# Predictors of Employment in Substance-Using Male and Female Welfare Recipients

**Aaron Hogue**, **Sarah Dauber**, **Christopher Dasaro**, and **Jon Morgenstern**
The National Center on Addiction and Substance Abuse at Columbia University

## Abstract

This study examined predictors of employment among substance-using men and women enrolled in welfare-to-work programs. Participants were 394 welfare applicants assigned to either coordinated care management or usual care for treatment services and job training and followed for one year to track employment outcomes. Common barriers to work were assessed at baseline in four key domains: disabilities, situational barriers, labor capital, and motivation. Results indicated substantial gender differences in the number and profile of work barriers. Among men, work experience and job motivation were the only significant predictors of employment; among women, multiple factors from each barrier domain predicted job acquisition even when controlling for all other significant predictors. Findings suggest that welfare-to-work programs should emphasize job training and job seeking during the early stages of welfare interventions for men and for many women.

### Keywords

adult substance use; predictors of employment; welfare-to-work policy; substance use treatment; gender differences

## 1. Introduction

A guiding supposition among substance use disorder (SUD) treatment professionals is that regular use of mood-altering substances is a primary work barrier among individuals with SUD, such that abstinence is a necessary first step towards gaining employment (SAMHSA, 2002). Alternatively, SUD may routinely co-occur with other kinds of employment barriers—for example, disabling physical or mental health conditions, housing instability, deficits in work skills or experience—that have greater impact on work acquisition than substance use and therefore represent a more logical target of interventions aimed at increasing employment (Schmidt et al., 2007). The current study examines how multiple barriers to employment predict self-reported days of work in the context of a practical clinical trial of case management services for male and female welfare-to-work participants with SUD.

**Publisher's Disclaimer:** This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

## 1.1 Welfare Reform and Employment Barriers for Substance Users

Welfare reform and other legislation enacted during the 1990s dramatically altered the availability of social safety net benefits for individuals with SUD. The enactment of Temporary Assistance for Needy Families (TANF) legislation imposed time limits on benefits, dramatically reduced the availability of disability benefits for those with SUD by requiring certification of a co-occurring physical or mental health condition, and tied receipt of benefits to participation in work activities and eventual employment (Schmidt, Weisner, & Wiley, 1998). Because receipt of benefits is now temporary and contingent on progress towards employment, helping welfare clients with SUD obtain work in addition to resolving their substance use problems has taken on a greater priority (Morgenstern et al., 2003). This coincides with increased emphasis on employment within SUD treatment programs (Magura, Stains, Blankertz, & Madison, 2004) in accord with the chronic care model, which promotes maintenance of supportive relationships, stable physical and mental health, and productive employment (for those able to work) as important recovery goals (Betty Ford Institute Consensus Panel, 2007; McLellan, Lewis, O'Brien, & Kleber, 2000).

Substance use is one of several potential barriers to employability experienced by a large segment of the welfare-to-work population. Other prevalent work barriers include physical and mental health disabilities, housing and legal problems, limited work skills and experience (i.e., labor capital), and childcare duties (Corcoran, Danziger, & Tolman, 2003; Morgenstern et al., 2003; Morgenstern, Hogue, Dasaro, Kuerbis, & Dauber, 2008). Numerous studies have shown that experiencing a greater number of overall barriers is associated with lower rates of job acquisition and job stability (Danziger et al., 2000; Lee & Vinokur, 2007; Nam, 2005).

Welfare research on employment barriers and interventions has been conducted almost exclusively with female samples (Lee & Vinokur, 2007; Meara, 2006). Males also seek public assistance for a variety of reasons including medical coverage, housing and employment assistance, and basic individual and family needs (Morgenstern et al., 2008). Males who are primary caretakers for young children can qualify for TANF; otherwise, many states fund separate general assistance (GA) programs for needy men and women who are not TANF eligible. In order to set effective welfare-to-work policies for male recipients, it is critical to test whether existing barrier models aptly describe this important subgroup.

One potentially important and understudied factor for this population is motivation to work. Low work motivation is not typically counted as a barrier to employment. However, motivation to change is considered a key element of client readiness for treatment among substance users, for whom denial of addiction problems and ambivalence about treatment participation constitute major barriers to treatment success (Miller & Rollnick, 2002). Only a handful of studies have examined whether baseline motivation to work predicts later employment among participants in SUD treatment (e.g., Zanis, Coviello, Alterman, & Appling, 2001) or welfare-to-work programs (e.g., Lee & Vinokur, 2007). These few studies indicate that stronger initial motivation is associated with better employment outcomes. However, findings are limited by the absence of standardized methods to assess motivation to work. The current study adapted a well-validated measure of readiness to abstain from smoking (Biener & Abrams, 1991). It remains to be seen whether readiness to work is as important as disability, job skills deficits, and other barriers in predicting job acquisition.

## 1.2 Previous Research on Case Management Interventions for Promoting Employment in Substance-Using Welfare Recipients

Our group has conducted two clinical trials examining whether intensive case management leads to improved employment outcomes for substance-using welfare clients. The first trial compared intensive case management (ICM) versus simple referral to SUD treatment and

welfare monitoring for TANF mothers who met SUD criteria but were not attending treatment. ICM yielded significantly higher levels of SUD treatment engagement as well as higher rates of abstinence and employment at 24 months following program entry (Morgenstern et al., 2006, in press).

The second trial generated the sample for the current study. Welfare applicants with SUD were selected to participate in one of two intervention conditions: coordinated care management (CCM), a continuity-of-care intervention focused on engaging clients in SUD treatment and ancillary services and fostering transition to employment, versus usual care (UC), a screen-and-refer intervention focused on assessing clients for substance use and related problems and referring needy clients to available community services. Findings indicated that among those not enrolled in methadone maintenance, CCM clients received more SUD treatment and ancillary services than UC clients and showed higher abstinence rates that emerged early in treatment and were sustained throughout one-year follow-up (Morgenstern, Hogue, Dauber, Dasaro, & McKay, 2009). Also, among women only, CCM increased rates of employment over time while UC remained stable at very low employment levels, with greater treatment attendance and abstinence levels during the first six months of CCM predicting greater employment at one year (Morgenstern, Hogue, Dauber, Dasaro, & McKay, in press).

