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Housing and Abstinence Self-Efficacy in Formerly Incarcerated Individuals

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## Abstract

Formerly-incarcerated individuals with substance use disorders face many barriers upon release from prison. In order to avoid returning to substance use and prison, these individuals must successfully navigate the re-entry process, which includes finding adequate housing and avoiding substance use. As abstinence self-efficacy, or confidence to abstain from substance use, has been found to predict better substance use outcomes, it is important to understand the relation between housing situations and abstinence self-efficacy in formerly-incarcerated individuals. This study examined the role that time spent in various housing situations, including controlled, recovery, independent, precarious, and homeless situations, affect abstinence self-efficacy. Two hundred and seventy formerly-incarcerated individuals were surveyed about previous housing situations and abstinence self-efficacy after release from prison or inpatient substance use treatment. Models were estimated with both days spent in each of the above-named housing situations in the past 180 days and in the past 30 days. In the past 180 days, longer time spent in recovery housing situations was associated with increased abstinence self-efficacy, after controlling for length of sobriety. In the past 30 days, longer time spent in recovery situations was associated with increased abstinence self-efficacy, while longer time spent in precarious situations was associated with decreased abstinence self-efficacy. Implications for research and practice are discussed.

### Housing and Abstinence Self-Efficacy in Formerly-Incarcerated Individuals

The outlook for incarcerated individuals with substance use problems is bleak. In the U.S., 2.3 million people are incarcerated (The National Center on Addiction and Substance Abuse [CASA] at Columbia University, 2010). Of that population, 65% suffer from a substance use disorder (CASA, 2010). The prison system is inundated with individuals struggling with drug/alcohol addiction. Although substance use treatment programs exist for inmates, only 11% of the 1.5 million incarcerated individuals with substance use problems receive any treatment while incarcerated (CASA, 2010). This population is often released without skills necessary to maintain abstinence. These and other factors contribute to the 75% of inmates who recidivate within 5 years of release (Bureau of Justice Statistics, 2014).

To further complicate the problem, substance use recovery is fraught with episodes of relapse. Individuals in recovery often suffer multiple relapses. McKay and Weiss (2001) reported that up to 40% of individuals in treatment cycled through periods of abstinence and use. Of those who enter treatment for substance abuse, only 50% eventually achieve remission (White, 2012).

Formerly-incarcerated individuals face unique barriers to recovery after release. Along with navigating recovery, released individuals must navigate re-entry into society, which includes finding adequate housing. Due to barriers such as restricted access to public housing and limited access to gainful employment to pay for adequate housing (Geller & Curtis, 2011), ex-offenders are often forced to live in adverse situations. Many formerly-incarcerated individuals, upon release, return to the same neighborhoods they lived in prior to incarceration (Kirk, 2012). These individuals are then surrounded by reminders of previous use. Additionally, formerly-incarcerated individuals may be denied public housing, due to certain laws, and private

housing, due to background checks (Helfgott, 1997; Geller & Curtis, 2011). These barriers may force justice-involved persons into unstable or precarious housing environments (Geller & Curtis, 2011).

Presented with the problematic housing situations for formerly-incarcerated individuals, it is important to understand the relation between housing and substance use. Results of prior studies seem to indicate a bidirectional relation between these two variables. Drug use or recovery is affected by housing situations. In a study of veterans entering substance use treatment, those who were consistently homeless throughout treatment and follow-up had significantly worse treatment outcomes than those who were consistently housed or were homeless but later found housing (Buchholz, Malte, Calsyn, Baer, & Nichol, 2010).

Additionally, youth in foster care who live in stable housing tend to have less substance use and mental health problems than those in unstable housing situations (Fowler, Toro, & Miles, 2011).

Drug use also may affect later housing situations. Studying homeless individuals, North, Eyrich-Garg, Pollio, and Thirthalli (2009) found that cocaine use during the first year of the study was predictive of housing patterns over the next two years. Specifically, abstinence from cocaine use during the first year was associated with stable housing over the next two years. In light of these effects, more research is needed to understand how housing impacts substance use recovery. A better understanding of the effects of housing on proximal predictors of substance abuse may help formerly-incarcerated individuals reduce substance use and recidivism risk.

### **Social Cognitive Theory and Self-Efficacy**

The apparent bidirectional relation between housing and substance use is reminiscent of Social Cognitive Theory (SCT). SCT, a theory of learning and behavior developed by Albert Bandura (1986), is built on the concept of triadic reciprocity, which refers to interactions

between behavior, personal factors, and the environment (Bandura, 1986). SCT posits a bidirectional relationship in which behavior, personal factors, and environment can reciprocally affect one another. These reciprocal relations allow for the inclusion of multiple explanatory factors in behavioral models. Triadic reciprocity finds unique application in the explanation of substance use/recovery due to the various personal, environmental, and behavioral factors associated with it.

As part of the personal aspect of triadic reciprocity, self-efficacy is an important facet in psychosocial functioning (Bandura, 1986). Self-efficacy is the confidence to use resources, skills, and motivation to accomplish something (Ozer and Bandura, 1990). According to Bandura (1986), self-efficacy affects psychosocial functioning in several ways. Self-efficacy influences behaviors, how much energy is expended and how long the behavior persists, and the cognitive and emotional reactions that co-occur with the behavior.

### **Self-Efficacy and Substance Abuse Recovery**

Self-efficacy has found particular usefulness in substance abuse research. Self-efficacy affects substance use recovery at three stages: commencement of recovery attempts, recovery from relapse, and long-term maintenance of recovery (Bandura, 1999). As such, many researchers have studied self-efficacy as a predictor of substance use. Self-efficacy has been shown to predict both quantity and frequency of substance use. McKay et al. (2005) found that higher self-efficacy was associated with lower alcohol and cocaine use. In addition, Holt, Litt, and Cooney (2012) reported lower self-efficacy ratings one day predicted smoking relapses the following day, and that lower self-efficacy ratings predicted both smoking and drinking relapse. Dolan, Martin, and Rohsenow (2008) reported that self-efficacy to abstain from cocaine use

predicted both quantity and frequency of use at 3-month follow-up, but not at 6-month follow-up.

Abstinence self-efficacy, or the confidence to remain abstinent from drugs or alcohol, has often been used as a predictor of substance use-related outcomes. Many studies have concluded that abstinence self-efficacy predicts substance use outcomes. Holt and colleagues (2012) found that both drinking and smoking lapses were preceded by decreases in smoking abstinence self-efficacy. Moos and Moos (2006) followed individuals with alcohol use disorders who sought remission over the course of sixteen years. Those who achieved remission at the 3-year follow-up reported higher self-efficacy and consumed alcohol less frequently at the baseline interview. Those who achieved remission at the 3-year follow-up, but relapsed at the 16-year follow-up, had less abstinence self-efficacy and consumed alcohol more frequently and heavily at the 3-year follow-up than those who did not relapse. Jason, Davis, and Ferrari (2007) studied abstinence self-efficacy in residents of democratically-run recovery homes. They found that abstinence was predicted by abstinence self-efficacy, social support, and length of time spent in the recovery home.

Similarly, several studies have sought to determine the extent to which abstinence self-efficacy affects abstinence. Chavarria, Stevens, Jason, and Ferrari (2012) studied individuals recently released from substance use treatment programs. They found that abstinence self-efficacy predicted abstinence from substance use. Specifically, for every one-point change in abstinence self-efficacy, there was a 2% decrease in the likelihood that the participant would use drugs or alcohol. Ilgen et al. (2005) studied nearly 3,000 individuals entering substance use treatment and followed them for one year after discharge. After one year, reporting 100% abstinence self-efficacy was the strongest predictor of abstinence.

**Predictors of Self-Efficacy**

Less research has been done to determine what predicts abstinence self-efficacy. The studies that have looked at abstinence self-efficacy as an outcome have found many different factors to be predictive of self-efficacy. Factors such as years of education (Ilgen, McKellar, & Moos, 2007), gender (McKellar et al., 2008), and race (McKay et al., 2005) have been associated with abstinence self-efficacy.

Beyond demographic variables, several studies have sought to understand the relation between treatment-related activities and abstinence self-efficacy. Ilgen et al. (2007) followed 2,350 participants from residential treatment facilities for one year. For individuals involved in inpatient treatment programs, greater participation in group therapy sessions, coping skills classes, and vocational training programs predicted greater self-efficacy. In addition, more frequent participation in off-site Alcoholics Anonymous (AA) or Narcotics Anonymous (NA) predicted higher self-efficacy, but not participation in on-site meetings. Longer involvement with AA is associated with higher self-efficacy (McKellar et al., 2008). Litt, Kadden, Kabela-Cormier, and Petry (2008) found that using coping skills during treatment predicted higher self-efficacy. These results seem to conclude that active participation in treatment and related activities produces greater self-efficacy.

Other variables not directly related to substance use treatment predict substance use-related self-efficacy. In a 16-year longitudinal study of alcohol users, factors including amount of heavy drinking, depression, impulsivity, and avoidance coping all predicted alcohol-related self-efficacy at a 1-year follow-up (McKellar et al., 2008). Specifically, improvements in these factors over time predicted increased self-efficacy. After 16 years, having more education and being female predicted higher self-efficacy.



### **Self-Efficacy, Substance Abuse, and Housing**

While the relation between housing and substance abuse has been shown, little research has been done to determine the relationship between housing and self-efficacy. Housing environments have the potential to positively or negatively affect self-efficacy. These situations may provide the environment through which self-efficacy is developed. Vijayaraghavan, Jacobs, Seligman, and Hernandez (2011) found that, for individuals with diabetes, housing instability predicted diabetes self-efficacy, or confidence to manage diabetes. Those who had the most unstable housing situations had the lowest self-efficacy. This suggests that housing instability, such as living doubled up with family/friends, living in overcrowded situations, moving frequently, and so forth, negatively affects self-efficacy. The relation between housing and abstinence self-efficacy will likely show similar results.

In light of the paucity of research related to housing and abstinence self-efficacy, more research is needed to understand how housing affects abstinence self-efficacy, as abstinence self-efficacy is a strong predictor of recovery and reduced substance use. This study tested the relation between time spent in different housing environments and abstinence self-efficacy. It was hypothesized that more stable or recovery-oriented housing environments, such as independent and recovery settings, would predict increased self-efficacy, while more unstable or not specifically recovery-oriented environments, such as homeless, precarious, and controlled situations, would predict decreased self-efficacy.

### **Method**

#### **Sample**

A total of 270 participants were recruited from inpatient substance abuse treatment centers or re-entry/case management programs in or near a large Midwestern city. Demographic

information can be found in Table 1. Participants were included as part of a two-year longitudinal study funded by the National Institute on Drug Abuse (NIDA). Several inclusion criteria were used: participants must have been 1) at least 18 years of age at recruitment, 2) recovering from alcohol or drug dependence, and 3) released from prison or jail within two years of recruitment. Participants were informed that they would be randomized into one of three conditions: a self-run abstinent living home (Oxford House), Therapeutic Community, or usual care. Individuals with violent crime convictions or sexual offenses were excluded. Of the participants approached for recruitment, 26 were excluded based on criteria violations, 13 were not interested in participation, and 15 refused randomization. For the present study, only baseline data were used.

### **Measures**

**The Drug Taking Confidence Questionnaire.** The Drug Taking Confidence Questionnaire (DTCQ; Annis & Martin, 1985) is a 50-item questionnaire that assesses abstinence self-efficacy in hypothetical high-risk relapse situations. Situations are represented by eight subscales including unpleasant emotions, physical discomfort, pleasant emotions, testing personal control, urges and temptations to use, conflict with others, social pressure to use, and pleasant times with others. Participants were instructed to rate their confidence that they would abstain from their drug of choice in each situation. Ratings were on a 6-point scale from 0% to 100% confidence to abstain. Internal consistency for the subscales ranged from .80 to .95, and the total DTCQ had a Cronbach's alpha of .98 (Sklar, Annis, & Turner, 1997). Sklar, Annis, and Turner (1997) provided evidence of construct validity.

