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Predicting dropout in the first 3 months of 12-step residential drug and alcohol treatment in an Australian sample

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Abstract
Objective: Premature termination from treatment is a major factor associated with poorer drug and alcohol treatment outcomes. The present study investigated client-related baseline predictors of dropout at 3 months from a faith-based 12-step residential drug treatment program. Method: Data were collected over a period of 14 months from eight residential drug and alcohol treatment programs run by The Australian Salvation Army. The final sample consisted of 618 participants, including 524 men (84.8%) and 94 women (15.2%). Predictor variables of interest were age, gender, primary drug of concern, criminal involvement, psychological distress, drug cravings, self-efficacy to abstain, spirituality, forgiveness of self and others, and life purpose. At 3 months, 264 participants (42.7%) remained in the treatment program, and 354 participants (57.3%) had dropped out. Results: Binary logistic regression revealed that individuals were more likely to drop out by the 3-month time frame if at intake their primary drug of concern was a drug other than alcohol or they reported greater forgiveness of self. Conclusions: To the authors' knowledge, this is the first study to examine forgiveness as a predictor of dropout from a drug treatment program. Assessing patient's primary drug of concern and levels of forgiveness may be useful for residential drug treatment providers in constructing programs that provide differential treatment based on the results of these assessments.

Keywords
step, 12, sample, australian, months, treatment, 3, alcohol, first, dropout, drug, predicting, residential

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Predicting Dropout in the First 3 Months of 12-Step Residential Drug and Alcohol Treatment in an Australian Sample

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ABSTRACT. Objective: Premature termination from treatment is a major factor associated with poorer drug and alcohol treatment outcomes. The present study investigated client-related baseline predictors of dropout at 3 months from a faith-based 12-step residential drug treatment program. **Method:** Data were collected over a period of 14 months from eight residential drug and alcohol treatment programs run by The Australian Salvation Army. The final sample consisted of 618 participants, including 524 men (84.8%) and 94 women (15.2%). Predictor variables of interest were age, gender, primary drug of concern, criminal involvement, psychological distress, drug cravings, self-efficacy to abstain, spirituality, forgiveness of self and others, and life purpose. At 3 months, 264 participants (42.7%) remained in the treatment program, and 354 participants (57.3%) had dropped out. **Results:** Binary logistic regression revealed that individuals were more likely to drop out by the 3-month time frame if at intake their primary drug of concern was a drug other than alcohol or they reported greater forgiveness of self. **Conclusions:** To the authors' knowledge, this is the first study to examine forgiveness as a predictor of dropout from a drug treatment program. Assessing patient's primary drug of concern and levels of forgiveness may be useful for residential drug treatment providers in constructing programs that provide differential treatment based on the results of these assessments. (*J. Stud. Alcohol Drugs, 73,* 000–000, 2012)

LONG-TERM RESIDENTIAL TREATMENT programs, such as the 12-step programs offered by faith-based organizations, remain one of the more common treatment options for individuals with substance misuse problems (McCoy et al., 2005). Several studies have shown that individuals who enter residential programs often have similar or superior recovery outcomes than those who enter other forms of treatment (De Leon et al., 2000; Gossop et al., 1997; Ouimette et al., 1997; Project MATCH Research Group, 1997). However, the posttreatment efficacy of these programs is often dependent on a patient's length of stay (Greenfield et al., 2004; Stark, 1992). Indeed, numerous studies have found length of stay in drug treatment to be the most consistent predictor of positive follow-up outcomes with regard to such things as abstinence, criminal involvement, mental health, and employment (De Leon, 1990–1991; Hubbard et al., 1997; Simpson, 1981; Simpson and Sells, 1982; Simpson et al., 1997).

Although the relationship between exact length of stay and treatment outcomes differs depending on treatment modality and program type (inpatient, outpatient, etc.) (Simpson and Sells, 1982), research suggests that drug and alcohol patients need to stay in treatment for a minimum of 3 months to gain significant improvements in the aforementioned areas (Hubbard et al., 1997; Mulder et al., 2009; Simpson, 1979, 1981; Simpson and Sells, 1982; Simpson et al., 1999). Specifically, using the large Drug Abuse Reporting Program database, Simpson (1979, 1981) found that a minimum of 3 months was necessary for any positive effect, and, after 3 months, a linear relationship was found between tenure and the above outcomes for up to 2 years. Unfortunately, approximately 50%–80% of individuals entering drug and alcohol treatment drop out before the 3-month time frame (e.g., see Baekeland and Lundwall, 1975; Stark, 1992, for reviews). *Dropout* has become a somewhat pejorative term but, for the purposes of this study, refers to individuals leaving treatment before the recommended treatment duration. Dropout does not necessarily mean treatment failure; although, as noted, individuals who stay longer tend to have better outcomes on average.

Identifying reliable predictors of residential treatment dropout can inform treatment providers about how they can better tailor their services for individuals at risk of terminating prematurely. Numerous client-related variables have been found to be related to treatment outcomes and dropout in both faith-based and secular programs, including age (Baekeland and Lundwall, 1975; Copeland and Hall, 1992), gender (Adamson et al., 2009; Claus et al., 2002), drug type (McCaul et al., 2001), criminal involvement (Evans et al., 2009), psychiatric severity (Adamson et al., 2009; McKay and Weis, 2001), stress (Dawes et al., 2000), drug cravings (Hartz et al., 2001), abstinence self-efficacy (Adamson et al., 2009), and spirituality/religiosity (Kelly and Moos, 2003). Despite the number of demonstrated predictors in the available research, there is a general lack of consistency in these predictors across studies (Claus et al., 2002; Greenfield et al., 2007; Maglione et al., 2000).

In identifying potential predictors for the present study, we considered the empirical findings noted above, cognitive–behavioral models of relapse, and factors that might be unique to the faith-based treatment program that is the focus of the research. Cognitive–behavioral models of relapse theorize that negative emotional states (affect), cravings, and self-efficacy contribute to lapses and relapse (Marlatt and Gordon, 1985; Niaura, 2000; Witkiewitz and Marlatt, 2007). Similarly, they might be expected to contribute to dropping out of residential treatment as a precursor to relapse. Negative emotions will vary from person to person, such that a range of states (e.g., depression, anxiety)—as opposed to a specific emotion—is thought to better predict relapse. Thus, measures of general psychological distress with a strong affective component may be most related to dropout. Although the definition of *cravings* is highly debated in research, craving is commonly operationalized as a persistent urge or desire to use a substance (Witkiewitz and Marlatt, 2007). In the context of the present study, it is expected that individuals who enter treatment with higher craving for drugs or alcohol will find it more difficult to persist with treatment and are more likely to leave early. Self-efficacy expectations are theorized to

mediate the relationship between cravings and relapse, such that greater confidence in being able to cope with high-risk situations and control substance use reduces the probability of relapse (Niaura, 2000). Thus, higher self-efficacy regarding the ability to cope with tempting situations should reduce the likelihood that someone would leave residential treatment early.

