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Longitudinal Differences in Spirituality and Religiousness between Men and Women in Treatment for Alcohol Use Disorders

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Abstract

This study compares men and women with alcohol use disorders on levels and trajectories of spirituality and religiousness over 30 months while controlling for critical covariates. Men (n=92) and women (n=65) entering abstinence-based treatment were assessed for drinking behavior, spirituality, and psychosocial variables in a longitudinal panel study. Multiple regression tested for baseline differences and multi-level models tested for differences from baseline to 6 months (early recovery) and from 6 to 30 months (later recovery) in seven dimensions of spirituality/religiousness. Between baseline and 6 months, women had higher scores than men for forgiveness of others and lower scores than men for negative religious coping. Between 6 and 30 months, the acceleration of positive change in self forgiveness was significantly greater for women than men. Differences in negative religious coping and forgiveness might relate to differences in shame and guilt and their resolution by gender. Future research should examine whether gender differences in spirituality serve as an asset to women as they pursue addiction recovery.

Keywords

Alcohol Use Disorder; Gender; Spirituality; Recovery

Women report higher levels of spirituality and religiousness than men in U.S. population surveys, such as Gallup public opinion polls (Newport, 2006) and the General Social Survey (Idler et al., 2003). In the broader research literature, higher rates of spirituality and religiousness have been reported for women across the lifespan: at adolescence, (Smith & Denton, 2009; Smith, Denton, Faris, & Regnerus, 2002), college age (Bryant, 2007), adulthood (Brown, Chen, Gehlert, & Piedmont, 2012), and older adulthood (Skarupski, Fitchett, Evans, & de Leon, 2010; Taylor, Chatters, & Joe, 2011). This pattern has been observed across multiple dimensions of spirituality and religiousness assessed with different psychometric instruments, suggesting a robust phenomenon. Scholars have ascribed these differences to biological, psychological, sociological, and developmental factors (Bryant, 2007; Hood, 2009; Pargament, 2001).

The study of gender differences in spirituality and religiousness among individuals with alcohol use disorders is important for several reasons. First, spirituality and religiousness are

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prominent factors in addictions treatment, research, and recovery (W. R. Miller, 2013). This is in part due to the prominent role of spirituality in Alcoholics Anonymous (W. R. Miller, 2013) and the inverse relationship between spirituality and drinking and drug use (Kendler, Gardner, & Prescott, 1997). Empirical evidence has supported the salubrious role of spirituality among individuals with substance use disorders. Higher levels of spirituality and religiousness (Piderman, Schneekloth, Pankratz, Stevens, & Altchuler, 2008) and improvement in spirituality and religiousness (Piderman et al., 2008; Robinson, Cranford, Webb, & Brower, 2007; Robinson, Krentzman, Webb, & Brower, 2011) have been associated with reduced drinking among individuals with alcohol use disorders. Therefore, higher levels of spirituality and religiousness among women could represent strengths that can be leveraged for recovery. Spirituality and religiousness comprise important ways in which recovery pathways differ (Flaherty, Kurtz, White, & Larson, 2014; Witbrodt, Kaskutas, & Grella, 2015). If women's spiritual and religious lives vary from men's during recovery, this could illuminate new knowledge about gender-moderated recovery pathways.

Definitions and Dimensions of Spirituality and Religiousness

The current study employs Pargament's (2013) definition of spirituality as the "search for the sacred" (p. 14) and religion as "the search for significance that occurs within the context of established institutions that are designed to facilitate spirituality" (p. 15). Spirituality and religiousness together have been considered a single over-arching construct comprised of multiple dimensions (Idler et al., 2003; Pargament, 2001). Scholars have defined these dimensions of spirituality/religiousness as "inclusive of both traditional religiousness and noninstitutionally based spirituality" (Idler et al., 2003, p. 327). Therefore, the current study examines diverse spiritual and religious constructs including theistic conceptualizations such as positive and negative religious coping as well as non-theistic constructs such as forgiveness and purpose in life. The seven dimensions of spirituality and religiousness included in the current study are positive religious coping, negative religious coping, spiritual/religious practices, daily spiritual experiences, purpose in life, forgiveness of others, and forgiveness of self.

Literature Review

Gender Differences in Levels of Spirituality/Religiousness

Gender differences in spirituality and religiousness among individuals with substance use disorders have been studied, but the results are mixed. Kelly and Hoepfner (2012) reported that women had significantly higher scores on a measure of religious background and behavior than men at intake in a large national multi-site study. In a sample of 180 patients enrolled in substance use disorder treatment programs, Bliss and Ekmark (2013) found that women had significantly higher scores than men on a measure of spiritual attitudes, but were equivalent to men on four other dimensions of spirituality/religiousness, including religious behaviors. In a sample of 152 individuals attending Alcoholics Anonymous (AA) after inpatient treatment in Sweden, 50% of women, but only 31% of men reported having had a spiritual awakening (Bodin, 2006).

Some studies have reported that spirituality and religiousness levels are higher among men. Charzy ska (2015) found that men were more spiritually inclined than women in a Polish sample of 112 individuals entering alcohol use disorder treatment. Specifically, women had lower scores than men on a measure of forgiveness of others and higher scores than men on a measure of negative spiritual coping; no gender differences were found in positive spiritual coping. A New Zealand study of 90 individuals entering treatment found that men's and women's levels of spirituality and religiousness were equivalent for belief in God, religious beliefs and behaviors, and daily spiritual experiences, but men attributed recovery to God's influence at higher rates than female peers (Baker, Sellman, & Horn, 2007).

Change in Spirituality/Religiousness over Time

Spirituality and religiousness increase over time as the drinking behavior of individuals with alcohol use disorders declines. Piderman and colleagues (2007) assessed 74 individuals at intake and discharge from a three-week outpatient program and found significant increases in private spiritual/religious practices, personal religious commitment, life purpose and satisfaction, and positive religious coping. Robinson and colleagues (2007) surveyed 123 outpatients at treatment entry and six months later, and, similar to Piderman et al., found significant increases in private spiritual/religious practices, positive religious coping, and purpose in life. In addition, Robinson reported significant increases in daily spiritual experiences and forgiveness. In a second study with a more diverse sample of 364 individuals with alcohol dependence, Robinson and colleagues (2011) observed significant changes in all of the factors reported in their earlier study as well as decreases in negative religious coping and increased spiritual/religious beliefs.

Only one study that we are aware of has reported spiritual and religious change by gender. Charzy ska (2015) found that over the course of a 6–8 week alcohol-use disorder treatment program, positive spiritual coping increased and negative spiritual coping decreased significantly for men and for women. However, Charzy ska reported that these increases were greater for women. Further, significant positive changes in forgiveness and in gratitude were only observed among women in the sample.

Aims of the Present Study

The aim of this study is to examine differences between men's and women's spirituality and religiousness, both in level and trajectory, during early and later recovery, while controlling for relevant covariates, in a sample of individuals with alcohol use disorders. This extends previous research in several ways. First, previous studies tend to report spiritual and religious differences between men and women without controlling for relevant demographic and clinical variables, potentially allowing other factors to account for observed differences. Second, only Charzy ska (2005) has reported differences in spiritual/religious change by gender, but this was assessed with only two time waves 6–8 weeks apart and relevant covariates were not included in the model. Third, it seems that no previous study has examined spiritual and religious change by gender over a time period longer than 8 weeks. Flaherty and colleagues have suggested that addiction recovery is not consistent over time but begins with an earlier phase of "initial recovery stabilization" followed by a distinct

longer-term “recovery maintenance” stage (Flaherty et al., 2014, p. 341), although previous research has not examined spirituality by recovery stage.

