be a predictor of employment among substance-using populations, specifically men who reported living in more stable conditions had more positive employment outcome. The present study found only one variable associated with employment outcome, living situation. Specifically, individuals reported living with family/parents/ and friends were more likely to have positive employment outcomes than those reporting living alone. This may be because family and social support has a positive influence on employment outcome. Prior research found social support helps reduce the stress level of unemployed, while family support increases success in job-seeking efforts (Cohen & Wills, 1985; Liu et al., 2014). In other words, this suggests that stress management may be an important component to add to job search intervention, even though intervention programs may not highlight such a component.

Legal status. Three variables from the legal domain were statistically significant: being prompted by the criminal justice system to enter treatment (current episode), being on parole or probation, and being arrested and charge for driving violations were more associated with becoming employed. It could be that individuals in substance abuse treatment benefit to some degree from structured monitoring by the legal system and perhaps participating in these mandatory programs with employment requirements increases motivation to find a job (Hogue at al., 2010). Somewhat paradoxically, it could also be that recent arrests reflect a population that is still engaged in prosocial societal participation that makes them more vulnerable to arrest (e.g., while driving) compared to some more chronic, disengaged drug users.

95

Employment/Financial support. Consistent with prior research on unemployment duration, the present study found that unemployment duration was negatively associated with employment outcome. In contrast, past 30 days employment/income measures were positively associated with employment outcome. Specifically, having a valid driver's license, an automobile available, receiving regular income and experiencing employment problems (past 30 days) were associated with becoming employed at 6-month follow-up.

Past research suggests that duration of unemployment plays an important role in the job-search intervention outcomes (Barber et al., 1994). Hall et al (1981a) found that JSW was not effective for those participants who had not been working in the past 5 years. Similarly, Zarkin et al. (2002) found job skills interventions were less effective for those who have been unemployed for a long time (Zarkin et al., 2002). Also, Liu et al (2014) in their meta-analysis found short-term unemployed job seekers (less than 6 months) were approximately 3.5 times more likely to obtain employment following job-skills training workshops than controls, while long-term unemployed job seekers, the odds were only 1.7 time higher than controls. Hogue et al. (2010) found that more months of employment in the past 3 years predicted better employment outcomes across 3, 6 and 12-month follow-up in substance-using welfare recipients who regularly used substances and had long-term histories of cocaine and heroin use.   Overall, then, interventions that focus more narrowly on job search skills may be more relevant for participants with recent employment, while those with past unemployment may require more broadly-focused approaches that include greater attention to motivation, job readiness, and career interests. They may also need greater assistance with identifying job leads, time management, and counseling to cope with psychological problems (i.e., depression, anxiety etc.). An

96

intervention that includes a wide range of services for individuals might be important addition to job search interventions.

Multivariate Analysis. Multivariate regression identified the most parsimonious model for predicting employment across all RCT participants. Specifically, the final model found that being male, attending JSW sessions, being in psychosocial outpatient versus methadone maintenance treatment, living with a sexual partner and/or children, and submitting a job application were all predictors of employment at 6 month-follow-up. This suggests a pattern of individuals being hired who are more active and better fit with known hiring biases, including gender biases, biases against people with poor work histories, and biases against history of drug use.

While the multivariate analysis provides a profile of individuals who are more likely to become employed, it is important to note that this model only accounted for between 18.6 % (Cox & Snell R Square) and 24.8% (Nagelkerke pseudo $R^{2)}$ of the variance in becoming employed. It correctly classified 70.3% of cases. While the clinical significance of these finding may appear limited, it is important to remember that the present study was secondary analysis of existing data with less information about motivation and other factors associated with employment. Present study findings represent an important area of research with opportunities to further explore correlates of becoming employed, particularly those that are modifiable.

Study Implications and Applications

The present study provides a better understanding of characteristics of becoming employment such as participants' job-seeking behaviors activities, session dose intervention, demographics, medical health, psychosocial characteristics and substance use behaviors in a larger sample of individuals in treatment with SUD. Findings on the role of session attendance

97

(session dose) associated with employment outcome was not surprising but in the same time highlighted the broader issues with motivation, session duration, education, social and financial support. Historically, data suggest that individuals who may benefit from employment-interventions attend training programs at higher rates when the opportunity to earn stipends is available (Silverman et al., 2018). Although these contingencies may be needed to ensure individuals participation in employment-intervention, application in community treatment setting is difficult.

Further, demographic correlates of employment including gender, age and race, highlights the potential importance of social factors in the employment process. These findings suggest that ongoing disparities must be addressed at the policy level to maximize and increase funding for these underserved groups among individuals with SUD. Specifically, demographics findings on predictors of employment were also consistent with previous research conducted with clients in recovery for SUD and SUD welfare recipients enrolled in employment enhancing interventions. For example, higher rates of employment were observed among younger age, male and White/ Caucasian participants (Hogue et al., 2010; Laudet, 2012). However, this study extent the knowledge base on predictors of employment to a larger multi-site CTN NIDA trial.

The present study provides important information about the JSW intervention, what worked and what didn't work, characteristics of those individuals who become and did not become employed presenting a larger clinical-trial of NIDA CTN. Given that employment interventions have been in specialized treatment center, the present study provides a better understanding of the demographics and other psychosocial variables correlated of employment. These finding can serve to inform the implementation and tailoring of employment-focused interventions to meet clients' needs in various medical care settings.

