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Changes in Religious Coping and Relapse to Drug Use Among Opioid-Dependent Patients Following Inpatient Detoxification

Eve S. Puffer,

Department of Psychiatry and Behavioral Sciences, Duke University Medical Center, Durham, NC, USA

Duke Global Health Institute, 310 Trent Drive, Room 239, Trent Hall, Durham, NC 27710, USA

Linda M. Skalski, and

Duke Global Health Institute, 310 Trent Drive, Room 239, Trent Hall, Durham, NC 27710, USA

Department of Psychology and Neuroscience, Duke University, 249 Soc/Psych, Box 90086, Durham, NC 27708, USA

Christina S. Meade

Department of Psychiatry and Behavioral Sciences, Duke University Medical Center, Durham, NC, USA

Duke Global Health Institute, 310 Trent Drive, Room 239, Trent Hall, Durham, NC 27710, USA

Eve S. Puffer: eve.puffer@duke.edu

Abstract

Relapse rates remain high among people with opioid dependence. Identifying psychosocial factors associated with outcomes is important for informing behavioral treatments. This study examined religious coping, opioid use, and 12-step participation among 45 participants receiving inpatient opioid detoxification at baseline and follow-up. At baseline, higher positive coping was related to less frequent opioid use pre-admission ($\beta = -.44, p < .001$) and history of 12-step participation ($OR = 2.33, p < .05$). Decreases in negative coping after discharge predicted less opioid use ($\beta = .55, p < .001$), and increases in positive coping predicted more frequent 12-step program participation ($\beta = .42, p < .05$). Positive religious coping may be protective, while negative religious coping may be a barrier to treatment.

Keywords

Religious coping; Opioid dependence; Opioid detoxification; Spirituality; 12-step program

Opioid dependence is a major public health concern, with severe social, medical, and economic consequences, including lost productivity, crime, violence, HIV/AIDS, other diseases, and death (Hser et al. 2001; Medicine 1997). In 2007, an estimated 1.4 million Americans abused oxycodone and 366,000 abused heroin (SAMSHA 2008). Physiological dependence on opioids can be severe, and withdrawal is characterized by acute symptoms, such as nausea, chills, sweating, muscle cramps, appetite loss, irritability, and insomnia (APA 2000). Detoxification is the first phase of treatment, and pharmacological treatments such as buprenorphine are often used to ease withdrawal and reduce opioid use (Fiellin et al.

2006; Jones 2004; Ling et al. 2005; Woody et al. 2008). Unfortunately, even with treatment, relapse often occurs within 1 month, and many individuals use drugs within days of discharge (Gossop et al. 2002; Ling et al. 2005; Woody et al. 2008). Therefore, it is critical to understand factors that may help protect against relapse to drug use in the vulnerable period immediately following detoxification.

Several researchers have examined religiosity and spirituality (R/S) in individuals with drug and alcohol abuse. Definitions of these constructs vary, though religiosity typically is defined as participation in organized religious activities, rituals, and practices, while spirituality is defined as the more internal aspects of individuals' spiritual experiences and beliefs (Miller and Thoresen 1999). One reason that R/S is important to examine in the context of drug use is that numerous factors, such as history of trauma, mental illness, and bereavement, can put one at risk for substance use. These experiences are extremely stressful and may require the mobilization of multiple coping resources (Jacobsen et al. 2001). Some individuals use substances to cope with these stressors, and they may simultaneously use coping strategies related to R/S that could affect substance use behavior. Not much is known about the co-occurrence of behaviors related to R/S and substance use, especially in relation to specific coping strategies.

Spirituality is a core component of 12-step programs, such as Alcoholics Anonymous (AA) and Narcotics Anonymous (NA), and data have shown associations between spirituality and recovery from substance use. Qualitative studies have described connections between spiritual change during AA and recovery from alcoholism (Alcoholics Anonymous 2001; Miller and Baca 2001), and treatment-outcome studies have shown associations between participation in 12-step programs and prolonged abstinence from alcohol (Moos and Moos 2006; Morgenstern et al. 1997). One study evaluating a 7-week group intervention to increase behavioral skills relating to spiritual involvement also reported that higher spiritual involvement was related to abstinence from alcohol (Brown et al. 2007).