Extant research does not provide enough of a foundation to articulate specific hypotheses for seven diverse dimensions of spirituality assessed over 30 months. While there is strong evidence that women’s levels of spirituality and religiousness are higher than men’s in the general population, this relationship has been less stable in the addiction literature. Therefore, this descriptive study will answer the following research questions: 1. Do women with alcohol use disorders report higher levels of spirituality than their male counterparts at baseline, in the shorter-term from baseline to 6 months, and in the longer-term from 6–30 months while controlling for key covariates? 2. Does spirituality increase more rapidly for women than men in the shorter-term and in the longer term?

Method

The current study is a secondary data analysis of a larger study in which 125 women and 239 men with diagnoses of alcohol dependence were followed prospectively over 30 months between 2004 and 2009 in the U.S. Midwest. The parent study was longitudinal and naturalistic in design and sought to address the relationship between spirituality, religiousness, and drinking in a sample of individuals with alcohol use disorders. Recruitment took place at four sites; the current study uses the data derived from one of the sites, a university outpatient clinic from which 92 men (58.6%) and 65 women (41.4%) participated in the study. This site was chosen because it was the only one of the four original sites in which all participants were entering abstinence-based out-patient substance use disorder treatment at baseline and in which women comprised more than 10% of the sample to enable gender comparisons. Patients were recruited first by inspection of the clinical record and then by invitation from the research team. Recruitment criteria included 1) being over age 18, 2) having a diagnosis of alcohol dependence, 3) consuming alcohol within the past 90 days, 4) absence of homicidality, psychopathy, and/or suicidality, and 5) English language literacy. At baseline and every 6 months, respondents met with researchers to complete surveys to assess spirituality, religiousness, drinking behavior, and a wide range of other clinical and psychosocial variables. At intervening 3-month intervals, data were obtained via telephone on treatment and drinking variables. All subjects gave informed consent in writing and received compensation for the in-person assessments, under the approval of the applicable Institutional Review Boards. Previously published reports provide additional details about the parent study (Krentzman, Cranford, & Robinson, 2013; Robinson et al., 2011).

Sample Characteristics

The majority of the sample employed in the current analyses were European-American (93.9%). Fewer than half (42.7%) were married or co-habiting. Two-thirds (66.9%) were employed. The sample had an average of over 14 years of education. All met criteria for alcohol dependence via the alcohol use disorders component of the Structured Clinical Interview for DSM-IV (First, Spitzer, Gibbon, & Williams, 1997), assessed in face-to-face interviews at baseline. For more than half the sample (56.7%), dependence was severe. Most

(85.4%) had a family member with an alcohol problem. Approximately half (51.0%) had been in treatment before the baseline treatment episode and previous treatment episodes averaged 2.8 in number ($SD = 2.8$). In the 90 days that preceded baseline, individuals abstained from alcohol just over half of the time (59.8% days abstinent, $SD = 26.8\%$). When they did drink, they averaged 9.3 ($SD = 6.7$) drinks per day. See Table 1 for sample demographics by gender.

Measures

Demographic factors—These included age in years, race (European-American or other), years of education, marital status (never married, married/living together, or separated/divorced/widowed), and employment (Yes or No).

Clinical factors—These included number of previous treatment episodes, drinks per drinking day (DDD), percent days abstinent (PDA) (Sobell, Brown, Leo, & Sobell, 1996; Sobell & Sobell, 1992), and Alcoholics Anonymous (AA) involvement. This construct was assessed with the Alcoholics Anonymous Involvement Scale (Tonigan, Connors, & Miller, 1996), modified to capture non-spiritual participation in AA as has been employed in previous research, e.g., Owen et al. (2003). The measure employs five items, one for each of the following AA experiences: having a sponsor, acting as sponsor, attending 90 meetings in 90 days, celebrating an AA anniversary, and considering one's self an AA member. In the current study, $\alpha = .80$ at baseline.

Spirituality/Religiousness—All spirituality variables were coded so that high values represent high levels of the construct. Cronbach's alphas represent internal consistency at baseline for the current subset of the parent study.

Positive and negative religious coping: Two subscales of the Brief RCOPE instrument (Pargament, Smith, Koenig, & Perez, 1998) assessed positive and negative religious coping. Positive religious coping represents the degree to which God is viewed as caring and reflects a secure relationship with God. Negative religious coping represents the degree to which God is punishing and reflects an insecure relationship with God. Ten items assessed positive religious coping, e.g., "Looked to God for strength, support, and guidance" and eight items represented negative religious coping, e.g., "Wondered whether God had abandoned me." The four-point response format ranged from 4=*a great deal* to 1=*not at all*. Previous work reported evidence that positive and negative religious coping represent distinct constructs (Pargament et al., 1998). Acceptable internal consistency for the subscales was reported in previous research with individuals with alcohol use disorders, for example, Robinson and colleagues (2007) reported Cronbach's alphas of .93 and .83 for positive and negative religious coping, respectively. In the current study, $\alpha = .92$ and .78 for positive and negative religious coping, respectively.

Spiritual/religious practices: The private religious practices instrument assessed the frequency of prayer, reading of sacred texts, listening to spiritual/religious programming, and praying before meals (Fetzer Institute, 2003). One item was added to assess frequency of meditation. Four items used an eight-point response format that ranged from 8=*several*

times a day to 1=*never*; the prayer-before-meals item used a five-point response format ranging from 5=*at all meals* to 1=*never*. For the current study, $\alpha=.74$.

Daily spiritual experiences: The Daily Spiritual Experiences instrument assessed the frequency with which smaller, more frequent moments of love, caring, selflessness, or beauty are experienced (Underwood & Teresi, 2002). Sixteen items, e.g., “I feel deep inner peace or harmony” used a six-point response format ranging from 6=*many times a day* to 1=*never or almost never*. One item assessed feeling close to God and used a four-point response format ranging from 4=*as close as possible* to 1=*not at all*. High internal consistency has been reported for this instrument in previous research with individuals with alcohol use disorders, for example, Robison and colleagues (2007) reported a Cronbach’s alpha of .92. For the current study, $\alpha=.93$.

Purpose in life: Crumbaugh and Maholick’s Purpose in Life scale (Crumbaugh, 1968; Crumbaugh & Maholick, 1964) was used to assess higher purpose in life, or, the absence of an “existential vacuum” (Nehemkis, Macari, & Lettieri, 1976). Twenty items use a response format anchored at each end of a 7 point continuum. For example, “My life is...” 1=*filled only with despair*, 4=*neutral*, 7=*running over with exciting good things*. The first studies of the instrument offered support for known-groups validity (Crumbaugh, 1968; Crumbaugh & Maholick, 1964). More recent studies report strong internal consistency for the instrument among samples of individuals with alcohol use disorders, for example, Robinson and colleagues (2007) reported a Cronbach’s alpha of .88. In the current study, $\alpha=.91$.

