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Daily Spiritual Experiences and Adolescent Treatment Response

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Abstract

The purpose of this study is to explore changes in belief orientation during treatment and the impact of increased daily spiritual experiences (DSE) on adolescent treatment response. One-hundred ninety-five adolescents court-referred to a 2-month residential treatment program were assessed at intake and discharge. Forty percent of youth who entered treatment as agnostic or atheist identified themselves as spiritual or religious at discharge. Increased DSE was associated with greater likelihood of abstinence, increased prosocial behaviors, and reduced narcissistic behaviors. Results indicate a shift in DSE that improves youth self-care and care for others that may inform intervention approaches for adolescents with addiction.

Keywords

Youth addiction; adolescents; spirituality; service; Alcoholics Anonymous

We are not cured of alcoholism. What we really have is a daily reprieve contingent on the maintenance of our spiritual condition.... To some extent we have become God-conscious.

(Alcoholics Anonymous, 2001, p. 85)

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INTRODUCTION

“Why do adolescents become dependent on alcohol and other drugs (AOD) and what might be done to redirect them back to sobriety?” This question has implications for a host of important quality-of-life outcomes for individuals, families, and communities. In the United States, addiction is associated with \$200 billion in economic damage annually and remains the third leading cause of preventable death (Bouchery, Harwood, Sacks, Simon, & Brewer, 2011; Mokdad, Marks, Stroup, and Gerberding, 2004). The greatest increase in AOD use disorders is among our nation’s minors (Pagano, White, Kelly, Stout, & Tonigan, 2013, p. 60), the personal and social costs of which are substantial. Adolescents with addiction have more severe health problems, exhibit a striking increase in emergency room visits, and have higher levels of sexually transmitted diseases (Carter, Johnson, Exline, Post, & Pagano, 2012; Coleman & Cater, 2005; Drug Abuse Warning Network, 2008; Eigen, 1991; Milgram, 1993; Miniño, Xu, & Kochanek, 2010; U.S. Department of Transportation, 2009). They also evidence decreased brain functioning as a result of drugs and alcohol (Brown, Tapert, Granholm, & Delis, 2000; Tapert & Brown, 1999; Tapert, Caldwell, & Burke, 2005), poor educational retention, more truancy, lower grades, as well as increased criminal offending and incarceration (Office of the Surgeon General, 2007; Bonnie & O’Connell, 2004; Miller, Naimi, Brewer, & Jones, 2007; Neighbors, Kempton, & Forehand, 1992; Teplin, Abram, & McClelland, 1996). Moreover, communities face significant social and economic repercussions associated with increased law enforcement costs, damage due to vandalism (Drug Abuse Warning Network, 2008), elevated levels of crime and violence (Teplin et al., 1996; Neighbors et al., 1992), overburdened courts (Webb, 2009), and correctional facilities that continue to cut rather than expand rehabilitation programs for prisoners that need AOD treatment (Cullen & Jonson, 2011).

Research suggests that the average age of first drug use has dropped to 12 years, the prevalence of adolescent substance dependency is at historic highs, and alcohol consumption among minors has increased (Bonnie & O’Connell, 2004; Carter et al., 2012, p. 164). According to self-report studies that examine drinking habits in the past month, less than one half of adult drinkers engage in heavy drinking on one or more occasions, compared with 65% of those age 15 to 17 years and 72% of those age 18 to 20 years (Office of Juvenile Justice and Delinquency Prevention, 2005). The intensity of AOD use is particularly high for juvenile drinkers and drug users (Office of Juvenile Justice and Delinquency Prevention, 2005; Substance Abuse and Mental Health Services Administration [SAMHSA], 2010). The harmful effects associated with youth addiction alter adolescents’ life-course trajectories, relationships with others, occupational opportunities, and their ability to make positive contributions to society (Jang, 2013; Ulmer, Desmond, Jang, & Johnson, 2012).

In short, reducing youth AOD use disorders is a critical area of social concern, but there are a number of factors that have made attaining this goal difficult. First, teens are much less likely to participate in AOD treatment compared to adults, with some researchers estimating that only 10% of the 1.4 million adolescents with AOD problems are receiving treatment (Sussman, 2010). Furthermore, there has been relatively little research on effective adolescent treatment programs, which means that recommending a specific modality of

treatment is, in the words of one scholar who has surveyed the literature, “not possible” (Sussman, 2010, p. 27).

Beyond the lack of treatment options for youth and the scarcity of research about their effectiveness, there are several social trends that appear to work against reducing adolescent AOD use disorders. For example, scholars have pointed to recent changes in levels of parental monitoring and concomitant shifts in recreation activities as one culprit. Levels of parental monitoring have decreased proportionately to the increase in youth substance abuse (Steinberg, Fletcher, & Darling, 1994). This decrease in parental monitoring is due to the increase in single-parent households, greater number of parental hours spent working outside the home, and higher divorce rates (Goldstein, 1999; McLanahan & Sandefur, 1994; Weinraub & Wolf, 1983). Consequently, lower parental monitoring results in adolescents following fewer rules and receiving less guidance from responsible adults, leading to more unstructured free time (Steinberg et al., 1994). This lack of guidance, compounded with increases in prescription medication manufacturing and prescriptions, creates increased opportunities for adolescents to possess and become dependent on substances (Bray, Getz, & Baer, 2000; Chilcoat, Dishion, & Anthony, 1995; Griffin, Botvin, Scheier, Diaz, & Miller, 2000; Li, Stanton, & Feigelman, 2000).

A shift in youth recreation activities seems tied to four major influences: employment, volunteerism, religiosity, and technology. A striking increase in unemployment, with adolescents having the highest rates of unemployment of all age groups (Carter et al., 2012; Hadaway, Marler, & Chaves, 1993), has occurred simultaneously with a marked decrease in adolescent volunteerism. The latter may be related to growing narcissistic tendencies in youth (Uecker, Regnerus, & Vaaler, 2007). There also has been a decrease in religious activities, such as church attendance, youth group participation, and time spent practicing religious activities outside the home (Carter et al., 2012; Hadaway et al., 1993; Uecker et al., 2007). Working, volunteering, and religious involvement tend to encourage youth to practice prosocial behavior, as opposed to the narcissistic lifestyle associated with addiction (Carter et al., 2012). The decline in prosocial behavior has been aggravated by the development and proliferation of new technology, such as smartphones, tablet computers, immersive video games, as well as the Internet boom (Hargittai, 2004; Putnam, 2000). The theory of addiction developed in this article views addiction as a disease of isolation and narcissism that is fostered by environmental conditions of an upward shift in adolescents’ unstructured time, lower parental monitoring, higher unemployment, reduced volunteerism, declining religiosity, and rise of new technologies that diminish face-to-face interactions.