**The Housing Timeline Follow-Back.** The Housing Timeline Follow-Back (HTFB) was designed to assess the stability of living environments over six months. Questions include type of

housing situation, length of stay, who the participant lived with, whether he/she contributed financially to housing payments, and, if the participant left the setting, why he/she left. The HTFB categorizes housing situations into eleven different groups: controlled (e.g. jail/prison), homeless, residential program with staff, transitional program without staff, shared housing (with roommates, contributing financially), mutual living (living in someone else's home but providing little or no set financial contribution), temporary housing, own house/apartment, nursing home, medical setting, and other housing situations. In this study, five condensed housing categories were used, including recovery, controlled, homeless, independent, and precarious housing settings.

Condensed categories followed the rationale of Fowler, Toro, and Miles (2009). Stable and unstable housing settings were identified. Literal homelessness and precarious living settings were differentiated. Precarious living settings were those in which individuals lived in shared housing but did not contribute financially. Stable living situations were also differentiated. Independent living situations, in which the person lived alone or with others while contributing financially, were separated from residential settings such as recovery settings and medical settings or incarceration. Recovery and controlled settings were separated. The 11 original categories were grouped into the condensed categories as follows: Controlled included controlled settings; Homeless included homeless settings; Recovery included residential, transitional, and medical settings; Independent included shared housing and own house/apartment; and Precarious included mutual living and temporary housing.

### **Timeline Follow-Back**

The Timeline Follow-Back was designed to assess use of alcohol and drugs over time (TFLB; Sobell & Sobell, 1992; Sobell & Sobell, 1996). It is a self-report calendar method which

captures daily patterns/frequency of drug and alcohol use. The TLFB has good reliability, discriminant and convergent validity, and is frequently used in assessing substance use over time (Fals-Stewart, O'Farrell, Freitas, McFarlin, & Rutigliano, 2000). For this study, participants were asked to describe their substance use over the six months prior to the interview. Past 180 days sobriety was calculated.

**Addiction Severity Index-Lite.** The Addiction Severity Index Lite-CF (ASI-lite; McLellan, Cacciola, Carise, & Coyne, 1999), was adapted from the Addiction Severity Index 5<sup>th</sup> Edition (ASI; McLellan et al., 1992). It is a reliable and valid structured interview to determine progress in substance abuse treatment. The ASI-Lite assesses potential problem areas related to substance abuse and recovery such as medical status, employment/support, substance use, illegal activity, family/social relationships, and psychiatric condition. Amount of education was included in analyses

**Demographics.** The demographic questions asked about age, gender, racial background, previous attempts at recovery from substance abuse, incarceration, and re-entry services. For this study, age, gender, and race were used. Race was dummy-coded as African-American/Non-African-American.

### **Procedure**

Participants were recruited by case managers or inpatient treatment center staff prior to release from treatment. The overall study was described to eligible participants. Informed consent was received. Research assistants conducted interviews in private, wherever possible, to decrease the likelihood of socially desirable responses and to ensure privacy. The baseline interview took approximately two and a half hours to complete. Participants received \$40 for

their participation. Complete information about the methods, randomization procedures, and outcomes of the study are presented by Jason, Olson, and Harvey (2014).

### **Statistical Analyses**

Hierarchical regression models were used to test the relation between days spent in different housing situations and abstinence self-efficacy. Tests of normality were performed. Initial correlations and one-way ANOVAs were used to determine which variables to include in subsequent models. Correlations were used to determine the relation between days spent in each condensed housing situation and self-efficacy. Hierarchical regression models included variables with significant correlations and ANOVAs in the first step. Significant housing variables were entered in the second step. Separate models were estimated using days spent in each housing situation in the past 180 days and the past 30 days.

## **Results**

### **Testing Assumptions**

Of the 270 participants, 204 had adequate housing data to be included in analyses. The Kolmogorov-Smirnov test was used to determine whether mean self-efficacy was normally distributed. The mean abstinence self-efficacy scores significantly deviated from normal,  $D(265) = .166, p < .001$ . To account for this non-normal distribution, bootstrapped models were estimated for each analysis. No differences in mean self-efficacy were found between participants who provided housing information and those who did not,  $F(1,265) = 0.08, p = .773$ .

### **Initial Analyses**

Correlations were conducted with age, education, length of sobriety, and mean abstinence self-efficacy. The minimum length of sobriety between alcohol and drugs was used in analyses to reflect sobriety from the more problematic substance. Mean length of sobriety was 79.48 days

( $SD = 76.46$ ). Abstinence self-efficacy levels ranged from zero to 100 ( $M = 77.53$ ,  $SD = 23.33$ ). Mean days spent in the five housing situations ranged from 9.17 days to 62.56 days for the past 180 days, and 3.07 to 18.50 days for the past 30 days, and can be found in Table 2. Correlations were conducted to determine which control and predictor variables to include in the final analyses. Two control variables had significant correlations with mean abstinence self-efficacy. Age was positively correlated with self-efficacy,  $r(203) = .229$ ,  $p = .001$ , as was length of sobriety,  $r(203) = .364$ ,  $p < .001$ . Of the five housing predictor variables, two were significantly correlated with self-efficacy. Days spent in recovery settings was positively correlated with self-efficacy,  $r(203) = .285$ ,  $p < .001$ . Days spent in precarious settings was negatively correlated with self-efficacy,  $r(203) = -.287$ ,  $p < .001$ . The hierarchical regression included age, length of sobriety, and race in the first step, and days spent in recovery and precarious settings in the second step. For all models, tolerances ranged from .64 to 1.00 and VIF ranged from 1.00 to 1.56, suggesting that multicollinearity was not an issue.

The two-step hierarchical regression with past 180-day housing situations as predictors and mean abstinence self-efficacy as the dependent variable was significant at both steps. Variables in the first step significantly contributed to the variation in self-efficacy,  $F(3,200) = 14.27$ ,  $p < .001$ , and accounted for 18% of the variation. When age, length of sobriety, and race were entered together, age and race became non-significant. The second step explained variance beyond that of the first step,  $F(2,198) = 3.35$ ,  $p = .037$ , and accounted for an additional 2.7% of the variance. Days spent in recovery setting was the only significant housing predictor of self-efficacy,  $b = .075$ ,  $t = 2.34$ ,  $p = .015$ .

Age and race were then removed from the analyses, and the models were estimated. The first step explained significant variation,  $F(1,202) = 30.52$ ,  $p < .001$ , and accounted for 13.10%

of the variance. The addition of the two housing variables explained significant variation,  $F(2,200) = 3.42, p = .035$ , and accounted for an additional 2.90% of the variance. Days spent in recovery settings was the only significant housing variable in the second step,  $b = .067, t = 2.16, p = .037$  (see Table 3).

Housing analyses were also run using days spent in a housing situation in the past 30 days. Mean days spent in the five housing situations can be found in Table 2. Correlations between the past month housing variables and abstinence self-efficacy showed significant correlations for days spent in precarious settings,  $r(209) = -.381, p < .001$ , and recovery settings,  $r(209) = .341, p < .001$ .

Hierarchical regression models were estimated using age, length of sobriety, and race in the first step, and days spent in precarious and recovery settings during the past month in the second step. The first step explained significant variance in mean abstinence self-efficacy,  $F(3,200) = 14.27, p < .001, R^2 = .18$ . When age, length of sobriety, and race were included in the first step, only length of sobriety was significant,  $b = .11, t = 5.63, p = .001$ . The addition of the two housing variables accounted for significant increase in explained variance in abstinence self-efficacy,  $F(2,198) = 10.69, p < .001, R^2_{\text{Change}} = .08$ . In the second step, days spent in a recovery setting was the only significant housing predictor,  $b = .36, t = 2.50, p = .012$ .

Age and race were removed from the model because they were non-significant when included with length of sobriety. The first step, in which length of sobriety was entered, explained significant variance in self-efficacy,  $F(1,202) = 30.52, p < .001, R^2 = .13$ . In the second step, days spent in precarious and recovery settings were entered. The addition of these housing variables explained significant variance beyond the first step,  $F(2,200) = 9.80, p < .001, R^2_{\text{Change}} = .08$ . Days spent in a precarious housing setting significantly predicted self-efficacy,  $b$

=  $-.49$ ,  $t = -2.06$ ,  $p = .041$ . Days spent in a recovery setting also significantly predicted self-efficacy,  $b = .31$ ,  $t = 2.15$ ,  $p = .030$  (see Table 4).

### **Discussion**

The hypothesis that days spent in more stable or recovery-oriented settings like independent living or recovery situations would predict higher abstinence self-efficacy was partially supported. After controlling for length of sobriety, more days in recovery settings during the past 180 and 30 days predicted increases in abstinence self-efficacy. However, no effect was found for days spent in independent housing situations. In addition, the hypothesis that days spent in more unstable or not specifically recovery-oriented housing situations, like precarious, controlled, or homeless situations, was partially supported. No relation was found between days spent in controlled or homeless situations and abstinence self-efficacy. However, more days in the past 30 days spent in precarious settings predicted lower abstinence self-efficacy. These effects were especially salient when considering past 30-day housing situations, when the addition of the housing variables nearly doubled the amount of variance in self-efficacy accounted for by the model.

These results suggest that, for formerly-incarcerated individuals, longer time spent in stable housing situations focused on recovery can increase confidence in long-term abstinence. As shown in previous studies, this increased confidence often leads to longer abstinence (Moos & Moos, 2006). Alternatively, living in unstable situations, like couch surfing, can have detrimental effects on abstinence self-efficacy. These results support previous work on housing and self-efficacy (Vijayaraghavan et al., 2011). Unfortunately, individuals often leave prison or jail and enter unstable housing situations (Geller & Curtis, 2011). The relations reported here help explain high levels of relapse and recidivism in this population.



The implications of this research are both theoretical and practical. The study tested the relation between environmental factors, represented here as time in different housing situations, and personal factors, represented as abstinence self-efficacy. The finding that more time spent in recovery and housing situations affects abstinence self-efficacy adds to the research currently compiled which support the relation between the two factors. It supports the directional relation from environment to personal factor reported by Vijayaraghavan et al. (2011). While these results provide support for the unidirectional effect, more work is needed to provide support for the bidirectional effects of environment and personal factors.

In addition to theoretical implications, these results have practical implications both for formerly-incarcerated individuals and for those who work with them. As higher self-efficacy is strongly associated with decreased substance use and increased abstinence (Ilgen et al., 2005), factors that increase self-efficacy in this population should be a major focus. While the effect of housing on self-efficacy in this study was small, it nevertheless had an effect on self-efficacy. To enhance recovery, individuals leaving prison should avoid precarious housing situations and instead focus on finding stable recovery housing situations. One possible housing option is Oxford House. Oxford Houses are democratically-run, self-supporting, abstinence-based homes for individuals in recovery from substance abuse (Oxford House Inc., 2015). Compared to usual care, Oxford House residents have lower substance use, higher monthly incomes, and lower incarceration rates (Jason, Olson, Ferrari, & Lo Sasso, 2006). Those who work with formerly-incarcerated individuals (e.g., case workers, probation/parole officers, etc.) may also benefit from understanding these relationships. They may provide information and support to individuals recently released from prison about potential housing situations that will increase their likelihood of remaining abstinent and out of prison.

**Limitations**

There were several limitations to this study. First, the data used were cross-sectional. While the housing data were retrospective, the housing, self-efficacy, and demographic variables were collected at the same time point. This limited the generalizability of the results and the ability to detect change in self-efficacy over time. Second, the method used to conceptualize housing situations focused on total days spent in each situation within a given time period. While this allowed for more housing situations to be analyzed, it was unclear whether which housing situation was most recent. Finally, days spent in controlled, homeless, or independent housing situations in the past 30 days were low. These housing situations may have effects on self-efficacy, but the current data may not have had significant variation on these variables to detect effects.