Forgiveness of self and others: Forgiveness of self and forgiveness of others were assessed with two subscales of the Behavior Assessment System (Mauger et al., 1992). Fifteen items assess each subscale using a true/false response format. The scale is designed to measure “deficits in forgiveness behaviors” (p. 171). The forgiveness of others subscale is designed to capture the extent to which a person holds a grudge, is punishing toward others, finds others to be hurtful, and is inclined toward retaliation or revenge: “It is hard for me to forgive those who hurt me.” The forgiveness of self subscale is designed to capture self-condemnation including the tendency to feel guilty, sinful, and to be self-punishing: “I find it hard to forgive myself for some things I have done.” Both subscales were reversed in the current study so that higher levels represented greater capacity to forgive self and others. Previous psychometric studies report that the two subscales represent distinct constructs and provide acceptable test-retest reliability and internal consistency (Mauger et al., 1992). In the current study, $\alpha=.83$ and .81, for forgiveness of self and others, respectively.

Statistical Methods

Rationale for statistical approach—The basic structure of the data were examined as a first step to determining data analytic procedures, as recommended by Singer and Willett (2003). Visual inspection of individual patterns and sample averages indicated that drinking and two of the spirituality/religiousness variables (spiritual/religious practices and daily spiritual experiences) followed a pattern of initial rapid increases between baseline and 6 months followed by relative stability between 6 months to 30 months. It was decided to analyze these two phases of time, baseline to 6 months, and 6 months to 30 months,

separately for several compelling reasons. First, the pattern of change over time for two of the spirituality variables suggested not one but two linear slopes, making a linear data analytic approach inappropriate. Second, this pattern was observed in a dimension of spirituality of central importance: spiritual/religious practices, which include prayer and meditation. Such behavioral dimensions of spirituality/religiousness have been especially associated with improvement in mental health when compared with attitudinal factors (Gartner, Larson, & Allen, 1991). In the addictions field, spiritual/religious practices have consistently and significantly mediated the effect of AA on reduced drinking, an effect not found for attitudinal dimensions (Kelly, Stout, Magill, Tonigan, & Pagano, 2011; Krentzman et al., 2013; Zemore, 2007). Third, analyzing the two phases separately allows for the comparison of outcomes by two of the recovery stages identified by Flaherty and colleagues: initial recovery stabilization and recovery maintenance stages (Flaherty et al., 2014). Fourth, drinking data also follow the pattern of pronounced reduction between baseline and 6 months followed by a period of greater stability. In the subsample employed in the current study, drinks per drinking day decreased significantly between baseline and 6 months (from 8.9 to 2.7, $t(135)=9.11$, $p<.001$) while percent days abstinent increased significantly (from 62.1% to 92.8%, $t(135)=-12.84$, $p<.001$). Between the 6 and 30 month period, by comparison, average drinks per drinking day did not change significantly (2.3 to 3.0, $t(103)=-1.12$, $p=.265$) while percent days abstinent decreased significantly (93.3% to 88.3%, $t(103)=2.14$, $p<.05$). This drinking pattern empirically supports the idea of two phases of change. Therefore, in the current study, data were analyzed separately by phase. First, baseline differences were determined, then gender differences in level and slope were analyzed from baseline to 6 months, and finally gender differences in level and slope were analyzed from 6–30 months.

Statistical approach—First, t-tests and chi-square analyses were employed to determine gender differences in a range of demographic and clinical factors. Significant differences were found between men and women only in baseline average drinks per drinking day; women drank less (see Table 1). Therefore, this variable was included as a covariate in all subsequent analyses. Additional covariates were selected for inclusion for their theoretical relationship to spirituality and religiousness. These additional covariates included age, education in years, and baseline AA involvement. Together with baseline drinks per drinking day, this set of covariates was included in all models to statistically control for possible confounds and isolate the effect of gender on spirituality. Heretofore, this set of factors will be referred to as “the study covariates.”

To determine gender differences at baseline, multiple regression was employed. In separate models, baseline spirituality variables were regressed one at a time on the study covariates and the focal predictor, gender (female=1, male=0).

To determine gender differences in spirituality between baseline and 6 months and between 6 and 30 months, multi-level models were employed as described by Singer and Willet (2003). This statistical approach enabled the modeling of change over time for the sample as a whole as well as gender’s role as a moderator of spirituality/religiousness over time. In the multilevel models, the main effect of gender was used to assess gender differences in spirituality *levels* over time, and the interaction of gender and time was used to assess gender

differences in slope, or *change*, in spirituality over time. All study covariates were included in these models to account for their influence on average spirituality levels and the slope of spirituality. The baseline level of the spirituality outcome was included in the 6–30 month models. The baseline to 6 month models included random intercepts (random slopes cannot be estimated for two repeated measures) and the 6–30 month models included random intercepts and slopes (this phase included five repeated measures). All analyses were conducted using the “MIXED” command in SPSS version 22 and the method of estimation was restricted maximum likelihood.

Missing data—The baseline wave assessed 157 individuals. One hundred thirty-six (86.6%) were present at the 6 month follow-up, 125 (79.6%) at the 12 month follow up, 116 (73.9%) at the 18 month follow up, 113 (72.0%) at the 24 month follow up, and 107 (68.2%) at the 30 month follow up. The number of respondents included in each analysis varied slightly based on availability of data for the seven spirituality outcomes over six assessment visits. The maximum number missing from any analysis was 23, representing individuals with missing spirituality data at baseline or 6 months. A chi-square test was conducted to determine whether this pattern of missingness varied by gender; it did not ($X^2(1, N=157) = 0.048, p=.827$). Individuals excluded from analyses (based on $n=23$) were equivalent to those included in the analyses on all demographic and clinical factors with one exception. They were drinking more frequently at baseline, specifically, they were abstinent only 46.4% of the previous 90 days versus 62.0% ($t(155)=-2.637, p<.01$).

Results

Differences in Spiritual and Religious Change by Phase of Recovery

Results of the statistical analyses which assessed levels and change in spirituality over time for all seven outcomes appear in Table 2. The left side of the table contains the results of the multi-level models assessing baseline to 6 months, the right side of the table contains the results of the multi-level models assessing 6–30 months. Reading across the rows marked “Time” for each outcome, significant change in spirituality/religiousness for the combined sample of men and women is indicated with bold type.

Five dimensions of spirituality changed significantly between baseline and 6 months (negative religious coping decreased; spiritual/religious practices, daily spiritual experiences, purpose in life, and forgiveness of self increased). Four dimensions of spirituality changed between 6 and 30 months (negative religious coping decreased; purpose in life, forgiveness of others, and forgiveness of self increased). Spiritual/religious practices and daily spiritual experiences improved significantly only in the shorter term. Three variables changed significantly throughout both phases: negative religious coping decreased and forgiveness of self and purpose in life increased. Forgiveness of others increased significantly only in the second phase. Positive religious coping did not change significantly in either phase of the study.

Gender Differences at Baseline

Clinical and demographic differences by gender are depicted in Table 1. Men and women were similar on all demographic and clinical variables at baseline with the exception of drinks per drinking day. Women reported fewer average drinks per drinking day at baseline (7.9 versus 10.3, $t(150.1)=-2.46$, $p<.01$) than men. Results of baseline comparisons of spirituality by gender are depicted in Table 3. Women and men had similar scores on all seven spirituality factors at baseline, controlling for study covariates, with one exception. Women had significantly lower scores for negative religious coping than men.