98

Study Strengths, Limitations, and Future Directions

Strengths. The present study has some important strengths. First, it was an RCT conducted under the NIDA Clinical Trials Network, and included random assignment, standardized procedures for research staff training with ongoing quality assurance, and involvement of the same workshop facilitators who conducted the original research more than 2 decades ago (Svikis et al., 2012).

Second, the Addiction Severity Index - Lite was used as a part of the original study assessment battery and was completed by trained interviewer. This format is more advanced than self-report as it is a semi-structured format allowed the interviewer to probe further and check answers with the participants.

Lastly, this RCT study eligibility had few exclusion criteria - while promoting heterogeneity and sample representativeness, it was also enhanced for those who might benefit from the JSW skills. Further, the limited exclusion criteria allowed individuals with comorbidities, polysubstance use, and different ethnic backgrounds to participate, providing information across a greater range of severity and a broader population than earlier studies. This enabled the data to reflect the complexities that are typically seen in substance use treatment settings.

Limitations. Despite these strengths, the study also has limitations. One limitation was the heterogeneity of drug abuse clients who may or may not have been motivated to obtain employment, which might have affected job-seeking behaviors. It is possible that JSW, when offered to individuals in early recovery and in methadone treatment lacked sufficient potency to achieve JSW versus SC differences in job-skills activities.

99

Second, the CTN Common Assessment Battery (CAB) measures, including ASI-Lite and Study Specific assessment measures, relied on retrospective, self-report information. Although, self-report measures are used widely in clinical research, they are subject to biases that are difficult to control even under the best of circumstances, particularly when participants are asked to report on stigmatized behaviors such as substance use or criminal behavior (Smith et al., 2008). It could be that JSW participants over-represented their actual efforts toward job-seeking in response to a social desirability bias. It could also be that some participants may have memory difficulties due to chronic drug use or current methadone effects, particularly given that the measures are relatively crude and inquire about a broad window of time.

Third, due to study inclusion criteria, the present study included participants who had been in substance abuse treatment for only 30 days prior to study enrollment and about two-thirds of the sample had been in treatment for less than 6 months. It is possible that this early treatment group may have lacked the stability and resources necessary to find and obtain a job. Recent drug use at baseline was not used to determined study eligibility. Half of the sample reported drug use and screened positive for one drug (excluding methadone) at baseline. This suggests that the focus on job training and employment may have been premature.

Future Directions. The present study reflected several findings prominent in the literature on job-skills workshops, including dose effects, differential impact of intervention efforts across age, gender, and unemployment chronicity, as well as the potential value of family support toward finding employment. Future efforts to adapt and investigate job-skills training may benefit from relying more heavily on more recently validated programmatic elements, including measuring client motivation to obtain employment in greater detail, incorporating a longer follow-up period of up to 1 year for measuring outcomes, and requiring more time in

treatment for participants with SUDs at study enrollment. Also improving self-presentation skills, promoting goal-setting, boosting self-efficacy toward achievement of goals are additional factors to explore (Liu et al., 2014).

Future intervention studies could focus on investigating training tailored to specific participant needs. Job seekers with short-term vs. longer-term unemployment appear to often have different needs, requiring a different intervention focus, with shorter-term unemployed participants needing more active job seeking skills and support, and longer-term unemployed participants needing more occupational skills development (Creed et al., 1998; Liu et al., 2014) and self-regulation skills (Van Hooft et al., 2013).

Future intervention studies could also more actively focus on motivational enhancement toward obtaining employment. One direct means may be to investigate incorporating motivational interviewing strategies (Fodgren & Berg, 2017). Another is to investigate explicitly encouraging social support, particularly among family members who may have a vested interest in the employment outcomes of participants (Liu et al., 2014). Contingency management incentives could also be explored further for their motivational effects on participation, given the finding that participation in more sessions was related to greater employment. Booster sessions may also help bolster self-efficacy and support job search intensity, which often wanes over time without support (Wanberg, Glomb, Song, & Sorenson, 2005).

Conclusion

In summary, the present study examined critical components of the JSW intervention, with an emphasis on job seeking behaviors activities, session dose and demographics correlates of employment. Using binary logistic regression, we found that intervention dose was related to positive employment outcome. In addition, multivariate regression found that being younger

101

attending more JSW sessions, participating in psychosocial outpatient program rather than methadone treatment, submitting job applications, and living with a sexual partner and/or children were all related to employment outcome. The present study suggests that future research on job search interventions should give consideration to additional approach elements such as strategies for improvising motivational enhancement towards employment, increasing JSW session attendance, and technology-mediated job search interventions tailored to specific participants needs.

References

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders*. (5th Ed.) American Psychiatric Press, Inc., Washington. D.C.

Bond, G. R. (2004). Supported employment: evidence for an evidence-based practice. *Psychiatric rehabilitation journal*, *27* (4), 345.

Bond, G. R., & Kukla, M. (2011). Impact of follow-along support on job tenure in the individual placement and support model. *The Journal of nervous and mental disease*, *199*(3), 150-155.

Bouchery, E. E., Harwood, H. J., Sacks, J. J., Simon, C. J., & Brewer, R. D. (2011). Economic costs of excessive alcohol consumption in the US, 2006. *American journal of preventive medicine*, *41*(5), 516-524.

Brooner, R. K., King, V. L., Kidorf, M., Schmidt, C. W., & Bigelow, G. E. (1997). Psychiatric and substance use comorbidity among treatment-seeking opioid abusers. *Archives of General psychiatry*, *54*(1), 71-80.

Brown, R. A., Burgess, E. S., Sales, S. D., Whiteley, J. A., Evans, D. M., & Miller, I. W. (1998). Reliability and validity of a smoking timeline follow-back interview. Psychology of Addictive Behaviors, 12(2), 101.