### 1.3 Current Study Aims

The primary aim of this study was to examine predictors of employment among substance-using men and women participating in welfare-to-work programs. The study sample exhibited chronic substance use problems as well as a variety of work barriers related to mental and physical health, legal and housing problems, and child welfare involvement (Morgenstern et al., 2008). All participants were judged suitable for eventual employment by welfare assessors, required to attend SUD treatment, and monitored for progress toward self-sufficiency via job training, welfare-supported work experience programs, and job seeking activities. As described above, previous analyses of this sample revealed that care management was effective in improving abstinence rates for all non-methadone clients and employment rates for non-methadone women only. However, factors other than case management services, such as disability characteristics and socio-contextual factors, likely play a large role in determining who obtains work among hard-to-employ groups. Moreover, care management was not successful in promoting work among men in this sample (Morgenstern, Hogue, et al., in press).

The current study advances research on employment barriers in SUD populations by identifying which specific barriers predicted one-year employment rates separately for men and women. Common barriers found in studies of predominantly female welfare samples include disability characteristics (e.g., physical health, mental health, substance use), situational barriers (e.g., housing instability, legal involvement), and labor capital deficits (e.g., work history, job skills). Motivation variables, such as readiness to abstain from substance use and readiness to work, are a promising but understudied domain. Arguably, different sets of factors are likely to serve as work barriers for men versus women. The current study tested the comparative strength of work barriers across four domains for each gender while controlling for demographics and intervention condition. Unique features of the study include a large subsample of men receiving benefits (67%), assessment of abstinence motivation and work motivation using a validated measurement approach, and one-year outcome data for on-the-books and off-the-books work. Also, the study used a multidimensional approach to assessing employment capital that included a standardized assessment of job aptitude and a measure of learning skills deficits.

## 2. Materials and methods

### 2.1 Participants

Demographic, substance use, employment readiness, and sample characteristics at baseline (N = 394) are presented in Table 1 separately by gender: 67% men and 33% women. Across gender, participants were primarily African American (49%) or Hispanic (43%), averaged 39.8 years of age (SD = 8.5); most were unmarried (92%), and 54% graduated high school or received an equivalency diploma. Severity and chronicity of substance use were high across gender: At baseline participants reported using alcohol or drugs on more than half the days of each month, and they averaged 9.7 (SD = 11.1) years of regular heavy alcohol use and 10.4 (SD = 8.9) years of regular heroin or cocaine use. Almost all men (98%) and women (87%) reported having previously held a job, although many had not worked at all in the past three years, and most reported no days of work during the previous month. Despite these similarities, men reported significantly stronger work histories than women for every employment variable at baseline. Also, about 22% men and 17% women had unstable living conditions, and many (55% men, 30% women) were involved in the criminal justice system. The vast majority (76% men, 91% women) had received public assistance prior to their application for benefits at baseline; at baseline only 9% of men and 30% of women in this sample were TANF-eligible (i.e., pregnant or custodial guardian of dependent child under 18 years old), with the remainder eligible for General Assistance. Finally, only 25% of men and 25% of women had a child under the age of 18, and of these, 88% reported having a child living with a different caretaker. Hence childcare burden was an infrequent concern. As seen in Table 1, other than employment history variables, few gender differences were evident.

### 2.1. Study Procedures and Attrition

Data for the current study were collected from a representative sample of persons applying for welfare benefits in a large urban county that offers public assistance to eligible men and women (for a full description of study procedure see Morgenstern et al., 2009). A total of 1519 applicants completed a study eligibility screen in welfare field offices over two years; of these 543 (36%) met criteria designed to identify persons most likely to benefit from intensive case management: At least one day of illicit drug use or heavy drinking in past month, or one day of drug use/heavy drinking in past six months and currently motivated to attend treatment; Not hospitalized for mental health problems more than once in past year; Not currently experiencing psychotic symptoms or prescribed antipsychotic medication; Not residing on the streets, in shelters, or in imminent danger of being homeless; Not planning to move from the area for six months. Of 543 eligible applicants, 421 (78%) agreed to participate in the clinical trial; refusal rates did not significantly differ between the CCM versus UC conditions. Follow-up interviews were completed 1, 3, 6, and 12 months after baseline. Overall follow-up rates were 95% in CCM and 92% in UC and did not differ between conditions. N = 394 trial participants (94%) completed all measures necessary for inclusion in the current study.

### 2.2. Treatment Conditions

For a complete description of treatment conditions and fidelity procedures see Morgenstern et al. (2009). Participants were randomly assigned to treatment condition via a computerized automated welfare management system. In both conditions, clients needing any level of SUD treatment were referred to a pre-approved treatment program and received either a partial or full temporary exemption from welfare-mandated job training activities. Clients were re-evaluated every 90 days and expected to transition in a timely manner from SUD treatment to participation in job training and eventually to self-sufficiency. The experimental condition, coordinated care management (CCM), featured an innovative care management approach focused on coordinating services among multiple providers to promote outcomes for individual clients. CCM case managers maintained caseloads of 30–35 clients, monitored program

activities at 4–6 drug treatment sites via bimonthly site visits, and received ongoing training in substance use issues. The control condition, usual care (UC), assigned clients to welfare eligibility workers who maintained caseloads of 75–250 clients, made routine service referrals only during annual face-to-face meetings, and received no training in substance use issues.

## 2.3 Measures

**2.3.1 Baseline demographics, substance use history, employment history, and other client characteristics—**Demographics (age, ethnicity, marital status, education), employment history, housing status, psychiatric history, drug treatment status (in drug-free program, in methadone maintenance program alone or in combination with drug-free treatment, no treatment), and welfare experience were obtained at baseline via structured interview procedures. Information on substance use chronicity and severity, prior SUD treatment episodes, and criminal justice involvement was obtained using the *Addiction Severity Index* (ASI, 5th edition: McLellan et al., 1992). Summary scores for physical heath status and mental health status were derived from the *Short Form–12 Version 2* (SF-12; Ware, Kosinski, Turner-Bowker, & Gandek, 2002).

**2.3.2 Readiness to Abstain and Readiness to Work—**We adapted the Contemplation Ladder (Biener & Abrams, 1991; Rustin & Tate, 1993) to assess these constructs at baseline. The Contemplation Ladder is a measure of readiness to quit smoking based on the stages of change model that characterizes readiness to change as a progression through precontemplation, contemplation, action, and maintenance phases (Prochaska, DiClemente, & Norcross, 1992). We created two versions of the Contemplation Ladder to measure readiness to stop using alcohol and illegal drugs, respectively (described in Morgenstern et al., 2008). Participants completed the alcohol ladder if they reported having three or more drinks in one sitting in the past six months; they completed the drug ladder if they reported any illegal drug use in the past six months. All analyses used a combined ladder score, derived as follows: For participants who completed only one ladder, that score was used; for participants who completed both ladders, the ladder score corresponding to the more severe problem (based on the higher ASI Composite Score) was used. Response choices on the alcohol/drug ladder ranged from 1 (*I do not have a problem with drinking [drugs], and I do not intend to cut down*) to 7 (*I have decided to quit drinking alcohol [using drugs] and plan never to drink [use drugs] again*). A similar contemplation ladder was created for employment (also described in Morgenstern et al., 2008), in keeping with research demonstrating that intention to work predicts later job acquisition (Vinokur & Caplan, 1987; Vinokur & Schul, 2002; Zanis et al., 2001). Response choices on the employment ladder ranged from 1 (*I am not interested in having a job, and I do not intend to look*) to 6 (*I would like to have a job now, and I have done something this past week to get one*).