Gender Differences in Levels of Spirituality over Time

Differences in levels of spirituality from baseline to 6 months and between 6–30 months by gender are presented in Table 2. Reading across the rows marked “Gender” for each outcome, significant differences in levels of spirituality on average across each phase is indicated with bold type. On average over time, the levels of women’s scores between baseline and 6 months were significantly lower than men’s for negative religious coping and significantly higher than men’s for forgiveness of others. On average over time, men and women’s levels of spirituality were equivalent between 6 to 30 for all outcomes. Averages for men and women in each dimension of spirituality/religiousness at each assessment wave are depicted in Table 4.

Gender Differences in Change in Spirituality

Differences in the slope of spirituality from baseline to 6 months and between 6–30 months by gender are also presented in Table 2. Reading across the rows marked “Gender*time” for each outcome, significant differences in the slope of spirituality by gender across each phase is indicated with bold type. Between baseline and 6 months, change in spirituality was equivalent for men and women. Between 6 and 30 months, change in spirituality was equivalent by gender for all spirituality variables with the exception of forgiveness of self. Here, women’s self forgiveness scores increased more rapidly than men’s ($p<.05$), when controlling for study covariates (see Figure 1).

Discussion

The current study extends the existing research on alcohol use disorders, gender, and spirituality/religiousness by examining seven dimensions of spirituality and religiousness, by including theoretically and empirically relevant covariates in all statistical analyses, by assessing static spirituality at baseline and changing spirituality by recovery phase over longer periods of time than in previous research.

This is the first study to report that different dimensions of spirituality change in the shorter-term versus the longer-term, supporting the hypothesis that there are distinct phases of recovery (Flaherty et al., 2014). Perhaps the spiritual and religious variables that changed only in the short term were more reactive to treatment-related influences. During treatment, individuals might have received recommendations to practice calming contemplative behaviors such as prayer and meditation, or perhaps individuals were more willing to initiate prayer and meditation practices in the earlier recovery phase in order to support newfound

abstinence. Daily spiritual experiences which changed only in the first phase has been shown to increase with more frequent meditation practice (Geary & Rosenthal, 2011). Meditation was included in the measurement of spiritual/religious practices which might explain why spiritual/religious practices and daily spiritual experiences increased during this phase.

Differences by gender reveal an interesting pattern. In the shorter-term, women reported lower levels of negative religious coping and higher levels of forgiveness of others. In the longer-term, women's forgiveness of self increased more rapidly than men's. These constructs are linked thematically. Negative religious coping, forgiveness of others, and forgiveness of self are all related to presence or absence of tendencies toward recrimination, retaliation, and vengeance. Lower levels of negative religious coping are associated with an absence of feeling punished by God (Pargament et al., 1998). Higher levels of forgiveness of others are associated with the absence of retaliatory and punishing behaviors toward others (Mauger et al., 1992). These patterns in women in the shorter-term were attended by greater ability to forgive themselves in the longer-term, that is, to feel less and less self-recrimination over time from 6–30 months. This study did not directly test whether reduced negative religious coping and increased forgiveness of others predicted increased slope in forgiveness of self, but the association is theoretically plausible and emerging research suggests that forgiveness of others predicts forgiveness of self twice as strongly as the reverse association (Krentzman, Webb, Jester, & Harris, 2016).

Why might we have seen these gender differences in negative religious coping and forgiveness? The answer might be found in the ways in which men and women resolve guilt and shame. Guilt and shame have been described as “two painful ‘self-conscious’ emotions that people experience when they have failed or transgressed” (Tangney et al., 2005, p. 143). However there are key differences in their definitions and in the ways in which they correlate with both substance use and self forgiveness. Shame indicates a negative disposition toward one's global sense of self while guilt indicates a negative disposition toward one's actions or behaviors (McGaffin, Lyons, & Deane, 2013). Shame has been positively associated with problematic substance use while guilt has been negatively or not associated with problematic substance use (Dearing, Stuewig, & Tangney, 2005). Individuals recovering from substance use disorders reported higher shame and lower guilt than a sample of individuals without addictive disorders (O'Connor, Berry, Inaba, Weiss, & Morrison, 1994). Self forgiveness has been identified as a healthy way to resolve pernicious feelings of guilt and shame (Tangney et al., 2005) but here too shame and guilt correlate differently with forgiveness. In one study of individuals with substance use disorders, guilt had a positive association with self forgiveness while shame had a negative association with self forgiveness (McGaffin et al., 2013).

Pertinent to the current study, gender differences have been reported in shame and guilt. In two studies assessing college students, Ferguson and Crowley found that shame was more prominent for women and guilt was more prominent for men (1997). Lutwak and Ferrari found that both shame and guilt were higher for women than men (1996). In a sample of individuals in recovery from addiction, women reported higher levels of shame than men (O'Connor et al., 1994). In addition to gender differences in shame and guilt, studies have reported gender differences in forgiveness, with a meta-analysis concluding that women are

more forgiving than men (A. J. Miller, Worthington, & McDaniel, 2008). Taken together, the research suggests that self forgiveness can resolve shame but that this process might vary between men and women. Women might suffer disproportionately compared with men from shame and yet they are more readily forgiving. The current study might lend insight into the mechanisms of this gender difference. For women, greater self forgiveness may follow the ability to forgive others and to feel forgiven by God. Further research should assess the role of shame in this process.

Limitations

The sample was largely of European-American descent and therefore these results may not be generalizable to individuals of other racial and ethnic groups. The current study assumes that gender falls along a purely dichotomous binary (male or female). However, this assumption is being challenged in popular culture, the social sciences, and in society at large (Christian, 2015; Gilbert, 2013; Kessler & McKenna, 1985). We are aware of at least one participant who transitioned from their gender assigned at birth over the course of the study (E.A.R. Robinson, personal communication, 8 June 2015). Sexual minority individuals have been found to have higher levels of substance use problems (Hughes, 2011; Woodford, Krentzman, & Gattis, 2012). Therefore an assumption of a dichotomous gender binary in addictions research can obscure the data patterns of a high-risk subpopulation. While the analyses in the current study controlled for age, education, baseline drinks per drinking day and baseline AA involvement, other factors that could influence change in and levels of spirituality and religiousness were not assessed, such as involvement in formal religious organizations such as church, synagogue, mosque, or sangha or the role of spirituality and religiousness in childhood.

Clinical Implications

These results suggest that women's greater tendency to forgive others and lesser tendency to feel punished by God in the shorter-term phase of recovery might translate into their greater ability to forgive themselves over time in the longer term. Self-forgiveness has been strongly associated with reduced substance use (Robinson et al., 2011; Webb & Jeter, 2015). Therapeutic attention to feelings of recrimination and retaliation toward others, toward the self, and from God toward the self might be worthy of examination. Related feelings of shame and guilt can also be examined; these feelings, as well as resolution of feelings of recrimination and retaliation should facilitate self forgiveness which should support recovery for both men and women.

Future Research Directions

In the few extant studies of gender and spirituality/religiousness among individuals with addictions, U.S. studies tend to report that women's spirituality and religiousness are higher than men's. The two studies that reported men with higher spirituality were conducted in New Zealand (Baker et al., 2007) and Poland (Charzy ska, 2015). Therefore, finer sensitivity to both gender and spirituality as culturally influenced and socially defined is warranted in designing and interpreting the results of addictions research. For example, future addictions research should be sensitive to diversity of gender identity beyond the strict male/female gender binary. One way to improve such sensitivity is to include additional

gender-identity categories or to provide open-ended response formats to gender-identity questions in demographic surveys.