More generally, social connectedness—a sense of the availability and closeness of friends and family members—is recognized increasingly as crucial to mental and physical health (Eisenberger & Cole, 2012; Meyer-Lindenberg & Tost, 2012). Loneliness results in increased morbidity and mortality as well as decreased cognitive ability and emotional well-being (Hawkey & Cacioppo, 2010). We contend that narcissism is at the root of addiction and that it also impedes social connectedness. Therefore, one of the great insights of the Alcoholics Anonymous (AA) 12-step approach to addiction recovery is recognizing the importance of prosocial behavior (service to others, as formalized in the 12th step) for sobriety and for healthy living in general. It is no coincidence that adolescent addiction has

increased at the same time that two aspects of narcissism (sense of grandiosity and entitlement) have also grown (Carter et al., 2012). After all, intoxication is one “primary mechanism to ‘refuel’ the pathological grandiose self ... and provide protection against a potentially frustrating and hostile environment in which gratification and admiration are not forthcoming” (Carter et al., 2012, p. 164). In other words, addicts substitute a false sense of connectedness derived from the lifestyle of drinking and partying for the actual social connections that would contribute to long-term growth and well-being. Ultimately, the illusion of connectedness vanishes and the addict must confront damaged (or destroyed) relationships and the negative individual and collective consequences of their selfish behavior. Using alcohol or drugs is a temporary, and ultimately ineffective, substitute for real connection with others. The latter requires a certain level of prosocial behavior that is difficult for addicts to sustain on an ongoing basis. Researchers have referred to teen addicts as “developmentally arrested” (Carter et al. 2012, p. 165), with empirical support for the connection between increased narcissism, addiction severity, and lower levels of service to others.

Like any other treatment modality, the AA approach has always had its share of critics, including condemnation of its reliance on spirituality and accusations that it functions as a quasi-cult (Bufe & Peele, 1998; Raggi, 1998). And like other treatment programs, AA is not universally successful in fostering sobriety. But it does have a number of advantages that justify further research into its efficacy. First, it is free, an important attribute given the fact that many youth and their families cannot afford treatment. Second, AA meetings are held all over the United States, and this high level of accessibility overcomes another important barrier for adolescent participation. Finally, AA approaches have been found to be effective for those teens who participate in meetings (Sussman, 2010), but it is not clear which aspects of the AA approach are essential to the sobriety of adolescents with addiction.

This study does not assume that the AA program is without flaws or that it is effective in all cases. However, given its substantial advantages, it is important to better understand why it works for many teens who participate in meetings and who work the 12 Steps. This article is the first to attempt to disentangle the effects of the different aspects of religion/spirituality that are central to the AA approach. We anticipate the findings will encourage additional research that pays more attention to the distinct and overlooked dimensions of religion/spirituality, not just in the lives of addicts but more generally. This article therefore advances two agendas: (1) better understanding the AA model and (2) disaggregating the aspects of religion/spirituality that make a difference in individual and collective well-being. As such, our work should be of interest to addiction specialists as well as scholars of religion. It serves as a corrective to studies in a variety of disciplines that treat religion/spirituality as a monolithic or simplistic concept.

AA Approach to Addressing a Root Cause of Addiction

Absolute unselfishness, synonymous with altruism or helping others, is one of the cornerstones of the [AA] program and is highlighted as the antidote to an alcoholic/addicts’ self-preoccupied lifestyle (Carter et al., 2012, pp. 165–166).

AA was founded by two alcoholics (Bill Wilson and Dr. Robert Smith) in 1935 in Akron, Ohio. It now has more than two million members and more than 100 offshoots, such as Narcotics Anonymous (NA), which utilize its 12-Step methodology for overcoming addictions of various kinds. AA views addiction as a disease and demands abstinence to prevent relapse (Sussman, 2010). The founders of AA were influenced strongly by an American Christian spiritual movement known as the Oxford Group, which aimed for spiritual growth via absolute honesty, unselfishness, purity, and love (Pagano, Post, & Johnson, 2011). Living according to these four absolutes required reliance on God. Wilson and Smith separated from the Oxford Group in 1939 to make AA more open to people from a variety of backgrounds. AA retained an emphasis on spirituality, but the 3rd Step in the 12 steps of recovery refers to “God, as we understood Him” (Alcoholics Anonymous [AA], 1981, p. 20). For some nontheists, the fellowship of AA itself serves as a “higher power.” A variety of Christian and non-Christian traditions have given meaning to the concept of a “higher power” in the AA program (Gippin, 2007). In addition to spirituality, AA emphasizes that sobriety depends on altruistic service to others that results from a spiritual awakening—“our constant thought of others and how we may help meet their needs” (AA, 2001, p. 20)—and completion of the 12th Step, which requires the ex-alcoholic to help other alcoholics specifically and others more generally as they “practice these principles in all our affairs” (AA, 1981, p. 60).

AA’s 12-Step model is a way of life, not a one-time solution to a temporary problem. One must constantly work the steps or risk relapse. Working the steps, with the help of a higher power, is thought to help the alcoholic remove the “baseline subjective sense of restlessness, irritability, and discontent” (Sussman, 2010, p. 28) that is the hallmark of the root cause of addiction: egocentrism. The AA “Big Book” is quite clear on this point: “Selfishness—self-centeredness! That, we think, is the root of our troubles.... Above everything, we alcoholics must be rid of this selfishness. We must, or it kills us” (AA, 2001, p. 62). Ego-centric thinking lies at the core of addiction and many other personal and social problems, which gets right sized via deep relationships of mutual accountability, the support of a God of one’s own understanding, and a compassionate network of recovered and recovering addicts (“wounded healers” capable of empathy and effective support). AA seeks to overcome the narcissism of materialistic culture by directing the addict to become more humble through the spiritual practice of relying on God:

When we encountered AA, the fallacy of our defiance was revealed. At no time had we asked what God’s will was for us; instead we had been telling Him what it ought to be. No man, we saw, could believe in God and defy Him, too. Belief meant reliance, not defiance. In AA we saw the fruits of this belief: men and women spared from alcohol’s final catastrophe. We saw them meet and transcend their other pains and trials. We saw them calmly accept impossible situations, seeking neither to run nor to recriminate. This was not only faith; it was faith that worked under all conditions. We soon concluded that whatever price in humility we must pay, we would pay. (AA, 1981, p. 31)

Alcohol Spirits, Spiritual Experiences, and Service to Others

Spirituality is the soul of AA. Lacking a connection with Spirit, the alcoholic finds life unbearable and turns to spirits of another kind to survive. As Carter et al. (2012) suggests, “the relief and pleasure sought with the help of illicit substances lead to a predominantly self-serving lifestyle of drug seeking behaviors” (p. 165). By getting drunk or becoming addicted to other short-term pleasures, the individual is able to temporarily escape from responsibilities and negative situations, but only in the short run. As relationships crumble and the addict enters a self-destructive spiral, a spiritual awakening becomes a matter of life or death.