For some participants, it is possible that specific elements of a faith-based treatment program may not fit well with their beliefs or expectations of treatment, and this may result in them leaving treatment early. For example, faith-based treatment organizations that offer 12-step-oriented programs have a strong emphasis on spiritual growth as a means to recovery (Alcoholics Anonymous World Services Inc., 2001). Two major mechanisms proposed to drive this spiritual growth are forgiveness and life purpose (Neff and MacMaster, 2005). Forgiveness can be defined as a process involving affective, behavioral, and cognitive components. When individuals perceive that they have been unfairly treated, they forgive when they willfully reduce resentment and related negative responses toward an offender. Furthermore, they may also respond with more positive emotions (e.g., compassion, love) toward the offender (Enright and Fitzgibbons, 2000). Forgiveness is typically recognized as having at least two components—forgiveness of oneself and of others (McCullough et al., 2000). Forgiveness is viewed as the antidote to resentment that is considered as one of the strongest maintaining factors in substance use disorders (Alcoholics Anonymous World Services Inc., 2001). Forgiveness may, therefore, be important for an individual to "let go" of previously held negative cognitions that maintain substance misuse. Indeed, research has found that forgiveness (self and others) is negatively related to a broad range of psychopathological variables among people seeking substance-related treatment (e.g., depression, anxiety, and psychoticism; Webb et al., 2009) and positively related to health outcomes more generally (Worthington, 2005). In drug and alcohol treatment contexts, greater forgiveness (of self and others) was related to reduced frequency, quantity, and negative consequences of alcohol intake (Webb et al., 2006).

Despite the positive outcomes demonstrated for time spent in spiritually based treatment programs (Gossop, 1995; Gossop et al., 1997; McCoy et al., 2005) and the potential role forgiveness might play in this process, research investigating the relationship between forgiveness and drug treatment dropout is lacking.

In spiritually based drug treatment programs, life purpose—defined as "the subjective reason for a person's existence, which is derived from their beliefs, values, and dispositions, and used to produce and manage life goals" (Lyons et al., 2010, p. 537)—is another proposed mechanism that underlies recovery (Lyons et al., 2010; Miller, 1998). It is a widely held belief that individuals who lack significant life purpose may turn to drugs for fulfillment. Twelve-step programs aim to address this by providing opportunities for the cultivation of both spiritual and social purpose in life (Lyons et al., 2010). This is proposed to be achieved via service attendance, prayer, helping others in the recovery journey, and restoring fractured interpersonal relationships (Lyons et al., 2010; Milne, 2009). Research suggests that greater life purpose is related to positive outcomes in alcohol rehabilitation. For example, greater purpose in life has been significantly related to a greater likelihood of refraining from heavy drinking at 6 months (Robinson et al., 2007). Other studies investigating purpose in life have found similar results (Carroll, 1993; Noblejas de la Flor, 1997; Waisberg and Porter, 1994). Underlying theology and theories used in faith-based substance abuse programs argue that a reconnection with God fills the spiritual void associated with substance abuse and leads to greater purpose in life, which in turn reduces substance use behaviors. Purpose and meaning in life have been found to significantly increase after participation in 12-step facilitation treatment (Robinson et al., 2007). Forgiveness is embedded in 12-step facilitation models and is particularly prominent in Step 8 (becoming willing to make amends) and Step 9 (making amends when possible) (Webb and Trautman, 2010). Finally, forgiveness has been found to mediate the relationship between spiritual experiences and purpose in life in a sample of people

attending faith-based residential drug and alcohol treatment using a 12-step facilitation approach (Lyons et al., 2011). However, the relationship between life purpose, forgiveness, and drug and alcohol treatment dropout in long-term residential treatment remains unknown.

This study aims to determine the extent to which a range of psychological and demographic variables collected at treatment entry can predict 3-month retention in a faith-based 12-step program. Finding reliable predictors of dropout is a major step toward to bettering drug treatment services through screening methods and tailoring programs to suit the needs of individuals more likely to drop out. Furthermore, previous research has not examined the role of forgiveness (of self and others) or life purpose as potential predictors of dropout from a drug treatment program. In sum, in this study, predictor variables of interest are age, gender, primary drug of concern, criminal involvement, psychological distress, drug cravings, self-efficacy to abstain, spirituality, forgiveness of self and others, and life purpose.

Method

Participants

All participants provided signed consent for the collection and use of their data, and these procedures have been reviewed and approved by the University of Wollongong Human Research Ethics Committee. Data were collected over a period of 14 months from eight residential drug and alcohol treatment programs in Australia run by The Salvation Army. Over the study period, 678 participants entered the treatment programs. For data to be eligible for analysis, participants' initial assessments needed to have occurred within 31 days of entry to the program. Only the first admission during the study period was used in analyses. Thus, those who left and were readmitted only had their data from the first admission included. Of those who entered, data from 60 participants were unsuitable for analysis because they did not meet this criterion, had missing data, or had other data collection errors (e.g.,

assessment date was earlier than entry date). Data from 618 participants (91%) were used in the final analysis.

The final sample for analysis included 524 men (84.8%) and 94 women (15.2%) (Table 1), with a mean age of 36.8 years (*SD* = 10.59) for men and 37.7 years (*SD* = 11.02) for women. Eighty-four participants (13.6%) were married or in relationships. The majority of participants were born in Australia (87.4%) and were of Anglo-Saxon background (91.6%). Participants' religions were Christian (37.2%), no religion (26.3%), Roman Catholic (20.8%), Protestant (7.7%), other (5.7%), Buddhist (1.7%), and Muslim (0.6%).

[COMP: Table 1 about here]

When asked about their usual living arrangements during the past 3 years, 32% of participants reported that they lived with their partner and/or children, 24% lived alone, 21% lived with other family members, 10% lived with friends, 5% had mostly been living in a controlled environment (i.e., jail), and 7% reported that they did not have stable living conditions during this period.

Participants were asked to indicate the highest level of education that they completed. One participant reported completing primary school (kindergarten to Grade 6), 31% completed lower secondary (between Grades 7 and 9), 57% completed upper secondary (between Grades 10 and 12), and 12% completed further tertiary education.