**2.3.3 Employment capital index—**Due to baseline interview time constraints, data on employment skills were collected at the 1-month follow-up interview. The employment capital index was created based on responses to questions regarding learning skills, acquired job skills, and a standardized measure of employment aptitude. For learning skills assessment, participants were asked whether they had ever experienced any of 12 learning difficulties, including difficulty in working with numbers in a column, filling out forms, and taking notes. All responses of no difficulty were scored "1" and summed to create a total learning skills score. For acquired job skills, participants responded to 10 items asking about job skills that were required at their most recent job, such as talking with customers face to face, writing letters/memos, and working on a computer. Items were rated on a scale from 1 to 4, with higher numbers representing more job skills, and scores were averaged to create a total job skills score. For job aptitude, participants completed the Comprehensive Adult Student Assessment System Form 120, a 25-item timed standardized assessment of verbal ability specifically designed to

appraise to employment competency (CASAS, 2002). Total scores on these three measures were standardized and averaged to create a total index score for employment capital.

### 2.3.4 Employment outcome: Days of employment

Days of employment were assessed using a structured interview measuring the number of days worked since the previous assessment timepoint. The interview was used in the multisite Employment Retention and Advancement (ERA) evaluation of innovative welfare programs for hard-to-employ populations and is a state-of-the-art measure of employment outcomes in welfare-to-work evaluations (MDRC, 2008). At each follow-up (1, 3, 6, 12 months), participants were asked to recall how many days since the last interview they were paid for working on the books, off the books, in full-time jobs, or in part-time jobs. Specific dates of employment were logged, and a monthly timeline of days worked was constructed for each participant that combined on- and off-the-books work and also full- and part-time work. We decided not to tabulate job retention separately from total days of work because the difference between job retention versus job acquisition is muted in drug-using welfare populations, who have treatment participation mandates that typically delay or supercede employment requirements (Morgenstern et al., 2003). This was true in the current sample, which showed relatively little employment overall during one-year follow-up (see section 3.1).

## 2.4 Statistical Analyses

Data were analyzed using Generalized Estimating Equations (GEE), an extension of the General Linear Model that permits a within-subject repeated measures examination of change over time as well as correction of variance estimates for correlated data within subject (Zeger & Liang, 1986; Zeger, Liang, & Albert, 1988). A series of GEE models were conducted to examine potential baseline predictors of employment through the one-year follow-up period. Employment was defined as the number of days employed within each month and was treated as a count variable. We first modeled the data as a poisson distribution. However, poor model fit parameters, along with large variances relative to the mean and examination of an employment data histogram, indicated over-dispersed data. In the case of overdispersed data, the poisson regression model underestimates variances and inflates the probability of Type I error; in such cases the negative binomial model provides better variance estimates and is more appropriate for inference testing (Gardner, Mulvey, & Shaw, 1995). Therefore, GEE models assumed a negative binomial distribution, logit link function, and exchangeable correlation matrix.

Potential baseline predictors of employment were examined in five domains: demographics, disability, situational barriers, labor capital, and motivation. Demographic variables included gender (0=female, 1=male), age in years, ethnicity (1=African American, 2=Hispanic, 3=Other), years of education, years spent on welfare, and also treatment condition (0=UC, 1=CCM). Disability variables included mental and physical health (higher scores indicate better health), alcohol and drug use (ASI composite scores), and number of prior substance use treatment episodes. Situational barriers included treatment status at baseline (1=drug free treatment, 2=methadone treatment, 3=no treatment), criminal justice history (0=any 1=none), and housing status (0=unstable housing, 1=stable housing). Labor capital variables included months employed in the past three years (0 = None, 1= 1–6 months, 2 = 7–12 months, 3 = 13–24 months, 4 = 24 months or more), and an employment capital index. Motivation variables included readiness to abstain from alcohol and drug use and readiness to work.

Predictors of employment were examined using a sequence of five GEE models conducted to test the set of variables in each domain independently of variables in all other domains. Following this initial examination of independent domains, a final cross-domain model was constructed including only predictors that were significant ($p < .05$) in each of the independent

domain models. The set of demographic predictors (including treatment assignment) was also included in each model as control variables regardless of statistical significance. Due to the large familywise error rate resulting from multiple GEE analyses repeated for each gender, the criterion level for interpreting significance for the final domain model was set at $p < .01$ for both men and women.

## 3. Results

### 3.1 Preliminary Analyses: Bivariate Correlations among Work Barriers at Baseline and Employment Outcome Comparisons between Men versus Women

To ensure that selected work barriers were sufficiently independent from one another and would not present multicollinearity problems in predicting employment outcomes, we inspected bivariate correlations among all barriers from all domains separately for men and women. No correlation exceeded $r = .37$ in magnitude, indicating that the set of predictors contained non-redundant data. In both men and women, the strongest correlation was found between drug use and mental health ($r = -.34$ and $-.37$, respectively). Interestingly, neither alcohol use nor drug use severity was significantly correlated with employment skills or recent employment in either group.

We also inspected the level of work reported by men and women at each follow-up assessment, controlling for age, ethnicity, years education, years on welfare, and treatment condition. At every timepoint men worked more cumulative days than women: At 1 month, men averaged 3.9 (SD = 6.7) days and women 1.0 (3.7) days; ($t$ (388.2) = $-5.61$, $p < .001$); at 3 months, men averaged 8.4 days (13.4) and women 2.5 (8.4) days ($t$ (372.8) = $-5.27$, $p < .001$); at 6 months, men averaged 14.0 (20.7) days and women 3.7 (12.5) days ($t$ (375.3) = $-6.06$, $p < .001$); and at 12 months, men averaged 28.9 (43.0) days and women 10.1 (26.5) days ($t$ (365.6) = $-5.23$, $p < .001$). Note that a substantial number of participants obtained no jobs of any kind during follow-up: one-third of men and two-thirds of women reported no days of employment during the follow-up year.

### 3.2 Predictors of Employment: Male Welfare Recipients

Significant predictors of employment for men (n = 263) are presented below within each of the five independent domains (demographics plus four barrier domains), followed by a final model that includes the significant predictors identified in each domain. Incidence rate ratios and confidence intervals for each independent domain model and for the final model are shown in Table 2.