Sussman (2010) found that participation in AA was effective in fostering sobriety, but he also noted that “only some aspects of spirituality mediate the effects of AA/NA participation” (p. 42). Because research that distinguishes what matters from what does not remains a neglected area, we offer a brief review of extant research as a foundation for our study. Dew, Daniel, Goldston, and Koenig (2008) researched the connections among depression, substance abuse, spirituality, and AA. They examined the short-term effects of spirituality and AA on depression and substance abuse in a sample of 117 outpatient adolescents (aged ~14.5 years). Statistically significant correlations were found between high substance abuse scores, high levels of depression, low levels of forgiveness of others, low levels of coping, and lower levels of external support and religiosity (Dew et al., 2008). These findings show that support, either from other people or from a higher power, has an effect on levels of depression and substance abuse.

Robinson, Krentzman, Webb, and Brower (2011) replicated this study and examined the long-term effects of AA, and spirituality on depression and substance abuse. In their study, 364 substance-dependent individuals were recruited to test for significant changes in drinking 6 months after leaving structured treatment. The researchers found, similar to the prior study, that levels of forgiveness, coping, and purpose in life were correlated with substance abuse (Robinson et al., 2011). This study also showed that levels of spirituality were able to predict levels of forgiveness, coping, purpose in life, and drinking outcomes 6-months posttreatment (Robinson et al., 2011). However, results could have been accounted for by unmeasured variables highly correlated with forgiveness and purpose in life, such as reliance on a power greater than oneself.

In their 2011 study, researchers Kelly, Stout, Magill, Tonigan, and Pagano found a strong connection between spirituality and 12-Step participation, while not focusing solely on the social fellowship derived from AA as in prior research. Using the same measures for spirituality and religiosity as previous studies, the researchers found that AA participation was associated with increased spiritual practices, especially for those participants who were initially low on spirituality scores at intake (Kelly, Stout, et al., 2011). This result was found to have an effect on both outpatient and aftercare samples (Kelly, Stout, et al., 2011).

This relationship between social connections, spirituality, and abstinence also has been substantiated beyond the confines of the AA program. In a study by Galanter et al. (2007), participants rated spirituality as being a large part of their recovery. Although this research helped to further knowledge of spirituality and addiction recovery, there were few empirical

measures to determine levels of spirituality, or levels of abstinence other than participants' own yes/no responses to the question, "Have you been abstinent of all drugs and alcohol?" This same religious awakening effect was shown in studies by Mason, Deane, Kelly, and Crowe (2009) and by Green, Fullilove, and Fullilove (1998). These researchers also had not empirically tested measures of spirituality or abstinence and relied solely on participant self-reporting. In Green et al.'s (1998) study, participants' therapy sessions were tape-recorded and analyzed by psychologists. The psychologists identified a common theme among all abstinent participants: a religious awakening and life-altering transformation as a result of embracing a higher power.

With few exceptions (Zemore, 2007), much of the extant research has not disaggregated spiritual experiences from other aspects of religion (e.g., church attendance, identification as religious or not, belief in God). But path-breaking research on adults using the Religious Background and Behavior questionnaire (RBB; Connors, Tonigan, & Miller, 1996) has addressed this methodological shortcoming. The RBB is a 14-item measure that taps into three religious domains: belief in the transcendent, current religious/spiritual behaviors, and lifetime religious/spiritual behaviors. Although initially identifying four components of religion/spirituality, including separate items for experiences of God and religious practices, the researchers ultimately aggregated the items into two components: "God consciousness" (including direct experiences of God) and "formal practices" (including frequency of attending worship services). This aggregation is likely due to the lack of a sufficient number of questions in the RBB with regard to experiential items. Nevertheless, the empirically supported distinction between experiential items and practices is an important one, and this study builds on this fundamental insight.

More detailed measures of experience are found in the Daily Spiritual Experience Scale (DSES; Underwood & Teresi, 2002). The DSES is a 16-item, self-report measure of perceived awareness of the transcendent (i.e., God, the divine) as manifested in daily life activities (Underwood, 2006). The DSES assesses spiritual experience rather than beliefs or religious practices. Although the RBB asks whether people believe in God, how often they pray or attend worship services, and whether they read holy writings, the DSES focuses on the such experiential matters as feeling God's presence, connecting with God in a way that produces joy, feeling God's love, and being guided by God in daily activities. To date, no study has measured the independent effects of RBB items compared to those included in the DSES.

There are good reasons to suspect that a comparison effort would prove fruitful, as suggested by research in the social sciences and humanities. This research has argued that spiritual experiences, such as feeling divine love, are more powerful predictors of outcomes like service to others than denominational differences, creeds, beliefs, or religious social networks. The latter constitute the structural "shell" of religion, but the former make up its "heart" (Lee, Poloma, & Post, 2013). In short, it is less important whether people pray, or how often they pray, and more important to assess what they actually experience when they pray. Do they simply thank God or ask for God's blessings, or do they engage in a two-way communication with the divine that permeates all aspects of their daily life? Similarly, the essential question is not whether a person is religious, but "how" they are religious. Do they

simply attend church once a week, in the role of passive spectator, or do they have a transformative, daily relationship with a living God? Is this relationship primarily cognitive, or does it include emotions, or a mystical/supernatural dimension? In terms of benevolent service to others as an outcome measure, recent empirical work suggests that emotionally powerful spiritual experiences of divine love are consequential (Lee et al., 2013).