Despite a burgeoning interest in this field, there are several limitations to the literature on R/S and substance use. Most studies are cross-sectional, draw from college and adolescent samples, and focus on substance use rather than addiction. Virtually no studies have examined R/S among users of illicit drugs. Another challenge is that R/S has not been measured in a standardized way and is often assessed as a global construct despite literature supporting a multidimensional model of religiosity (Hall et al. 2008). Therefore, more studies are needed that include clinical populations and that use well-defined measures of specific dimensions of R/S to understand the role of these constructs in the recovery process.

Religious coping is one dimension of R/S found to be a powerful predictor of health outcomes (for review, see George et al. 2002). Religious coping is defined by Pargament et al. (2000) as "how the individual [makes] use of religion to understand and deal with stressors" (p. 521). Pargament proposes that religiously oriented coping can be positive or negative. Positive religious coping is characterized by a belief in a loving God or Higher Power that offers support and help, as well as the use of a theological framework that helps one make meaning out of suffering. In contrast, negative religious coping is characterized by feelings of abandonment by God or a Higher Power and religious turmoil. It reflects the degree to which hardships are understood as punishment from God and the belief that problem-solving is futile because God is in complete control (Pargament 1997).

In many studies, positive religious coping has been associated with improved health outcomes, including reduced mortality among cancer and cardiac patients (Oxman et al. 1995; Spiegel et al. 1989). Negative religious coping has not been as clearly associated with physical health, but has been related to increased depression and anxiety (Koenig et al.

1992; Pargament 1997). Some researchers, however, have reframed negative religious coping as “religious struggle” and suggest that though religious doubt and frustration cause distress in the short term, it can be an opportunity for growth among those who “work to restore the relationship [with God]” toward a “stronger bond and more mature faith” (Exline 2002).

Studies suggest that religious coping is often mobilized during times of acute stress, frequently in situations involving threat and loss, such as a health crisis or job loss (Bearon and Koenig 1990; Bjork and Cohen 1993; Pargament and Hahn 1986). Individuals may find that their typical coping strategies are insufficient to meet the demands of the stressor, motivating even individuals who do not report high religiosity to use religious coping (Pargament et al. 2000). For substance abusers, the time periods immediately before and after addiction treatment often bring acute stress. Admission into treatment usually follows a period of heavy use and psychosocial problems (e.g., job loss, legal problems, and relationship difficulties), and the time period following discharge often requires readjustment and intense effort to avoid relapse. Given this, the time periods around detoxification and early recovery may trigger the use of both positive and negative religious coping.

Religious coping has not been studied adequately in relation to active substance use. Two studies have been conducted in the general population on religious coping and substance use; one conducted on emergency care patients found no relationship between religious coping and alcohol consumption (Bazargan et al. 2004), and another found a protective effect on marijuana use in women (Cecero and Fried 2005). Two studies examined changes in religious coping among patients in treatment for alcohol dependence (Piderman et al. 2007; Robinson et al. 2007). Piderman et al. documented significant increases in positive religious coping at discharge from treatment and non-significant reductions in negative religious coping. Robinson et al. documented the same pattern of changes, but at 6 months after treatment completion. These data suggest that religious coping may be mobilized and/or changed during addiction treatment. However, their findings about religious coping and treatment outcomes were mixed. Piderman and colleagues found associations between positive religious coping and alcohol abstinence self-efficacy and affiliation with AA, while Robinson and colleagues found no relationship between religious coping and participants’ engagement in heavy drinking. Studies have not examined religious coping and treatment outcomes in individuals with other drug addictions, including opioid dependence.