Burke-Miller, J. K., Cook, J. A., Grey, D. D., Razzano, L. A., Blyler, C. R., Leff, H. S., & Hoppe, S. K. (2006). Demographic characteristics and employment among people with severe mental illness in a multisite study. *Community mental health journal*, *42*(2), 143-159.

Cacciola, J. S., Alterman, A. I., McLellan, A. T., Lin, Y. T., & Lynch, K. G. (2007). Initial evidence for the reliability and validity of a "Lite" version of the Addiction Severity Index. Drug and alcohol dependence, 87(2), 297-302.

Caetano, R., Schafer, J., & Cunradi, C. B. (2017). Alcohol-related intimate partner violence among white, black, and Hispanic couples in the United States. Domestic Violence: The Five Big Questions.

Calabria, B., Degenhardt, L., Briegleb, C., Vos, T., Hall, W., Lynskey, M., & McLaren, J. (2010). Systematic review of prospective studies investigating "remission" from amphetamine, cannabis, cocaine or opioid dependence. *Addictive Behaviors*, *35*(8), 741-749.

Castells, X., Kosten, T. R., Capellà, D., Vidal, X., Colom, J., & Casas, M. (2009). Efficacy of opiate maintenance therapy and adjunctive interventions for opioid dependence with comorbid cocaine use disorders: A systematic review and meta-analysis of controlled clinical trials. *The American journal of drug and alcohol abuse*, *35*(5), 339-349.

Catty, J., Lissouba, P., White, S., Becker, T., Drake, R. E., Fioritti, A., & Van Busschbach, J. (2008). Predictors of employment for people with severe mental illness: results of an

103

international six-centre randomized controlled trial. *The British Journal of Psychiatry*, *192*(3), 224-231.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*(2), 310-357. http://dx.doi.org/10.1037/0033-2909.98.2.310

Cook, J. A., Leff, H. S., Blyler, C. R., Gold, P. B., Goldberg, R. W., Mueser, K. T., & Dudek, K. (2005). Results of a multisite randomized trial of supported employment interventions for individuals with severe mental illness. Archives of general psychiatry, 62(5), 505-512.

Côté,S., Saks, A.M., Zikic, J. (2006). Trait affect and job search outcomes,J*ournal of Vocational Behavior, 68*, 233-252,

Coviello, D. M., Zanis, D. A., & Lynch, K. (2004). Effectiveness of vocational problem-solving skills on motivation and job-seeking action steps. *Substance use & misuse*, *39*(13-14), 2309-2324.

Creed, P.A.,Hicks, R.E., & Machin, M.A. (1998). Behavioural plasticity and mental health outcomes for unemployed individuals attending occupational skills training programs. *Community, Work & Family, 4,* 285-303.

Creed, P. A., King, V., Hood, M., & McKenzie, R. (2009). Goal orientation, self-regulation strategies, and job-seeking intensity in unemployed adults. *Journal of Applied Psychology, 94(3),* 806.

Danziger, S. K., Kalil, A., & Anderson, N. J. (2000). Human capital, physical health, and mental health of welfare recipients: Co-occurrence and correlates. *Journal of Social Issues*, *56*(4), 635-654.

104

Drake, R. E., & Bond, G. R. (2011). IPS support employment: A 20-year update. *American Journal of Psychiatric Rehabilitation*, *14*(3), 155-164.

Dutra, L., Stathopoulou, G., Basden, S. L., Leyro, T. M., Powers, M. B., Otto, M. W. (2008). Reviews and Overviews. A Meta-Analytic Review of Psychosocial Interventions for Substance Use Disorders . *American Journal of Psychiatry, 165,179-187* https://doi.org/10.1176/appi.ajp.2007.06111851

Fleury, M. J., Djouini, A., Huỳnh, C., Tremblay, J., Ferland, F., Ménard, J. M., & Belleville, G. (2016). Remission from substance use disorders: A systematic review and meta-analysis. *Drug and Alcohol Dependence*. Elsevier Ireland Ltd. Flodgren GM, & Berg, RC (2017). Motivational interviewing as a method to facilitate return to work: a systematic review. Oslo: National Instituted of Public Health.

Florence, C. S., Zhou, C., Luo, F., & Xu, L. (2016). The economic burden of prescription opioid overdose, abuse, and dependence in the United States, 2013. *Medical Care*, *54*(10), 901-906.

https://doi.org/10.1016/j.drugalcdep.2016.08.625

Foley,K., Pallas.D., Forcehimes.A.A., Houck.J.M., E., Bogenschutz.M.P., Keyser-Marcus.L.,…. Svikis. D. (2011). Effect of Job Skills Training on Employment and Job Seeking Behaviors in an American Indian Substance Abuse Treatment Sample, *Journal of Vocational Rehabilitation, 33*(3), 181–192. https://doi.org/10.3233/JVR-2010-0526

Galai, N., Safaeian, M., Vlahov, D., Bolotin, A., & Celentano, D. D. (2003). Longitudinal patterns of drug injection behavior in the ALIVE Study cohort, 1988–2000: description and determinants. *American Journal of Epidemiology*, *158*(7), 695-704.

105

Gold, P. B. (2004). Some Obstacles to Employment for Persons with Chronic Substance Use Disorders Inadequate Federal-State Vocational Rehabilitation (VR) Services. *Substance Use & Misuse*, *39*(14), 2631–2636. https://doi.org/10.1081/LSUM-200034674

Grella, C. E., & Lovinger, K. (2011). 30-year trajectories of heroin and other drug use among men and women sampled from methadone treatment in California. *Drug and Alcohol Dependence*, *118*(2-3), 251-258.