Participants' primary drugs of concern were alcohol (54%), stimulants (14%) and cannabis (12%) (see Table 1). One hundred and seventy-nine participants (33%) were awaiting charges, trial, or sentencing. Twenty-two percent of these participants were awaiting legal charges, trial, or sentencing for assault; 12% for drug-related offenses; 12% for burglary or larceny; 7% for parole violations; 5% for shoplifting or vandalism; 3% for robbery; 1% for forgery; and 1% for arson. Participants' length of stay

ranged from 2 to 372 days (M = 105.9), with 264 participants (42.7%) staying 3 months or longer and 354 participants (57.3%) dropping out by the 3-month time frame.

Procedure

Participants were recruited from Australian Salvation Army Recovery Service Centres located in Queensland (Townsville, Brisbane, and the Gold Coast), New South Wales (Blue Mountains, Sydney, Central Coast, and Lake Macquarie), and the Australian Capital Territory (Canberra). The Recovery Service Centres provide a 10-month residential drug and alcohol rehabilitation treatment in the form of a modified therapeutic community. The program uses a 12-step approach and is primarily based on the disease model of dependence. The Salvation Army program offers individual case management and group therapy sessions. Groups provided during the program cover a diverse range of areas, including social skills training, aspects of psycho-education, motivation training, self-esteem development, communication skills, relapse prevention planning, family systems work, and anger management. As a faith-based program, attendance at chapel is also expected.

Upon entry to the program, The Salvation Army staff conducted a routine background interview that included participants' drug and alcohol use, criminal involvement (defined as presently awaiting charges, trial, or sentencing), as well as their demographic information. In addition, participants were asked to complete a battery of questionnaires. All data were entered into The Salvation Army Management of Information System.

Measures

The Drug Taking Confidence Questionnaire (short version) (DTCQ; Sklar et al., 1997). This is an 8-item self-report questionnaire that measures a person's self-efficacy in terms of resisting the urge to take drugs in specific high relapse situations. The DTCQ had a Cronbach's α coefficient of .98 (Sklar et al., 1997). In the present study, the Cronbach's α was .92.

The Desires for Alcohol Questionnaire (DAQ; Clark, 1995). This is a 36-item measure of a person's drug and alcohol cravings. The short 8-item form of the DAQ used in the present study was modified to reflect both drug and alcohol cravings. The short versions of the DAQ have been found to have good convergent and discriminant validity, demonstrating a significant positive relationship with an alcohol cravings measure—Obsessive Compulsive Drinking Scale (Anton et al., 1995) (r = .50, p <.01) and a significant negative relationship with a self-efficacy to refuse drugs and alcohol (r = -.42, p < .01; see Mason et al., 2009). Cronbach's α for the eight-item DAQ in an independent sample of 277 individuals in residential drug and alcohol treatment was .88 (unpublished data from Lyons et al., 2011). In the present study, the Cronbach's α was .92.

The Depression, Anxiety and Stress Scale–21 (DASS-21; Lovibond and Lovibond, 1995). This is a well-established 21-item self-report questionnaire that measures a person's affective states of depression, anxiety, and stress. Previous research has shown the DASS-21 subscales to have good concurrent validity with other well-known measures of depression (Beck Depression Inventory: r = .79), anxiety (Beck Anxiety Inventory: r = .85), and stress (State Trait Anxiety Inventory: r = .68) (Antony et al., 1998). The DASS-21 has a Cronbach's α of .88 for the depression subscale, .82 for the anxiety subscale, .90 for the stress subscale, and .93 for the total scale (Henry and Crawford, 2005). In the present study, the total score was used, and the Cronbach's α was .96.

The Spiritual Belief Scale (SBS; Schaler, 1996). This is an eight-item scale that measures spiritual thinking based on the 12-step philosophy of Alcoholics Anonymous. Specifically, the model measures "release-gratitude-humility" and "tolerance" dimensions of spirituality. The SBS had a Cronbach's α of .92 (Schaler, 1996) in a study investigating spiritual thinking in 295 treatment providers who work for drug and alcohol treatment organizations. In the present study, the Cronbach's α was .82.

The Heartland Forgiveness Scale (HFS; Thompson et al., 2005). This is an 18-item self-report questionnaire that measures a person's dispositional forgiveness of themselves, of others, and of situations. Each item is rated on a 7-point Likert-type scale ranging from *strongly disagree* (1) to *strongly agree* (7). Example items are "It is really hard for me to accept myself once I've messed up" (self-forgiveness) and "If someone mistreats me, I continue to think badly of them" (forgiveness of others). Prior research found that the HFS had a Cronbach's α of .86–.87 (total), .72–.76 (self), .78–.71 (others), and .77–.82 (situations) (Thompson et al., 2005). In this study, 12 items of the two subscales used to measure a person's dispositional forgiveness of themselves and other people were used. Cronbach's α of .68 (self) and .76 (others) were found.

The Life Engagement Test (LET; Scheier et al., 2006). This is a six-item self-report questionnaire that measures a person's purpose in life, defined in terms of the extent to which a person engages in activities that are personally valued. Prior research found that the LET had a Cronbach's α of .80 (Scheier et al., 2006). In the present study, the Cronbach's α was .74.

Statistical analysis

Data were analyzed using the SPSS, Version 17 (SPSS Inc., Chicago, IL). The dependent variable was calculated as those who remained in the program for 90 days or more (from their entry date) versus those who dropped out before the 90-day mark. Primary drug of concern was categorized into "alcohol" and "other drugs" because alcohol represented more than half of the sample, and the remaining drug types were highly varied, resulting in low numbers for each drug type. Binary logistic regression was used to examine the unique treatment entry–based predictors of dropout at the 3-month time frame. Post hoc biserial correlations and chi-square tests were used to further explore these relationships. A standard family-wise type I error rate of .05 was used.

Results

Relationship between predictor variables

Table 2 presents correlations between the predictor variables. Participants who stayed in treatment for 90 days or longer were more likely to be older, report lower levels of forgiveness of self, and report alcohol or not opiates as their primary substances of concern.

Predictors of dropout at 3 months

A binary logistic regression analysis was conducted to predict dropout at 3 months using age, gender, primary drug of concern, criminal involvement, psychological distress, alcohol or drug cravings, self-efficacy to abstain, spirituality, forgiveness (of self and others), and life purpose as predictors. A test of the full model against a constant-only model was statistically significant, indicating that the predictors reliably distinguished those who dropped out from those who did not, $\chi^2(14) = 33.85$, $p < .002$. Although significant, the Nagelkerke's R^2 indicated that the predictors accounted for only 9.5% of the variance in dropout. The overall model was 61.6% accurate, being able to predict dropouts with 76.5% accuracy and nondropouts with 42.3% accuracy. The predictor variables calculated from the regression are summarized in Table 3.