**Future Research**

Future research may enhance knowledge of the relation between housing and self-efficacy. To better understand the totality of individuals' housing environments and their effects on self-efficacy, future research may focus on developing housing trajectories after release from prison. These trajectories may be used to descriptively explain pathways during re-entry and to determine the differential effects these profiles have on abstinence self-efficacy. Also, longitudinal data tracking both housing environments and abstinence self-efficacy may enable the testing of the bidirectional relation between housing and self-efficacy.

In conclusion, recovery-oriented housing situations may help to increase self-efficacy in formerly-incarcerated individuals, while precarious housing situations may decrease self-efficacy. Formerly-incarcerated individuals, or those working with them, may benefit from finding recovery-oriented housing after release from prison. While the effects were small, the

results nevertheless help explain the relation between environment and self-efficacy. More work is needed to understand how housing affects recovery.

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## Appendix A

Table 1

<i>Participant Characteristics</i>	
Variable	% (n)
Sex	
Male	83 (224)
Female	17 (46)
Race/Ethnicity	
Black/African-American	74.1 (200)
White/Caucasian	21.1 (57)
Hispanic/Latino	3.3 (9)
Other	1.5 (4)
Drug of Choice	
Heroin	43 (116)
Crack	17.8 (48)
Alcohol	15.2 (41)
Cocaine	11.5 (31)
Marijuana	7.4 (20)
Alcohol/Crack	0.4 (1)
Crystal Methamphetamine	0.4 (1)
Ecstasy and Marijuana	0.4 (1)
Heroin and Cocaine	0.4 (1)
Vicodin	0.4 (1)
Did not report	3 (8)
	<i>M (SD)</i>
Age	40.43 (9.52)
Education (in years)	11 (1.94)
Days since release from prison	144.27 (119.90)

*Table 2**Days Spent in Housing Situations*

Variable	<i>M (SD)</i>
Days spent in housing (past 180 days):	
Controlled	62.56 (61.10)
Homeless	8.92 (30.24)
Recovery	48.81 (51.20)
Independent	9.17 (30.94)
Precarious	47.98 (64.15)
Days spent in housing (past 30 days):	
Controlled	3.07 (7.56)
Homeless	1.69 (5.89)
Recovery	18.50 (12.09)
Independent	.79 (4.23)
Precarious	5.50 (9.83)

*Table 3*

*Past 180-Day Housing Hierarchical Regression Controlling for Length of Sobriety*

Variables Entered	<i>b</i>	<i>S.E.</i>	<i>t</i>	<i>p</i>
Step 1				
Intercept	67.26	2.57	26.18	.001
Length of Sobriety	.12	.02	6.11	.001
Step 2				
Intercept	69.31	3.66	18.95	.001
Length of Sobriety	.08	.02	3.35	.004
Days in Recovery Setting	.07	.03	2.16	.037
Days in Precarious Setting	-.04	.03	-1.33	.184

Table 4

*Past 30-Day Housing Hierarchical Regression Controlling for Length of Sobriety*

Variables Entered	<i>b</i>	<i>S.E.</i>	<i>t</i>	<i>p</i>
Step 1				
Intercept	67.26	2.67	25.20	.001
Length of Sobriety	.12	.02	6.11	.001
Step 2				
Intercept	67.56	4.35	15.54	.001
Length of Sobriety	.08	.02	3.80	.001
Days in Recovery Setting	.31	.14	2.15	.030
Days in Precarious Setting	-.49	.24	-2.06	.041

Appendix B

DEPAUL UNIVERSITY

DRUG OF CHOICE AND HOUSING: PREDICTORS OF ABSTINENCE SELF-EFFICACY

A THESIS PROPOSAL TO BE SUBMITTED TO THE FACULTY OF THE COLLEGE OF  
SCIENCE AND HEALTH IN CANDIDACY FOR THE DEGREE OF MASTER OF ARTS IN  
COMMUNITY PSYCHOLOGY

BY

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## Abstract

For individuals recently released from prison, recovery from substance use can be a difficult endeavor. In addition to the low rates of recovery from substance use for the general population, ex-offenders are also faced with barriers related to re-entry into society and recovery which make successful recovery even more unlikely. Ex-offenders face barriers related to finding adequate housing and specific assistance with recovery, among others. Understanding how to increase the likelihood of recovery from substance use is crucial to avoid recidivism and aid in successful re-entry. The proposed thesis aims to model the relation between these barriers to recovery and abstinence self-efficacy, a construct associated with increased recovery rates in substance users. The findings will contribute to social-cognitive literature by providing greater insight into the influence of environmental and behavioral factors on personal/cognitive aspects. In addition, it may assist those who work with ex-offenders in understanding the unique situations faced by individuals in recovery as well as the benefits or risks that certain housing environments present in recovery.



## CHAPTER I. INTRODUCTION

### Literature Review

#### Problem Statement

Substance abuse is a major national problem. In 2012, it was estimated that 23.9 million Americans were current illicit drug users (Substance Abuse and Mental Health Services Administration [SAMHSA]). The National Institute on Drug Abuse (2012) estimates that alcohol addiction cost the United States (U.S.) \$235 billion in increased health care costs, crime-related costs, and lost productivity, while illicit drug use cost the U.S. \$193 billion for similar losses. In 2012, over 40,000 people in the U.S. died from drug-related incidents (Centers for Disease Control and Prevention [CDC], 2014).

To further complicate the problem, recovery from substance abuse is fraught with episodes of relapse, or return to substance use. Of those who develop substance use problems, only 50% eventually achieve remission or recovery (White, 2012). For individuals who enter treatment programs, results are roughly the same; the average recovery rate is about 50% (White, 2012). Individuals seeking to recover from substance use often suffer multiple relapses on the path to recovery. McKay and Weiss (2001) reported that up to 40% of individuals in treatment cycled through periods of abstinence from the drug and use.

During incarceration, many individuals are faced with barriers to recovery. In the U.S., 2.3 million people are incarcerated (The National Center on Addiction and Substance Abuse [CASA] at Columbia University, 2010). Of that population, 65% meet the criteria established in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV; American Psychiatric Association, 2000) for substance abuse or dependence. The prison system is

inundated with individuals struggling with drug or alcohol addiction. Although substance abuse treatment programs exist for inmates, only 11% of the 1.5 million people who struggle with addiction receive any treatment while incarcerated (CASA, 2010). Incarcerated individuals with substance abuse problems are often released from prison without the skills necessary to maintain abstinence. These and other factors contribute to the 75% of inmates who recidivate within 5 years of release from prison (Bureau of Justice Statistics, 2014).

In addition to pre-incarceration barriers, previously incarcerated individuals face added barriers to recovery from substance use after release. Along with navigating recovery, ex-offenders must navigate re-entry into society. Difficulties may arise for ex-offenders when trying to successfully re-integrate into society. For example, ex-offenders face many barriers when trying to gain employment after incarceration, including mandatory background checks and regulations banning ex-offenders from specific professions (Harris & Keller, 2005). Another barrier faced by ex-offenders is obtaining suitable housing. Due to barriers in obtaining housing, such as restricted access to public housing and limited ability to gain employment to pay for adequate housing (Geller & Curtis, 2011), ex-offenders are forced to live in adverse situations and environments. It is vital that those involved with ex-offenders understand how these varied housing situations affect substance abuse outcomes, such as abstinence self-efficacy.

Understanding what factors lead to decreased substance use and increased likelihood of recovery after release can aid in reducing post-incarceration substance abuse and, therefore, reduce recidivism. This thesis aims to address this need by examining how drug of choice and housing situation after release predict drug abstinence self-efficacy. This will be determined using hierarchical linear regressions to test the predictability of both variables beyond that

explained by other variables associated with self-efficacy. The results will be discussed in the context of the existing literature regarding substance abuse, self-efficacy, and ex-offenders.

### Social Cognitive Theory

The proposed study is framed by Social Cognitive Theory (SCT). SCT is a theory of learning and behavior developed by Albert Bandura (1986). This theory assumes that, by nature, individuals have the capacity to not only learn from their environment, but to exercise control over nature and life (Bandura, 2001). According to Bandura, humans possess agency, or the ability to make choices or intentionally make things happen through action (2001). This agentic perspective permeates SCT. In SCT, human nature is defined in respect to capabilities such as the capability to symbolize, plan, learn vicariously, self-regulate, and self-reflect (Bandura, 1986). Humans are capable of providing meaning to their lives through symbols, foresee future outcomes and plan behavior accordingly, learn vicariously, regulate their own behaviors, and reflect on past behavior and experiences to make changes. These ideas are vastly different from early behaviorists such as B.F. Skinner, who said, “A person does not act upon the world, the world acts upon him” (1971, p. 211). In other words, the environment provides the stimuli for action, and the person simply reacts. In contrast, SCT assumes that humans are able to act upon their environment, rather than simply being acted upon by their environment.

SCT is based on several assumptions. The first is that people can learn vicariously through the observation of others. While individuals can and do learn through personal experience, they also learn through watching others enact behaviors (Bandura, 1986). Through observation, one learns both how to perform behaviors and rules associated with that behavior.

Observational or vicarious learning can help individuals avoid costly errors associated with direct experience.

Second, SCT assumes that learning can occur without immediate changes in behavior. This differs from definitions provided by early behavioral theories of learning that posited that learning only occurred when behavior changed in type or frequency. In SCT, learning involves changes in behavior, but can also occur with changes in knowledge, skills, values, or any other related construct.

Third, behavior is purposeful and goal-directed. Rather than simply responding to various stimuli in a predetermined way, individuals can make decisions and behave according to personal values, beliefs, or goals. While people do occasionally react to environmental or biological stimuli, they have the capacity to consider personal, behavioral, and environmental influences on behavior before they act. They can set goals and act to achieve those goals, regardless of other influences.

Fourth, behavior eventually becomes self-regulated. Similar to behavioral theories of learning, in SCT, humans may receive external reinforcement for performance of a behavior. However, in SCT, humans begin to regulate their own behaviors and may not require the application of an external stimulus or the anticipation of reinforcement. In essence, individuals have the capacity to act without or in direct opposition to external stimuli, based on personal, behavioral, or environmental factors. In this way, people can attribute behavior and outcomes to personal motivation or action (Bandura, 1986).

Fifth, reinforcement and punishment have indirect, rather than direct, effects on behavior. Learning may prompt the development of outcome expectations or expectations of the consequences of performing a certain behavior. These expectations, rather than the actual

consequences may, in turn, influence our behavior. As we learn vicariously, we see the outcomes of certain behaviors. If these outcomes are pleasant or desirable, we may be more likely to enact a certain behavior. If, on the other hand, the outcomes are undesirable, we may forego the development of that behavior.

Finally, SCT is built on the concept of triadic reciprocity. Triadic reciprocity refers to the nature of the interaction between behavior, personal factors, and the environment (Bandura, 1986). Rather than assuming that behavior is unidirectionally affected by the environment or personal factors, SCT posits a bidirectional relationship in which behavior can reciprocally affect personal factors or environment. Additionally, personal factors and the environment have a reciprocal relationship. For example, an individual who abuses substances may choose to stop using because of personal ideals inconsistent with use. This change in behavior can then increase his/her confidence to remain abstinent from substance use, which may then increase abstinent behaviors, such as going to self-help meetings or avoiding people or places that increase temptation to use. Upon recovery, the person may seek a new environment free of substance use or reminders of use, which would likely increase abstinent behaviors. In SCT, these three concepts influence each other to influence behavior.

### Self-Efficacy

As part of the personal or cognitive aspect of triadic reciprocity, self-referent thought or self-knowledge is an important facet in psychosocial functioning (Bandura, 1986). Behavior is reliant on knowledge and constituent skills for adequate or proficient performance. However, it is possible for individuals to not perform optimally even though they possess the appropriate knowledge and skills. According to Bandura, “self-referent thought mediates the relationship

between knowledge and action” (Bandura, 1986, p. 390). Thus, knowledge, skills, and the appropriate self-referent thought are necessary for optimal performance. One of the most important aspects of self-knowledge is self-efficacy.