**3.2.1 Demographics—**Significant demographic predictors of employment for men across follow-up included age and ethnicity. Specifically, younger participants were working more (IRR = .97; 95% CI = .96, .99; $p < .01$). African Americans showed lower rates of employment than those classified as "Other," who were mainly Caucasian (IRR = 1.78; 95% CI = 1.17, 2.71; $p < .01$).

**3.2.2 Disability—**Significant predictors within the disability domain included drug use, number of prior treatment episodes, and physical health status. Higher levels of employment were predicted by lower levels of drug use (IRR = .32; 95% CI = .12, .86; $p < .05$), fewer prior treatment episodes (IRR = .97; 95% CI = .95, .99; $p < .01$), and better physical health (IRR = 1.01; 95% CI = 1.00, 1.03; $p < .05$). Alcohol use and mental health did not predict work.

**3.2.3 Situational barriers—**Housing status was a strong predictor, with men living in more stable conditions showing more employment gains (IRR = 1.48; 95% CI = 1.12, 1.94; $p < .01$). Criminal justice history and treatment status did not predict employment.

**3.2.4 Labor capital—**More months of employment in the past three years predicted greater employment across follow-up (IRR = 1.16; 95% CI = 1.06, 1.26; *p* < .01).

**3.2.5 Motivation—**Participants reporting greater baseline readiness to obtain a job were working significantly more across the follow-up period (IRR = 1.44; 95% CI = 1.33, 1.56; *p* < .001).

**3.2.6 Final domains model for men—**The final model for men included all demographic variables and the following predictors that were significant in the independent domains analyses: drug use, prior treatment episodes, physical health, housing stability, work experience, and readiness to work. There were only two significant (*p* < .01) predictors of employment in the final model: more employment experience (IRR = 1.16; 95% CI = 1.06, 1.27; *d* = .08) and greater readiness to work (IRR = 1.41; 95% CI = 1.29, 1.54; *d* = .19). Effect sizes (Cohen's *d*; Cohen, 1988) were small for both predictors.

### 3.3 Predictors of Employment: Female Welfare Recipients

Significant predictors of employment for women (n = 131) are presented below within each of the five independent domains, followed by a final model that includes the significant predictors identified in each. Incidence rate ratios and confidence intervals for each independent domain model and the final model are shown in Table 3.

**3.3.1 Demographics—**Significant demographic predictors of employment included age, ethnicity, years on welfare, and treatment condition. Specifically, older participants were working more (IRR = .1.03; 95% CI = 1.01, 1.04; *p* < .01), and Hispanics were working more than African Americans (IRR = 1.70; 95% CI = 1.18, 2.43; *p* < .01). Women with fewer years of welfare history obtained more work (IRR = .78; 95% CI = .66, .91; *p* < .01). As in our previous study with this sample (Morgenstern, Hogue, et al., in press), women in coordinated care management obtained more employment than those in a usual-care screen-and-refer program (IRR = 2.20; 95% CI = 1.56, 3.11; *p* < .001).

**3.3.2 Disability—**Women with better physical health at baseline reported more future employment (IRR = 1.04; 95% CI = 1.02, 1.06; *p* < .001). No significant effects on were found for alcohol use, drug use, prior SUD treatment, or mental health.

**3.3.3 Situational barriers—**All three situational barriers predicted future employment. Women enrolled in drug-free treatment programs at baseline reported more work during follow-up than those enrolled in methadone maintenance programs (IRR = .17; 95% CI = .10, .28; *p* < .001) and those not enrolled in any SUD services (IRR = .52; 95% CI = .37, .74; *p* < .001). Contrary to expectations, women with *more* legal involvement (IRR = .54; 95% CI = .39, .74; *p* < .001) and *less* stable housing (IRR = .52; 95% CI = .36, .76; *p* < .001) reported more work over time.

**3.3.4 Labor capital—**More employment capital (IRR = 2.30; 95% CI = 1.71, 3.10; *p* < .001) and more work experience in the past three years (IRR = 1.49; 95% CI = 1.32, 1.68; *p* < .001) predicted greater employment across follow-up.

**3.3.5 Motivation—**Participants reporting greater readiness to abstain worked more during follow-up (IRR = 1.40; 95% CI = 1.24, 1.58; *p* < .001). Also, those reporting greater baseline readiness to obtain a job were working more across the follow-up period (IRR = 1.93; 95% CI = 1.67, 2.21; *p* < .001).

**3.3.6 Final domains model for women**—The final model for women included all the demographic variables and the following predictors significant in the independent domains analyses: physical health, treatment status, criminal justice involvement, housing stability, employment capital, work experience, readiness to work, and readiness to abstain. Virtually every predictor that was significant in the independent domains analyses remained significant ($p < .01$) in the final model. Women who were older (IRR = 1.04; 95% CI = 1.02, 1.07; $d = .02$) and more educated (IRR = 1.26; 95% CI = 1.13, 1.42; $d = .13$) found more jobs, and Hispanics worked more than African Americans (IRR = 2.05; 95% CI = 1.28, 3.28; $d = .40$). As before, clients receiving coordinated care management worked more than those in usual care (IRR = 2.21; 95% CI = 1.44, 3.39; $d = .44$); however, opposite to what was found in the independent domains analyses, more employment was predicted by *more* previous years on welfare (IRR = 1.53; 95% CI = 1.23, 1.92; $d = .24$). Women with better physical health worked more (IRR = 1.04; 95% CI = 1.02, 1.06; $d = .02$), and those in drug-free treatment worked more than those in methadone maintenance (IRR = .11; 95% CI = .06, .21; $d = 1.22$) or those not enrolled in SUD services (IRR = .36; 95% CI = .23, .57; $d = .56$). As before, more employment was predicted by more legal involvement (IRR = .54; 95% CI = .36, .83; $d = .34$) and less stable housing (IRR = .46; 95% CI = .28, .77; $d = .43$). Finally, women with greater employment capital (IRR = 3.18; 95% CI = 2.27, 4.46; $d = .64$), work experience (IRR = 1.49; 95% CI = 1.32, 1.68; $d = .22$), motivation to abstain (IRR = 1.19; 95% CI = 1.05, 1.36; $d = .10$), and motivation to work (IRR = 1.79; 95% CI = 1.54, 2.08; $d = .32$) found more jobs over time. Effect sizes were small for age, education, physical health, and readiness to abstain; they were small-to-moderate for ethnicity, welfare tenure, treatment condition, not being in SUD treatment at baseline, legal involvement, housing stability, and motivation to work. A moderate-to-large effect was found for employment capital and a large effect for being in methadone treatment at baseline.