Consistent with a central theme in the AA literature, recent research (on adults and adolescents) confirms that narcissism feeds addiction, while benevolence counters it (Carter et al., 2012; Kelly, Hoepfner, Stout, & Pagano, 2011; Pagano et al., 2010; Pagano et al., 2011; Pagano, White, et al., 2013). Religion/spirituality may serve as a key that unlocks the door to benevolent service (Lee et al., 2013) and therefore has important implications for research on addiction. Researchers have used interviews with nonaddicted people to document a process that is highly relevant for those battling addiction:

There is a common theme in all of the stories: powerful experiences of spiritual transformation (often taking the form of feeling born again) lead to a deeper sense of God's love and a calling to benevolent action, which in turn promotes existential well-being.... The point we would like to stress here is that spiritual experience and transformation provide the foundation for subsequent steps in living out a calling. As National Public Radio correspondent Barbara Bradley Hagerty explains, "Half of Americans claim to have experienced a life-altering spiritual event that they could circle on the calendar in red ink," and this explains why 'even the twentieth century, with its Freuds and B. F. Skinners, its technological advances and scientific reductionism, could not quash Americans' yearning for the divine.'" (Lee et al., 2013, p. 96)

For many people, it may not be religion, per se, that has this effect. Instead, it may be emotionally powerful spiritual experiences that make the difference (Lee et al., 2013). Such experiences are a primary aim of the 12-Step process promoted by AA, as the 12th and final step refers to a "spiritual awakening."

This transformation has been documented in a variety of therapeutic settings, such as Hagerty's (2009) discussion of the findings of psychologist William Miller:

He noticed that some of his patients underwent sudden spiritual experiences, and when they emerged on the other side, they had been transformed: no longer alcoholic, no longer suicidal, they were people who treated life as a gift. He called the phenomenon "quantum change." (p. 30)

Thus, whether a person has such a spiritual transformation while working the 12 Steps of the AA program may make a significant difference in their sobriety and service to others, independent of their religious background, affiliation, beliefs, or church attendance.

Fostered Spiritual Experiences in AA, Sobriety, and Service

The preceding discussion provides an explanation for why Sussman's (2010) review of the literature found that AA/NA attendance predicts abstinence and sobriety (p. 40). Similarly, Carter et al. (2012) found "preliminary support for AA's theory of egocentrism as a root cause of addiction" (p. 169), and they suggest volunteerism as a possible solution. However,

the positive effect of the AA approach to reducing narcissism and fostering service to others is a function of whether a person actually works the 12 Steps on an ongoing basis. As mentioned, the 12th Step includes benevolent service to others (often referred to as AA-related helping, or AAH). However, a 10-year follow-up study has shown that only 10% of AA participants were engaged in AAH at any given time over this period. We argue that a closer examination of religiosity and spirituality may help us understand the striking disconnect between AA participation and AAH engagement.

The literature on this topic is just now emerging, but early work has found that teens with high levels of religiousness (measured by the RBB) at intake displayed greater 12-Step work and greater AAH at discharge roughly 2 months later (Krentzman et al., 2012).

Religiousness was not related to drug use during the treatment period or to AOD cravings after discharge. The DSES was not used in this study, so it remains an open question whether spiritual experiences would have predicted the outcome measures. As we have said, the RBB does include a couple of items on spiritual experience, but the potential impact of these measures are likely to be overwhelmed by other items that are unrelated to actual experience, such as belief or worship attendance. Still, this early study suggests that disentangling the different aspects of religiosity/spirituality might be fruitful.

Zemore (2007) found that participation in AA predicted abstinence and that this effect was mediated partly by spirituality and religious practices. This study employed a single-item measure of spirituality that was distinct from religiosity (measured by the RBB), and both were significant predictors. It is noteworthy that baseline spirituality/religiosity did not have this effect; rather, it was the change in spirituality/religiosity over time that made the difference. Zemore (2007) concluded that spirituality/religiosity is an important mechanism by which 12-Step programs increase abstinence and that “it is spiritual change (but not spirituality at treatment outset) that matters” (p. 78S). In other words, the effects of spirituality/religiosity are not spuriously related to abstinence because of an association with 12-Step work. Stated differently, spirituality/religiosity “may help to drive (or mediate) the effects of 12-step involvement on recovery outcomes” (p. 76S).

Another study using the RBB assessed the effect of adult religiosity as a mediator between AA participation and a number of outcomes (Kelly et al., 2011). This research found religiosity was an important mediator for aftercare patients but not for those in an outpatient program, which indicates that religiosity may be more important for those with more severe substance abuse problems. Although this research did not involve teens, it is informative that, “The spiritual framework of AA may provide a compassionate structure that facilitates self-forgiveness” (p. 297). Self-forgiveness may short-circuit the “self-criticism” and “functional decline” displayed by alcoholics as their addictions worsen. The authors did note the caveat that the RBB “may not be consistent with AA’s own idea of ‘spirituality’” (p. 297). The DSES would be an improvement in this regard.

Two studies by Kelly and Pagano (and their colleagues) are relevant especially to this discussion. The first study assessed youth participation in AAH using the Service to Others in Sobriety Scale (SOS, see also Pagano et al., 2010) and included two items from the DSES, although these were included as part of a prosocial behavior scale, rather than a scale

that measures spirituality. Findings indicated that the SOS scale was associated with helping and compassion and negatively related with narcissistic entitlement, which has important implications for long-term abstinence (Pagano, Kelly, et al., 2013). The second study showed the influence of lifetime formal religious practices but not God consciousness on youth engagement in programmatic 12-Step activities (step work and AAH), which in turn were associated with improved outcomes (Kelly, Pagano, Stout, & Johnson, 2011). These findings suggest that one's lifetime God consciousness before getting sober does not influence one's progress during treatment in contrast a positive influence of lifetime religious practices. However, it is not clear whether recent spirituality or religious practices, or both influence youth self-care practices as well as care for others.

Purpose of Study

Taken as a whole, the research to date suggests that the AA program is effective in fostering sobriety for those who work the steps, including AAH, on an ongoing basis and that some aspect of religiosity/spirituality is involved in this process. However, there are a number of gaps in the literature. First, prior research with adults may not extend to adolescents with addiction. Second, measurement of spirituality in addiction research is limited. The measure of choice up to this point (the RBB) aggregates a number of distinct aspects and deemphasizes spirituality in favor of beliefs and formal practices. This may account for some of the mixed findings with regard to the relationship between religiosity and sobriety. AA does not ask participants to simply attend worship services, pray, or believe in God. It requires that they turn their lives over to a higher power and that a spiritual awakening inform all aspects of their daily living. The DSES, with its emphasis on spiritual experience, comes closer to the AA conception of spirituality than the RBB. But it is an empirical question whether the DSES, or RBB, or both predict outcome variables independent of other controls. Some research indicates that spirituality and religiosity "should not be thought of as mutually exclusive categories but as concepts tapping different dimensions of faith with a fair amount of overlap between them" (Jang & Franzen, 2013, p. 3), despite the existence of a sizeable group of people who self-identify as "spiritual but not religious." There is also a question about whether the effects of these variables are related to their levels at baseline or to changes in spirituality/religiosity that occur during the treatment process. The purpose of this study is to explore (1) changes in belief orientation after 8 weeks of residential treatment, (2) the link between increased DSE and improved care for self (substance abuse and cravings) and others (prosocial and narcissistic behaviors), and (3) changes in formal religious practices (FRP) in relation to increased DSE.