[COMP: Table 3 about here]

The regression analysis revealed two significant predictors—primary drug of concern and forgiveness of self. Those who reported higher average forgiveness of self were more likely to drop out before the 3-month time frame, Exp(β) = 0.75.

Alcohol was used as the reference category for primary drug of concern because this category had the highest proportion of those staying more than 3 months. For those with cannabis and stimulants as their primary drug, the odds of them staying 3 months or more were reduced by 20% compared with those with alcohol, Exp(β) = 0.80 and 0.78, respectively. Those who reported opiates had 60% reduced odds compared with alcohol, Exp(β) = 0.40, and those with "other" drug types had a 90% reduced odds,

Exp(β) = 0.09, of staying more than 3 months compared with those with alcohol as their primary drug of concern. However, the differential odds were significant only for opiates and "other" drugs compared with alcohol.

Regression analyses were also conducted with the dependent variable, time in treatment, as a continuous variable. However, the regressions accounted for only 2% of the variance with age as the only significant predictor. Because these analyses offered less predictive or explanatory insights, they are not elaborated on further in this article.

Post hoc analyses

A post hoc chi-square test revealed a significant difference in the proportion of people who stayed beyond 3 months depending on their primary drug of concern. For those who reported alcohol as their primary drug, 49.3% (n = 165 / 335) stayed beyond 3 months, whereas of those who reported any drug other than alcohol, only 32.9% (n = 72 / 219) stayed beyond 3 months, $\chi^2(1) = 14.51$, $p < .001$. However, chi-square comparisons revealed significant differences compared with alcohol for all four drug types. Specifically, the 49% with alcohol as the primary concern were more likely to stay beyond 3 months compared with those with stimulants (35%), cannabis (35%), opiates (27%), and other drugs (10%), all $p < .05$.

The regression further demonstrated that individuals who reported higher average forgiveness of self were more likely to drop out before the 3-month time frame. Biserial correlations (Field, 2009) between forgiveness of self and 3-month retention revealed a significant but small negative relationship between forgiveness of self and retention past the 3-month period (r = -.16, $p < .003$) (one tailed).

Data were available for 198 of the participants who completed the measures around 3 months in treatment. We explored whether there were changes over this time in treatment on the predictor variables using a series of paired t tests. There were significant reductions in psychological distress

(DASS) and cravings (DAQ), and significant increases in forgiveness (HFS), self-efficacy (DTCQ), and spiritual beliefs (SBS) (all *p*s < .01). There was no significant improvement in purpose in life (LET, $p > .05$).

Discussion

There is a high dropout rate from drug treatment programs, and previous research suggests that client-related variables may be useful in predicting those more likely to dropout. This study aimed to find predictors of dropout from a faith-based residential treatment program, two of which (forgiveness and life purpose) have not previously been examined. Findings revealed that slightly more than half of the participants dropped out of the treatment program by the 3-month period. Previous studies that have used comparable methodological parameters and samples have revealed dropout rates similar to or greater than the current study within similar time frames (approximate range: 50%–80%) (e.g., see Evans et al., 2009; Gossop et al., 1999; Keen et al., 2001; Maglione et al., 2000; Meier et al., 2006). In a review, Baekeland and Lundwall (1975) determined that 52%–75% of outpatient alcoholics dropped out by the fourth session, and a mean of 28% of inpatient alcoholics dropped out before the recommended period (typically 2–3 months). What is unclear from previous research, however, is exactly what can be expected when assessing real-world outcomes between the 3-month time frame and other time frames. For example, are individuals three times more likely on average to relapse or commit a criminal act if they receive only 1 month of treatment instead of 2 or 3 months in a residential program? Furthermore, at what time frame is further treatment no longer effective with regard to these outcomes? Such information could be used to modify treatment programs and economically maximize outcomes.

Despite previous research demonstrating some utility in the predictors explored in this study, few reached significance, and the overall model explained only 9.5% of the variance in dropout. Finding reliable predictors of dropout and retention in drug treatment has proven difficult in prior settings. For

example, Keen et al. (2001) explored age, gender, and drug use among several other variables and found no significant predictors of length of stay in a study of 138 drug users in a residential rehabilitation center. Numerous other empirical studies have found few client-related predictors, and, of these, the amount of variance explained has been moderate at best (see Bell et al., 1997; Kelly and Moos, 2003; Mulder et al., 2009; De Weert-Van Oene et al., 2001; Schroder et al., 2009). Furthermore, individual predictors have generally been found to be inconsistent across studies (Claus et al., 2002; Greenfield et al., 2007; Maglione et al., 2000).

Of the two significant predictors found in this study, participant's drug type was the strongest predictor of retention, with those reporting alcohol as their primary drug of concern being more likely to remain at the 3-month period. Although there was a general trend for greater proportions of those with alcohol problems to remain past 3 months, this was only significant in relation to those with opiates or "other" drugs as their primary problem. We were unable to locate similar findings for medium- to long-term inpatient programs. However, a similar predictive pattern has been found in inpatient detoxification and outpatient settings. In a study of 877 First Nations individuals attending inpatient detoxification services in Canada, 29% were found to drop out (Callaghan, 2003). Whether patients were self-referred (odds ratio = 1.89) or had preferred using drugs other than alcohol (odds ratio = 1.67) predicted treatment dropout. In a second study of 268 hospital outpatients, those who reported alcohol as their only drug were almost twice as likely to remain in treatment at the 6-month period compared with those who reported a combination of alcohol and other drugs or just other drugs (McCaul et al., 2001). This raises questions about why those with alcohol as their primary drug of choice tend to stay longer in treatment.

In a study investigating a 28-day rehabilitation program, those with alcohol-only problems were significantly older, more likely to be married, and had longer and more severe substance misuse

histories at admission than dual substance users (Brown et al., 1993). Alcohol-only patients in rehabilitation have also been found to have greater psychiatric severity and more prior treatment attempts than dual substance users or cocaine-only users (Brower et al., 1994). It is possible that alcohol is a more insidious drug of misuse because of legal and social acceptance and a strong culture of heavy episodic drinking. Thus, an individual could have problems with drinking for a long period before society (or family and friends) deems it sufficiently "problematic" to require treatment. Such delays may result in more severe problems and multiple treatment episodes before help is first sought. Delays in help seeking and length of time with alcohol misuse increase the potential for harming relations with family and friends. Although speculative, when those with long-term alcohol problems enter residential treatment, they may believe they have done considerable harm to others over the years. The more harm that one perceives he or she has done to others, the greater the potential that he or she will experience shame and be less self-forgiving.