Hall, S. M., Loeb, P., LeVois, M., & Cooper, J. (1981a). Increasing employment in ex-heroin addicts in criminal justice sample. *Behavior Therapy*, *12*(4), 443-452

Hall, S. M., Loeb, P., LeVois, M., & Cooper, J. (1981b). Increasing employment in ex-heroin addicts II: Methadone maintenance sample. *Behavior Therapy*, *12*(4), 453-460.

Hall, S. M., Loeb, P., Norton, J., & Yang, R. (1977). Improving vocational placement in drug treatment clients: A pilot study. *Addictive Behaviors*, *2*(4), 227-234.

Hall, W., Degenhardt, L., & Teesson, M. (2009). Reprint of "Understanding comorbidity between substance use, anxiety and affective disorders: Broadening the research base". *Addictive behaviors*, *34*(10), 795-799.

Henkel, D. (2011). Unemployment and substance use: A review of the Literature (1990-2010). *Current Drug Abuse Reviews*, *4*(1), 4–27. https://doi.org/10.2174/1874473711104010004

Hien, D. A., Morgan-Lopez, A. A., Campbell, A. N., Saavedra, L. M., Wu, E., Cohen, L., … Nunes, E. V. (2012). Attendance and substance use outcomes for the Seeking Safety program: sometimes less is more. *Journal of Consulting and Clinical Psychology*, *80* (1), 29–42. doi:10.1037/a0026361

Hjorthøj, C. R., Hjorthøj, A. R., & Nordentoft, M. (2012). Validity of timeline follow-back for self-reported use of cannabis and other illicit substances—systematic review and meta-analysis. *Addictive Behaviors,* 37(3), 225-233.

Hoffmann, H., Jäckel, D., Glauser, S., Mueser, K. T., & Kupper, Z. (2014). Long-term effectiveness of supported employment: 5-year follow-up of a randomized controlled trial. *American Journal of Psychiatry,* 171(11), 1183-1190.

Hogue, A., Dauber, S., Dasaro, C., & Morgenstern, J. (2010). Predictors of employment in substance-using male and female welfare recipients. *Journal of Substance Abuse Treatment*, *38*(2), 108–118. https://doi.org/10.1016/j.jsat.2009.09.003

Hser, Y. I., Evans, E., Grella, C., Ling, W., & Anglin, D. (2015). Long-term course of opioid addiction. *Harvard Review of Psychiatry*, *23*(2), 76-89.

Hser, Y. I., Evans, E., Huang, D., Brecht, M. L., & Li, L. (2008). Comparing the dynamic course of heroin, cocaine, and methamphetamine use over 10 years. *Addictive Behaviors*, *33*(12), 1581-1589.

Hser, Y. I., Hoffman, V., Grella, C. E., & Anglin, M. D. (2001). A 33-year follow-up of narcotics addicts. *Archives of General Psychiatry*, *58*(5), 503-508.

Hser, Y. I., Longshore, D., & Anglin, M. D. (2007). The life course perspective on drug use: A conceptual framework for understanding drug use trajectories. *Evaluation Review*, *31*(6), 515-547.

Hubbard, R. L., Craddock, S. G., Flynn, P. M., Anderson, J., & Etheridge, R. M. (1997). Overview of 1-year follow-up outcomes in the Drug Abuse Treatment Outcome Study (DATOS). *Psychology of Addictive Behaviors*, *11*(4), 261.

107

Inciardi, J. A., Surratt, H. L., Martin, S. S., & Hooper, R. M. (2002). The importance of aftercare in a corrections-based treatment continuum. *Treatment of drug offenders: Policies and issues*, 204-216.

Institute of Medicine. (1990). Treating Drug Problems. Vol. 1. Washington, DC: National Academy Press.

Jancaitis, B., Kelpin, S., Masho, S., May, J., Haug, N. and Svikis, D.S. (2018). Predictors of early treatment engagement and retention in methadone and non-methadone maintained pregnant, opioid-dependent women. *Women & Health*, 08 May 1-11

Kanfer, R., Wanberg, C. R., & Kantrowitz, T. M. (2001). A personality-motivational analysis and meta-analytic review. *Journal of Applied Psychology, 86,* 837– 855.

Paul Karoly, P. (1993). Mechanisms of Self-Regulation: A Systems View. *Annual Review of Psychology, 1993,* 44:1, 23-52

Kashner TM, Rosenheck R, Campinell AB, et al. (2002). Impact of Work Therapy on Health Status Among Homeless, Substance-Dependent Veterans: A Randomized Controlled Trial. *Archives of General Psychiatry*,59(10), 938–944. doi:10.1001/archpsyc.59.10.938

Kerrigan, A. J., Kaough, J. E., Wilson, B. L., Vaughn Wilson, J., & Bostick, R. (2004). Vocational rehabilitation of participants with severe substance use disorders in a VA veterans industries program. *Substance Use & Misuse*, *39*(13-14), 2513-2523.

Keyser-Marcus, L., Alvanzo, A., Rieckmann, T., Thacker, L., Sepulveda, A., Forcehimes, A., ... & Svikis, D. S. (2015). Trauma, gender, and mental health symptoms in individuals with substance use disorders. *Journal of Interpersonal Violence,* 30(1), 3-24.