The purpose of this study was to examine the use of and changes in religious coping preceding and following inpatient detoxification and to examine how religious coping was related to opioid use and participation in 12-step programs before and after treatment. We hypothesized the following: (1) at baseline, positive religious coping would be inversely associated with frequency of opioid use and negative religious coping would be positively associated with frequency of use; (2) changes in religious coping would predict relapse to opioid use at follow-up such that increases in positive religious coping and decreases in negative religious coping would be related to lower frequency of use; (3) higher positive religious coping at baseline would be associated with having a history of 12-step program participation; and (4) changes in religious coping would predict 12-step program participation at follow-up such that increases in positive religious coping and decreases in negative religious coping would be associated with more frequent 12-step meeting attendance.

Methods

Participants and Procedures

This study used data collected as part of a randomized clinical trial of adjunctive electroacupuncture for opioid detoxification (Meade et al. 2010). Participants were men and women 18–59 years of age with opioid dependence requiring medical management of opioid withdrawal who presented for inpatient treatment at the Alcohol and Drug Abuse Treatment Program at McLean Hospital between August 21, 2007 and July 24, 2008. For safety considerations, exclusion criteria were as follows: requiring medical management of alcohol or benzodiazepine withdrawal; acute mania, psychosis, or suicidality; history of heart disease or seizure disorder; and pregnancy. All participants received treatment as usual, including daily meetings with a psychiatrist and a case worker, individual and group substance abuse counseling emphasizing relapse prevention and participation in 12-step/mutual-help programs, and a 3- or 4-day buprenorphine taper plus ancillary medications (e.g., antidepressants, sleep aids) as needed.

This study was approved by the McLean Hospital Institutional Review Board. Shortly after admission to the inpatient unit, interested participants provided written informed consent and were randomly assigned to either active or sham electroacupuncture thrice daily during inpatient detoxification (mean, median, and modal length of stay was 4 days). Participants completed assessments at baseline, prior to discharge, and at 1-week and 2-weeks post-discharge. Assessments were administered by trained research assistants and included both questionnaire- and interview-based measures. Participants received \$45 for each follow-up, plus a \$20 bonus for completing both visits. Of 45 participants who completed religious coping measures at baseline, 33 also had follow-up data. Because of the window around each follow-up, the follow-up period ranged from 6 to 32 days across participants ($M = 19$ days; $SD = 6.5$) with 3 participants followed for fewer than 14 days.

Measures

Substance Use—Timeline follow-back methodology was used to assess day-by-day alcohol and drug use (Sobell and Sobell 1996). At baseline, participants reported substance use in the 30 days prior to admission. At the 1- and 2-week follow-ups, they reported substance use since the previous interview. Data were combined and because of variable follow-up periods, percent days of drug use since discharge were computed. Supervised urine samples were collected at each assessment for toxicology screening to corroborate self-reports; any discrepancies were corrected.

Religiosity and Religious Coping—The demographics questionnaire included two items on general religiosity and religious affiliation. General religiosity (i.e., How religious are you?) had a 4-point Likert scale ranging from “not religious at all” to “very religious.” For religious affiliation, participants selected from the following choices: None, Catholic, Protestant, Jewish, Buddhist, Hindu, or Other. Religious coping was assessed with the Brief Measure of Religious Coping (Brief RCOPE; Pargament et al. 2000), a questionnaire composed of two 3-item subscales that assess use of positive and negative religious coping strategies. Participants indicated how often they engaged in each form of coping on a 4-point Likert scale ranging from 1 (not at all) to 4 (very often). Positive religious coping items assessed the extent to which one felt connected with a spiritual force, worked with a Higher Power, and felt that spirituality helped him or her with stress. Negative religious coping items assessed the extent to which one felt that he/she was punished or abandoned by a Higher Power and the extent to which he/she did *not* rely on a Higher Power. Scores on the three items for each scale were summed separately, and the mean was calculated for analysis (range = 0–4), with higher scores representing greater presence of the construct.