Future research should examine the sequencing of types of spirituality and religiousness to clarify the causal nature of these relationships during addiction recovery. Further studies should explore whether the gender differences in spirituality and religiousness observed herein are associated with a benefit for women in terms of their effect on drinking abstinence and relapse patterns.

Conclusions

This study of men and women who at baseline were entering abstinence-based out-patient treatment for alcohol use disorders found support for different patterns of spirituality in the shorter-term and the longer-term in general and by gender. This study found that women compared to men had lower levels of negative religious coping and greater levels of the ability to forgive others in the first six months and it is theoretically plausible that these experiences might have been related to women's greater increases in self forgiveness in the longer-term, between 6 and 30 months after treatment. Self forgiveness has emerged in the research literature as having a significant association with lower levels of drinking among individuals with substance use disorders (Robinson et al., 2011; Webb & Jeter, 2015). Future research can examine whether the lower tendency to feel recrimination and retribution toward others and from God is predictive of increases in self-forgiveness and if this pattern of spirituality represents a benefit to women in the form of enhanced treatment outcomes.

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References

- Baker MP, Sellman JD, Horn J. The spiritual characteristics of New Zealanders entering treatment for alcohol/ther drug dependence. *Alcoholism Treatment Quarterly*. 2007; 24(4):137–155. http://doi.org/10.1300/J020v24n04_09.
- Bliss DL, Ekmark SS. Gender Differences in Spirituality in Persons in Alcohol and Drug Dependence Treatment. *Alcoholism Treatment Quarterly*. 2013; 31(1):25–37. <http://doi.org/10.1080/07347324.2013.746625>.
- Bodin M. Gender Aspects of Affiliation with Alcoholics Anonymous after Treatment. *Contemporary Drug Problems*. 2006; 33(1):123.
- Brown, IT., Chen, T., Gehlert, NC., Piedmont, RL. Age and Gender Effects on the Assessment of Spirituality and Religious Sentiments (ASPIRES) Scale: A Cross-Sectional Analysis. *Psychology of Religion and Spirituality*. 2012. <http://doi.org/10.1037/a0030137>
- Bryant AN. Gender Differences in Spiritual Development During the College Years. *Sex Roles*. 2007; 56(11–12):835–846. <http://doi.org/10.1007/s11199-007-9240-2>.
- Charzy ska, E. Sex Differences in Spiritual Coping, Forgiveness, and Gratitude Before and After a Basic Alcohol Addiction Treatment Program. *Journal of Religion and Health*. 2015. <http://doi.org/10.1007/s10943-015-0002-0>

- Christian, R. The Transgender Tipping Point. *Time*. 2015. 08:48, -06-04 10:50:06 Retrieved from <http://time.com/135480/transgender-tipping-point/>
- Crumbaugh JC. Cross-validation of purpose-in-life test based on Frankl's concepts. *Journal of Individual Psychology*. 1968; 24:74–81. [PubMed: 4385494]
- Crumbaugh JC, Maholick LT. An experimental study in existentialism: The psychometric approach to Frankl's concept of noogenic neurosis. *Journal of Clinical Psychology*. 1964; 20:200–207. [PubMed: 14138376]
- Dearing RL, Stuewig J, Tangney JP. On the importance of distinguishing shame from guilt: Relations to problematic alcohol and drug use. *Addictive Behaviors*. 2005; 30(7):1392–1404. <http://doi.org/10.1016/j.addbeh.2005.02.002>. [PubMed: 16022935]
- Ferguson TJ, Crowley SL. Gender Differences in the Organization of Guilt and Shame. *Sex Roles*. 1997; 37(1–2):19–44. <http://doi.org/10.1023/A:1025684502616>.
- Fetzer Institute. Multidimensional measurement of religiosity/spirituality for use in health research: A report of the Fetzer Institute/National Institute on Aging working group. Kalamazoo, MI: Author; 2003.
- First, MB., Spitzer, RL., Gibbon, M., Williams, JBW. Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I), Clinician version: User's guide. Washington, DC: American Psychiatric Press; 1997.
- Flaherty MT, Kurtz E, White W, Larson A. An Interpretive Phenomenological Analysis of Secular, Spiritual, and Religious Pathways of Long-Term Addiction Recovery. *Alcoholism Treatment Quarterly*. 2014; 32(4):337–356. <http://doi.org/10.1080/07347324.2014.949098>.
- Gartner J, Larson DB, Allen GD. Religious commitment and mental health: A review of the empirical literature. *Journal of Psychology and Theology*. 1991; 19(1):6–25.
- Geary C, Rosenthal SL. Sustained impact of MBSR on stress, well-being, and daily spiritual experiences for 1 year in academic health care employees. *The Journal of Alternative and Complementary Medicine*. 2011; 17(10):939–944. <http://doi.org/10.1089/acm.2010.0335>. [PubMed: 22010779]
- Gilbert, M. Encyclopedia of Social Work. National Association of Social Workers Press and Oxford University Press; 2013. Transgender People. Retrieved from <http://socialwork.oxfordre.com/view/10.1093/acrefore/9780199975839.001.0001/acrefore-9780199975839-e-399>
- Hall JH, Fincham FD. Self-Forgiveness: The Stepchild of Forgiveness Research. *Journal of Social and Clinical Psychology*. 2005; 24(5):621–637. <http://doi.org/10.1521/jscp.2005.24.5.621>.
- Hood, RW. The psychology of religion: an empirical approach. 4. New York: Guilford Press; 2009.
- Hughes T. Alcohol use and alcohol-related problems among sexual minority women. *Alcoholism Treatment Quarterly*. 2011; 29(4):403–435. <http://doi.org/10.1080/07347324.2011.608336>. [PubMed: 22470226]
- Idler EL, Musick MA, Ellison CG, George LK, Krause N, Ory MG, ... Williams DR. Measuring multiple dimensions of religion and spirituality for health research: Conceptual background and findings from the 1998 General Social Survey. *Research on Aging*. 2003; 25(4):327–365. <http://doi.org/10.1177/0164027503025004001>.
- Kelly, J., Hoepfner, B. Does Alcoholics Anonymous work differently for men and women? A moderated multiple-mediation analysis in a large clinical sample. *Drug and Alcohol Dependence*. 2012. <http://doi.org/10.1016/j.drugalcdep.2012.11.005>
- Kelly J, Stout RL, Magill M, Tonigan J, Pagano ME. Spirituality in recovery: A lagged mediational analysis of Alcoholics Anonymous' principal theoretical mechanism of behavior change. *Alcoholism, Clinical and Experimental Research*. 2011; 35(3):454–463. <http://doi.org/10.1111/j.1530-0277.2010.01362.x>.
- Kendler KS, Gardner CO, Prescott CA. Religion, psychopathology, and substance use and abuse; a multimeasure, genetic-epidemiologic study. *The American Journal of Psychiatry*. 1997; 154(3): 322–329. [PubMed: 9054778]
- Kessler, SJ., McKenna, W. Gender: An Ethnomethodological Approach. Chicago: University Of Chicago Press; 1985. (Reprint edition)
- Krentzman AR, Cranford JA, Robinson EAR. Multiple dimensions of spirituality in recovery: A lagged mediational analysis of Alcoholics Anonymous' principal theoretical mechanism of

behavior change. *Substance Abuse*. 2013; 34(1):20–32. <http://doi.org/10.1080/08897077.2012.691449>. [PubMed: 23327501]