## 4. Discussion

This study identified barriers to employability that predicted work outcomes in men and women on public assistance participating in welfare-to-work programs. Results indicated that there were substantial gender differences in the number and profile of work barriers. Among male recipients, work experience during the previous three years and motivation to obtain a job emerged as the only significant predictors of days worked over the course of a year. Among female recipients, multiple factors representing every barrier domain were uniquely related to job acquisition, even when controlling for all other demographics and barriers. Specifically, women worked more if they were older, Hispanic rather than African American, more educated, in drug-free treatment, in better physical health, more involved in criminal justice, less stably housed, more vested with employment capital and work experience, and more motivated to obtain work and abstain from substance use. Noteworthy among these findings are the following: (a) substance use severity, considered a major barrier to employability, did not predict job outcomes for either group; (b) motivation to work, though infrequently studied in welfare samples, was one of the strongest predictors in both groups.

For women, multiple work barriers in multiple domains related to future employment. This has been repeatedly shown in previous studies with female recipients (e.g., Danziger et al., 2000; Morgenstern et al., 2003) and confirms the suitability of the work barriers model for women on public assistance. The current study also found that assignment to care management benefited women even when controlling for a host of competing variables, strengthening confidence in similar results for the whole sample reported elsewhere (Morgenstern, Hogue, et al., in press) and in a similar study of intensive case management with TANF women (Morgenstern, Neighbors, et al., in press). The CCM model was designed to address multiple barriers to employability via intensive case management and direct coordination of services

with providers (Morgenstern et al., 2009) and thus appears to be a good fit for substance-using women on welfare.

By the same token, findings cast further doubt on the suitability of the work barriers framework for male welfare recipients. As expected, men reported a stronger employment history and greater readiness to work than women at baseline, and over the course of follow-up they obtained more work. However, the usual roster of disability and situational barriers was not related to job acquisition, nor was assignment to care management. Instead, only two work-centered factors predicted future employment: work experience and work motivation. Thus male recipients exhibiting multiple barriers to employment were nevertheless more work-ready than women and evidently pursued alternate pathways to employment outside the mandated welfare-to-work system. A critical issue is whether work immersion approaches such as supported employment (Bond, 2004), which foster immediate work placements along with work training and case management for needed services, might be more effective for work-ready men.

Substance use and mental health status, two commonly cited work barriers (Danziger et al., 2000), had no observed relation to employment outcomes despite the severity of these problems in this sample (see Morgenstern et al., 2008). Note that all study participants were referred for SUD treatment after baseline, and men and women in both conditions showed improved abstinence rates during follow-up (Morgenstern et al., 2009). Programmatic interventions for substance use over time may have confounded the relation between baseline substance use and later employment. It is also possible that substance use and co-occurring mental health barriers exerted combined or interactive effects on employment that were unobserved at the individual predictor level. A previous study (Morgenstern et al., 2008) documented the high degree of co-occurring problems in this sample. Even so, current findings argue that removing or modulating disability barriers is insufficient for promoting job acquisition for either men or women. Instead, work readiness needs to be systematically addressed in order to move hard-to-employ SUD welfare recipients toward sustainable employment (Meara, 2006; Schmidt et al., 2007). Because work motivation and experience are potentially more malleable than disability characteristics, realigning welfare interventions to emphasize job training and job seeking during the early stages of welfare management appears to be a promising strategy for this population (Morgenstern, Hogue, et al., in press).

As expected, being enrolled in methadone maintenance was a significant barrier to employment for women. This corresponds to prior studies showing that methadone clients have modest to poor work outcomes even when their drug use is reduced (e.g., French, Dennis, McDougal, Karuntzos, & Hubbard, 1992; Zanis et al., 2001). But it was surprising that among women, housing instability and criminal justice involvement were related to more employment. One explanation is that women benefited to some degree from structured monitoring by the legal system and various housing assistance agencies, perhaps participating in mandated programs with employment requirements. Note that truly homeless persons—those residing on the streets or in temporary shelters—were excluded from study participation. The counterintuitive finding that more years on welfare predicted greater employment in the final model for women was offset by the opposite finding in the independent domains analyses, wherein more welfare history predicted less employment; the final model result may be a proxy or suppressor effect stemming from unidentified correlations with a third variable.

## 4.1 Study Strengths and Limitations

Important strengths of the current study include the large subsample of male welfare recipients, assessment of a comprehensive profile of work barriers including understudied personal motivation and labor capital factors, and timeline-based retrospective collection of daily employment data for documented and undocumented work. An important limitation is lack of

a formal test for differential barrier effects in men versus women because the sample size limited power to detect gender interactions or evaluate competing path models. Most participants were heavy substance users, constituting a restricted high range of severity that may have attenuated the correlation between substance use and work. Persons reporting recent psychiatric hospitalization or antipsychotic medication—evidence of acute psychiatric problems—were excluded from the study. It is well established that severe and persistent mental illness is a significant barrier to employability (Lehman et al., 2002); our study utilized a normative measure of mental health not intended to assess severe mental illness. The study selection criteria—no acute psychiatric problems, not homeless, not intending to leave the area for six months—were designed to increase the study's internal validity, that is, the fit between the study sample and the experimental intervention. But in so doing, selection criteria decreased external validity by excluding persons with significant transience and mental health problems that commonly occur in substance-using welfare populations.

Note that data for this study were collected over a three-year period [2004–2006] during which a particular historical set of labor market factors affected work acquisition in both study conditions; similar studies need to be completed in future markets to evaluate the robustness of findings. Employment data are based on self-report only. Findings are limited to a 12-month outcome period; longer follow-up periods are needed to investigate the possibility of more gradual or delayed employment effects. Longer follow-up would also permit examination of reciprocal influences between employment and work barriers, including the degree to which finding and keeping a job subsequently impacts disability and motivational characteristics over time (Atkinson et al., 2003).

### 4.2 Conclusion

Study results indicate that work readiness factors rather than disability characteristics are strong predictors of future employment for substance-using men and women on public assistance. Thus there may be large benefits to revising the focus of welfare interventions for SUD populations, which currently emphasize treatment referral and disabilities management, to include substantial emphasis on employment planning during the earliest stages of care. Gender differences were also pronounced. Job acquisition by men was related exclusively to work experience and motivation, with little evidence that services in other domains improved job outcomes. In contrast, multiple barriers impeded work success for women, and intensive management of these barriers facilitated job acquisition. However, despite their participation in welfare-to-work programs, women achieved low levels of employment overall (see also Morgenstern, Hogue, et al., in press). Additional research is needed to determine whether some female recipients are too disabled to meet current work mandates and thereby require alternative services more consistent with a disabled population.