12-step Participation—Participation in 12-step programs (e.g., AA/NA) was assessed with an interview. At baseline, participants reported whether they had ever participated in a 12-step program. History of participation was used because past-month treatment-seeking behavior was likely not representative, since this was the time during which their drug use escalated to the point of requiring inpatient detoxification. At follow-up, participants reported number of days they had attended a 12-step meeting since the previous assessment. Data were combined and, because of variable follow-up periods, percent days of 12-step participation since discharge were computed.

Statistical Analysis

Descriptive statistics were used to examine levels of religiosity and religious coping among participants prior to admission and changes in religious coping at follow-up. Correlation analyses were used to identify possible covariates (e.g., age, gender, religiosity, years of education, and treatment condition) for the remaining analyses. For hypotheses 1 and 2, multivariate linear regression was conducted to assess relationships between positive and negative religious coping at baseline and drug use in the 30 days prior to admission (number days of use) and between changes in religious coping and drug use since discharge (percent days of use); multivariate analyses were used because positive and negative religious coping scores were not correlated ($r = .05$, $p = .73$), confirming that these are orthogonal constructs. For hypotheses 3 and 4, multivariate logistic regression was used to examine relationships between religious coping and history of participation in 12-step programs, and multiple linear regression was used to determine whether changes in religious coping were related to frequency of 12-step participation at follow-up. Analyses were conducted in SPSS 17.0.

Results

Participant Characteristics

Demographics—Participants included 31 men and 14 women ranging in age from 18 to 57 years. Most were Caucasian (96%), single (76%), and heterosexual (96%). Almost all had a high school education (93%), and some had a 4-year college degree or higher (24%). At baseline, 36% were working full time, 60% were working part time or in college, and 24% were unemployed. The majority had history of treatment for alcohol and drug problems (84%) and for psychiatric problems (80%).

Substance Use—Overall, participants had used drugs regularly for a mean of 9.73 (SD = 5.6) years and opioids for 5.67 (SD = 5.2) years. In the 30 days prior to admission, participants had used opioids on an average of 23.8 (SD = 8.1) days. Of all participants, 72.3% returned for at least one follow-up visit. Following discharge from inpatient treatment, 47% of those who attended follow-up relapsed to opioid use. These participants reported using opioids on a mean of 15.9% of days (SD = 29.3%) during the follow-up period. Frequency of opioid use was not correlated with age, gender, education, and years of substance use prior to admission or at follow-up ($p > .13$). Treatment condition also was unrelated to number of days of use during follow-up, though the initial intervention-outcome study showed that fewer participants in the electroacupuncture condition had any relapse within 2-weeks of discharge (C. Meade et al. 2010). The majority of participants (61.7%) had a history of 12-step participation. History of 12-step participation was associated with number of years of drug use ($r = .404$, $p = .006$), but not with age, gender, education, or religiosity ($p > .45$).

Religiosity and Religious Coping among Participants—Table 1 shows the descriptive data on religiosity and religious coping. The majority of participants (64%) were Catholic, and 24% reported no religious affiliation. Many reported that they were not

religious at all (47%) or only slightly religious (40%). At baseline, the mean RCOPE score for positive religious coping was 1.98 (SD = 2.29) on the 4-point scale, and 44.4% had a score of 0. The mean RCOPE score for negative religious coping was 1.89 (SD = 2.01), and 33.3% had a score of 0. Overall, 71% reported some use of religious coping, either positive, negative, or both, while 29% reported no religious coping. Level of religiosity was positively correlated with positive religious coping ($r = .599, p < .001$) but not negative religious coping ($r = .165, p = .279$). Neither positive nor negative religious coping was associated with age, gender, education, or years of substance use ($p > .12$).

The majority of participants exhibited some change in religious coping from baseline to follow-up. For positive religious coping, over half (52%) had an increase, 15% had a decrease, and 33% had no change. Of note, of the 13 participants with a baseline score of 0 on positive religious coping, six endorsed some level of positive religious coping at follow-up. For negative religious coping, almost half (42%) reported a decrease, 27% reported an increase, and 30% had no change. Of the 12 participants with a baseline score of 0 on negative religious coping, 5 reported some negative religious coping at follow-up. Neither change in positive nor negative religious coping was associated with religiosity, age, gender, education, or years of substance use ($p > .24$). Overall, the proportion of participants who reported no religious coping at all (positive or negative) decreased from 28% at baseline to 15% at follow-up.