METHOD

Procedures

Data were derived from Project SOS, a longitudinal investigation of adolescent participation in 12-Step programs of recovery. Recruitment for this study was conducted from February 2007 to August 2009 at New Directions, the largest adolescent residential treatment provider in northeast Ohio. New Directions is a 24-hour monitored, AA-based, intensive residential treatment program that provides a range of evidence-based therapeutic modalities, including cognitive-behavioral therapy (CBT); motivational enhancement therapy; reality therapy;

adolescent community reinforcement approaches; gender-specific treatment; medication-assisted treatment; relapse prevention; family, individual, and group therapies; and aftercare. Clients in residential treatment spend approximately 20 hours per week in therapeutic activities and attend up to five 12-Step meetings per week. Inclusion criteria included the following: ages 14 to 18 years; English speaking; stable address and telephone; met *DSM-IV-TR* diagnostic criteria for a current substance-dependency disorder; and medically stable (American Psychiatric Association, 2000). Exclusion criteria included a major chronic health problem other than substance use likely to require hospitalization, currently suicidal or homicidal, and expected incarceration in the subsequent 12 months. Participants were referred to treatment from a variety of sources, including juvenile court (83%), mental health professionals (65%), and nonpsychiatric physicians (2%). Participants were admitted into treatment one week after a 3-day detoxification (if required). In the week before their scheduled date of admission, participants were sent a packet of information with an invitation letter to participate in the study. Following admission, participants were approached to participate in the study. After a complete description of the study, eligible participants signed statements of informed consent/assent. Ninety-minute baseline interviews were conducted within the initial 10 days of treatment ($M = 7.5$ days after intake admission) and repeated at discharge after an average of 2.2 months of residential treatment. Participants were paid \$25 for completed assessments. All procedures of this study were approved by the University Hospitals/Case Medical Center Institutional Review Board for human investigation, and a Certificate of Confidentiality from the National Institute on Alcohol Abuse and Alcoholism was obtained. Additional information regarding the study design and methods is detailed elsewhere (Kelly, Pagano, et al., 2011).

Participants

A total of 482 adolescents were admitted into treatment during the study's enrollment period. All youth with scheduled admission appointments and those unscheduled occurring during regular weekday hours (8 am–6 pm), one weekday evening (5 pm–8 pm), and one weekend day (9 am–5 pm) were approached by research staff. Of the 211 patients approached, none were ineligible and 16 refused, resulting in an enrollment sample of 195 participants. There were no significant intake differences between youth enrolled ($N = 195$) versus not enrolled ($N = 287$) in terms of demographic characteristics, AOD severity, years of illicit drug use, trauma and sexual history, treatment history, as well as likelihood of residential treatment completion. There were more girls in the enrollment sample (50% vs. 17%, $p < 0.0001$) due to the study design's gender stratification.

Measures

Data were gathered via rater-administered, semistructured interviews; medical chart review; biomarkers; and youth, parent, and clinician reports. Semistructured interviews were conducted in person by experienced clinical interviewers whose training and certification ranged from bachelor's level to doctor of medicine. All individuals involved in collecting data from subjects completed National Institutes of Health required courses on human subjects' protection. Background characteristics and addiction severity were assessed at baseline; belief factors and study outcomes were assessed at baseline and discharge.

Background characteristics—Background characteristics included gender, age, minority status, ethnicity, grade (years in school), number of arrests in prior 24 months, parental education, and single-parent household, which were assessed using select items from valid and reliable Health Care Data Form (HCDF; Zywiak et al., 1999) and Teen Treatment Services Review (McLellan, Alterman, Cacciola, Metzger, & O'Brien, 1992).

Addiction severity—Addiction severity indices included treatment history, readiness-to-change, and length of time sober. Treatment history (AOD inpatient, outpatient, residential, detoxification episodes) in the 24 months prior to intake was assessed using select items from the HCDF. Readiness-for-change was assessed with the University of Rhode Island Change Assessment scale, a measure of motivation for behavioral change that has been validated with treatment-seeking young adults and adults (DiClemente, Schlundt, & Gemmell, 2004). With reference to the past month, 32 items are rated on a 5-point Likert-type scale from 1 (*strong disagreement*) to 5 (*strong agreement*). A readiness for change score is formed from the sum of three subscale scores (contemplation, action, and maintenance) minus the precontemplation subscale, with scores ranging from 0 to 105. Youth self-report of the longest period of voluntary abstinence since initial AOD use was assessed using a select item from the valid Addiction Severity Index (ASI; Hendricks, Kaplan, Van-Limbeck, & Geerlungs, 1989). There were no significant correlations between addiction severity indices ($r_s = -.1$ to $.1$, NS).

Belief factors—Current belief orientation, formal religious practices (FRP), and God Consciousness (GC) were assessed using the RBB (Connors, Tonigan, & Miller, 1996) and the DSES (Underwood & Teresi, 2002). These questionnaires were chosen because of item congruency with 12-Step practices (i.e., prayer, meditation), their frequent use in addiction research, and good psychometric properties (Goggin, Murray, Malcarne, Brown, & Wallston, 2007; Loustalot, Wyatt, Boss, May, & McDyess, 2006). The first RBB item asked participants to indicate their belief orientation at the present time (atheist = 0 to religious = 4). The FRP subscale of the RBB was used to assess youth engagement in various religious activities (meditation, worship attendance, reading scriptures, experiences of God). With reference to the past three months, four RBB items were rated from 0 (*never*) to 7 (*more than once a day*) and summed (range = 0–28), with higher scores indicating higher engagement in RFP. The DSES was used to assess GC as manifested in daily life activities. With reference to the past week, 15 items were rated from 1 (*many times a day*) to 6 (*never or almost never*), with one item rated from 1.5 (*as close as possible*) to 6 (*not close at all*). Items were reverse-scored and summed for a total score (range = 16.5–96), with high values reflecting high closeness. DSES and FRP scores were moderately correlated at baseline and discharge ($r_s = .6$, $p < 0.0001$).