Kidorf, M., Hollander, J. R., King, V. L., & Brooner, R. K. (1998). Increasing employment of opioid dependent outpatients: An intensive behavioral intervention. *Drug and Alcohol Dependence*, *50*(1), 73–80. https://doi.org/10.1016/S0376-8716(98)00005-2

Kidorf, M., Stitzer, M. L., & Brooner, R. K. (1994). Characteristics of methadone patients responding to take-home incentives. *Behavior Therapy*, *25*(1), 109–121. https://doi.org/10.1016/S0005-7894 (05)80148-0

Koffarnus, M. N., Wong, C. J., Fingerhood, M., Svikis, D. S., Bigelow, G. E., & Silverman, K. (2013). Monetary incentives to reinforce engagement and achievement in a job-skills training program for homeless, unemployed adults. *Journal of Applied Behavior Analysis*, *46*(3), 582–591. https://doi.org/10.1002/jaba.60

Kokko, K., Pulkkinen, L., & Puustinen, M. (2000). Selection into long-term unemployment and its psychological consequences. *International Journal of Behavioral Development*, *24*(3), 310-320.

Lambert, M. J., Hansen, N. B., & Finch, A. E. (2001). Patient-focused research: Using patient outcome data to enhance treatment effects. *Journal of Consulting and Clinical Psychology*, *69*(2), 159.

Laudet, A. B. (2012). Rate and predictors of employment among formerly polysubstance dependent urban individuals in recovery. *Journal of Addictive Diseases*, *31*(3), 288–302. https://doi.org/10.1080/10550887.2012.694604

Laudet, A. B., & White, W. (2010). What are your priorities right now? Identifying service needs across recovery stages to inform service development. *Journal of Substance Abuse Treatment*, *38*(1), 51-59

109

Lee, S. J., & Vinokur, A. D. (2007). Work barriers in the context of pathways to the employment of welfare-to-work clients. *American Journal of Community Psychology*, *40*(3-4), 301.

Liu, S., Huang, J.L., & Wang, M. (2014). Effectiveness of Job Search Interventions: A Meta-Analytic Review. *Psychological Bulletin.* Advance online publication. http://dx.doi.org/10.1037/a0035923

Locke, E. A., & Latham, G. P. (1990). A theory of goal setting & task performance. Englewood Cliffs, NJ, US: Prentice-Hall, Inc.

Leukefeld, C., McDonald, H. S., Staton, M., & Mateyoke-Scrivner, A. (2004). Employment, employment-related problems, and drug use at drug court entry. *Substance Use & Misuse*, *39* (13-14), 2559-2579.

Leukefeld, C., Webster, J. M., Staton-Tindall, M., & Duvall, J. (2007). Employment and work among drug court clients: 12-Month outcomes. *Substance Use and Misuse*, 42(7), 1109-1126.

Lundgren, L. M., Schilling, R. F., Ferguson, F., Davis, K., & Amodeo, M. (2003). Examining drug treatment program entry of injection drug users: Human capital and institutional disaffiliation. *Evaluation and Program Planning*, *26*(2), 123-132.

Lidz, V., Sorrentino, D. M., Robison, L., & Bunce, S. (2004). Learning from disappointing outcomes: An evaluation of prevocational interventions for methadone maintenance patients. *Substance Use & Misuse*, *39*(13-14), 2287-2308.

Magura, S. (2003). The role of work in substance dependency treatment: A preliminary overview. *Substance Use & Misuse*, *38*(11-13), 1865-1876.

Magura, S., Blankertz, L., Madison, E. M., Friedman, E., & Gomez, A. (2007). An innovative job placement model for unemployed methadone patients: a randomized clinical trial. *Substance Use & Misuse*, *42*(5), 811-828.

Magura, S., Staines, G. L., Blankertz, L., & Madison, E. M. (2004). The effectiveness of vocational services for substance users in treatment. *Substance Use & Misuse*, *39*(13-14), 2165-2213.

Marsden, J., Gossop, M., Stewart, D., Rolfe, A., & Farrell, M. (2000). Psychiatric symptoms among clients seeking treatment for drug dependence: Intake data from the National Treatment Outcome Research Study. *The British Journal of Psychiatry*, *176*(3), 285-289.

McCaul, M. E., Svikis, D. S., & Moore, R. D. (2001). Predictors of outpatient treatment retention: Patient versus substance use characteristics. *Drug and Alcohol Dependence*, *62*(1), 9–17. https://doi.org/10.1016/S0376-8716 (00)00155-1

McCoy, C. B., Comerford, M., & Metsch, L. R. (2007). Employment among chronic drug users at baseline and 6-month follow-up. *Substance Use & Misuse*, *42*(7), 1055-1067.

McLellan, A. T., Ball, J. C., Rosen, L., & O'Brien, C. P. (1981). Response to treatment in patients on welfare: A follow-up study of methadone maintenance. *American Journal of Psychiatry*, *138*, 785-789.

McLellan, A. T., Cacciola, J. C., Alterman, A. I., Rikoon, S. H., & Carise, C. (2006). The Addiction Severity Index at 25: origins, contributions and transitions. *The American Journal on Addictions,* 15(2), 113-124.

McLellan, A. T., Cacciola, J. S., & Zanis, D. (1997). The Addiction Severity Index-"Lite" (ASI-"Lite"). Center for the Studies of Addiction, University of Pennsylvania/Philadelphia VA Medical Center.

111

McLellan, A.T., Cacciola, J., Carise, D., & Coyne, T. H. (1999). Addiction Severity Index-Lite (Clinical Training Version). *Philadelphia, PA: Treatment Research Insitute*.