Hypothesis Testing

Hypotheses 1 and 2: Religious Coping and Opioid Use—Table 2 shows linear regression models predicting opioid use at baseline and follow-up. Higher positive religious coping at baseline was related to less frequent pre-treatment opioid use ($\beta = -.44, p = .003$). This remained significant after controlling for level of religiosity. However, change in positive religious coping was unrelated to frequency of post-treatment opioid use at follow-up ($\beta = .09, p = .58$). In contrast, negative religious coping at baseline was unrelated to pre-treatment opioid use ($\beta = -.06, p = .68$), but change in negative religious coping was significantly correlated with post-treatment opioid use ($\beta = .55, p = .003$). Specifically, reductions in negative religious coping were associated with less frequent opioid use during follow-up.

Hypotheses 3 and 4: Religious Coping and 12-step Program Participation—Table 2 also shows the multiple regression models predicting 12-step participation. Positive religious coping at baseline was associated with history of 12-step participation after controlling for years of substance use (OR = 2.33, $p = .01$). That is, individuals with higher religious coping were more likely to have ever been to meetings. Furthermore, increased positive religious coping was associated with frequency of 12-step participation at follow-up ($\beta = .42, p = .03$). Negative religious coping was unrelated to 12-step participation.

Discussion

This study is among the first to examine the relationship between religious coping and relapse to illicit drug use. We focused on the time period surrounding inpatient detoxification, an event associated with high stress that may mobilize religious coping. Results documented a relationship between religious coping and opioid use. Greater use of positive religious coping was associated with less frequent opioid use prior to inpatient treatment and a history of 12-step participation. For many participants, religious coping changed during treatment; most commonly, positive religious coping increased and negative religious coping decreased. Reductions in negative religious coping predicted less opioid use

after discharge, and increased positive religious coping was associated with more frequent participation in 12-step programs.

While many participants reported shifts in religious coping, results do not necessarily suggest drastic changes in participants' spiritual views over only a few weeks. Rather, changes may reflect participants' increased effort to use *all* of their coping resources, including their religiously oriented beliefs that perhaps had not been on the forefront of their minds until they faced the stress of early recovery. While religiously oriented responses to stress may be expected for people who are highly religious, the associations between religious coping and drug use were particularly interesting in our sample, given that the majority reported no or low religiosity prior to admission. This suggests that religious coping may be relevant even for some individuals who are not highly religious upon entering treatment. This is consistent with data from validation of the RCOPE showing that the construct of religious coping is often independent from overall endorsed levels of religiosity (Pargament et al. 2000). Individuals may not self-identify as "religious," but when asked about their specific thoughts and strategies for coping with problems, they may endorse interacting with or relying on God or a Higher Power in those stressful situations. Therefore, it may be beneficial to continue to explore issues of religious coping in samples that are not expected to be highly religious.

Consistent with Pargament's (1997) conceptualization of religious coping as a multidimensional construct, results suggest that positive and negative religious coping may play somewhat independent roles in substance use outcomes. Positive religious coping seems to have a protective effect, as it was associated with lower opioid use and higher 12-step participation. Having a strong sense of hope and feeling supported by God or a Higher Power may decrease distress and increase motivation to engage in adaptive coping (in lieu of substance use). Results suggest that individuals with greater positive religious coping may be more open to treatment options, such as 12-step programs. As 12-step programs have a strong spiritual focus, it may be that these programs build upon an individual's use of religious coping, thereby making the 12-step experience more meaningful and effective in one's recovery process. Alternatively, 12-step programs may be the driving force of this observed change by encouraging positive religious coping.