## References

Betty Ford Institute Consensus Panel. What is recovery? A working definition from the Betty Ford Institute. Journal of Substance Abuse Treatment 2007;33:221–228. [PubMed: 17889294]

Biener L, Abrams DB. The Contemplation Ladder: Validation of a measure of readiness to consider smoking cessation. Health Psychology 1991;10:360–365. [PubMed: 1935872]

Bond GR. Supported employment: Evidence for an evidence-based practice. Psychiatric Rehabilitation Journal 2004;27:345–359. [PubMed: 15222147]

Comprehensive Adult Student Assessment System (CASAS). ECS Appraisal test Administration Manual, Form 120 and Form 130. 2nd Edition. San Diego, CA: Foundation for Educational Achievement, Inc; 2002.

Corcoran M, Danziger SK, Tolman R. Long-term employment of African American and White welfare recipients and the role of persistent health and mental health problems. Women & Health 2003;39:21–32.

Danziger, SK.; Corcoran, M.; Danziger, S.; Heflin, C.; Kalil, A.; Levine, J.; Rosen, D., et al. Barriers to employment of welfare recipients. In: Cherry, R.; Rodgers, WM., III, editors. Prosperity for all? The economic boom and African Americans. New York: Russell Sage Foundation; 2000.

Ewing JA. Detecting alcoholism: the CAGE questionnaire. Journal of the American Medical Association 1984;252:1905–1907. [PubMed: 6471323]

French MT, Dennis ML, McDougal GL, Karuntzos GT, Hubbard RL. Training and employment programs in methadone treatment: Client needs and desires. Journal of Substance Abuse Treatment 1992;9:293–303. [PubMed: 1336067]

Gardner W, Mulvey EP, Shaw EC. Regression analyses of counts and rates: Poisson, overdispersed poisson, and negative binomial models. Psychological Bulletin 1995;118:392–404. [PubMed: 7501743]

Lee SJ, Vinokur AD. Work barriers in the context of pathways to the employment of welfare-to-work clients. American Journal of Community Psychology 2007;40:301–312. [PubMed: 17909961]

Lehman AF, Goldberg R, Dixon LB, McNary S, Postrado L, Hackman A, McDonnell K. Improving employment outcomes for persons with severe mental illness. Archives of General Psychiatry 2002;59:165–172. [PubMed: 11825138]

McLellan AT, Kushner H, Metzger D, Peters R, Smith I, Grissom G, et al. The fifth edition of the Addiction Severity Index. Journal of Substance Abuse Treatment 1992;9:199–213. [PubMed: 1334156]

Magura S, Staines GL, Blankertz L, Madison EM. The effectiveness of vocational services for substance users in treatment. Substance Use and Misuse 2004;39:2165–2213. [PubMed: 15603001]

McLellan AT, Lewis DC, O'Brien CP, Kleber HD. Drug dependence, a chronic medical illness: Implications for treatment, insurance, and outcomes evaluation. Journal of the American Medical Association 2000;284:1689–1695. [PubMed: 11015800]

McLellan AT, Kushner H, Metzger D, Peters R, Smith I, Grissom G, et al. The fifth edition of the Addiction Severity Index. Journal of Substance Abuse Treatment 1992;9:199–213. [PubMed: 1334156]

MDRC. MDRC Employment Retention and Advancement project page. 2008 www.mdrc.org/project_20_9.html.

Meara E. Welfare reform, employment, and drug and alcohol use among low-income women. Harvard Review of Psychiatry 2006;14:223–232. [PubMed: 16912008]

Miller, WR.; Rollnick, S. Motivational Interviewing: Preparing People for Change. New York: Guilford Press; 2002.

Morgenstern J, Blanchard KA, McCrady BS, McVeigh KH, Morgan TJ, Pandina RJ. A randomized field trial examining the effectiveness of intensive case management for substance dependent woman receiving Temporary Aid to Needy Families. American Journal of Public Health 2006;96:2016–2023. [PubMed: 17018819]

Morgenstern J, Hogue A, Dasaro C, Kuerbis A, Dauber S. Characteristics of individuals screening positive for substance use in a welfare setting: Implications for welfare and SUD treatment systems. Journal of Studies on Alcohol and Drugs 2008;69:561–570. [PubMed: 18612572]

Morgenstern J, Hogue A, Dauber S, Dasaro C, McKay JR. A practical clinical trial of coordinated care management to treat substance use disorders among public assistance beneficiaries. Journal of Consulting and Clinical Psychology 2009;77:257–269. [PubMed: 19309185]

Morgenstern J, Hogue A, Dauber S, Dasaro C, McKay JR. Does Coordinated Care Management improve employment for substance using welfare recipients? Journal of Studies on Alcohol and Drugs. in press.

Morgenstern J, McCrady BS, Blanchard KA, McVeigh KH, Riordan A, Irwin TW. Barriers to employability among substance dependent and nonsubstance-affected women on federal welfare: Implications for program design. Journal of Studies on Alcohol 2003;64:239–246. [PubMed: 12713198]

Morgenstern J, Neighbors CJ, Kuerbis A, Riordan A, Blanchard KA, McVeigh KH, et al. Intensive Case Management improves 24-Month abstinence and employment outcomes for substance dependent women receiving temporary assistance to needy families. American Journal of Public Health. in press.

Nam Y. The roles of employment barriers in welfare exits and reentries after welfare reform: Event history analysis. The Social Service Review 2005;79:268–293.

Prochaska JO, DiClemente CC, Norcross JC. In search of how people change: Applications to addictive behaviors. American Psychologist 1992;47:1102–1114. [PubMed: 1329589]

Rustin TA, Tate JC. Measuring the stages of change in cigarette smokers. Journal of Substance Abuse Treatment 1993;10:209–220. [PubMed: 8389898]

SAMHSA (Substance Abuse and Mental Health Services Administration). Center for Substance Abuse Treatment. Rockville, MD: US Department of Health and Human Services; 2002. A Look at State welfare Reform Efforts to to address Substance Abuse.

Schmidt L, Weisner C, Wiley J. Substance abuse and the course of welfare dependency. American Journal of Public Health 1998;88:1616–1622. [PubMed: 9807526]

Schmidt L, Zabkiewicz D, Jacobs L, Wiley J. Substance abuse and employment among welfare mothers: From welfare to work and back again? Substance Use & Misuse 2007;42:1069–1087. [PubMed: 17668326]

Slavet JD, Stein LA, Colby SM, Barnett NP, Monti PM, Golembeske C, Labeau-Craven R. The Marijuana Ladder: Measuring motivation to change marijuana use in incarcerated adolescents. Drug and Alcohol Dependence 2006;83:42–48. [PubMed: 16289930]

Sobell, LC.; Sobell, MB. Timeline Followback user's guide: A calendar method for assessing alcohol & drug use. Toronto, Canada: Addiction Research Foundation; 1996.