Our findings indicated that persons who reported greater forgiveness of self at baseline were more likely to drop out by the 3-month period. However, the biserial correlation between self-forgiveness and dropout was small in magnitude. Although we raised the possibility of secondary processes—such as doing penance for past indiscretions that may also be related to greater length of stay—there may be other explanations. There were significant improvements in self-forgiveness among those completing a second assessment after 3 months in treatment, suggesting self-forgiveness could change relatively early in treatment. This raises the question about whether changes in forgiveness rather than admission scores may be more prominent in explaining treatment retention. We have commenced collection of 3-month postdischarge outcome data in the current treatment settings. In the future, we will assess the relationships between outcome, treatment retention, and self-forgiveness.

In the treatment settings where this research was conducted, issues of forgiveness were mostly embedded within 12-step groups. Webb and Trautman (2010) use the forgiveness phases described by Enright and colleagues (1998) to characterize the processes at each step. In the early steps (e.g., Steps 1–3), work focuses on "uncovering" and "decision" phases of forgiveness (Webb and Trautman, 2010). This requires understanding and accepting the need for change and making a commitment. Webb and Trautman (2010) specify units within these phases, such as recognition of shame, anger, identification with offender, realization that former coping strategies are ineffective, and consideration of forgiveness. However, it is the latter steps that are most explicitly and clearly related to forgiveness (Step 8, being willing to make amends; Step 9, making amends where possible). Better understanding of the relationship of these various forgiveness components to changes in self-forgiveness may allow for more refined timing to promote treatment retention. The findings here suggest that further research is needed to elucidate such questions with the aim of improving drug treatment programs.

An unexpected finding was that purpose in life at treatment entry did not significantly predict treatment retention at 3 months. Overall, people rated their responses as "unsure" on this measure at entry, and this remained stable over time. There was also relatively little variability in mean ratings (entry $M = 3.15$, $SD = 0.42$), possibly reducing the potential of the variable to contribute to the prediction of retention. Purpose in life was the only variable that did not show improvements by the 3-month assessment. This may suggest that purpose in life is relatively stable and may take longer to change over time and the course of treatment. It may also suggest that it is relatively insensitive to relatively short-term treatment effects and the variables related to these short-term treatment effects, such as treatment retention.

A limitation of the current study is the single measurement point of the predictors. Several of the investigated variables are dynamic in nature and likely to change over time. For example, an

individual's drug cravings at baseline may dramatically increase 1 week later when an emotional trigger occurs, such as a bad phone call from family or a dispute with one of the other residents. Indeed, research has found craving to change in response to such things as mood (Maude-Griffin and Tiffany, 1996), blood levels of the drug (Greenwald, 2002), and perceived availability of the drug (MacKillop and Lisman, 2007). Research has also demonstrated forgiveness to fluctuate over time (McCullough et al., 2003). Future research may benefit from repeated measures of these dynamic variables. Baseline-only assessments aimed at predicting future likelihood of dropout might benefit from a focus on better capturing fluctuations in these dynamic indicators that might be most related to dropout. For example, those who enter treatment with high levels of craving that are sustained after 2 weeks may be more at risk of dropout than those who show reductions in craving. Similarly, early increases in a sense of purpose in life may help hold people in treatment by providing hope, a greater sense of direction, and goal orientation. There are several other dynamic variables that may show promise in future research; for example, counselor ratings of the working alliance have been found to be highly related to treatment retention (Meier et al., 2006). Another limitation of the current study is the underrepresentation of women and lack of power to assess predictors by gender. Nevertheless, the sample is representative of most populations in long-term residential programs, especially in Australia (Australian Institute of Health and Welfare, 2009), and can therefore be generalized to other treatment programs with similar gender proportions.

In conclusion, a large proportion of individuals can be expected to drop out of a residential drug treatment program by the 3-month period. Identifying client-related variables that can accurately and reliably predict those who will drop out from those who will not has thus far been inconsistent in the empirical research. The present study found few client-related variables that were significantly related to treatment dropout. However, it was found that patients who do not report alcohol as their primary drug

concern but who report greater forgiveness of self may be more likely to drop out by the 3-month period. To the authors' knowledge, this is the first study to examine and find elements of forgiveness as a predictor of dropout from a drug treatment program. These findings may be useful for residential drug treatment programs to implement strategies aimed at retaining such individuals or developing better aftercare and assertive follow-up for those who leave treatment early. If these findings are replicated, then one approach may include constructing a curriculum within a program aimed at individuals with primarily alcohol problems and another curriculum for individuals with problems related to drugs other than alcohol. Such programs may also be able to refine the forgiveness components of treatment, which may also promote greater treatment retention.

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References

Adamson, S. J., Sellman, J. D., & Frampton, C. M. A. (2009). Patient predictors of alcohol treatment outcome: A systematic review. *Journal of Substance Abuse Treatment, 36,* 75–86.

Alcoholics Anonymous World Services Inc. (2001). *The story of how many thousands of men and women have recovered from alcoholism* (4th ed.). New York, NY: Author.

Anton, R. F., Moak, D. H., & Latham, P. (1995). The Obsessive Compulsive Drinking Scale: A self-rated instrument for the quantification of thoughts about alcohol and drinking behavior. *Alcoholism: Clinical and Experimental Research, 19,* 92–99.

Antony, M. M., Bieling, P. J., Cox, B. J., Enns, M. W., & Swinson, R. P. (1998). Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety Stress Scales in clinical groups and a community sample. *Psychological Assessment, 10,* 176–181.

Australian Institute of Health and Welfare. (2009). *Alcohol and other drug treatment services in Australia 2007–2008* (Bulletin 74). Canberra, Australia: Author.

Baekeland, F., & Lundwall, L. (1975). Dropping out of treatment: A critical review. *Psychological Bulletin, 82,* 738–783.

Bell, K., Cramer-Benjamin, D., & Anastas, J. (1997). Predicting length of stay of substance-using pregnant and postpartum women in day treatment. *Journal of Substance Abuse Treatment, 14,* 393–400.

Brown, T. G., Seraganian, P., & Tremblay, J. (1993). Alcohol and cocaine abusers 6 months after traditional treatment: Do they fare as well as problem drinkers? *Journal of Substance Abuse Treatment, 10,* 545–552.

Brower, K. J., Blow, F. C., Hill, E. M., & Mudd, S. A. (1994). Treatment outcome of alcoholics with and without cocaine disorders. *Alcoholism: Clinical and Experimental Research, 18,* 734-739.

Callaghan, R. C. (2003, July 8). Risk factors associated with dropout and readmission among First Nations individuals admitted to an inpatient alcohol and drug detoxification program. *Canadian Medical Association Journal, 169,* 23–27.

Carroll, S. (1993). Spirituality and purpose in life in alcoholism recovery. *Journal of Studies on Alcohol, 54,* 297–301.