In contrast, negative religious coping appears to be a risk factor for poorer outcomes. Individuals who *reduced* their use of negative religious coping were less likely to use opioids following discharge. When engaging in negative religious coping, one may feel hopeless and alone, sensing a lack of power over one's life and that God or a Higher Power has abandoned them. Reducing these negative beliefs is likely to remove some barriers to recovery and perhaps restore motivation and adaptive coping abilities that lead to decreased substance use.

Clinical Implications

Results suggest that religious coping may deserve more attention in clinical settings, though research will be needed to evaluate interventions targeting religious coping and to determine whether addressing religious coping is an essential factor to address. A first step in clinical settings may be to assess whether individuals use religious coping and whether it is negative or positive. This would alert clinicians to risk and protective factors that potentially could be addressed during treatment. The Brief RCOPE may be a useful assessment tool because it is brief and easily interpreted, or clinicians could simply ask patients about spirituality and religious coping. Delaney and colleagues (2009) suggest a client-centered approach that allows clients to guide the discussion of spiritual issues. For patients who report use of religious coping or openness to religiously oriented strategies, it may be helpful to integrate

the topic of religious coping within interventions to increase positive and decrease negative religious coping.

Addressing religious coping could improve treatment success for some patients, and including religious coping as a treatment target could be consistent with current treatment models. This is particularly clear in 12-step programs that already emphasize spirituality. Additionally, cognitive-behavioral treatments emphasize connections between cognitions and substance use behaviors. As religious coping strategies are primarily cognitive, clinicians could use their current framework to encourage positive religious coping thoughts (e.g., “I can resist this craving, and a Higher Power is here to help me.”) and challenge negative ones. For example, a therapist could challenge the thought, “God is punishing me” through questions about the concepts of grace and mercy, which are central in most spiritual belief systems. The client may then develop a new, more positive cognition (e.g., “I feel guilty, but God can forgive me.”) and subsequently experience mood improvements and increased motivation for behavior change. Further, some interventions specifically targeting religious coping have already been developed for patient with serious illnesses (Breitbart 2002). Elements of these interventions could be adapted for use with individuals who have substance use disorders.

A possible challenge to integrating religious coping across treatment approaches is that religion is not typically addressed in many treatment programs and may be a topic that some clinicians find difficult to discuss. This is understandable given the variability in religious beliefs among therapists (Shafranske and Malony 1990) and lack of training on how to address R/S in therapy (Galanter et al. 2009; Russell and Yarhouse 2006). One way to facilitate clinicians’ comfort with addressing spirituality may be to focus on concepts, such as religious coping, that blend familiar concepts (i.e., coping) with the less familiar, non-clinical constructs surrounding spirituality. Focusing on general spirituality rather than specific belief systems also is likely to help integrate these issues into standard treatment protocols, particularly for settings that provide group treatments to diverse patients.

An additional challenge to addressing R/S in mental health interventions is the question of whether or not it is ethical to attempt to change an individuals’ worldview, especially something as personal (and often cultural) as religious beliefs. It is particularly important to consider the ethics of this when conducting research on new interventions that integrate religiously oriented approaches that have not yet been found to be efficacious. To address this, we recommend that future studies that evaluate religious coping interventions develop very explicit informed consent procedures that explain the content of the intervention and the possible risks and benefits related to personal belief systems. This will allow clients to make a fully informed decision about whether they want to engage in a treatment that promotes spiritual practices or beliefs that may be different from, or in conflict with, their current beliefs.

Limitations and Future Directions

A strength of this study is that religious coping was measured longitudinally, at admission to the hospital and after discharge. This allowed us to examine changes in religious coping during early recovery and its relationship to drug use outcomes. Nevertheless, correlational analyses limit our ability to identify causal relationships between religious coping and opioid use, and we did not examine possible underlying mechanisms. For instance, positive religious coping could be related indirectly to less drug use by increasing one’s hope and sense of purpose. Conversely, negative religious coping could increase depression and hopelessness, posing barriers to abstinence. The direction of the relationships also could not be determined; while religious coping may affect opioid use, one’s substance use behavior also may affect one’s level of religious coping. Perhaps most likely, there may be reciprocal

relationships between religious coping, opioid use, and 12-step participation not identified within the current design.