Self-efficacy is the confidence an individual has in his/her ability to use resources, skills, and motivation to successfully accomplish something (Ozer and Bandura, 1990). In other words, self-efficacy is what drives action when the skills, resources, and motivation are present.

According to Bandura (1986), self-efficacy affects psychosocial functioning in several ways.

First, it affects the behaviors we choose to enact. For example, if an individual has higher self-efficacy, he/she is more likely to participate in a given behavior/activity. Second, self-efficacy affects both how much energy one expends on a behavior and how long one will persist in that behavior. It is expected that individuals with higher self-efficacy will expend more energy on a specific behavior. Also, individuals with higher self-efficacy will be more persistent in their efforts despite failures. Third, self-efficacy affects both cognition and emotional reactions during the behavior and after the behavior has been performed. Rather than attributing failure to a lack of ability, highly self-efficacious persons will attribute failure to a lack of effort and try again.

Self-efficacy, as a crucial aspect of the person that influences behavior and environment, is detailed in its explanation of behavior. It is not simply a number through which expectations of successful performance are denoted. Rather, self-efficacy varies on several different dimensions: magnitude, generality, and strength (Bandura, 1978). Self-efficacy can vary in magnitude. Self-efficacy for an individual may be limited to simple tasks related to a given behavior, may include both simple and moderate tasks, or may include the gamut of task difficulty from simple to taxing. Thus, an individual may have self-efficacy to perform a

behavior in more simple situations or environments, but lack the confidence to perform the behavior in more difficult or trying circumstances. It also can vary in generality. Efficacy beliefs can regard specific behaviors, as in the confidence to remain abstinent from a drug, or they can be more general, as in the confidence to overcome adversity and be successful in most situations. Lastly, self-efficacy can vary in strength. Weak efficacy expectations can be easily destroyed through experiences such as failure. On the other hand, strong efficacy expectations may survive failed performance attempts and continue to influence behavior (Bandura, 1978).

Along with the different ways in which self-efficacy can vary, self-efficacy can be developed in various situations. According to Bandura (1978), performance accomplishments, or actually performing the behavior, are the best sources of personal efficacy. Successfully performing a behavior will raise confidence that the behavior can be successfully performed again. Repeated failures will diminish this confidence, if self-efficacy is weak. If self-efficacy is strong, the effect of failure on self-efficacy may be diminished.

In addition to performance accomplishments, people also can develop self-efficacy through vicarious experience. Individuals are able to develop self-efficacy for behavior regulation by observing another person successfully perform the behavior without adverse consequences (Bandura, 1978). These individuals may tell themselves that if others can do it, they should be able to be at least somewhat successful (Bandura, 1978). While developing self-efficacy through vicarious experience is possible, the effects are likely somewhat weaker and shorter in duration than that developed through performance accomplishment.

Verbal persuasion may influence the strength, magnitude, and generality of self-efficacy. This source of self-efficacy is readily available and easy to use. People are persuaded to believe that they possess the abilities, knowledge, skills, or whatever else is necessary to perform a

behavior. Due to the lack of actual performance by the person or evidence of successful performance by others, efficacy developed in this way may be weaker than those provided through experience and may be easily extinguished by failure (Bandura, 1978).

Finally, emotional arousal can influence the development or disintegration of self-efficacy (Bandura, 1978). High emotional arousal generally relates to decreased performance. In situations that elicit heightened emotional arousal, individuals may use the arousal or anxiety to judge their competency with the behavior or in the situation. Individuals are more likely to feel confident about competency when arousal levels are low compared to when such levels are high.

Taking into consideration the relationship of self-efficacy to behavior, it is no surprise that self-efficacy has been used in many areas of psychology to help explain various phenomena. Initially, self-efficacy was developed to analyze change related to fearful and avoidant behavior (Bandura, 1978). Since then, self-efficacy has been used to explain such varied outcomes as weight loss (Armitage et al., 2014), softball performance (Chang et al., 2014), career success (Spurk & Abele, 2014), and trajectories of chronic illnesses (Bonsaksen, Fagermoen, & Lerdal, 2014).

### **Self-Efficacy and Substance Abuse Recovery**

The concept of self-efficacy has found particular usefulness in relation to substance abuse. As a mediator between knowledge and action, self-efficacy affects recovery from substance use at three stages: the commencement of recovery attempts, recovery from relapse, and long-term maintenance of recovery (Bandura, 1999). Self-efficacy is involved in the initiation of recovery; individuals who possess self-efficacy related to recovery will take the



necessary steps to initiate the process, whether it be entering treatment, disassociating with drug-using peers, or joining a self-help group. It is also involved in recovery from relapse; those with high self-efficacy will likely regard the occasional relapse as a temporary set-back and make changes to be successful in the future. Lastly, self-efficacy affects the long-term maintenance of recovery behaviors; individuals with high self-efficacy will likely persist in recovery-related behaviors.

Many researchers have studied self-efficacy as a predictor of substance use. Self-efficacy has been shown to predict frequency of substance use. McKay et al. (2005) found that higher self-efficacy was associated with lower alcohol and cocaine use. In addition, Holt, Litt, and Cooney (2012) reported lower self-efficacy ratings one day predicted smoking relapses the following day, and that lower self-efficacy ratings predicted both smoking and drinking relapse. Dolan, Martin, and Rohsenow (2008) determined that confidence in one's ability to quit using cocaine and confidence to abstain from cocaine use in high-risk relapse situations predicted both quantity and frequency of cocaine use at 3-month follow-up, but not at 6-month follow-up.

When predicting substance abuse, researchers have used two different types of self-efficacy as predictors: general self-efficacy and specific self-efficacy. General self-efficacy refers to a generalized set of expectations one has about abilities to successfully perform behaviors (Oei, Hasking, & Phillips, 2007). In a study of general self-efficacy on drinking behavior comparing individuals recently released from detoxification programs compared to a community sample, Oei and colleagues (2007) found that general self-efficacy predicted both volume and frequency of alcohol consumption among the clinical group, but not the community sample. The authors suggested that individuals in the maintenance phase of recovery, as those

recently released from detoxification programs, relied on self-efficacy that wasn't situation specific.

While some researchers have used general self-efficacy as a predictor of substance abuse, situation-specific self-efficacy is used more often. Rather than asking about self-efficacy or confidence in general terms, situation-specific self-efficacy in substance abuse research focuses on confidence about behaviors related to substance abuse, such as coping with high-risk relapse situations, refusing alcohol or drugs, or remaining abstinent from drug use (Sklar, Annis, & Turner, 1999; Oei et al., 2007; Ilgen, McKellar, & Tiet, 2005).

Abstinence self-efficacy, or the confidence to remain abstinent from drugs or alcohol, has often been used as a predictor of substance abuse-related outcomes. Many studies have found similar results concluding that abstinence self-efficacy predicts substance use outcomes. Holt and colleagues (2012) used Ecological Momentary Assessment to determine predictors of lapses in abstinence. They found that both drinking and smoking lapses were preceded by decreases in smoking abstinence self-efficacy. Moos and Moos (2006) followed individuals with alcohol use disorders who sought remission over the course of sixteen years. Those who achieved remission at the 3-year follow-up reported higher self-efficacy and consumed alcohol less frequently at the baseline interview. Those who achieved remission at the 3-year follow-up, but relapsed at the 16-year follow-up had less abstinence self-efficacy and consumed alcohol more frequently and heavily at the 3-year follow-up than those who did not relapse. Jason, Davis, and Ferrari (2007) studied abstinence self-efficacy in residents of democratically-run recovery homes. They found that abstinence from drug or alcohol use was predicted by abstinence self-efficacy, social support, and length of time spent in the recovery home. Many other studies have reported

similar results (O'Hare & Shen, 2013; Maisto, Connors, & Zywiak, 2000; Vielva & Iraugi, 2001).

Similarly, several studies have looked more specifically at the extent to which abstinence self-efficacy affects abstinence. Chavarria, Stevens, Jason, and Ferrari (2012) studied individuals recently released from substance abuse treatment programs. Participants were randomly assigned to either a recovery home or usual after-care. They found that abstinence self-efficacy predicted abstinence from substance use. Specifically, for every one-point change in abstinence self-efficacy, there was a 2% decrease in the likelihood that the participant would use drugs or alcohol. Ilgen et al. (2005) studied nearly 3,000 individuals entering substance abuse treatment and followed them for one year after discharge. They found that being 100% confident that one can remain abstinent from using drugs was the strongest predictor of abstinence at the 1-year follow-up.

While many studies have shown support for the effect of self-efficacy on substance abuse recovery, it should be noted that some studies have not reported such effects. Bandura (1986) posits that the relationship between personal factors, like self-efficacy, and behaviors, like substance use or abstinence, is bidirectional or reciprocal. Therefore, increased self-efficacy should lead to decreased use which, in turn, increases abstinence self-efficacy. However, Wong et al. (2004) found that the relationship between self-efficacy and abstinence was unidirectional. Wong and colleagues used Structural Equation Modeling to test the relationship between self-efficacy and abstinence among cocaine-dependent individuals in outpatient treatment programs. While prior abstinence significantly predicted both self-efficacy and later abstinence, self-efficacy only predicted later confidence. While this study did not show support for the bidirectional influence of self-efficacy, others have provided evidence for it (Perkins, Parzynski,

Mercincavage, Conklin, & Fonte, 2012). Perkins et al. (2012) detailed two studies in which the effects of nicotine treatments on smoking frequency were tested. Placebo patches or pills were used as a control. In these studies, the short-term effects of each treatment were measured. Participants reported on cigarette use, as well as self-efficacy to not use the following day, once per day. They found that current day smoking abstinence status predicted self-efficacy the following day. Reciprocally, they found that self-efficacy predicted next-day smoking abstinence.

### **Predictors of Self-Efficacy**

After understanding the relationship between abstinence self-efficacy and recovery, it is important to understand what variables predict abstinence self-efficacy. Less research has been done on this aspect of self-efficacy. The studies that have looked at abstinence self-efficacy as an outcome have found many different variables to be predictive of changes in self-efficacy. The number of years of education an individual has completed has been found to be positively related to abstinence self-efficacy (Ilgen, McKellar, & Moos, 2007; McKellar, Ilgen, Moos, & Moos, 2008). Gender has been found to be related to abstinence self-efficacy; females tend to have higher levels, or greater improvement, in self-efficacy (McKellar et al., 2008; Sklar et al., 1999). In addition, race has been found to significantly predict abstinence self-efficacy, with white participants showing lower levels of self-efficacy compared to other races (McKay et al., 2005).

Along with the demographic variables shown to predict self-efficacy, several studies have sought to understand the relationship between treatment-related activities and abstinence self-efficacy. Ilgen et al. (2007) followed 2,350 participants from 88 residential treatment facilities for one year. They found that, for individuals involved in inpatient treatment programs, factors

like greater participation in group therapy sessions, coping skills classes, and vocational training programs predicted greater self-efficacy. In addition, more frequent participation in off-site Alcoholics Anonymous (AA) or Narcotics Anonymous (NA) predicted higher self-efficacy, but not participation in on-site meetings. Others reported that individuals who had participated in AA longer had higher levels of self-efficacy (McKellar et al., 2008). Litt, Kadden, Kabela-Cormier, and Petry (2008), studying 240 marijuana users in different treatment approaches, found that using coping skills during treatment predicted higher levels of self-efficacy. These results seem to conclude that active participation in treatment, whether it be in classes, groups, or activities, produces greater confidence to abstain or recover.

Other variables not directly related to substance abuse treatment have been found to be predictive of self-efficacy related to substance abuse. In a 16-year longitudinal study of alcohol users, variables such as amount of heavy drinking, depression, impulsivity, and avoidance coping all predicted alcohol-related self-efficacy at a 1-year follow-up. Specifically, improvements in these variables from baseline predicted increased self-efficacy. After 16 years, having more education and being female predicted higher levels of self-efficacy. Interestingly, those who showed the greatest improvement in alcohol problems and impulsivity at 1-year follow-up were less likely to maintain high levels of self-efficacy throughout the study (McKellar et al., 2008). This suggests that, while initial success in managing substance use problems may be beneficial in increasing self-efficacy, these effects may be short-lived.