Vinokur AD, Caplan RD. Attitudes and social support: Determinants of job seeking behavior and well-being among the unemployed. Journal of Applied Social Psychology 1987;17:1007–1024.

Vinokur AD, Schul Y. The web of coping resources and pathways to reemployment following a job loss. Journal of Occupational Health Psychology 2002;7:68–83. [PubMed: 11827235]

Ware, JE.; Kosinski, M.; Turner-Bowker, DM.; Gandek, B. How to score version 2 of the SF-12 Health Survey. Lincoln, RI: QualityMetric Incorporated; 2002.

Zanis DA, Coviello D, Alterman AI, Appling SE. A community-based trial of vocational problem-solving to increase employment among methadone patients. Journal of Substance Abuse Treatment 2001;21:19–26. [PubMed: 11516923]

Zeger SL, Liang KY. Longitudinal data analysis for discrete and continuous outcomes. Biometrics 1986;42:121–130. [PubMed: 3719049]

Zeger SL, Liang KY, Albert PS. Models for longitudinal data: A generalized estimating equation approach. Biometrics 1988;44:1049–1060. [PubMed: 3233245]

## Acknowledgments

**Table 1**

Sample characteristics at baseline: Demographics, substance use, employment history, and other issues by gender (N = 394).

| Variable | Men | Women |
|---|---|---|
| N | 263 (67%) | 131 (33%) |
| Demographics | | |
| Age (M/SD) | 39.4 (8.0) | 40.7 (9.4) |
| Ethnicity | | |
|   African American | 121 (47%) | 67 (53%) |
|   Hispanic | 119 (46%) | 47 (37%) |
|   Other | 18 (7%) | 13 (10%) |
| Marital status (Not married) | 235 (90%) | 122 (95%) |
| Education (High school/GED/Some College) | 148 (57%) | 63 (49%) |
| Substance Use | | |
| Average percent days of use[a] (M/SD) | 55.43 (36.4) | 51.09 (37.1) |
| Chronicity[b] | | |
|   Heavy alcohol (M/SD) | 9.7 (10.8) | 9.8 (11.8) |
|   Heroin/cocaine (M/SD) | 10.1 (8.5) | 11.0 (9.6) |
| Severity | | |
|   Alcohol (M/SD) [c] | 0.20 (0.24) | 0.21 (0.26) |
|   Drug (M/SD) [d] | 0.15 (0.13) | 0.16 (0.14) |
| Substance Use Treatment Status | | |
| In drug-free treatment program | 80 (31%) | 34 (26%) |
| In methadone maintenance program | 66 (25%) | 35 (27%) |
| Not in treatment | 114 (44%) | 61 (47%) |
| Employment History | | |
| Ever had an on/off books job[**] | 258 (98%) | 114 (87%) |
| No employment at all in past 3 years[**] | 41 (16%) | 57 (44%) |
| Any days employed past 30 [**] | 60 (23%) | 12 (9%) |
| Any employment income past 30 days [*] | 52 (20%) | 11 (8%) |
| Other Issues | | |
| Prior year criminal justice involvement [e][**] | 143 (55%) | 39 (30%) |
| Unstable housing[f] | 57 (22%) | 22 (17%) |
| Psychiatric issues[g][*] | 28 (11%) | 32 (25%) |
| Previous welfare case[*] | 199 (76%) | 116 (91%) |
| TANF-eligible (i.e., pregnant or custodial guardian of a minor)[**] | 23 (9%) | 40 (30%) |

*Note.* Group differences were tested using the chi-square statistic for categorical variables and one-way ANOVA for continuous variables.

[a] Percent days of use of alcohol and/or drugs in the 6 months prior to baseline.

[b] Chronicity refers to total years of regular use (3 days or more per week).

[c]Alcohol Composite Score from the *Addiction Severity Index.*

[d]Drug Composite Score from the *Addiction Severity Index.*

[e]On probation or parole and/or arrested/detained/incarcerated in year prior to baseline.

[f]Unable to remain in current housing situation for more than 6 months.

[g]Taking psychiatric medications or reported any psychiatric hospitalization in past year.

[*]$p < .05$.

[**]$p < .001$

**Table 2**

Predictors of employment using the domains approach: Incidence Rate Ratios and Confidence Intervals for independent domain and final cross-domain models for men

| | Model 1: Demographics | Model 2: Disability | Model 3: Situational Barriers | Model 4: Employment Capital | Model 5: Motivation | Model 6: Final Model (Effect Size) |
|---|---|---|---|---|---|---|
| | IRR (95% CI) | IRR (95% CI) | IRR (95% CI) | IRR (95% CI) | IRR (95% CI) | IRR (95% CI) |
| Time | 1.03 (1.02, 1.03)*** | 1.03 (1.03, 1.04)*** | 1.03 (1.02, 1.03)*** | 1.02 (1.01, 1.03)*** | 1.02 (1.02, 1.03)*** | 1.02 (1.01, 1.03)*** (d = .01) |
| Age in years | .97 (.96, .99)** | .98 (.97, 1.00) | .97 (.96, .99)** | .97 (.96, .99)*** | .99 (.97, 1.00) | .99 (.97, 1.01) (NS) |
| Hispanic (AA) | .93 (.74, 1.17) | 1.07 (.82, 1.38) | 1.06 (.83, 1.35) | .85 (.66, 1.08) | .83 (.66, 1.04) | .79 (.61, 1.01) (NS) |
| Other ethnicity (AA) | 1.78 (1.17, 2.71)** | 2.06 (1.30, 3.27)** | 2.05 (1.35, 3.12)** | 1.56 (1.01, 2.39)* | 1.63 (1.09, 2.45)* | 1.55 (1.00, 2.40) (NS) |
| Years education | 1.06 (.99, 1.14) | 1.07 (.99, 1.16) | 1.06 (.99, 1.14) | 1.03 (.97, 1.10) | 1.03 (.96, 1.10) | 1.02 (.95, 1.10) (NS) |
| Time on welfare | 1.05 (.92, 1.19) | 1.05 (.91, 1.21) | 1.04 (.91, 1.18) | 1.07 (.94, 1.22) | 1.13 (.99, 1.28) | 1.16 (1.01, 1.32) (NS) |
| Treatment condition (CCM) | .84 (.67, 1.04) | 1.10 (.86, 1.40) | .84 (.67, 1.05) | .84 (.66, 1.05) | .90 (.73, 1.12) | 1.11 (.88, 1.41) (NS) |
| Alcohol use[a] | | 1.66 (.96, 2.87) | | | | |
| Drug use[b] | | .32 (.12, .86)* | | | | .67 (.28, 1.60) (NS) |
| Prior treatment episodes | | .97 (.95, .99)** | | | | .99 (.97, 1.00) (NS) |
| Mental health | | 1.00 (.99, 1.01) | | | | |
| Physical health | | 1.01 (1.00, 1.03)* | | | | 1.00 (.99, 1.02) (NS) |
| In methadone treatment (In drug-free tx) | | | .76 (.56, 1.04) | | | |
| Not in treatment (In drug-free tx) | | | .99 (.76, 1.29) | | | |
| Criminal justice history (None) | | | 1.13 (.91, 1.42) | | | |
| Housing instability (Stable) | | | 1.48 (1.12, 1.94)** | | | 1.26 (.93, 1.69) (NS) |