- Krentzman, AR., Webb, JR., Jester, JM., Harris, JI. Longitudinal relationship between forgiveness of self and forgiveness of others among individuals with alcohol use disorders. 2016. Unpublished manuscript
- Lutwak N, Ferrari JR. Moral affect and cognitive processes: Differentiating shame from guilt among men and women. *Personality and Individual Differences*. 1996; 21(6):891–896. [http://doi.org/10.1016/S0191-8869\(96\)00135-3](http://doi.org/10.1016/S0191-8869(96)00135-3).
- Mauger PA, Perry JE, Freeman T, Grove DC, McBride AG, McKinney KE. The measurement of forgiveness: Preliminary research. *Journal of Psychology and Christianity*. 1992; 11(2):170–180.
- McGaffin BJ, Lyons GCB, Deane FP. Self-forgiveness, shame, and guilt in recovery from drug and alcohol problems. *Substance Abuse*. 2013; 34(4):396–404. <http://doi.org/10.1080/08897077.2013.781564>. [PubMed: 24159911]
- Miller AJ, Worthington EL, McDaniel MA. Gender and Forgiveness: A Meta-Analytic Review and Research Agenda. *Journal of Social and Clinical Psychology*. 2008; 27(8):843–876. <http://doi.org/10.1521/jscp.2008.27.8.843>.
- Miller WR. Addiction and spirituality. *Substance Use & Misuse*. 2013; 48:1258–1259. [PubMed: 24041187]
- Nehemkis, A., Macari, MA., Lettieri, DJ. Drug abuse instrument handbook: selected items for psychosocial drug research. Rockville, Md: Dept. of Health, Education, and Welfare, Public Health Service, Alcohol, Drug Abuse, and Mental Health Administration, National Institute on Drug Abuse; Washington: For sale by the Supt. of Docs., U.S. Govt. Print. Off; 1976. Retrieved from <http://archive.org/details/drugabuseinstrum00nehe>
- Newport, F. Gallup News Service. Washington, DC: 2006 Nov 29. Religion Most Important to Blacks, Women, and Older Americans.
- O'Connor LE, Berry JW, Inaba D, Weiss J, Morrison A. Shame, guilt, and depression in men and women in recovery from addiction. *Journal of Substance Abuse Treatment*. 1994; 11(6):503–510. [http://doi.org/10.1016/0740-5472\(94\)90001-9](http://doi.org/10.1016/0740-5472(94)90001-9). [PubMed: 7884834]
- Owen PL, Slaymaker V, Tonigan J, McCrady BS, Epstein EE, Kaskutas LA, ... Miller W. Participation in Alcoholics Anonymous: intended and unintended change mechanisms. *Alcoholism, Clinical and Experimental Research*. 2003; 27(3):524–532. <http://doi.org/10.1097/01.ALC.0000057941.57330.39>.
- Pargament, K. *The Psychology of Religion and Coping: Theory, Research, Practice*. 1. New York: The Guilford Press; 2001.
- Pargament, K., Mahoney, A., Exline, J., Jones, J., Shafranske, E. Envisioning an integrative paradigm for the psychology of religion and spirituality. In: Pargament, K., Exline, J., Jones, J., editors. *APA handbook of psychology, religion, and spirituality (Vol 1): Context, theory, and research*. Washington, DC, US: American Psychological Association; 2013. p. 3-19.
- Pargament K, Smith BW, Koenig HG, Perez L. Patterns of positive and negative religious coping with major life stressors. *Journal for the Scientific Study of Religion*. 1998; 37(4):710–724. <http://doi.org/10.2307/1388152>.
- Piderman KM, Schneekloth TD, Pankratz VS, Maloney SD, Altchuler SI. Spirituality in alcoholics during treatment. *The American Journal on Addictions*. 2007; 16(3):232–237. <http://doi.org/10.1080/10550490701375616>. [PubMed: 17612829]
- Piderman KM, Schneekloth TD, Pankratz VS, Stevens SR, Altchuler SI. Spirituality during alcoholism treatment and continuous abstinence for one year. *International Journal of Psychiatry in Medicine*. 2008; 38(4):391–406. [PubMed: 19480354]
- Robinson EAR, Cranford JA, Webb JR, Brower KJ. Six-month changes in spirituality, religiousness, and heavy drinking in a treatment-seeking sample. *Journal of Studies on Alcohol and Drugs*. 2007; 68(2):282–290. <http://doi.org/10.15288/jsad.2007.68.282>. [PubMed: 17286347]
- Robinson EAR, Krentzman AR, Webb JR, Brower KJ. Six-month changes in spirituality and religiousness in alcoholics predict drinking outcomes at nine months. *Journal of Studies on Alcohol and Drugs*. 2011; 72(4):660–668. [PubMed: 21683048]

- Scherer M, Worthington EL, Hook JN, Campana KL. Forgiveness and the Bottle: Promoting Self-Forgiveness in Individuals Who Abuse Alcohol. *Journal of Addictive Diseases*. 2011; 30(4):382–395. <http://doi.org/10.1080/10550887.2011.609804>. [PubMed: 22026530]
- Singer, JD., Willett, JB. *Applied Longitudinal Data Analysis: Modeling Change and Event Occurrence*. 1. Oxford; New York: Oxford University Press, USA; 2003.
- Skarupski KA, Fitchett G, Evans DA, de Leon CFM. Daily spiritual experiences in a biracial, community-based population of older adults. *Aging & Mental Health*. 2010; 14(7):779–789. <http://doi.org/10.1080/13607861003713265>. [PubMed: 20635237]
- Smith, C., Denton, ML. *Soul Searching: The Religious and Spiritual Lives of American Teenagers*. Oxford University Press; USA: 2009. (Reprint)
- Smith C, Denton ML, Faris R, Regnerus M. Mapping American Adolescent Religious Participation. *Journal for the Scientific Study of Religion*. 2002; 41(4):597–612. <http://doi.org/10.1111/1468-5906.00148>.
- Sobell L, Brown J, Leo GI, Sobell MB. The reliability of the Alcohol Timeline Followback when administered by telephone and by computer. *Drug and Alcohol Dependence*. 1996; 42(1):49–54. [http://doi.org/10.1016/0376-8716\(96\)01263-X](http://doi.org/10.1016/0376-8716(96)01263-X). [PubMed: 8889403]
- Sobell, L., Sobell, MB. Timeline Follow-Back. In: Litten, RZ., Allen, JP., editors. *Measuring Alcohol Consumption*. Humana Press; 1992. p. 41-72. Retrieved from http://link.springer.com/chapter/10.1007/978-1-4612-0357-5_3
- Tangney, JP., Boone, AL., Dearing, R. Forgiving the Self: Conceptual Issues and Empirical Findings. In: ELW, editor. *Handbook of Forgiveness*. 1. New York: Routledge; 2005. p. 143-158.
- Taylor RJ, Chatters LM, Joe S. Non-organizational religious participation, subjective religiosity, and spirituality among older African Americans and Black Caribbeans. *Journal of Religion and Health*. 2011; 50(3):623–645. <http://doi.org/10.1007/s10943-009-9292-4>. [PubMed: 19866358]
- Tonigan J, Connors GJ, Miller WR. Alcoholics Anonymous Involvement (AAI) scale: Reliability and norms. *Psychology of Addictive Behaviors*. 1996; 10(2):625.), and AAI response stability is reported by using a test–retest sample (. <http://doi.org/10.1037/0893-164X.10.2.75>.
- Underwood LG, Teresi JA. The daily spiritual experience scale: Development, theoretical description, reliability, exploratory factor analysis, and preliminary construct validity using health-related data. *Annals of Behavioral Medicine: A Publication of the Society of Behavioral Medicine*. 2002; 24(1): 22–33. [PubMed: 12008791]
- Webb, JR., Jeter, BR. Forgiveness and problematic substance use. In: Toussaint, LL, Worthington, EL., Jr, Williams, DR., editors. *Forgiveness and health: Scientific evidence and theories relating forgiveness to better health*. New York, NY: Springer; 2015. p. 139-154.
- Witbrodt J, Kaskutas LA, Grella CE. How do recovery definitions distinguish recovering individuals? Five typologies. *Drug and Alcohol Dependence*. 2015; 148:109–117. <http://doi.org/10.1016/j.drugalcdep.2014.12.036>. [PubMed: 25630961]
- Woodford MR, Krentzman AR, Gattis MN. Alcohol and drug use among sexual minority college students and their heterosexual counterparts: the effects of experiencing and witnessing incivility and hostility on campus. *Substance Abuse and Rehabilitation*. 2012; 3:11–23. <http://doi.org/10.2147/SAR.S26347>. [PubMed: 24474863]
- Zemore SE. A role for spiritual change in the benefits of 12-step involvement. *Alcoholism, Clinical and Experimental Research*. 2007; 31(10 Suppl):76s–79s. <http://doi.org/10.1111/j.1530-0277.2007.00499.x>.