McLellan, A. T., Lewis, D. C., O'brien, C. P., & Kleber, H. D. (2000). Drug dependence, a chronic medical illness: implications for treatment, insurance, and outcomes evaluation. *Journal of the American Medical Association*, *284*(13), 1689-1695.

McLellan, A. T., Luborsky, L., Cacciola, J., Griffith, J., Evans, F., Barr, H. L., & O'Brien, C. P. (1985). New Data from the Addiction Severity Index Reliability and Validity in Three Centers. *The Journal of Nervous and Mental Disease,* 173(7), 412-423.

McLellan, A. T., Luborsky, L., Woody, G. E., & O'Brien, C. P. (1980). An improved diagnostic evaluation instrument for substance abuse patients: the Addiction Severity Index. *The Journal of Nervous and Mental Disease,* 168(1), 26-33.

McLellan, A. T., Luborsky, L., Woody, G. E., O'Brien, C. P., & Druley, K. A. (1983). Predicting response to alcohol and drug abuse treatments: Role of psychiatric severity. *Archives of General Psychiatry*, *40*(6), 620-625.

McLellan, A. T., Woody, G. E., Metzger, D., Mckay, J., Alterman, A. I., Brien, C. P. O., … Metzger, D. (1996). Evaluating the Effectiveness of Addiction Treatments : Reasonable Expectations , Appropriate Comparisons. *The Milbank Quarterly*, *74*(1), 51–85.

Mateyoke-Scrivner, A., Webster, J. M., Staton, M., & Leukefeld, C. (2004). Treatment retention predictors of drug court participants in a rural state. *The American Journal of Drug and Alcohol Abuse*, *30*(3), 605-625.

Melvin, A. M., Davis, S., & Koch, D. S. (2012). Employment as a predictor of substance abuse treatment. *Journal of Rehabilitation,* 78(4), 31-37.

Miller, W. R., & Rollnick, S. (2012). *Motivational interviewing: Helping people change*. Guilford Press: New York.

Montoya, I. D., & Atkinson, J. S. (2002). A synthesis of welfare reform policy and its impact on substance users. *The American Journal of Drug and Alcohol Abuse*, *28*(1), 133-146.

Morgenstern, J., Hogue, A., Dauber, S., Dasaro, C., & McKay, J. R. (2009). Does coordinated care management improve employment for substance-using welfare recipients? *Journal of Studies on Alcohol and Drugs*, *70*(6), 955-963.

National Institute on Drug Abuse (NIDA) (2015). 2016–2020 NIDA Strategic Plan: Advancing Addiction Science . Retrieved from https://www.drugabuse.gov/about-nida/2016-2020-nida-strategic-plan

National Institute on Drug Abuse. (2016, February 11). Understanding Drug Abuse and Addiction: What Science Says. Retrieved from https://www.drugabuse.gov/understanding-drug-abuse-addiction-what-science-says on 2019, August 8).

National Institute on Drug Abuse (NIDA) (2017). Trends & Statistics. Retrieved from https://www.drugabuse.gov/related-topics/trends-statistics

O'Brien, C. P., & McLellan, A. T. (1996). Myths about the treatment of addiction. *Lancet*. https://doi.org/10.1016/S0140-6736

Oggins J, Guydish J, Delucchi K. (2001). Gender differences in income after substance abuse treatment. *Journal of Substance Abuse Treatment, 20,* 215–24.

Olfson M., Mojtabai R., Sampson N. A., Hwang I., Kessler R. C. (2009). Dropout from outpatient mental health care in the United States. *Psychiatric. Services.* 60 898–907

Platt, J. J. (1995). Vocational rehabilitation of drug abusers. *Psychological Bulletin*, *117*(3), 416

113

Platt, J. J., Husband, S. D., Hermalin, J., Cater, J., & Metzger, D. (1993). A cognitive problem-solving employment readiness intervention for methadone clients. *Journal of Cognitive Psychotherapy*, *7*(1), 21-33.

Polak K., Haug N.A., Drachenberg H.E., Svikis D.S. (2015). Gender Considerations in Addiction: Implications for Treatment. *Current Treatment Options in Psychiatry,2,* 326-338. PubMed PMID: 26413454

Reif, S., Horgan, C. M., Ritter, G. A., & Tompkins, C. P. (2004). The impact of employment counseling on substance user treatment participation and outcomes. *Substance Use and Misuse*, *39*(13–14). https://doi.org/10.1081/JA-200034661

Richardson, L., Wood, E., Li, K., & Kerr, T. (2010). Factors associated with employment among a cohort of injection drug users. *Drug and Alcohol Review*, *29*(3), 293–300. https://doi.org/10.1111/j.1465-3362.2009.00141.x

Richardson, L., Wood, E., Montaner, J., & Kerr, T. (2012). Addiction treatment-related employment barriers: The impact of methadone maintenance. *Journal of Substance Abuse Treatment*, *43*(3), 276-284.

Ranganathan, P., Pramesh, C. S., & Aggarwal, R. (2016). Common pitfalls in statistical analysis: Intention-to-treat versus per-protocol analysis. *Perspectives in clinical research*, *7*(3), 144–146. doi:10.4103/2229-3485.184823

Rosenheck, R., & Seibyl, C. L. (1997). Effectiveness of treatment elements in a residential–work therapy program for veterans with severe substance abuse. *Psychiatric Services*.

Rouse, B. A., Carter, J. H., & Rodriguez-Andrew, S. (2002). Race/ethnicity and other sociocultural influences on alcoholism treatment for women. *Recent Developments in Alcoholism* (pp. 343-367). Springer, Boston, MA.