Study outcomes: caring for self and others—Study outcomes included two care-for-self indices (AOD use and cravings) and two care-for-others indices (narcissistic and prosocial behaviors). Biomarker data collection of AOD use was collected prospectively each week of the 8-week trial by counselors as part of clinical procedures and upon youth return from pass outings in the community. Urine screens tested for the presence of amphetamines, opiates, cannabinoids, cocaine, and phencyclidine. A positive toxicology

screen was determined by detection of any six drugs, including ethanol, amphetamines, opiates, cannabinoids, cocaine, and phencyclidine. Abstinence was defined as zero versus one or more positive toxicology screens. Cutoff ng/ml concentrations for the following drugs were THC (50), opiates (300), PCP (25), and amphetamine (1000). AOD cravings were assessed with the valid Adolescent Obsessive-Compulsive Drinking Scale (AOCDS; Deas, Roberts, Randall, & Anton, 2001). With reference to the past week, 14 items were rated on a Likert-type scale from 0 to 6 and summed. Narcissistic behaviors were assessed using the valid Narcissistic Personality Inventory (NPI; Raskin & Terry, 1988). Forty items were rated using a forced-choice format and summed for a total NPI score ranging from 0 to 40, with higher scores reflecting higher narcissistic behaviors. Prosocial behaviors were measured with the valid and reliable Service to Others in Sobriety (SOS) questionnaire, a self-report of AAH (Pagano et al., 2009; Pagano et al., 2013a). With reference to the past month, 12 items were rated from 1 (*rarely*) to 5 (*always*) and summed (range = 12–60). In the current sample, good internal consistency was found for the AOCDS, SOS, and NPI (Cronbach's $\alpha > .85$). In contrast to nonsignificant correlations between care-for-self indices, care-for-others indices were moderately correlated baseline and discharge ($r_s = .3, p < 0.001$).

Data Analytic Plan

Statistical analyses were conducted with SAS Version 9.2 (SAS Institute Inc., 2002), using PROC FREQ, PROC GENMOD, PROC TTEST, PROC LOGISTIC, and PROC MIXED. Distributions of variables were examined for normality. Positively skewed variables (longest time sober, number of prior arrests) were given a square root transformation, as was done in the primary MATCH (Matching Alcoholism Treatments to Client Heterogeneity) outcome analyses (Project MATCH Research Group, 1997). Missing data for key variables at discharge ranged from 0.5% to 9.5%, and biomarker outcomes were obtained for all participants. Fisher's Exact Test for binary variables and Kruskal-Wallis chi-squared test for continuous variables were performed to evaluate differences between participants. Nonparametric *t* tests were used to test for score changes at discharge in comparison to the baseline assessment. A logistic regression was performed to determine main effects of belief factors on likelihood of AOD abstinence (0 versus 1+ positive toxicology screen). Hierarchical linear model (HLM) regressions were performed to explore the relationship between changes in belief factors and continuous outcomes. Independent variables in regression models included belief factors (DSES, FRP) and covariates associated with outcomes, including age, minority status, arrest history, parental education and marital status, and addiction severity indices. Regression models controlled for baseline assessments of belief factors and the dependent variable. Two-way Gender \times Belief Factor and baseline Agnostic/Atheist Status (y/n) \times Belief Factor interactions were tested initially in regression models to explore whether main effects of belief factors on outcomes differed between boys and girls, and between those entering treatment with and without faith. Variables were mean centered to reduce multicollinearity (Aiken & West, 1991). Fitted models were corrected for overdispersion, and multicollinearity diagnostics indicated no problems (i.e., tolerances 0.50). Statistical significance was set at $p < 0.05$ (two-tailed).

RESULTS

Sample Description

Table 1 shows the intake profile of adolescent boys ($N = 93$) and girls ($N = 102$, 52%). The majority of youth entered treatment with drug dependency (99%) and comorbid alcohol dependency (60%). The most common drug dependency disorder was marijuana (92%), followed by narcotics (30%) and hallucinogens (29%), with rates comparable to other adolescent samples in residential treatment (Deykin & Buka, 1994; Godley, Godley, Dennis, Funk, & Passetti, 2002). Participants were age 16 years on average ($M = 16.2$) and in 10th grade ($M = 10.1$ years of education). Approximately one half (50%) were from a single-parent household, and 73% had a parent with a high school diploma or less. Thirty percent were African American, and 8% were Hispanic. Eighty-five percent had a history of parole/probation, with an average of 2.5 arrests in the 24 months prior to treatment admission. Approximately one out of four youth entered treatment as an agnostic or atheist (27%), 39% were spiritual with no religious denomination, and 34% endorsed membership in a religious denomination. Few had received prior substance use disorder treatment (SUD) (5% reported prior residential treatment, and 8% reported prior intensive outpatient treatment). Average belief scores at baseline (DSES: $M = 56.2$, FRP: $M = 8.0$), AOD cravings (AOCDS: $M = 18.9$), and care-for-others indices (NPI: $M = 18.9$, SOS: $M = 26.2$) were similar across gender groups (Table 1). Additional information regarding the clinical profile of the sample at intake is detailed elsewhere (Johnson, Carter, & Pagano, 2011; Kelly, Pagano, et al., 2011).

Changes in Spirituality/Religiosity and Outcomes at Discharge

After two months of residential treatments, t test statistics revealed a significant increase in DSES scores ($M = 62.1$, $t = 5.8$, $p < 0.001$) and relatively constant FRP scores ($M = 9.9$, $t = 2.1$, $p = .20$). The sample overall demonstrated significantly improved outcomes in terms of decreased AOD cravings ($M = 8.9$, $t = -24.7$, $p < 0.0001$) and increased SOS scores ($M = 36.4$, $t = 11.6$, $p < 0.0001$), with relatively constant NPI scores ($M = 17.5$, $t = -2.2$, $p = .22$). One half of the sample (50%) had at least one positive toxicology screen. Approximately 3 out of 4 youth who entered treatment as spiritual (74%) or as belonging to a religious society (77%) reported the same religious orientation at discharge. Few spiritual (7%) and no religion-affiliated youths became atheist or agnostic (AGN) at discharge while nearly half of AGN youths became spiritual (32%) or religion-affiliated (8%). Twenty-five percent of AGN youths claiming a spiritual/religious affiliation at discharge tested positive for AOD during treatment in comparison to 55% of sustained AGN youths ($\chi^2 = 3.2$, $p < .05$).

Table 2 shows the effects of changes in DSE and FRP on care-for-self and care-for-others indices. There were no significant interaction effects between belief factors (DSE, FRP) and gender ($p > 0.40$), or between belief factors (DSE, FRP) and baseline belief orientation ($p > 0.55$), which were removed from regression models. As shown in Table 2, significant main effects of DSES were found for three out of four outcomes: every one unit increase in DSES score was associated with a 5% decrease in the odds of testing positive for AOD on the toxicology screen HR (Hazard Ratio) = 0.95, 95% confidence interval [CI] [0.92, 0.99], $p < 0.05$, a .16 unit increase in SOS score ($p < 0.05$), and .05 unit decrease in NPI score ($p <$

0.05). Baseline assessments of the DSES and FRP were not related significantly to study outcomes with one exception: higher FRP scores were associated significantly with reduced NPI levels at discharge ($p < 0.01$). Consistent patterns were found when regression models were rerun separately for each belief factor.