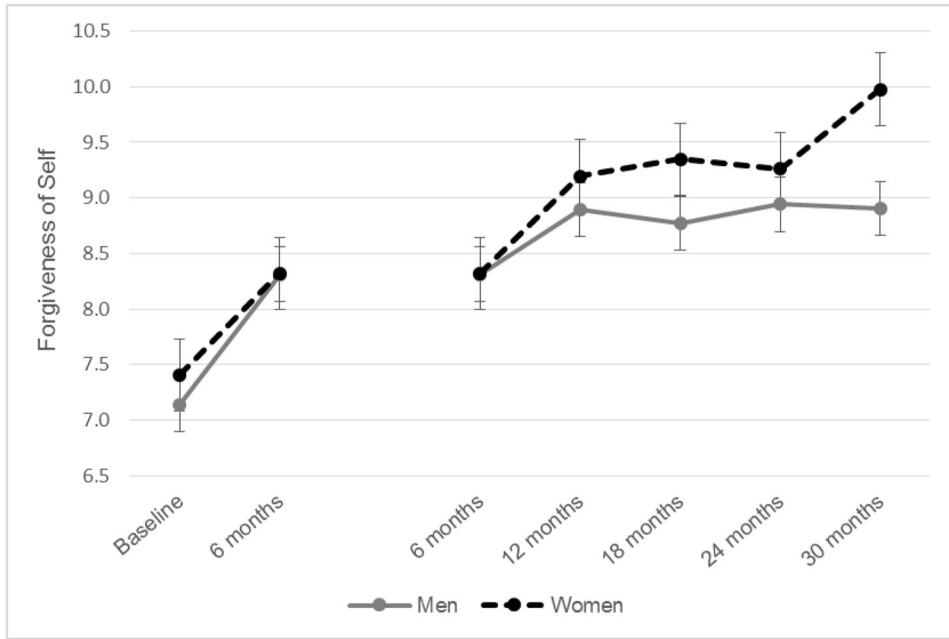


Figure 1. Significant gender by time interaction for forgiveness of self between 6 and 30 months. Error bars represent standard error of the mean. Levels of self-forgiveness are not significantly different by gender at baseline nor over time. Self forgiveness increases significantly for the combined sample during both phases. Only during the second phase (6–30 months) is the interaction between gender and time significant.

Table 1

Baseline Clinical and Demographic Variables by Gender

Variable M (SD) or %	Men (n=92, 58.6%)		Women (n=65, 41.4%)		Total (n=157, 100%)	
	Mean	SD or %	Mean	SD or %	Mean	SD or %
Demographics						
Age, in years	42.2	13.7	42.9	14.8	42.5	14.1
Race, European-American ^a		90.2%		96.9%		93.0%
Education, in years	14.6	2.6	14.5	2.2	14.6	2.5
Marital Status						
Never married		26.1%		27.7%		26.8%
Married/living together		43.5%		41.5%		42.7%
Separated/divorced/widowed		30.4%		30.8%		30.6%
Employed		68.5%		64.6%		66.9%
Clinical						
Number of previous treatment episodes	1.5	2.5	1.4	2.4	1.4	2.4
Drinks per drinking day in past 90 days (DDD) *	10.3	7.8	7.9	4.5	9.3	6.7
Percent days abstinent in past 90 days (PDA)	58.2	26.4	62.0	27.3	59.8	26.8
Alcoholics Anonymous Involvement score (AAI)	0.76	1.31	0.95	1.46	0.84	1.38

Notes. Bold type indicates statistical significance.

^aNon-European-American individuals included 3.8% Black (n=6), 1.3% Asian (n=2), 1.3% multiracial (n=2), and 0.6% other (n=1).

* p < .05.

Table 2
Effect of Time and Gender on Spirituality and Religiousness during Shorter-Term and Longer-Term Recovery

	Shorter-Term Recovery (Baseline to 6 Months)										Longer-Term Recovery (6 Months to 30 Months)									
	Estimate	Standard Error	df	t	p	95% Confidence Interval		Estimate	Standard Error	df	t	p	95% Confidence Interval							
						lower	upper						lower	upper						
Positive Religious Coping	gender	1.08	1.16	149.57	0.93	0.356	-1.22	3.38	1.32	0.82	133.19	1.62	0.108	-0.29	2.94					
	time	0.75	0.50	139.24	1.48	0.140	-0.25	1.74	0.08	0.13	121.03	0.60	0.546	-0.18	0.33					
Negative Religious Coping	gender*time	1.06	1.04	134.18	1.02	0.311	-1.00	3.11	-0.04	0.27	115.74	-0.16	0.876	-0.58	0.49					
	gender	-1.35	0.57	151.85	-2.37	0.019	-2.48	-0.23	-0.02	0.39	137.09	-0.05	0.961	-0.79	0.75					
Spiritual/Religious Practices	time	-1.04	0.28	143.12	-3.67	0.000	-1.60	-0.48	-0.18	0.07	116.07	-2.70	0.008	-0.31	-0.05					
	gender*time	0.57	0.57	138.14	1.00	0.321	-0.56	1.71	0.01	0.14	109.28	0.09	0.929	-0.26	0.29					
Daily Spiritual Experiences	gender	1.44	1.07	151.22	1.35	0.178	-0.66	3.55	0.69	0.68	127.77	1.02	0.312	-0.66	2.04					
	time	1.87	0.42	139.92	4.47	0.000	1.04	2.69	-0.12	0.10	122.33	-1.15	0.252	-0.32	0.08					
Purpose in Life	gender*time	0.80	0.87	135.31	0.92	0.360	-0.92	2.52	-0.28	0.21	115.67	-1.31	0.194	-0.69	0.14					
	gender	4.57	2.58	150.95	1.77	0.079	-0.54	9.67	2.69	1.69	133.58	1.59	0.114	-0.66	6.04					
Forgiveness of Others	time	3.21	0.94	139.01	3.42	0.001	1.35	5.06	0.35	0.25	116.49	1.40	0.163	-0.14	0.84					
	gender*time	2.79	1.92	134.24	1.46	0.148	-1.00	6.58	-0.29	0.52	110.54	-0.56	0.579	-1.31	0.74					
Forgiveness of Self	gender	3.46	2.83	146.70	1.22	0.224	-2.14	9.06	0.38	2.19	126.05	0.18	0.861	-3.96	4.73					
	time	4.15	1.21	136.94	3.43	0.001	1.76	6.54	0.79	0.30	108.01	2.67	0.009	0.20	1.38					
Alcoholics Anonymous Involvement	gender*time	-0.32	2.48	132.21	-0.13	0.899	-5.23	4.60	-0.63	0.62	101.51	-1.01	0.317	-1.86	0.61					
	gender	1.14	0.51	149.38	2.23	0.028	0.13	2.16	0.65	0.41	130.85	1.58	0.117	-0.16	1.46					
Alcoholics Anonymous Involvement	time	0.37	0.22	138.23	1.66	0.100	-0.07	0.81	0.16	0.05	112.89	3.39	0.001	0.06	0.25					
	gender*time	0.38	0.47	133.84	0.82	0.411	-0.54	1.31	0.02	0.10	108.23	0.18	0.860	-0.18	0.21					
Alcoholics Anonymous Involvement	gender	-0.14	0.59	151.61	-0.24	0.810	-1.31	1.02	0.02	0.46	131.81	0.05	0.957	-0.88	0.93					
	time	1.13	0.25	140.16	4.59	0.000	0.64	1.62	0.16	0.06	114.24	2.60	0.011	0.04	0.27					
Alcoholics Anonymous Involvement	gender*time	-0.30	0.52	135.67	-0.58	0.566	-1.33	0.73	0.31	0.12	106.69	2.57	0.012	0.07	0.55					