### **Self-Efficacy, Substance Abuse, and Drug of Choice**

While chronic substance abusers may use multiple drugs, there is generally a primary drug that is used regularly or preferred. This is often referred to as the user's "drug of choice."

Research in self-efficacy specific to substance use often look at either the substance use of individuals using specific drugs (e.g. alcohol, marijuana; see Moos & Moos, 2006; Stephens, Wertz, & Roffman, 1995) or compare substance users as a whole, regardless of the specific drug of choice (see Ilgen et al., 2007). These methods of understanding self-efficacy and substance abuse provide valuable information about the relation between the two concepts at both a specific drug level and at a more global level. However, when it comes to self-efficacy and substance abuse, more research is needed to understand how these different drugs affect self-efficacy.

The situations in which users of different drugs struggle to remain abstinent are qualitatively and quantitatively different depending on the drug of choice. For example, heroin users may struggle in situations where alcohol users would have no problem abstaining. Compared to cocaine users, alcohol users struggle to remain abstinent in interpersonal conflict situations. Cocaine users, on the other hand, worry more about relapsing in situations where their personal control is tested, such as when others are pressuring them to use or when they are trying to prove that they can use moderately without abusing the drug (Sklar et al., 1999). In many instances, users of different types of drugs may experience similar high-risk relapse situations, but may differ in the quantity of these situations experienced. Compared to alcohol users, heroin users report finding themselves in high-risk situations much more often (Sheikh & Bashir, 2004).

In addition to differences in the severity and quantity of relapse situations encountered, there are differences in the amount of self-efficacy reported by users of certain drugs of choice. Alcohol users have higher levels of abstinence self-efficacy than heroin users (Sheikh & Bashir, 2004). These lower levels among heroin users are present both in the mean levels of abstinence

self-efficacy and in specific areas of self-efficacy, such as testing personal control (Sheikh & Bashir, 2004). Differences also exist among alcohol users and cocaine users. Cocaine users are more confident in their ability to remain abstinent during bouts of interpersonal conflict, while alcohol users are more confident during situations in which their personal control is tested, they deal with urges or temptations to use, and are faced with social pressure (Sklar et al., 1999).

### **Self-Efficacy, Substance Abuse, and Housing**

For ex-offenders who are recovering from substance abuse, finding adequate housing can be quite challenging and can have an effect on subsequent use. Many ex-offenders, upon release, return to the same neighborhoods they lived in prior to incarceration (Kirk, 2012). This can be problematic for substance abusers. Ex-offenders in this situation are surrounded by reminders of previous use: places they used before, people with whom they previously used, and so forth. In addition, there are other barriers to finding adequate housing, or any housing at all. Ex-offenders may be denied from living in public housing due to certain laws and may be denied from living in private housing due to background checks (Helfgott, 1997; Geller & Curtis, 2011). These barriers may force ex-offenders into unstable or insecure housing environments (Geller & Curtis, 2011).

Presented with the housing situations in which ex-offenders often find themselves after release and the instability or precarious nature of housing environments for ex-offenders, it is important to understand the relation between housing situations and substance abuse. The results of prior studies regarding this relation seem to indicate a bidirectional relationship between housing and substance abuse, supportive of the concept of triadic reciprocity. Drug use or recovery is affected by housing situations. In a study of veterans entering substance abuse

treatment, veterans who were consistently homeless throughout treatment and follow-up had significantly worse treatment outcomes in terms of improvement over time than did those who were consistently housed or those who were homeless but later found housing (Buchholz, Malte, Calsyn, Baer, & Nichol, 2010). Youth in the foster care system who live in stable housing, regardless of whether they live with others or alone, tend to have less substance use and mental health problems than those whose housing situation is unstable (Fowler, Toro, & Miles, 2011). Additionally, substance users from economically disadvantaged areas who move to a new location with increased economic resources report decreases in both binge drinking and illicit drug use (Cooper et al., 2013). Drug use may affect later housing situations. Studying homeless cocaine users, North, Eyrich-Garg, Pollio, and Thirthalli (2009) found that cocaine use during the first year of the study was predictive of housing patterns over the next two years. Specifically, abstinence from cocaine use during the first year was associated with stable housing over the next two years.

While the relationship between housing and substance abuse has been shown, little research has been done to determine the relationship between housing and self-efficacy. Vijayarghavan, Jacobs, Seligman, and Hernandez (2011) found that, for individuals with diabetes, housing instability predicted diabetes self-efficacy, or confidence to manage diabetes. Those who had the most instability in their housing situation had the lowest self-efficacy. This suggests that housing instability, such as living doubled up with family or friends, living in overcrowded situations, moving frequently, and so forth, has a negative effect on self-efficacy. The relation between housing and self-efficacy related to substance abuse, such as abstinence self-efficacy, will likely show similar results. However, more research needs to be done using substance abusing or recovery samples to determine this effect.



## Rationale

While the relation between drug of choice and substance abuse, as well as housing and substance abuse, has been well-documented, little is known about how drug of choice and housing affect self-efficacy related to substance abuse. The relation between self-efficacy and substance abuse recovery has been documented; it is now beneficial to understand what affects self-efficacy to recognize how to increase it in recovery populations. This is especially true for high-risk populations, such as ex-offenders, who have more difficulty in obtaining adequate recovery resources and housing. This research will seek to clarify the relationship of these two variables, drug of choice and housing, to abstinence self-efficacy in order to determine risk or protective areas for the previously incarcerated population. The models presented have the potential to advance the field's understanding of SCT's triadic reciprocity by providing more evidence of the effects of behavioral (drug of choice) and environmental (housing) influences on personal cognitive factors, to be added to the wealth of research regarding the personal factor's effects on behavior and environment. Additionally, findings may provide those who work with previously incarcerated individuals with an understanding of the role that specific drugs of choice and housing situations play in substance use, through abstinence self-efficacy.

## Statement of Hypotheses

*Hypothesis 1:* Drug of choice variables will significantly predict levels of abstinence self-efficacy beyond that predicted by demographic variables found to be related to abstinence self-efficacy. Specifically, heroin use will predict a lower level of abstinence self-efficacy than that predicted by crack/cocaine or other drug users.

*Hypothesis 2:* Housing variables will significantly predict levels of abstinence self-efficacy beyond that predicted by demographic variables found to be related to abstinence self-efficacy. Specifically, longer time spent in recovery and independent housing will predict higher levels of abstinence self-efficacy, while longer time spent in controlled, homeless, or precarious housing settings will predict lower levels of abstinence self-efficacy.

## CHAPTER II. METHOD

### Sample

A total of 270 participants were recruited for this study from inpatient substance abuse treatment centers or re-entry/case management programs in or near Chicago. There were 224 (83%) male participants, compared to 46 (17%) female participants. The mean age of participants was 40.4 years ( $SD = 9.5$ ). Participants were primarily Black/African-American (74.1%;  $n=200$ ), followed by White/European-American (21.1%;  $n=57$ ), Hispanic/Latino (3.3%;  $n=9$ ), and other racial or ethnic backgrounds (1.5%;  $n=3$ ). On average, participants completed eleven years of school ( $SD = 1.94$ ). The number of days since participants' release from prison range from one day to 610 days, with an average of 144.27 days ( $SD = 119.90$ ). Participants reported using a range of different substances as their drug of choice, with heroin reported most frequently (43%), followed by crack (17.8%), alcohol (15.2%), cocaine (11.5%), marijuana (7.4%), alcohol/crack (0.8%), crystal methamphetamine (0.4%), ecstasy and marijuana (0.4%), heroin and cocaine (0.4%), and Vicodin (0.4%). Three percent of the participants did not report a drug of choice.

Participants were included as part of a two-year longitudinal study funded by the National Institute on Drug Abuse (NIDA). Participants were included in the study if they 1) were over the age of 18, 2) were recovering from alcohol or drug dependence, and 3) were released from prison or jail within two years of recruitment. Individuals with violent crime convictions or sexual offenses were excluded. Of the participants approached for recruitment, 26 were excluded based on criteria violations, 13 were not interested in participation, and 15 refused randomization to one of three conditions: a self-run abstinent living home (Oxford House), Therapeutic Community, or usual care. Complete information about the methods, randomization

procedures, and outcomes of the longitudinal study are presented by Jason, Olson, and Harvey (2014). For the present study, only baseline data were used. The present study is a cross-sectional study comparing a sample of ex-offender substance abusers on drug of choice and housing as it pertains to self-efficacy.

## Measures

### **The Drug Taking Confidence Questionnaire**

The Drug Taking Confidence Questionnaire (DTCQ; Annis & Martin, 1985) is a 50-item questionnaire that assesses individuals' coping self-efficacy in hypothetical high-risk situations related to relapse. Participants were asked their drug of choice, and assessments of their self-efficacy were made in relation to that drug. High-risk situations are represented by eight subscales, originally proposed by Marlatt and Gordon (1980), including unpleasant emotions, physical discomfort, pleasant emotions, testing personal control, urges and temptations to use, conflict with others, social pressure to use, and pleasant times with others. Participants were first asked to report their drug of choice. Participants were then instructed to predict the likelihood that they would be able to abstain from their drug of choice in each situation. Ratings were done using a 6-point scale from 0% to 100% in intervals of 20. These ratings represented the participant's confidence in his/her ability to abstain from using, with 0 representing no confidence to abstain and 100 representing total confidence to abstain. Each question began "I would be able to resist the urge to use (drug of choice)..." Example questions include "If I were depressed about things in general," "If I met some old friends and we wanted to have a good time," and "if other people rejected me or didn't seem to like me. Internal consistency estimates for the 8 subscales ranged from .80 to .95, and the total DTCQ had a Cronbach's alpha of .98

(Sklar, Annis, & Turner, 1997). Sklar, Annis, and Turner (1997) also provide evidence of construct validity.

### **The Housing Timeline Follow-Back**

The Housing Timeline Follow-Back (HTFB) was designed to assess the stability of participants living environments over the course of six months. Questions are asked regarding where the person lived, how long they lived there, who they lived with, whether they contributed financially to their housing, and, if they left the setting, why they left. These questions were asked about each residence the participant reported. The HTFB categorizes housing situations into eleven different groups: controlled (e.g. jail/prison), homeless, residential program with staff, transitional program without staff, shared housing (with roommates, contributing financially), mutual living (living in someone else's home but providing little or no set financial contribution), temporary housing, own house/apartment, nursing home, medical setting, and other housing situations. In this study, five condensed housing categories will be used. The condensed categories include recovery, controlled, homeless, independent, and precarious housing settings.

Categorization of settings into these condensed categories followed the rationale of Fowler, Toro, and Miles (2009). Both stable and unstable housing settings were identified. Literal homelessness and precarious living settings were differentiated. Precarious living settings were those in which individuals lived in shared housing with others but did not contribute financially. After breaking down the unstable living situations, stable living situations were further broken down. Independent living situations, in which the person lives alone or mutually while contributing financially, were separated from residential settings such as recovery settings and medical settings or incarceration. Finally, a distinction was made between recovery

settings and controlled settings like medical detoxification programs or incarceration to account for the high number of days spent in each of these settings by participants. Settings were placed into one of these five categories by two independent raters. Discrepancies were discussed. Inter-rater reliability was not calculated. A variable will be calculated for time spent in each condensed category.

### **Timeline Follow-Back**

The Timeline Follow-Back interview was designed to assess participants' use of alcohol and drugs over a designated period of time (TFLB; Sobell & Sobell, 1992; Sobell & Sobell, 1996). It is a self-report calendar method to capture daily patterns and frequency of drug and alcohol use. The TLFB has been found to have good reliability, discriminant and convergent validity, and is frequently used in assessing substance use over time (Fals-Stewart, O'Farrell, Freitas, McFarlin, & Rutigliano, 2000). For this study, participants were asked to describe their alcohol and drug use over the six months prior to the interview. Length of sobriety from drugs or alcohol in the past 180 days will be calculated.