A number of other limitations are noteworthy. First, the follow-up period was relatively brief. This timeframe was chosen because of the high rate of relapse among opioid users, and indeed, approximately half of participants relapsed during that time. While we observed changes in religious coping, longer follow-up in prospective and longitudinal studies would allow for a better understanding of how religious coping and substance use may be related throughout the recovery process. Second, our measures did not assess the full range of coping strategies and aspects of R/S that could play a role in relapse, and we measured only AA/NA attendance rather than AA/NA involvement, which better assesses individuals' applications of the 12-step principles (Tonigan et al. 1996). Third, the sample was relatively small and homogeneous, as data collection was limited to a single unit in a private psychiatric hospital. Therefore, results may not generalize to the broader population of opioid users, including those of different socioeconomic backgrounds, geographic regions, and not seeking detoxification. Lack of diversity of religious affiliation in our sample also was limiting in that we were unable to examine potential differences between individuals of different religions or denominations of the same religion. Religious belief systems vary in their emphasis on the positive, supportive aspects of a relationship with God or a Higher Power versus an emphasis on punitive or threatening aspects of this relationship. Future studies should investigate whether certain religious affiliations are related to more positive or negative religious coping and whether these differences are related to substance use outcomes.

Conclusions

Opioid dependence is a serious addiction with high rates of relapse. While pharmacotherapies like methadone and buprenorphine are effective in reducing relapse, there is still much room for improvement. Results of the current study suggest that religious coping may play a role in the recovery process, at least for some people. Increased positive religious coping was associated with less frequent opioid use and more frequent 12-step participation, and decreased negative coping was associated with less relapse. Results provide a rationale for further examining the role of religious coping in the treatment of substance abusers and how it might be integrated into treatments to improve outcomes.

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Table 1

Religiosity and religious coping among participants

Variable	Statistic
Religion, % (<i>n</i>)	
Catholic	64.4 (29)
No religion	24.4 (11)
Other	11.1 (5)
Religiosity, % (<i>n</i>)	
Not at all	46.7 (21)
Slightly	40.0 (18)
Moderately	13.3 (6)
Very	0 (0)
Baseline religious coping ^a : M (SD)	
Positive	1.98 (2.29)
Negative	1.89 (2.01)
Changes in positive religious coping	
Any increase, % (<i>n</i>)	51.5 (17)
Mean increase ^a , M (SD)	.22 (.10)
Any decrease, % (<i>n</i>)	15.2 (5)
Mean decrease ^a , M (SD)	.28 (.22)
Changes in negative religious coping	
Any decrease, % (<i>n</i>)	42.4 (14)
Mean decrease, M (SD)	.14 (.12)
Any increase, % (<i>n</i>)	27.3 (9)
Mean increases, M (SD)	.31 (.17)

^aMean values for religious coping were calculated by dividing the sum score by 12 to correspond with the 4-point Likert scale

Table 2

Regression models of religious coping predicting substance abuse outcomes

	Opioid use ^d			12-step participation ^b		
	Baseline (days prior to treatment)		Post-treatment (% days since discharge)	Lifetime history (any)		Post-treatment (% days since discharge)
	B (95% CI)	β	B (95% CI)	OR (95% CI)	B (95% CI)	β
Baseline						
Positive coping	-1.56 (-2.55, -.57)	-.44**	-	2.33 (1.21, 4.48)*	-	-
Negative coping	-.230 (-1.35, .89)	-.06	-	1.02 (.70, 1.48)	-	-
Changes						
Increased positive coping	-	-	.01 (-.03, .05)	-	6.98 (.92, 13.05)	.42*
Reduced negative coping	-	-	.06 (.02, .10)	-	-.06 (-6.56, 6.44)	-.00

^a *n* = 31; 2 participants had missing drug use data at follow-up.

^b *n* = 29; 4 participants had missing 12-step data at follow-up

* *p* < .05,

** *p* < .001