Notes. Each set of three rows represents the main effects of gender (female=1, male=0), the main effects of time, and the interaction between gender and time as predictors of the spirituality outcome. All models controlled for baseline age, education, drinks per drinking day and Alcoholics Anonymous Involvement. Bold type indicates statistical significance at $p < .05$. df = degrees of freedom. t =t statistic. p =significance level.

Significant Baseline Differences in Spirituality/Religiousness by Gender Controlling for Key Covariates

Table 3

Spirituality Outcome Variable	Possible Range	B	SE B	b	t	p	95% Confidence Interval		Adjusted r ²
							Lower Bound	Upper Bound	
Positive Religious Coping	10–40	0.64	1.20	0.04	0.53	0.597	-1.74	3.02	0.06
Negative Religious Coping*	8–32	-1.60	0.63	-0.19	-2.52	0.013	-2.85	-0.35	0.13
Spiritual/Religious Practices	5–37	1.09	1.11	0.08	0.98	0.329	-1.11	3.29	0.11
Daily Spiritual Experiences	16–94	3.39	2.57	0.10	1.32	0.190	-1.70	8.47	0.10
Purpose in Life	20–140	3.58	3.02	0.10	1.18	0.238	-2.40	9.55	0.05
Forgiveness of Others	0–15	0.98	0.56	0.14	1.75	0.082	-0.12	2.08	0.04
Forgiveness of Self	0–15	0.01	0.61	0.00	0.01	0.990	-1.20	1.21	0.04

Notes. Each row represents the association of gender (female=1, male=0) to each spirituality variable at baseline. Each row is the result of a separate regression model. All models controlled for baseline drinks per drinking day, baseline Alcoholics Anonymous Involvement, age, and education. Bold type indicates statistical significance.

* p < .05.

Table 4
Means, Standard Deviations, and Effect Sizes by Gender for Spirituality Outcomes at All Assessment Waves

	Men			Women			Cohen's d
	N	Mean	Std. Deviation	N	Mean	Std. Deviation	
<u>Positive Religious Coping</u>							
Baseline	92	22.4	7.3	65	23.2	7.8	0.10
6 Months	80	22.8	7.9	56	24.3	8.2	0.18
12 Months	74	22.9	7.7	51	24.7	8.2	0.23
18 Months	67	23.3	8.0	48	25.0	8.0	0.21
24 Months	66	23.3	7.5	46	24.2	8.9	0.12
30 Months	64	22.9	7.5	43	25.4	8.1	0.32
<u>Negative Religious Coping</u>							
Baseline	92	13.8	4.4	65	12.0	3.5	-0.44
6 Months	80	12.5	4.0	56	11.3	3.4	-0.32
12 Months	74	12.1	3.6	51	11.3	3.8	-0.22
18 Months	67	11.9	3.4	48	10.6	2.7	-0.41
24 Months	66	11.7	3.4	46	10.7	2.9	-0.32
30 Months	64	11.4	2.9	43	11.0	3.4	-0.13
<u>Spiritual/Religious Practices</u>							
Baseline	92	14.5	6.8	65	15.7	7.5	0.17
6 Months	80	16.2	7.0	56	18.0	7.9	0.25
12 Months	74	16.5	7.3	51	18.0	7.5	0.21
18 Months	67	16.3	7.4	49	17.2	7.7	0.11
24 Months	66	16.4	7.2	46	17.2	7.4	0.11
30 Months	64	16.3	7.2	43	17.9	7.6	0.22
<u>Daily Spiritual Experiences</u>							
Baseline	92	51.1	16.4	65	55.0	16.3	0.24
6 Months	80	53.5	16.5	56	59.8	19.3	0.35
12 Months	74	54.5	17.8	51	61.2	18.2	0.37
18 Months	67	55.3	18.1	48	61.8	18.9	0.36
24 Months	67	55.2	17.9	46	61.2	18.6	0.33

	Men			Women			Cohen's d
	N	Mean	Std. Deviation	N	Mean	Std. Deviation	
30 Months	64	56.3	18.7	43	63.8	18.2	0.41
<u>Purpose in Life</u>							
Baseline	89	90.7	18.6	65	95.1	18.6	0.24
6 Months	80	94.2	19.4	56	99.1	18.0	0.26
12 Months	74	95.6	19.1	51	101.4	16.6	0.32
18 Months	67	97.9	18.2	49	102.3	17.3	0.24
24 Months	67	97.2	19.3	46	100.7	19.5	0.18
30 Months	64	99.8	18.9	41	101.6	16.7	0.11
<u>Forgiveness of Others</u>							
Baseline	92	9.8	3.6	64	10.9	3.1	0.31
6 Months	80	9.9	3.8	56	11.5	2.5	0.53
12 Months	74	10.5	3.4	51	11.7	3.0	0.37
18 Months	66	10.6	3.5	49	11.9	3.2	0.40
24 Months	67	10.6	3.6	46	11.5	3.3	0.28
30 Months	64	10.7	4.1	43	12.6	2.3	0.62
<u>Forgiveness of Self</u>							
Baseline	92	7.1	3.9	64	7.4	3.6	0.07
6 Months	80	8.3	4.2	56	8.3	4.0	0.01
12 Months	74	8.9	4.0	51	9.2	4.1	0.08
18 Months	66	8.8	4.2	49	9.3	4.0	0.14
24 Months	67	8.9	4.4	46	9.3	4.3	0.08
30 Months	64	8.9	4.2	43	10.0	4.5	0.25