Clark, D. (1995). Craving for alcohol [Abstract]. *Journal of Psychopharmacology, 9,* 73.

Claus, R. E., Kindleberger, L. R., & Dugan, M. C. (2002). Predictors of attrition in a longitudinal study of substance abusers. *Journal of Psychoactive Drugs, 34,* 69–74.

Copeland, J., & Hall, W. (1992). A comparison of women seeking drug and alcohol treatment in a specialist women's and two traditional mixed-sex treatment services. *British Journal of Addiction, 87,* 1293–1302.

Dawes, M. A., Antelman, S. M., Vanyukov, M. M., Giancola, P., Tarter, R. E., Susman, E. J., . . . Clark, D. B. (2000). Developmental sources of variation in liability to adolescent substance use disorders. *Drug and Alcohol Dependence, 61,* 3–14.

De Leon, G. (1990–1991). The therapeutic community and behavioral science. *International Journal of the Addictions, 25,* 1537–1557.

De Leon, G., Sacks, S., Staines, G., & McKendrick, K. (2000). Modified therapeutic community for homeless mentally ill chemical abusers: Treatment outcomes. *The American Journal of Drug and Alcohol Abuse, 26,* 461–480.

De Weert-Van Oene, G. H., Schippers, G. M., De Jong, C. A. J., & Schrijvers, G. J. P. (2001). Retention in substance dependence treatment: The relevance of in-treatment factors. *Journal of Substance Abuse Treatment, 20,* 253–261.

Enright, R., & Fitzgibbons, R. P. (2000). *Helping clients forgive: An empirical guide for resolving anger and restoring help.* Washington, DC: American Psychological Association.

Enright, R. D., Freedman, S., & Rique, J. (1998). The psychology of interpersonal forgiveness. In R. D. Enright & J. North (Eds.). *Exploring forgiveness* (pp. 46–62). Madison, WI: University of Wisconsin Press.

Evans, E., Li, L., & Hser, Y. I. (2009). Client and program factors associated with dropout from court mandated drug treatment. *Evaluation and Program Planning, 32,* 204–212.

Field, A. P. (2009). *Discovering statistics using SPSS: And sex and drugs and rock 'n' roll* (3rd ed.). London, England: Sage.

Gossop, M. (1995). The treatment mapping survey; a descriptive study of drug and alcohol treatment responses in 23 countries. *Drug and Alcohol Dependence, 39,* 7–14.

Gossop, M., Marsden, J., Stewart, D., Edwards, C., Lehmann, P., Wilson, A., & Segar, G. (1997). The National Treatment Outcome Research Study in the United Kingdom: Six-month follow-up outcomes. *Psychology of Addictive Behaviors, 11,* 324–337.

Gossop, M., Marsden, J., Stewart, D., & Rolfe, A. (1999). Treatment retention and 1 year outcomes for residential programmes in England. *Drug and Alcohol Dependence, 57,* 89–98.

Greenfield, L., Burgdorf, K., Chen, X., Porowski, A., Roberts, T., & Herrell, J. (2004). Effectiveness of long-term residential substance abuse treatment for women: Findings from three national studies. *The American Journal of Drug and Alcohol Abuse, 30,* 537–550.

Greenfield, S. F., Brooks, A. J., Gordon, S. M., Green, C. A., Kropp, F., McHugh, R. K., . . . Miele, G. M. (2007). Substance abuse treatment entry, retention, and outcome in women: A review of the literature. *Drug and Alcohol Dependence, 86,* 1–21.

Greenwald, M. K. (2002). Heroin craving and drug use in opioid-maintained volunteers: Effects of methadone dose variations. *Experimental and Clinical Psychopharmacology, 10,* 39–46.

Hartz, D. T., Frederick-Osborne, S. L., & Galloway, G. P. (2001). Craving predicts use during treatment for methamphetamine dependence: A prospective, repeated-measures, within-subject analysis. *Drug and Alcohol Dependence, 63,* 269–276.

Henry, J. D., & Crawford, J. R. (2005). The short-form version of the Depression Anxiety Stress Scales (DASS-21): Construct validity and normative data in a large non-clinical sample. *British Journal of Clinical Psychology, 44,* 227–239.

Hubbard, R. L., Craddock, S. G., Flynn, P. M., Anderson, J., & Etheridge, R. M. (1997). Overview of 1-year follow-up outcomes in the Drug Abuse Treatment Outcome Study (DATOS). *Psychology of Addictive Behaviors, 11,* 261–278.

Keen, J., Oliver, P., Rowse, G., & Mathers, N. (2001). Residential rehabilitation for drug users: A review of 13 months' intake to a therapeutic community. *Family Practice, 18,* 545–548.

Kelly, J. F., & Moos, R. H. (2003). Dropout from 12-step self-help groups: Prevalence, predictors, and counteracting treatment influences. *Journal of Substance Abuse Treatment, 24,* 241–250.

Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy, 33,* 335–343.

Lyons, G. C. B., Deane, F. P., Caputi, P., & Kelly, P. J. (2011). Spirituality and the treatment of substance use disorders: An exploration of forgiveness, resentment and purpose in life. *Addiction Research & Theory, 19,* 459–469.

Lyons, G. C. B., Deane, F. P., & Kelly, P. J. (2010). Forgiveness and purpose in life as spiritual mechanisms of recovery from substance use disorders. *Addiction Research & Theory, 18,* 528–543.

MacKillop, J., & Lisman, S. A. (2007). Examining the effect of perceived availability on craving for alcohol: A quasi-experimental approach. *Addiction Research & Theory, 15,* 231–245.

Maglione, M., Chao, B., & Anglin, D. (2000). Residential treatment of methamphetamine users: Correlates of drop-out from the California Alcohol and Drug Data System (CADDS), 1994–1997. *Addiction Research & Theory, 8,* 65–79.

Marlatt, G. A., & Gordon, J. (1985). *Relapse prevention.* New York, NY: Guilford Press.

Mason, S. J., Deane, F. P., Kelly, P. J., & Crowe, T. P. (2009). Do spirituality and religiosity help in the management of cravings in substance abuse treatment? *Substance Use & Misuse, 44,* 1926–1940.

Maude-Griffin, P., & Tiffany, S. T. (1996). Production of smoking urges through imagery: The impact of affect and smoking abstinence. *Experimental and Clinical Psychopharmacology, 4,* 198–208.

McCaul, M. E., Svikis, D. S., & Moore, R. D. (2001). Predictors of outpatient treatment retention: Patient versus substance use characteristics. *Drug and Alcohol Dependence, 62,* 9–17.