Sayegh, P., Arentoft, A., Thaler, N. S., Dean, A. C., & Thames, A. D. (2014). Quality of education predicts performance on the Wide Range Achievement Test-Word Reading subtest. *Archives of Clinical Neuropsychology,* 29(8), 731-736.

Shepard, D. S., & Reif, S. (2004). The value of vocational rehabilitation in substance user treatment: A cost-effectiveness framework. *Substance Use & Misuse*, *39*(13-14), 2581-2609.

Sigurdsson, S. O., Ring, B. M., O'Reilly, K., & Silverman, K. (2012). Barriers to employment among unemployed drug users: Age predicts severity. *American Journal of Drug and Alcohol Abuse*, *38*(6), 580–587. https://doi.org/10.3109/00952990.2011.643976

Silverman, K., DeFulio, A., & Sigurdsson, S. O. (2012). Maintenance of reinforcement to address the chronic nature of drug addiction. *Preventive Medicine*, *55*(SUPPL.). https://doi.org/10.1016/

Silverman, K., Holtyn, A. F., & Subramaniam, S. (2018). Behavior Analysts in the War on Poverty : Developing an Operant Antipoverty Program, *Experimental and Clinical Psychopharmacology, 26*(6), 515–524. https://doi.org/10.1037/

Silverman, K., Svikis, D., Robles, E., Stitzer, M. L., & Bigelow, G. E. (2001). A reinforcement-based Therapeutic Workplace for the treatment of drug abuse: Six-month abstinence outcomes. *Experimental and Clinical Psychopharmacology*, *9*(1), 14–23. https://doi.org/10.1037/1064-1297.10.3.228

Silverman, K., Svikis, D., Wong, C. J., Hampton, J., Stitzer, M. L., & Bigelow, G. E. (2002). A reinforcement-based therapeutic workplace for the treatment of drug abuse: three-year abstinence outcomes. *Experimental and Clinical Psychopharmacology*, *10*(3), 228.

Sobell, L. C., Brown, J., Leo, G. I., & Sobell, M. B. (1996). The reliability of the Alcohol
Timeline Followback when administered by telephone and by computer. *Drug and*
Alcohol Dependence, 42(1), 49-54.

Sobell, L. C., Maisto, S. A., Sobell, M. B., & Cooper, A. M. (1979). Reliability of alcohol
abusers' self-reports of drinking behavior. *Behavior Research and Therapy,* 17(2), 157-
160.

 Sobell, L. C., & Sobell, M. B. (1992). Timeline follow-back. *Measuring Alcohol*
Consumption (pp. 41-72). Humana Press, Totowa, NJ.

Sobell, L. C., & Sobell, M. B. (1996). Timeline Follow-back user's guide: A calendar method for
assessing alcohol and drug use. Toronto: *Addiction Research Foundation*

Sorensen, J. L., Hall, S. M., Loeb, P., Allen, T., Glaser, E. M., & Greenberg, P. D. (1988).
Dissemination of a job seekers' workshop to drug treatment programs. *Behavior*
Therapy, *19*(2), 143-155.

Substance Abuse and Mental Health Services Administration. (2017z). *Key substance use and*
mental health indicators in the United States. Results from the 2016 National Survey on
Drug Use and Health (HHS Publication No. SMA 17-5044, NSDUH Series H-52).
Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse
and Mental Health Services Administration. Retrieved from
https://www.samhsa.gov/data/

Substance Abuse and Mental Health Services Administration. (2017b) National Survey of
Substance Abuse Treatment Services (N-SSATS): 2016 Data on Substance Abuse
Treatment Facilities. BHSIS Series S-93, HHS Publication No. (SMA) 17-5039.
Rockville, MD

116

Substance Abuse and Mental Health Services Administration (2018). *Treatment Episode Data Set TEDS (2016) Admissions to and Discharges from Publicly Funded Substance Use Treatment.* Rockville, MD: Center for Behavioral Health Statistics and Quality.

Svikis, D. S., Keyser-Marcus, L., Stitzer, M., Rieckmann, T., Safford, L., Loeb, P., & DeBernardi, M. A. (2012). Randomized multi-site trial of the Job Seekers' Workshop in patients with substance use disorders. *Drug and Alcohol Dependence,* 120(1), 55-64.

Svikis, D.S., Lee, J., Haug, N. and Stitzer, M. (1997). Attendance incentives for outpatient treatment: Effects in methadone- and nonmethadone-maintained pregnant drug dependent women. *Drug and Alcohol Dependence, 48,* 33-41.

Tanner-Smith, E. E., Wilson, S. J., & Lipsey, M. W. (2013). The comparative effectiveness of outpatient treatment for adolescent substance abuse: A meta-analysis. *Journal of Substance Abuse Treatment*, *44*(2), 145-158

U. S. Department of Health and Human Services. (2016). Facing Addiction in America: The Surgeon General's Report on Alcohol, Drugs, and Health. *Office of the Surgeon General* Washington, DC

U.S. Department of Health and Human Services, National Institute on Alcoholism and Alcohol Abuse (NIAAA). (2018). *Drinking Levels Defined.* Retrieved from *https://www.niaaa.nih.gov/alcohol-health/overview-alcohol-consumption/moderate-binge-drinking*

U.S. Department of Labor. [accessed March 22, 2012] Bureau of Labor Statistics Data: Labor Force Statistics from the Current Population Survey 2002–2011. Web Page. Available at: http://www.bls.gov/home.htm

Vaillant, G. E. (1996). A long-term follow-up of male alcohol abuse. *Archives of General Psychiatry*, *53*(3), 243-249.