DISCUSSION

This study is the first to include detailed measures of spirituality and religiosity as independent variables at baseline and over the course of treatment for sample of adolescents following the AA program, and therefore it is the first to determine which aspects of religiosity/spirituality help teens stay sober and engage in service to others. Our work was motivated by recent research attempting to disentangle the effects of religion and spirituality in a 12-Step context on care-for-self (e.g., sobriety) and care-for-others (e.g., prosocial behaviors). Indeed, it has been suggested that AA's effectiveness depends on the extent to which those working the 12 Steps become more spiritual or religious during the treatment process (Zemore, 2007). Increases in spirituality or religiosity may be related to levels before treatment, progress through the 12 Steps, other aspects of the treatment process, or other individual or social factors.

Although this study did not determine the source for changes in DSE, increased DSE was associated with greater likelihood of abstinence during treatment and increased care for others (higher prosociality and lower narcissism). Our findings indicate a link between sobriety and spirituality and service to others and suggest the utility of incorporating spiritual approaches like AA into treatment modalities for young people. In a time when most federal, state, and local jurisdictions are facing looming budget shortfalls and significant cuts in treatment programs, it would seem prudent to consider all efficacious alternatives, especially those bringing no added burden to taxpayers.

There are three primary findings from this study. First, an increase in spirituality as indicated from change in DSES scores was observed after approximately two months of residential treatment without a formal spirituality intervention. Concretely, 40% of AGN youths claimed a spiritual/religion affiliation at discharge, a change associated with reduced risk of AOD use. Second, independent of intake belief orientation, increased DSES scores were associated with reduced likelihood of testing positive for AOD use and improved narcissistic and prosocial behavior. Third, with exception to a link between intake FRP and reduced NPI scores, FRP scores were relatively constant and not associated with outcomes. However, the importance of these practices is inconclusive, given the moderate correlation between FRP and DSES scores at intake and discharge ($r = .6$). This suggests that FRP serves as an active mechanism of change in daily spiritual experiences and also in reducing narcissism. We also note that the New Directions program did not encourage increased FRP, although the AA component of the program did attempt to foster more spiritual experiences. Therefore, we must be cautious about concluding that spiritual experiences are more significant than religious practices; the two are clearly related and the program encouraged one more than the other.

12-Step theory posits self-centeredness as a root cause of addiction. This perspective is particularly relevant for the study population, because adolescents are regarded widely as a much more self-centered age group compared with those who are older. This issue has received recurring media attention for decades and is often the topic of national conversation (Reeve, 2013). As our literature review indicated, young people are increasingly unsupervised by adults and less involved in volunteerism and other pursuits that might reduce narcissism (e.g., religious activities). These conditions, if not remedied, could create a kind of perfect storm for adolescent addiction and other negative outcomes (e.g., delinquency) that have negative consequences over the life course.

There are a number of reasons why higher levels of spirituality or religion (S/R) might affect outcomes like sobriety or benevolence. One recent study found evidence that those “who had more faith in God also had more faith in treatment. They were more likely to believe that the treatment would help them, and they were more likely to see it as credible and real” (Rosmarin, quoted in Taylor, 2013). Future research will need to further explore this possibility and other competing explanations. For the present discussion, it is sufficient to point out that S/R appears to be a positive factor in treatment programs that deal with issues ranging from addiction, mental health, delinquency, and a host of other issues related to individual and communal well-being. But scholars in a number of disciplines, including religious studies, criminology, and addiction research, are realizing that there is an important distinction between spirituality and religion (Lee et al., 2013; Jang & Franzen, 2013). It remains an open question whether one is more important than the other or whether they reinforce each other in their influence on outcomes like addiction or crime.

It is important to define these terms and ensure that they are operationalized appropriately in scientific studies. Otherwise, the results might be more a function of poor conceptualization and measurement error than a real effect. Jang and Franzen (2013) note that, “spirituality was most often described in personal or experiential terms, whereas religiousness was used in relation to institutional beliefs and practices, such as church membership or attendance and commitment to the belief system of organized religion” (p. 3). They also stated that these concepts are “modestly” correlated—which our results support—and should be understood as conceptually distinct but complimentary rather than mutually exclusive.

Our findings indicate that both are statistically significant predictors of sobriety and benevolence. Religiosity at baseline predicted increased service to others and reduced narcissism at discharge, though change in religiosity during the treatment period was not significantly related to any of the outcomes. On the other hand, spirituality at baseline was not associated with the four outcomes, but change in spirituality over time did predict lower levels of toxicology and narcissism and higher levels of benevolence. Stated differently, AOD cravings were not affected by religiosity or spirituality (or any of the other variables in our model), whereas reduced toxicology was related to change in spirituality, but not to baseline spirituality or to religiosity at baseline or discharge. Lower levels of self-centeredness (measured by prosociality and narcissism) were related to religiosity at intake and change in spirituality.

These results suggest that the relationship between spirituality, religiosity, benevolence, and sobriety is a complicated one and requires additional study. We might have obtained different results had we relied on a single-item measure of spirituality, as some previous work has done, instead of the 16-item DSES. Some studies combine spirituality and religiosity (e.g., those that use the full 14-item RBB), which we argue obscures different aspects of a person's spiritual and religious life. There are alternative approaches to this kind of research. One fruitful line of inquiry has attempted to separate those who are "spiritual but not religious" from those who are "religious but not spiritual" and those who are "spiritual and religious." Although the outcome variable was crime rather than addiction, the finding that the spiritual but not religious group had a higher propensity to violent crime than the other groups is informative. The researchers found that this result could be explained partially by the finding that the spiritual but not religious individuals scored low on religious involvement and also exhibited lower levels of self-control (Jang and Franzen, 2013).

The 12-Step program encourages reliance on a power greater than oneself for personal freedom from the disease of addiction but is clear that no religious affiliation is required for membership. This is partly due to AA's attempt to create a "big tent" atmosphere that welcomes people from all backgrounds, including the nonreligious. In our study, increases in DSE were associated with greater likelihood of abstinence, reduced narcissistic behaviors, and improved prosocial behaviors. Although FRP and DSE scores were highly correlated at both intake and discharge, FRP was largely not associated with improved outcomes. These findings support AA's contention that a "daily reprieve" from addiction is contingent on the maintenance of one's spiritual condition, but Jang and Franzen's (2013) study raises a question about whether spirituality alone will also be effective in reducing crime.