### **Addiction Severity Index-Lite**

The Addiction Severity Index Lite-CF (ASI-lite; McLellan, Cacciola, Carise, & Coyne, 1999), is adapted from the Addiction Severity Index 5<sup>th</sup> Edition (ASI; McLellan et al., 1992). It is a reliable and valid structured interview used to determine an individual's progress in substance abuse treatment. The ASI-Lite assesses potential problem areas related to substance abuse and recovery such as medical status, employment/support, drug and alcohol use, illegal activity, family and social relations, and psychiatric condition. For the baseline data, participants reported on each question in terms of lifetime prevalence and past 30 days. The employment subscale will be used to provide information about the amount of education received.

## Demographics

The demographic questionnaire includes questions regarding participants' age, gender, racial background, previous attempts at recovery from substance abuse, incarceration, and re-entry services. For this thesis, age, gender, and race will be used.

## Procedure

Participants were recruited by case managers or inpatient treatment center staff prior to release from inpatient treatment. The overall study was described to eligible participants, who were then asked to participate. Informed consent was received from each participant. After receiving informed consent, research assistants interviewed participants. Interviews were conducted in private, wherever possible, to decrease the likelihood of participants providing socially desirable answers and to ensure privacy due to the sensitive nature of the questions. The baseline interview took approximately two and a half hours to complete. For the DTCQ, participants were asked to imagine themselves as they are at the time of interview. For the HTFB, participants were asked to report on characteristics related to each living environment they reported living in over the six months preceding the interview. For the TLFB, participants were asked to report number of days of alcohol and drug use in the past 180 days. After completing the baseline interview, participants received \$40 for their participation.

## Proposed Analyses

Several calculations will be used to prepare the different variables for analysis. Abstinence self-efficacy scores will be calculated by averaging item scores across the fifty items. Drug of choice variables will consist of four groups: heroin and other opiates, crack/cocaine,

alcohol, and marijuana. Participants who report two drugs of choice and would fall into two groups in this analysis will be dropped from subsequent analyses to ensure that groups are homogeneous. These groups of drug users have been previously compared in other self-efficacy research. Sklar et al. (1999) compared cocaine and alcohol users. Sheikh and Bashir (2004) compared heroin and alcohol users. More research is needed to understand the relation between heroin and cocaine users, how marijuana users compare to other drug users, and how these four groups compare to one another. Groups will be dummy coded, with the heroin group as the referent group. Housing situations will be computed as the number of days spent in the six months prior to baseline interview in each of the five housing situations: recovery, controlled, independent, precarious, and homeless.

Initial correlations and ANOVAs will be performed to determine the relationship between demographic and use variables and self-efficacy. Correlations will be run with age, years of education, length of sobriety, and days of substance use in the past six months. One-way ANOVAs will be used to determine significant relationships between categorical variables and self-efficacy. The categorical variables used will be race and gender. Variables that are significantly correlated with self-efficacy will be included in later analyses. The five housing variables will be correlated with abstinence self-efficacy prior to regression to determine which variables to include as predictors.

Hierarchical linear regressions will be used to determine the relation between drug of choice/housing variables and abstinence self-efficacy. For the regression of drug of choice on self-efficacy, two steps will be included. In the first step, variables found to be related to abstinence self-efficacy in the initial correlations and ANOVAs will be entered. In the second step, the dummy coded drug of choice variables will be entered. To determine the relationship



between race and self-efficacy, models will be estimated with race as a control variable in the first step and as a predictor in the second step. Models will also be estimated using a two-factor model of the DTCQ. These two factors include an internal factor and an external factor. For the regression of housing on self-efficacy, variables to be controlled for will be entered in the first step. In the second step, the housing variables found to be correlated with self-efficacy will be entered. Each housing variable will be added into a regression model individually. After determining the predictability of each housing variable after controlling for demographic and other variables, those housing variables found to be predictive of abstinence self-efficacy will be included in the second step of a hierarchical regression to determine which housing environment is the best predictor of abstinence self-efficacy. Models will also be estimated using the two-factor model of the DTCQ. Following model estimations using number of days lived in each housing situation in the past 180 days, all housing models will be estimated using number of days lived in each housing situation in the past 30 days.

## CHAPTER III: RESULTS AND ANALYSIS

### Potential Difficulties and Solutions

One potential difficulty which may arise with these analyses is multicollinearity among predictors in the final stages of the hierarchical regressions. To reduce the likelihood of multicollinearity in the first step, demographic variables that are not found to be significantly related to the dependent variable will be excluded. This will decrease the likelihood of redundancy among variables in the first step. By correlating the housing variables with abstinence self-efficacy, the number of predictors included in the final housing model will be reduced, which should reduce the likelihood of introducing redundancy into the model. Another potential difficulty may be a non-normal distribution for the abstinence self-efficacy variable. Bootstrapped models will be performed to account for the non-normal distribution.

### Testing Assumptions

To determine whether mean self-efficacy was normally distributed, the Kolmogorov-Smirnov test was used. The mean abstinence self-efficacy scores significantly deviated from normal,  $D(265) = .166, p < .001$ . To account for the non-normal distribution of the dependent variable, bootstrapped models were estimated for each analysis. All variables used were taken from baseline data.

### Initial Analyses

Initial correlations were conducted with the age, education, length of sobriety, and mean abstinence self-efficacy variables. The minimum length of sobriety between alcohol and drugs was used in analyses to reflect sobriety from the more problematic substance. Participants

reported a mean length of sobriety of 79.48 days ( $SD = 76.46$ ). Levels of abstinence self-efficacy ranged from zero to 100 ( $M = 77.53$ ,  $SD = 23.33$ ). Significant Pearson's correlations were found between age and self-efficacy,  $r(255) = .171$ ,  $p = .006$ , and length of sobriety and self-efficacy,  $r(258) = .337$ ,  $p < .001$ . One-way ANOVAs were also conducted to determine whether to control for race and gender in the main regression models. There were 265 participants included in the analysis with race as the independent variable. 5 participants were removed from the analyses due to missing data. Of those 265 participants, 196 (73.96%) were Black or African American, and 69 (26.04%) were of other racial or ethnic groups. There were significant differences in self-efficacy based on race,  $F(1,263) = 12.88$ ,  $p < .001$ . Black or African American participants had higher abstinence self-efficacy ( $M = 80.13$ ,  $SD = 21.97$ ) than other race/ethnicity participants ( $M = 68.53$ ,  $SD = 26.01$ ). There were no significant differences in self-efficacy based on gender,  $F(1,263) = .08$ ,  $p = .78$ . Based on the results of the initial correlations and one-way ANOVAs, age, length of sobriety, and race were included as control variables in the first step of the hierarchical regressions. For all regression models estimated with drug of choice variables, tolerance levels ranged from .33 to .99 and VIF ranged from 1.01 to 3.05, which suggested that multicollinearity was not an issue.

### **Hierarchical Regressions for Drug of Choice**

A two-step hierarchical multiple regression was conducted with mean abstinence self-efficacy as the dependent variable. Age, length of sobriety, and race were entered in the first step to control for their effects on self-efficacy. The drug of choice dummy-coded variables were entered in the second step, with heroin as the referent group. The variables entered in the first step significantly contributed to the variance in self-efficacy,  $F(3,255) = 16.10$ ,  $p < .001$ , and

accounted for 15.90% of the variation in self-efficacy. When age, length of sobriety, and race were included together in the first step, age became non-significant,  $b = .19$ ,  $t = 1.11$ ,  $p = .259$ . The addition of the dummy coded drug of choice variables, with heroin as the referent group, significantly explained additional variation,  $F(3,252) = 3.08$ ,  $p = .028$ , and accounted for an additional 3.00% of the variation in self-efficacy. After controlling for age, length of sobriety, and race, there were significant differences between heroin users and crack/cocaine users on self-efficacy,  $b = 9.06$ ,  $t = 2.95$ ,  $p = .003$ , such that crack/cocaine users had higher levels of mean abstinence self-efficacy than heroin users (see Table 1).

Since age was not statistically significant when included in the first step, age was removed from the model. Race and length of sobriety were entered in the first step, and significantly contributed to the variation in mean levels of self-efficacy,  $F(2,256) = 23.39$ ,  $p < .001$ , and accounted for 15.50% of the variation in self-efficacy. Entering the drug of choice variables into the model significantly explained variation beyond the first step,  $F(3,253) = 3.05$ ,  $p = .029$ , and accounted for an additional 3.00% of the variation. In the second model, significant differences existed between crack/cocaine users and heroin users in self-efficacy,  $b = 9.05$ ,  $t = 2.93$ ,  $p = .003$  (see Table 2).

To determine the effects of race as a predictor of mean abstinence self-efficacy, another model was estimated, controlling for length of sobriety and including the drug of choice variables with heroin as the referent group and race as predictors in the second step. Length of sobriety was entered in the first step, and significantly contributed to the variance in self-efficacy,  $F(1,257) = 32.73$ ,  $p < .001$ . This step accounted for 11.30% of the variance. In the second step, race and the drug of choice variables were entered. The addition of these variables accounted for significant variance beyond the first step,  $F(4,253) = 5.51$ ,  $p < .001$ , and accounted

for an additional 7.10% of the variance. In the second step, race was significant,  $b = 9.61$ ,  $t = 2.77$ ,  $p = .011$ , as was crack/cocaine,  $b = 9.05$ ,  $t = 2.92$ ,  $p = .003$  (see Table 3).

Three additional models were run with crack/cocaine, alcohol, and marijuana as the referent group to determine differences between drug of choice groups. The model in which crack/cocaine was used as the referent group predicted significant variation in mean self-efficacy after all predictors were entered,  $F(3,253) = 2.93$ ,  $p = .034$ . Significant differences in self-efficacy were found between heroin and crack/cocaine users,  $b = -8.68$ ,  $t = 2.82$ ,  $p = .009$  (see Table 4), such that heroin users had lower levels of abstinence self-efficacy. The model in which alcohol was the referent group explained significant variation in self-efficacy in the second step,  $F(3,253) = 3.05$ ,  $p = .029$ . In this model, no drug of choice predictors were significant (see Table 5). Lastly, the model in which marijuana was the referent group predicted explained significant variation in self-efficacy,  $F(3,253) = 3.11$ ,  $p = .027$ . In the second step, no drug of choice predictors were significant (see Table 6).

In addition to drug of choice analyses using mean abstinence self-efficacy scores, dummy coded regression analyses were run using a two-factor model of the DTCQ. The posited two-factor model included a factor for high-risk relapse situations related to internal experiences, and a factor for high-risk relapse situations related to external experiences. Participants reported a mean internal score of 83.88 ( $SD = 21.23$ ) and a mean external score of 70.32 ( $SD = 27.90$ ). Hierarchical regression analyses were run using each factor as the only dependent variable. Mean scores of the items included in each factor were used. Both models were run with length of sobriety and race entered in the first step, and the drug of choice variables, with heroin as the referent group, in the second step.

To determine the effects of drug of choice on the internal factor of abstinence self-efficacy, length of sobriety and race were first entered. The inclusion of these variables explained significant variance in self-efficacy,  $F(2,256) = 15.38, p < .001$ , and accounted for 10.70% of the variance. The addition of the drug of choice dummy coded variables accounted for significant variance beyond the first step,  $F(3,253) = 3.44, p = .017$ , and explained an additional 3.50% of the variance. There were significant differences in self-efficacy between crack/cocaine users and heroin users,  $b = 8.50, t = 3.04, p = .003$ , and alcohol and heroin users,  $b = 7.42, t = 2.33, p = .021$  (see Table 7).

The model predicting the external factor of self-efficacy was also estimated. The first step in which length of sobriety and race were entered was significant,  $F(2,256) = 27.174, p < .001$ . However, the inclusion of the drug of choice variables in the second step produced non-significant change,  $F(3,253) = 2.38, p = .071$ .