McCoy, L. K., Hermos, J. A., Bokhourm, B. G., & Frayne, S. M. (2005). Conceptual bases of Christian, faith-based substance abuse rehabilitation programs: Qualitative analysis of staff interviews. *Substance Abuse, 25,* 1–11.

McCullough, M. E., Fincham, F. D., & Tsang, J. A. (2003). Forgiveness, forbearance, and time: The temporal unfolding of transgression-related interpersonal motivations. *Journal of Personality and Social Psychology, 84,* 540–557.

McCullough, M. E., Pargament, K. I., & Thoresen, C. E. (2000). *Forgiveness. Theory, research and practice.* New York, NY: Guilford Press.

McKay, J. R., & Weiss, R. V. (2001). A review of temporal effects and outcome predictors in substance abuse treatment studies with long-term follow-ups. Preliminary results and methodological issues. *Evaluation Review, 25,* 113–161.

Meier, P. S., Donmall, M. C., McElduff, P., Barrowclough, C., & Heller, R. F. (2006). The role of the early therapeutic alliance in predicting drug treatment dropout. *Drug and Alcohol Dependence, 83,* 57–64.

Miller, W. R. (1998). Researching the spiritual dimensions of alcohol and other drug problems. *Addiction, 93,* 979–990.

Milne, B. (2009). *Know the truth. A handbook of Christian belief* (3rd ed.). Nottingham, England: InterVarsity Press.

Mulder, R. T., Frampton, C. M. A., Peka, H., Hampton, G., & Marsters, T. (2009). Predictors of 3-month retention in a drug treatment therapeutic community. *Drug and Alcohol Review, 28,* 366–371.

Neff, J. A., & MacMaster, S. A. (2005). Spiritual mechanisms underlying substance abuse behavior change in faith-based substance abuse treatment. *Journal of Social Work Practice in the Addictions, 5,* 33–54.

Niaura, R. (2000). Cognitive social learning and related perspectives on drug craving. *Addiction, 95, Supplement 2,* S155–S163.

Noblejas de la Flor, M. A. (1997). Meaning levels and drug-abuse therapy: An empirical study. *International Forum for Logotherapy, 20,* 46–51.

Ouimette, P. C., Finney, J. W., & Moos, R. H. (1997). Twelve-step and cognitive–behavioral treatment for substance abuse: A comparison of treatment effectiveness. *Journal of Consulting and Clinical Psychology, 65,* 230–240.

Project MATCH Research Group. (1997). Matching Alcoholism Treatments to Client Heterogeneity: Project MATCH posttreatment drinking outcomes. *Journal of Studies on Alcohol, 58,* 7–29.

Robinson, E. A. R., Cranford, J. A., Webb, J. R., & Brower, K. J. (2007). Six-month changes in spirituality, religiousness, and heavy drinking in a treatment-seeking sample. *Journal of Studies on Alcohol and Drugs, 68,* 282–290.

Schaler, J. A. (1996). Spiritual thinking in addiction-treatment providers: The Spiritual Belief Scale (SBS). *Alcoholism Treatment Quarterly, 14,* 7–33.

Scheier, M. F., Wrosch, C., Baum, A., Cohen, S., Martire, L. M., Matthews, K. A., . . . Zdaniuk, B. (2006). The Life Engagement Test: Assessing purpose in life. *Journal of Behavioral Medicine, 29,* 291–298.

Schroder, R., Sellman, D., Frampton, C., & Deering, D. (2009). Youth retention: Factors associated with treatment drop-out from youth alcohol and other drug treatment. *Drug and Alcohol Review, 28,* 663–668.

Simpson, D. D. (1979). The relation of time spent in drug abuse treatment to posttreatment outcome. *American Journal of Psychiatry, 136,* 1449–1453.

Simpson, D. D. (1981). Treatment for drug abuse. Follow-up outcomes and length of time spent. *Archives of General Psychiatry, 38,* 875–880.

Simpson, D. D., Joe, G. W., Fletcher, B. W., Hubbard, R. L., & Anglin, M. D. (1999). A national evaluation of treatment outcomes for cocaine dependence. *Archives of General Psychiatry, 56,* 507–514.

Simpson, D. D., Joe, G. W., Rowan-Szal, G. A., & Greener, J. M. (1997). Drug abuse treatment process components that improve retention. *Journal of Substance Abuse Treatment, 14,* 565–572.

Simpson, D. D., & Sells, S. B. (1982). Effectiveness of treatment for drug abuse: An overview of the DARP research program. *Advances in Alcohol & Substance Abuse, 2,* 7–29.

Sklar, S. M., Annis, H. M., & Turner, N. E. (1997). Development and validation of the drug-taking confidence questionnaire: A measure of coping self-efficacy. *Addictive Behaviors, 22,* 655–670.

Stark, M. J. (1992). Dropping out of substance abuse treatment: A clinically oriented review. *Clinical Psychology Review, 12,* 93–116.

Thompson, L. Y., Snyder, C. R., Hoffman, L., Michael, S. T., Rasmussen, H. N., Billings, L. S., . . . Roberts, D. E. (2005). Dispositional forgiveness of self, others, and situations. *Journal of Personality, 73,* 313–360.

Waisberg, J. L., & Porter, J. E. (1994). Purpose in life and outcome of treatment for alcohol dependence. *British Journal of Clinical Psychology, 33,* 49–63.

Webb, J. R., Robinson, E. A. R., & Brower, K. J. (2009). Forgiveness and mental health among people entering outpatient treatment with alcohol problems. *Alcoholism Treatment Quarterly, 27,* 368–388.

Webb, J. R., Robinson, E. A. R., Brower, K. J., & Zucker, R. A. (2006). Forgiveness and alcohol problems among people entering substance abuse treatment. *Journal of Addictive Diseases, 25,* 55–67.

Webb, J. R., & Trautman, R. P. (2010). Forgiveness and alcohol use: Applying a specific spiritual principle to substance abuse problems. *Addictive Disorders & Their Treatment, 9,* 8–17.

Witkiewitz, K., & Marlatt, G. A. (Eds.). (2007). *Therapist's guide to evidence-based relapse prevention.* New York, NY: Academic Press.

Worthington, E. L., Jr. (Ed.). (2005). *Handbook of forgiveness.* New York, NY: Routledge.