|  | Model 1:<br>Demographics | Model 2:<br>Disability | Model 3:<br>Situational Barriers | Model 4:<br>Employment Capital | Model 5:<br>Motivation | Model 6:<br>Final Model<br>(Effect Size) |
|---|---|---|---|---|---|---|
| Employment capital index |  |  |  | .96 (.79, 1.17) |  |  |
| Months employed past 3 years |  |  |  | 1.16 (1.06, 1.26)** |  | 1.16 (1.06, 1.27)**<br>($d = .08$) |
| Readiness to abstain |  |  |  |  | 1.05 (.98, 1.11) |  |
| Readiness to work |  |  |  |  | 1.44 (1.33, 1.56)*** | 1.41 (1.29, 1.54)***<br>($d = .19$) |

*
$p < .05$

**
$p < .01$

***
$p < .001$

Note. The reference group for each predictor (when applicable) is shown in parentheses.

[a] Alcohol Composite Score from the *Addiction Severity Index*

[b] Drug Composite Score from the *Addiction Severity Index*

**Table 3**

Predictors of employment using the domains approach: Incidence Rate Ratios and Confidence Intervals for independent domain and final cross-domain models for women

| | Model 1: Demographics | Model 2: Disability | Model 3: Situational Barriers | Model 4: Employment Capital | Model 5: Motivation | Model 6: Final Model (Effect Size) |
|---|---|---|---|---|---|---|
| | IRR (95% CI) | IRR (95% CI) | IRR (95% CI) | IRR (95% CI) | IRR (95% CI) | IRR (95% CI) |
| Time | 1.08 (1.06, 1.09)*** | 1.07 (1.05, 1.09)*** | 1.06 (1.04, 1.08)*** | 1.08 (1.06, 1.10)*** | 1.07 (1.06, 1.09)*** | 1.07 (1.05, 1.10)*** ($d$ = .04) |
| Age in years | 1.03 (1.01, 1.04)** | 1.03 (1.00, 1.05)* | 1.04 (1.02, 1.06)*** | .99 (.97, 1.01) | 1.05 (1.02, 1.07)*** | 1.04 (1.02, 1.07)*** ($d$ = .02) |
| Hispanic (AA) | 1.70 (1.18, 2.43)** | 1.25 (.84, 1.88) | 2.60 (1.83, 3.70)*** | 1.26 (.83, 1.90) | 1.58 (1.03, 2.43)* | 2.05 (1.28, 3.28)** ($d$ = .40) |
| Other ethnicity (AA) | 1.10 (.59, 2.03) | .86 (.43, 1.71) | 2.50 (1.42, 4.38)** | .56 (.27, 1.17) | 1.62 (.84, 3.12) | 1.83 (.93, 3.60) (NS) |
| Years education | 1.09 (.99, 1.20) | 1.04 (.93, 1.17) | 1.14 (1.04, 1.24)** | 1.11 (1.01, 1.23)* | 1.16 (1.03, 1.30)* | 1.26 (1.13, 1.42)*** ($d$ = .13) |
| Time on welfare | .78 (.66, .91)** | .78 (.65, .93)** | .82 (.71, .95)* | 1.18 (.97, 1.43) | .99 (.82, 1.22) | 1.53 (1.23, 1.92)*** ($d$ = .24) |
| Treatment condition (CCM) | 2.20 (1.56, 3.11)*** | 3.04 (2.06, 4.49)*** | 2.27 (1.62, 3.17)*** | 1.97 (1.32, 2.93)** | 2.08 (1.39, 3.10)*** | 2.21 (1.44, 3.39)*** ($d$ = .44) |
| Alcohol use[a] | | .74 (.36, 1.52) | | | | |
| Drug use[b] | | .33 (.07, 1.50) | | | | |
| Prior treatment episodes | | .96 (.91, 1.00) | | | | |
| Mental health | | 1.01 (.99, 1.03) | | | | |
| Physical health | | 1.04 (1.02, 1.06)*** | | | | 1.04 (1.02, 1.06)*** ($d$ = .02) |
| In methadone treatment (In drug-free tx) | | | .17 (.10, .28)*** | | | .11 (.06, .21)*** ($d$ = 1.22) |
| Not in treatment (In drug-free tx) | | | .52 (.37, .74)*** | | | .36 (.23, .57)*** ($d$ = .56) |
| Criminal justice history (None) | | | .54 (.39, .74)*** | | | .54 (.36, .83)** ($d$ = .34) |

| | Model 1: Demographics | Model 2: Disability | Model 3: Situational Barriers | Model 4: Employment Capital | Model 5: Motivation | Model 6: Final Model (Effect Size) |
|---|---|---|---|---|---|---|
| Housing instability (Stable) | | | .52 (.36, .76)** | | | .46 (.28, .77)** (d = .43) |
| Employment capital index | | | | 2.30 (1.71, 3.10)*** | | 3.18 (2.27, 4.46)*** (d = .64) |
| Months employed past 3 years | | | | 1.49 (1.32, 1.68)*** | | 1.49 (1.32, 1.68)*** (d = .22) |
| Readiness to abstain | | | | | 1.40 (1.24, 1.58)*** | 1.19 (1.05, 1.36)** (d = .10) |
| Readiness to work | | | | | 1.93 (1.67, 2.21)*** | 1.79 (1.54, 2.08)*** (d = .32) |

*
$p < .05$

**
$p < .01$

***
$p < .001$

Note. The reference group for each predictor (when applicable) is shown in parentheses.

[a] Alcohol Composite Score from the *Addiction Severity Index*

[b] Drug Composite Score from the *Addiction Severity Index*