### **Hierarchical Regression for Housing**

Mean number of days spent in the five housing situations range from 9.17 days to 62.56 days, and can be found in Table 8. Initial correlations were conducted to determine which control and predictor variables to include in the final analyses. For the control variables, two variables had significant correlations with mean abstinence self-efficacy. Age was positively correlated with self-efficacy,  $r(203) = .229, p = .001$ . Length of sobriety was also positively correlated with self-efficacy,  $r(203) = .364, p < .001$ . Of the five housing predictor variables, two were significantly correlated with self-efficacy. Number of days spent in recovery settings was positively correlated with self-efficacy,  $r(203) = .285, p < .001$ . Number of days spent in precarious settings was negatively correlated with self-efficacy,  $r(203) = -.287, p < .001$ . The

hierarchical regression for housing situations included age, length of sobriety, and race in the first step, and number of days spent in recovery and precarious settings in the second step. For all regression models estimated using housing variables, tolerances ranged from .64 to 1.00 and VIF ranged from 1.00 to 1.56, suggesting that multicollinearity was not an issue.

Models were estimated using days spent in recovery and precarious settings in the past 180 days and days spent in these settings in the past 30 days to predict the mean scores for the internal and external factors of the DTCQ. Models were estimated first using the days spent in the settings in the past 180 days to predict each of the factors, then using the days spent in the settings in the past 30 days to predict each factor.

A two-step hierarchical regression was estimated to predict the mean external self-efficacy scores, entering length of sobriety in the first step, and number of days spent in recovery and precarious settings in the past 180 days in the second step. The variable entered in the first step explained significant variance in internal DTCQ factor scores,  $F(1,202) = 30.80, p < .001$ , and accounted for 13.20% of the variance in the dependent variable. However, the second model was non-significant,  $F(2,200) = 2.47, p = .087, R^2_{\text{Change}} = .02$ .

The hierarchical regression including the mean score of the internal factor as the dependent variable was then estimated. The first step explained significant variance in the internal factor of the DTCQ,  $F(1,202) = 24.80, p < .001$ . Number of days spent in recovery and precarious settings in the past 180 days were then entered, and explained significant variance in the internal factor,  $F(2,200) = 4.25, p = .016, R^2_{\text{Change}} = .04$ . Number of days spent in precarious settings significantly predicted the internal factor,  $b = .06, t = 2.31, p = .023$  (see Table 9).

Models were then estimated using number of days spent in each setting during the past 30 days. A two-step hierarchical regression was estimated for the mean scores on the internal

factor. The first step, in which length of sobriety was entered, explained significant variance,  $F(1,202) = 24.80, p < .001, R^2 = .11$ . The inclusion of the 30 day housing variables explained a significant amount of additional variance,  $F(2,200) = 12.44, p < .001, R^2_{\text{Change}} = .10$ . In the second step, number of days spent in a precarious setting significantly predicted the internal factor of the DTCQ,  $b = -.52, t = -2.45, p = .012$ , as did number of days spent in recovery settings,  $b = .28, t = 2.20, p = .033$  (see Table 10).

In the model with the mean scores on the external factor as the dependent variable, length of sobriety in the first step explained significant variance,  $F(1,202) = 30.80, p < .001$ , and explained 13.20% of the variance. In the second step, variables representing the number of days spent in recovery and precarious housing situations during the past 30 days were entered. The inclusion of these variables was significant,  $F(2,200) = 6.79, p = .001$ , and explained an additional 5.50% of the variance. However, in the second step, neither of the housing variables predicted the external factor of the DTCQ.



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## Appendix A: Measures

**DTCQ**

*Participant ID Number:* \_\_\_\_\_

*Type of Drug (use primary):* \_\_\_\_\_

**Directions:** Listed below are a number of situations or events in which some people use **(type of drug indicated above)**. Imagine yourself as you are right now in each of these situations. Indicate on the scale provided how confident you are that you would be able to resist the urge to use **(type of drug indicated above)**.

Write **100** if you are 100% confident right now that you could resist the urge to use these drugs; **80** if you are 80% confident; **60** if you are 60% confident. If you are more unconfident than confident, circle **40** to indicate that you are only 40% confident that you could resist the urge to use these drugs; **20** for 20% confident; **0** if you have no confidence at all about that situation.

**0 = Not at all confident**

**20 = 20% confident**

**40 = 40% confident**

**60 = 60% confident**

**80 = 80% confident**

**100 = Very confident (100%)**

**888 = Don't know**

**999 = Refused**

**How confident are you that you would be able to resist the urge to use (type of drug indicated above). . .**

- \_\_\_\_\_ 1. If you were depressed about things in general.
- \_\_\_\_\_ 2. If you felt shaky, sick or nauseous.
- \_\_\_\_\_ 3. If you were happy.
- \_\_\_\_\_ 4. If you felt there was nowhere left to turn.
- \_\_\_\_\_ 5. If you wanted to see whether you could use these drugs in moderation.
- \_\_\_\_\_ 6. If you were in a place where you had used or bought these drugs before.
- \_\_\_\_\_ 7. If you felt tense or uneasy in the presence of someone.
- \_\_\_\_\_ 8. If you were invited to someone's home and felt awkward about refusing when they offered me these drugs.
- \_\_\_\_\_ 9. If you met some old friends and we wanted to have a good time.
- \_\_\_\_\_ 10. If you were unable to express your feelings to someone.
- \_\_\_\_\_ 11. If you felt that you had let yourself down.
- \_\_\_\_\_ 12. If you had trouble sleeping.
- \_\_\_\_\_ 13. If you felt confident and relaxed.
- \_\_\_\_\_ 14. If you were bored.
- \_\_\_\_\_ 15. If you wanted to prove to yourself that these drugs were not a problem for you.
- \_\_\_\_\_ 16. If you unexpectedly found some of these drugs or happened to see something that reminded you of these drugs.
- \_\_\_\_\_ 17. If other people rejected you or didn't seem to like you.
- \_\_\_\_\_ 18. If you were out with friends and they kept suggesting you go somewhere and use these drugs.
- \_\_\_\_\_ 19. If you were with an intimate friend and you wanted to feel even closer.
- \_\_\_\_\_ 20. If other people treated you unfairly or interfered with your plans.

- \_\_\_\_\_ 21. If you were lonely.
- \_\_\_\_\_ 22. If you wanted to stay awake, be more alert, or more energetic
- \_\_\_\_\_ 23. If you felt excited about something.
- \_\_\_\_\_ 24. If you felt anxious or tense about something.
- \_\_\_\_\_ 25. If you wanted to find out whether you could use these drugs occasionally without getting hooked.
- \_\_\_\_\_ 26. If you had been drinking and thought about using these drugs.
- \_\_\_\_\_ 27. If you felt that your family was putting a lot of pressure on you or that you couldn't measure up to their expectations.
- \_\_\_\_\_ 28. If others in the same room were using these drugs and you felt that they expected you to join in.
- \_\_\_\_\_ 29. If you were with friends and wanted to increase your enjoyment.
- \_\_\_\_\_ 30. If you were not getting along well with others at school or work.
- \_\_\_\_\_ 31. If you started to feel guilty about something.
- \_\_\_\_\_ 32. If you wanted to lose weight.
- \_\_\_\_\_ 33. If you were feeling content with your life.
- \_\_\_\_\_ 34. If you felt overwhelmed and wanted to escape.
- \_\_\_\_\_ 35. If you wanted to test out whether you could be with drug-using friends without using these drugs.
- \_\_\_\_\_ 36. If you heard someone talking about their past experiences with these drugs.
- \_\_\_\_\_ 37. If there were fights at home.
- \_\_\_\_\_ 38. If you were pressured to use these drugs and felt that you couldn't refuse.
- \_\_\_\_\_ 39. If you wanted to celebrate with a friend.
- \_\_\_\_\_ 40. If someone was dissatisfied with your work or you felt pressured at school or on the job.

- \_\_\_\_\_ 41. If you were angry at the way things had turned out.
- \_\_\_\_\_ 42. If you had a headache or were in physical pain.
- \_\_\_\_\_ 43. If you remembered something good that had happened.
- \_\_\_\_\_ 44. If you felt confused about what you should do.
- \_\_\_\_\_ 45. If you wanted to test out whether you could be in places where these drugs were being used without using any.
- \_\_\_\_\_ 46. If you began to think how good a rush or high had felt.
- \_\_\_\_\_ 47. If you felt that you needed courage to face up to someone.
- \_\_\_\_\_ 48. If you were with a group of people and everyone was using these drugs.
- \_\_\_\_\_ 49. If you were having a good time and wanted to increase your sexual enjoyment.
- \_\_\_\_\_ 50. If you felt that someone was trying to control you and you wanted to feel more independent.

**Demographic Questionnaire**

1. Participant ID Number
2. Date of Administration
3. Wave Number
4. Interviewer
5. What is your age?
6. What is your gender?
7. To what racial group do you belong?
8. Have you had any substance abuse treatment previously (i.e., 12-step program, at least a three day detoxification, and/or one-on-one sessions with a counselor)?
9. Are you currently seeking treatment for your substance abuse?
10. What prison/jail were you recently released from?
- 10b. When were you released? (Month/Day/Year)
11. How long were you in jail for during your most recent incarceration?
12. In your life time, how many times (total) have you been incarcerated?
13. During the time you were incarcerated, did the prison/jail you were in offer substance abuse treatment programs? (check all that apply)
  - a. 12 step program
  - b. One-on-one sessions with a counselor
  - c. Group sessions with a counselor
  - d. Detoxification (medical or other)
14. Did you take part in any of these treatment programs? (check all that apply)
  - a. 12 step program
  - b. One-on-one sessions with a counselor
  - c. Group sessions with a counselor
  - d. Detoxification (medical or other)
15. If yes, how often did you use these programs?
16. Were these programs helpful in your recovery process?
17. Upon release, did the jail/prison you were in offer any re-entry services? (check all that

apply)

- a. Job training
- b. Job placement
- c. Housing assistance
- d. Case management

18. Did you take part in any of these re-entry services? (check all that apply)

- a. Job training
- b. Job placement
- c. Housing assistance
- d. Case management

19. Were they helpful tools to ease the transition back into society?

20. Do you have a high school diploma or GED?

21. If you have a GED, did you receive your GED while in prison?

22. Since your release from jail/prison, have you received any type of substance use treatment?

23. If yes, what type of treatment have you received?

- a. 12 step program
- b. One-on-one sessions with a counselor
- c. Group sessions with a counselor
- d. Detoxification (medical or other)
- e. Other (specify\_\_\_\_\_)

24. In your current treatment setting, were you mandated to participate?

25. How were you referred to your current treatment setting?

**ASI-Lite****Employment/Support Status**

E1. Education completed?

\_\_\_\_\_years

E2. Training or technical education completed?

\_\_\_\_\_months

E4. Do you have a valid driver's license?

No                      Yes

E5. Do you have an automobile available for use?

No                      Yes

E6. How long was your longest full time job? (*full time = 35+ hours per week*)

\_\_\_\_\_months

E7. Usual (or last) occupation?

\_\_\_\_\_ (specify in detail)

E9. Does someone contribute the majority of your support?

No                      Yes

E10. Usual employment pattern in the past 3 years

\_\_\_\_\_full time (40 hrs/wk)

\_\_\_\_\_part time (regular hours)

\_\_\_\_\_part time (irregular, day work)

\_\_\_\_\_student

\_\_\_\_\_service

\_\_\_\_\_retired/disabled

\_\_\_\_\_unemployed

\_\_\_\_\_in controlled environment

E11. How many days were you paid for working in the past 30? (*include "under the table" work, paid sick days and vacation*)

\_\_\_\_\_days

How much money did you receive from the following sources in the past 30 days?

E12. Employment: \$\_\_\_\_\_

E13. Unemployment compensation: \$\_\_\_\_\_

E14. Welfare: \$\_\_\_\_\_

E15. Pension, benefits, or social security: \$\_\_\_\_\_

E16. Mate, family, or friends (money for personal expenses): \$\_\_\_\_\_

E17. Illegal: \$\_\_\_\_\_

E18. How many people depend on you for the majority of their food, shelter, etc?  
\_\_\_\_\_people

E19. How important to you now is counseling for these employment problems?