There are several limitations that merit attention. Although valid and reliable, the FRP subscale was assessed with four items and may miss important aspects of religiosity. Future research may wish to incorporate an alternative measure of religiosity. Second, our tested models were not exhaustive, and other nonspecified variables could also account for observed relationships. Third, the majority of the sample were nonviolent first-time offenders court-referred to treatment. Although this referral source is the most common for youth entering SUD treatment, referrals that will increase with recent legislation changes (Courier, 2011), results may not generalize to populations where court-referred patients are not the norm.

Despite these limitations, this study was able to overcome some of the limitations of previous research, including a lack of gender/racial/ethnic diversity. Additionally, independent and dependent variables were assessed using multiple methods (i.e., biomarkers, semistructured interviews, medical chart), multiple informants (i.e., clinician, rater-administered, and youth reports), and missing data rates were low (<10%). We used prospective biomarker assessment of substance use, medical chart information, and clinician report of adolescent AA/NA-related helping and global functioning to reduce the potential social desirability bias that is inherent in self-report assessment. Biomarkers were collected prospectively each week by clinical staff, who provided reliable assessments of substance use for all participants on their return from an outside-facility outing (i.e., client pass, shuttle

van to local meeting). Also, though unmeasured variables could exist that influence the processes of interest, the environment in which participants were studied (e.g., 24-hour monitored care for 10 consecutive weeks) provided a natural incubator/laboratory to study youth behavior independent of familial or substance-using peer-group influences.

Clinical Implications and Future Directions

This study advances the literature by ensuring adequate representation of different gender and minority groups, measuring spirituality and religiosity at baseline and over time, and disentangling the effects of changes in spirituality and religiosity on adolescent treatment response. Findings may be of special relevance to clinicians working with youth with addiction, as well as scholars exploring the effects of religion and spirituality on a range of outcomes such as crime/delinquency, benevolence, reduced narcissism, and other aspects of well-being (Carter et al., 2012; Jang & Franzen, 2013; Lee et al., 2013). Increased DSE was associated with decreased narcissistic behaviors, 40% of agnostic/atheist youth became spiritual or religious during treatment, and the benefits associated with increased DSE were observed independent of intake belief orientation. These results counter the view that the benefits associated with spiritual approaches depend upon a certain belief orientation, and that personality is relatively fixed by adolescence. Rather than being fixed properties of individuals, Axis II disorders (e.g., narcissistic personality disorder) can improve (Skodol et al., 2005, p. 487). Changes in spirituality during treatment may serve as the “switch” that moves youth off of the track of substance dependency and onto the track of recovery and enhanced well-being. Longitudinal research with adolescents is needed to confirm this finding over time and effects on other outcomes, such as reduced crime and AOD readmissions. In sum, our results support the AA theory of addiction and suggest that this approach could be helpful in designing treatment options for adolescents.

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TABLE 1

Intake Profile of Adolescent Boys and Girls

Intake characteristic	Total, 195 (100%)	Male, 93 (48%)	Female, 102 (52%)
Background			
Age	16.18 (1.1)	16.1 (1.1)	16.23 (1.1)
Minority	59 (30%)	34 (37%)	25 (25%)
Hispanic	15 (8%)	5 (5%)	10 (10%)
Prior arrests (#)	2.7 (2.4)	2.9 (2.5)	2.5 (2.2)
Years in school	10.09 (1.2)	10.1 (1.3)	10.09 (1.1)
Single-parent household	97 (57%)	41 (44%)	56 (55%)
Parental high school graduate or less	142 (73%)	72 (71%)	70 (75%)
Addiction severity (current)			
Treatment history	9 (5%)	4 (4%)	5 (5%)
Readiness-to-change	109.7 (11.7)	108.8 (12.5)	111.3 (10.6)
Longest time sober (days)	89.0 (88.3)	85.9 (84.0)	91.9 (92.4)
Belief			
Religious denomination	66 (34%)	33 (35%)	33 (32%)
Spiritual	76 (39%)	36 (39%)	40 (39%)
Agnostic/atheist	53 (27%)	24 (26%)	29 (28%)
Daily Spiritual Experiences (DSES)	56.2 (17.8)	55.9 (15.7)	56.5 (19.7)
Formal Religious Practices (FRP)	8.0 (6.5)	8.0 (6.6)	8.0 (6.3)
Outcomes at baseline			
Adolescent-Obsessive Compulsive Drinking Scale (AOCDS)	34.5 (11.3)	33.3 (10.7)	35.5 (11.5)
Narcissistic Personality Inventory (NPI)	18.9 (6.1)	19.4 (5.4)	18.4 (6.6)
Service to Others in Sobriety (SOS)	26.2 (10.5)	26.6 (10.5)	25.7 (10.5)

TABLE 2

Changes in Belief and Outcomes at Discharge

	Care-for-self			Care-for-others				
	Toxicology	AOD cravings	NPI	SOS	NPI			
	χ^2	<i>p</i>	<i>F</i>	<i>p</i>	<i>F</i>	<i>p</i>		
Belief								
FRPB	1.11	0.29	0.16	0.68	0.18	0.67	0.41	0.52
DSES	5.70	0.03	0.69	0.40	6.34	0.01	4.29	0.04
Covariates								
Male	0.17	0.68	0.21	0.64	1.70	0.19	0.10	0.75
Age	1.75	0.19	0.03	0.85	0.08	0.77	0.01	0.94
Minority	1.41	0.42	0.01	0.91	0.14	0.71	3.38	0.07
Hispanic	0.00	0.98	0.15	0.70	1.55	0.22	5.43	0.02
Prior arrests (#)	1.70	0.19	1.65	0.20	0.96	0.33	0.62	0.43
Years in school	0.00	0.98	0.79	0.37	0.50	0.48	1.48	0.22
Single-parent household	0.63	0.43	0.08	0.78	0.08	0.78	0.00	0.99
Parental high school graduate or less	0.01	0.92	0.36	0.54	0.25	0.62	0.15	0.70
Treatment history	0.19	0.66	0.35	0.55	1.38	0.24	0.91	0.34
Readiness-for-change	0.43	0.51	0.12	0.72	1.35	0.25	0.36	0.55
Longest time sober	0.07	0.79	0.92	0.33	0.78	0.38	0.02	0.88
FRPB (intake)	1.47	0.22	0.09	0.76	0.03	0.86	15.89	0.00