Van den Berg, H., & Van der Veer, C. G. (1992). The myth of 'unemployable 'people: an evaluation of a new employment service for the 'hard core 'unemployed. *Journal of Social Policy*, *21*(2), 177-210.

Van Hooft, E.A.J., Wanberg, C.R., & Van Hoye, G. (2013). Moving beyond job search quantity: Towards a conceptualization and self-regulatory framework of job search quality. *Organizational Psychology Review, 3,* 3-40

Van Hoye, G., & Saks, A.M. (2008). Job search as goal-directed behavior: Objectives and methods. *Journal of Vocational Behavior, 73*, 358-367.

Veilleux, J. C., Colvin, P. J., Anderson, J., York, C., & Heinz, A. J. (2010). A review of opioid dependence treatment: pharmacological and psychosocial interventions to treat opioid addiction. *Clinical Psychology Review*, *30*(2), 155-166.

Wanberg, C.R., Glomb, T.M., Song, Z., & Sorenson,S. (2005). Job search persistence during unemployment: A 10-wave longitudinal study. *Journal of Applied Psychology, 90,* 411-430.

Wang, M., & Shultz, K. S. (2010). Employee Retirement: A Review and Recommendations for Future Investigation. *Journal of Management*, *36*(1), 172–206. https://doi.org/10.1177/0149206309347957

Walton, M. T., & Hall, M. T. (2016). The Effects of Employment Interventions on Addiction Treatment Outcomes: A Review of the Literature. *Journal of Social Work Practice in the Addictions*, *16*(4), 358–384. https://doi.org/10.1080/1533256X.2016.1235429

Webster, J. M., Staton-Tindall, M., Duvall, J. L., Garrity, T. F., & Leukefeld, C. G. (2007). Measuring employment among substance-using offenders. *Substance Use and Misuse* (42). https://doi.org/10.1080/10826080701409800

Wickizer, T. M., Joesch, J., Longhi, J., Krupski, A., & Stark, K. (1997). Employment outcomes of indigent clients receiving alcohol and drug treatment in Washington State. *Analytic Series*.

Wong, C. J., & Silverman, K. (2007). Establishing and maintaining job skills and professional behaviors in chronically unemployed drug abusers. *Substance Use & Misuse*, *42*(7), 1127-1140.

World Health Organization. (1992). The ICD-10 classification of mental and behavioral disorders: clinical descriptions and diagnostic guidelines (Vol. 1). World Health Organization

Zanis, D. A., Coviello, D., Alterman, A. I., & Appling, S. E. (2001). A community-based trial of vocational problem-solving to increase employment among methadone patients. *Journal of Substance Abuse Treatment*, *21*(1), 19-26.

Zanis, D. A., Metzger, D. S., & McLellan, A. T. (1994). Factors associated with employment among methadone patients. *Journal of Substance Abuse Treatment*, *11*(5), 443-447

Zarkin, G.A., Dunlap, L.J., Bray, J.W. & Wechsberg, W.M. (2002). The effect of treatment completion and length of stay on employment and crime in outpatient drug-free treatment. *Journal of Substance Abuse Treatment, 23,* 261-271.

Appendix

Participant Assessments and Procedures

Assessment/ Procedure	Screening / Baseline-1/ Enrollment	‡Job Seekers Workshop Phase			Follow-Up 1 2 3 (28d) (84d) (168d)		
Time (Study day)*	000	001-042	002-042	003-042	026-056	082-112	166-196
Phase	01	02			03	04	05
*JSW/ST		**Need to complete all 3 JSW sessions within 6 weeks**					
Consent and Consent Quiz	x						
**Baseline Assessments							
Demographic (DEM)	x						
Addiction Severity Index-Lite Pre-Treatment (ASIP)	x						
Substance Use Disorder-cidi (SUD)	x						
Alcohol Breathalyzer (AB)	x				x	x	x
Urine Drug Screen (UDS)	x				x	x	x
WRAT (Reading section) (WRAT-R)	x						
Vocational Survey Pre-Treatment (VSP)	x						
*Vocational Survey Intake Job Addendum (VSPJ)	x						
^Participant Tracking Form (PTF)	x				^x	^x	^x
Inclusion/Exclusion Form (IEC)	x						
Randomization Form (RAN)	x						
Other Assessments							
JSW Attendance (JSWA)				x			
Addiction Severity Index-Lite FU (ASIF)					~~x	x	x
Vocational Survey Follow-up (VSF)					~~x	x	x

120

*Vocational Survey Follow-up 1 Job Addendum (VSFJ1)					~x		
*Vocational Survey Follow-up 1 Training Addendum (VSFT1)					~x		
*Vocational Survey Follow-up 2 Job Addendum (VSFJ2)						~x	
*Vocational Survey Follow-up 2 Training Addendum (VSFT2)						~x	
*Vocational Survey Follow-up 3 Job Addendum (VSFJ3)							~x
*Vocational Survey Follow-up 3 Training Addendum (VSFT3)							~x
Community Job Resources Brochure Survey (CJRB)					~~x		

*This form is collected conditionally based on answers to the Vocational Survey Pre-Treatment form

** The Baseline Assessments was filled out within 14 days from consent.

^ The participant tracking form was filled out at baseline, and updated throughout the study if changes occur.

~ These forms were collected only if participant has a new job/training or information for a previous job/training.

~~These forms were collected upon completion of the JSW or Follow-up 1, whichever one comes last.

= These forms were completed only when appropriate.

* The TLFB is a worksheet that the RA used to fill out the appropriate CRFs.