\_\_\_\_\_Not at all

\_\_\_\_\_Slightly

\_\_\_\_\_Moderately

\_\_\_\_\_Considerably

\_\_\_\_\_Extremely



**HTFB**

**In the past 6 Months:**

With whom did you live?

- 1. With Sexual Partner and Children
- 2. With Sexual Partner Alone
- 3. With Children Alone
- 4. With Parents
- 5. With Family
- 6. With Friends
- 7. Alone
- 8. Other \_\_\_\_\_

Where did you live?

- A. Controlled environment (jail/prison, non-voluntary)
- B. Homeless (car, bus station, park, shelter, tent, Dunkin Donuts)
- C. Residential program with staff (halfway house, sober house)
- D. Transitional housing without staff (Oxford house)
- E. Shared housing (roommates, contributing financially)
- F. Mutual living (living in someone else's home but providing little or no set financial contribution)
- G. Temporary housing (couch surfing, hotel room)
- H. House/apartment
- I. Nursing Home
- J. Medical setting (detox, medical hospital, voluntary placement)
- K. Other \_\_\_\_\_

Why did you leave?

! Was removed from the setting for disruptive behavior

@ Was removed from the setting for relapsing

\$ Was removed from the setting for failure to pay bills

# Left setting in good standing

% Left setting for other reason, specify: \_\_\_\_\_





	January	February	March	April	May	June	July	August	September	October	November	December
	New Year's MLK Day	Valentine's President's Day	St. Patrick's Day	April Fools Easter	Memorial Day Mother's Day	Father's Day	4th of July		Labor Day	Halloween	Thanksgiving	Christmas
<b>2010</b>												
	1 15 31	1 15 28	1 15 31	1 15 30	1 15 31	1 15 30	1 15 31	1 15 31	1 15 30	1 15 31	1 15 30	1 15 31

**TLFB**

Name/ID#: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_\_

**TIMELINE FOLLOWBACK CALENDAR: 2012**

<b>1 Standard Drink is Equal to</b>			
	One 12 oz can/bottle of beer		One 5 oz glass of regular (12%) wine
			1 ½ oz of hard liquor (e.g. rum, vodka, whiskey)
			1 mixed or straight drink with 1 ½ oz hard liquor

<b>Complete the Following</b>							
<b>Start Date (Day 1):</b> _____				<b>End Date (yesterday):</b> _____			

2012	SUN	MON	TUES	WED	THURS	FRI	SAT
	1 <sup>New Year's</sup>	2	3	4	5	6	7
<b>J</b>	8	9	10	11	12	13	14
<b>A</b>	15	16 <sup>M. L. King</sup>	17	18	19	20	21
<b>N</b>	22	23	24	25	26	27	28
	29	30	31	1	2	3	4
<b>F</b>	5	6	7	8	9	10	11
<b>E</b>	12	13	14 <sup>Valentine's Day</sup>	15	16	17	18
<b>B</b>	19	20 <sup>Presidents' Day</sup>	21	22	23	24	25
	26	27	28	29	1 <sup>Ash Wednesday</sup>	2	3
<b>M</b>	4	5	6	7	8	9	10
<b>A</b>	11	12	13	14	15	16	17 <sup>St. Patrick's Day</sup>
<b>R</b>	18	19	20	21	22	23	24
	25	26	27	28	29	30	31
<b>A</b>	1	2	3	4	5	6 <sup>Good Friday</sup>	7 <sup>Passover</sup>
<b>P</b>	8 <sup>Easter</sup>	9	10	11	12	13	14
<b>R</b>	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	1	2	3	4	5
<b>M</b>	6	7	8	9	10	11	12
<b>A</b>	13 <sup>Mother's Day</sup>	14	15	16	17	18	19
<b>Y</b>	20	21	22	23	24	25	26
	27	28 <sup>Memorial Day</sup>	29	30	31		

2012	SUN	MON	TUES	WED	THURS	FRI	SAT
------	-----	-----	------	-----	-------	-----	-----

						1	2
<b>J U N</b>	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17 <small>Father's Day</small>	18	19	20	21	22	23
	24	25	26	27	28	29	30
<b>J U L</b>	1	2	3	4 <small>Independence Day</small>	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	31	1	2	3	4
<b>A U G</b>	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30	31	1
<b>S E P</b>	2	3 <small>Labor Day</small>	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17 <small>Rosh Hashanah</small>	18	19	20	21	22
	23	24	25	26	27	28	29
<b>O C T</b>	30	1	2	3	4	5	6
	7	8 <small>Columbus Day</small>	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	31 <small>Halloween</small>	1	2	3
<b>N O V</b>	4	5	6 <small>Election Day</small>	7	8	9	10
	11 <small>Veterans' Day</small>	12	13	14	15	16	17
	18	19	20	21	22 <small>Thanksgiving</small>	23	24
	25	26	27	28	29	30	1
<b>D E C</b>	2	3	4	5	6	7	8
	9 <small>Hanukkah</small>	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24 <small>Christmas Eve</small>	25 <small>Christmas</small>	26	27	28	29
	30	31 <small>New Year's Eve</small>					



## Appendix B: Tables

Table 1

*Drug of Choice Hierarchical Regression Controlling for Age, Length of Sobriety, and Race*

Variables Entered	<i>b</i>	<i>S.E.</i>	<i>t</i>	<i>p</i>
Step 1				
Intercept	55.22	6.15	8.98	.001
Age	.19	.173	1.11	.259
Length of Sobriety	.10	.02	5.71	.001
Race	9.04	4.05	2.23	.023
Step 2				
Intercept	51.95	6.85	7.58	.001
Age	.21	.19	1.11	.247
Length of Sobriety	.09	.02	5.47	.001
Race	7.59	4.16	1.83	.070
Crack/Cocaine	9.06	3.08	2.95	.003
Alcohol	6.94	3.77	1.84	.059
Marijuana	4.61	4.98	.93	.344

Table 2

*Drug of Choice Hierarchical Regression Controlling for Length of Sobriety and Race*

Variables Entered	<i>b</i>	<i>S.E.</i>	<i>t</i>	<i>p</i>
Step 1				
Intercept	61.58	3.36	18.34	.001
Length of Sobriety	.10	.02	5.71	.001
Race	10.91	3.35	3.26	.002
Step 2				
Intercept	58.88	3.46	17.01	.001
Length of Sobriety	.10	.02	5.94	.001
Race	9.61	3.34	2.88	.005
Crack/Cocaine	9.05	3.09	2.93	.003
Alcohol	6.66	3.54	1.88	.064
Marijuana	2.44	4.58	.53	.596

Table 3

*Drug of Choice Hierarchical Regression with Race as a Predictor,  
Controlling for Length of Sobriety*

Variables Entered	<i>b</i>	<i>S.E.</i>	<i>t</i>	<i>p</i>
Step 1				
Intercept	69.23	2.31	30.00	.001
Length of Sobriety	.10	.02	6.06	.001
Step 2				
Intercept	58.88	3.58	16.45	.001
Length of Sobriety	.10	.02	5.94	.001
Race	9.61	3.48	2.77	.011
Crack/Cocaine	9.05	3.09	2.93	.003
Alcohol	6.66	3.77	1.77	.075
Marijuana	2.44	4.46	.55	.569



Table 4

*Drug of Choice Hierarchical Regression with Crack/Cocaine as the Referent Group, Controlling for Length of Sobriety and Race*

Variables Entered	<i>b</i>	<i>S.E.</i>	<i>t</i>	<i>p</i>
Step 1				
Intercept	61.58	3.46	17.79	.001
Length of Sobriety	.10	.02	5.71	.001
Race	10.91	3.45	3.17	.005
Step 2				
Intercept	67.19	3.88	17.31	.001
Length of Sobriety	.10	.02	5.94	.001
Race	9.82	3.42	2.87	.007
Heroin	-8.68	3.08	-2.82	.009
Alcohol	-1.82	3.60	-.50	.595
Marijuana	-6.04	4.40	-1.37	.172

Table 5

*Drug of Choice Hierarchical Regression with Alcohol as the Referent Group, Controlling for Length of Sobriety and Race*

Variables Entered	<i>b</i>	<i>S.E.</i>	<i>t</i>	<i>p</i>
Step 1				
Intercept	61.58	3.36	18.34	.001
Length of Sobriety	.10	.02	5.71	.001
Race	10.91	3.35	3.26	.002
Step 2				
Intercept	64.86	3.89	16.66	.001
Length of Sobriety	.10	.02	5.94	.001
Race	9.69	3.34	2.91	.004
Heroin	-6.28	3.53	-1.78	.079
Crack/Cocaine	2.97	3.59	.83	.378
Marijuana	-3.64	5.02	-.72	.474

Table 6

*Drug of Choice Hierarchical Regression with Marijuana as the Referent Group, Controlling for Length of Sobriety and Race*

Variables Entered	<i>b</i>	<i>S.E.</i>	<i>t</i>	<i>p</i>
Step 1				
Intercept	61.58	3.33	18.50	.001
Length of Sobriety	.10	.02	5.71	.001
Race	10.91	3.34	3.27	.001
Step 2				
Intercept	61.53	4.76	12.92	.001
Length of Sobriety	.09	.02	5.88	.001
Race	9.63	3.32	2.90	.005
Heroin	-2.88	4.70	-.61	.547
Crack/Cocaine	6.39	4.71	1.36	.175
Alcohol	4.00	5.07	.79	.435

Table 7

*Drug of Choice Hierarchical Regression with Mean Internal Self-Efficacy as the Dependent Variable*

Variables Entered	<i>b</i>	<i>S.E.</i>	<i>t</i>	<i>p</i>
Step 1				
Intercept	73.23	3.32	22.06	.001
Length of Sobriety	.08	.02	5.27	.001
Race	6.32	3.14	2.01	.048
Step 2				
Intercept	70.52	3.53	19.97	.001
Length of Sobriety	.08	.02	5	.001
Race	5.10	3.15	1.62	.111
Crack/Cocaine	8.50	2.80	3.04	.003
Alcohol	7.42	3.18	2.33	.021
Marijuana	3.19	3.57	.89	.362

*Table 8**Days Spent in Housing Situations*

<i>Variable</i>	<i>M (SD)</i>
Days spent in housing (past 180 days):	
Controlled	62.56 (61.10)
Homeless	8.92 (30.24)
Recovery	48.81 (51.20)
Independent	9.17 (30.94)
Precarious	47.98 (64.15)
Days spent in housing (past 30 days):	
Controlled	3.07 (7.56)
Homeless	1.69 (5.89)
Recovery	18.50 (12.09)
Independent	.79 (4.23)
Precarious	5.50 (9.83)

Table 9

*Past 180-Day Housing Hierarchical Regression with Mean Internal Self-Efficacy as Dependent Variable*

Variables Entered	<i>b</i>	<i>S.E.</i>	<i>t</i>	<i>p</i>
Step 1				
Intercept	75.84	2.51	30.17	.001
Length of Sobriety	.09	.02	5.22	.001
Step 2				
Intercept	78.60	3.37	23.32	.001
Length of Sobriety	.06	.02	2.62	.010
Days in Recovery Setting	.06	.03	2.31	.023
Days in Precarious Setting	-.05	.03	-1.55	.121

*Table 10*

*Past 30-Day Housing Hierarchical Regression with Mean Internal Self-Efficacy as Dependent Variable*

Variables Entered	<i>b</i>	<i>S.E.</i>	<i>t</i>	<i>p</i>
Step 1				
Intercept	75.84	2.51	30.23	.001
Length of Sobriety	.09	.02	5.53	.001
Step 2				
Intercept	76.81	3.77	20.39	.001
Length of Sobriety	.05	.02	3.18	.003
Days in Recovery Setting	.28	.13	2.20	.033
Days in Precarious Setting	-.52	.21	-2.45	.012