TABLE 1. Mean scores and frequencies for predictor variables

Domain	*M*	*SD*	*n*	%
Length of stay				
Less than 3 months			354	57.3
3 months or more			264	42.7
Age, in years	36.97	10.65		
Gender				
Female			94	15.2
Male			524	84.8
Primary substance of abuse				
Alcohol			335	54.2
Stimulants			85	13.8
Cannabis			74	12.0
Heroin and other opiates			60	9.7
Other			11	1.8
Not reported			53	8.6
Criminal involvement[1]				
No			383	62.0
Yes			137	22.1
Not reported			98	15.9
Symptom distress[2]	1.38	0.76		
Alcohol or drug cravings[3]	2.87	1.55		
Self-efficacy to abstain[4]	55.59	26.79		
Spirituality[5]	3.54	0.70		
Forgiveness of self[6]	4.20	0.91		
Forgiveness of others[6]	4.57	1.05		
Life purpose[7]	3.14	0.42		

[1]"Was this admission prompted or suggested by the criminal justice system." [2]Depression, Anxiety and Stress Scale total average score. [3]Desires for Alcohol Questionnaire total average score. [4]Drug Taking Confidence Questionnaire total average score. [5]The Spiritual Beliefs Scale total average score. [6]The Heartland Forgiveness Scale subscale total averages. [7]Life Engagement Test total average score.

TABLE 2. Bivariate correlations between the predictor variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Treatment length[1]														
2. Age	.18**[d]													
3. Gender[2]	.02[b]	-.03[c]												
4. Criminal involvement[3]	-.04[b]	-.02**[d]	.04[b]											
5. Symptom distress[4]	.09[d]	-.02[a]	-.11**[c]	-.25**[d]										
6. Alcohol or drug cravings[5]	.02[d]	-.04**[a]	-.05[c]	-.04[d]	.43**[a]									
7. Self-efficacy to abstain[6]	.03[d]	.04[a]	.07[c]	.08[d]	-.23**[a]	-.32**[a]								
8. Spirituality[7]	.03[d]	.10**[a]	-.09*[c]	.03[d]	.05[a]	-.13**[a]	.08[a]							
9. Forgiveness of self[8]	-.22**[d]	.00[a]	.11**[c]	.12**[d]	-.41**[a]	-.20**[a]	.29**[a]	.04[a]						
10. Forgiveness of others[8]	.03[d]	.11**[a]	-.05[c]	.03[d]	-.31**[a]	-.18**[a]	.16**[a]	.09*[a]	.37**[a]					
11. Life purpose[9]	-.02[d]	.01[a]	.10*[c]	.08[d]	.03[a]	-.05[a]	.08*[a]	.09*[a]	.04[a]	-.02[a]				
12. Alcohol[10]	.17**[b]	.52**[d]	-.08[b]	-.21**[b]	0.12[d]	-.06	.12*[d]	.12*[d]	-.08[d]	.12*[d]	-.00[d]			
13. Stimulants[11]	-.06[b]	-.28**[d]	.06[b]	.21**[b]	-.09[d]	.01[d]	.10[d]	-.10[d]	.13*[d]	-.03[d]	.06[d]	-.51**[b]		
14. Cannabis[12]	-.06[b]	-.31**[d]	-.01[b]	.02[b]	0.02[d]	.02[d]	-.07[d]	-.07[d]	.02[d]	-.09[d]	.02[d]	-.47**[b]	-.16**[b]	
15. Opiates[13]	-.11*	-.10*[d]	.05	.07[b]	-.10[d]	.06[d]	.03[d]	.03[d]	.00[d]	-.03[d]	-.01[d]	-.42**[b]	-.15**[b]	-.13**[b]

[a]Pearsons correlation. [b]Pearson chi-square. [c]Point-biserial correlation. [d]Biserial correlation. [1]0 = did not stay longer than 90 days. 1 = stayed 90 days or longer. [2]0 = female, 1 = male. [3]"Was this admission prompt or suggested by the criminal justice system," 0 = no, 1 = yes. [4]Depression, Anxiety and Stress Scale total average score; higher scores indicate greater symptom distress. [5]Desires for Alcohol Questionnaire total average score; higher scores indicate greater levels of cravings. [6]Drug Taking Confidence Questionnaire total average score; higher scores indicate greater self-efficacy to abstain. [7]The Spiritual Beliefs Scale total average score; higher scores indicate greater spirituality. [8]The Heartland Forgiveness Scale subscale total averages; higher scores indicate greater levels of forgiveness. [9]Life Engagement Test total average score; higher scores indicate greater life purpose. [10]0 = primary substance of abuse not alcohol, 1 = primary substance of abuse is alcohol. [11]0 = primary substance of abuse not stimulants, 1 = primary substance of abuse = stimulants. [12]0 = primary substance of abuse not cannabis, 1 = primary substance of abuse cannabis. [13]0 = primary substance of abuse not opiates, 1 = primary substance of abuse = opiates.
*$p < .05$; **$p < .01$.

TABLE 3. Baseline predictors of participants staying in treatment for at least 3 months

Variable	β	*SE* of β	Exp(β)	[95% CI]
Age	0.02	0.01	1.02	[1.00, 1.04]
Gender[1]	-0.21	0.26	0.81	[0.49, 1.35]
Primary substance of abuse				
Stimulants	-0.25	0.30	0.78	[0.43, 1.41]
Cannabis	-0.22	0.31	0.80	[0.43, 1.48]
Heroin and other opiates	-0.91*	0.37	0.40	[0.19, 0.83]
Other	-2.38*	1.08	0.09	[0.01, 0.78]
Criminal involvement[2]	-0.07	0.24	0.93	[0.58, 1.49]
Symptom distress[3]	0.19	0.16	1.20	[0.87, 1.66]
Alcohol or drug cravings[4]	-0.02	0.08	0.98	[0.85, 1.14]
Self-efficacy to abstain[5]	0.00	0.00	1.00	[1.00, 1.01]
Spirituality[6]	0.10	0.14	1.11	[0.84, 1.47]
Forgiveness of self[7]	-0.29*	0.13	0.75	[0.59, 0.96]
Forgiveness of others[7]	-0.02	0.10	0.98	[0.80, 1.20]
Life purpose[8]	-0.21	0.25	0.81	[0.50, 1.32]
Constant	-1.80	1.50	0.17	

Notes: Dependent variable is the length of time the person spent at the treatment facility. 0 = less than 90 days, 1 = 90 or more. [1]0 = female, 1 = male. [2]"Was this admission prompted or suggested by the criminal justice system," 0 = no, 1 = yes. [3]Depression, Anxiety and Stress Scale total average score; higher scores indicate greater symptom distress. [4]Desires for Alcohol Questionnaire total average score; higher scores indicate greater levels of cravings. [5]Drug Taking Confidence Questionnaire total average score; higher scores indicate greater self-efficacy to abstain. [6]The Spiritual Beliefs Scale total average score; higher scores indicate greater spirituality. [7]The Heartland Forgiveness Scale subscale total averages; higher scores indicate greater levels of forgiveness. [8]Life Engagement Test total average score; higher scores indicate greater life purpose.
*$p < .05$.