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The Role of Religiosity in Substance Use Disorder Treatment Utilization

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Abstract

The Role of Religiosity in Substance Use Disorder Treatment Utilization

By Robiel S. Abraha

The Substance Abuse and Mental Health Services Administration (SAMHSA) reported that in 2012 alone, nearly twenty million people who were in need of treatment for substance use disorder (SUD) reported not receiving any treatment. The significant unmet need for treatment among people with substance problems poses a profound public health challenge given that untreated alcohol or drug use disorders lead to deleterious mental and physical health outcomes. Therefore, identifying barriers and predictors of SUD treatment receipt remains a vital priority for public health researchers. While past research consistently identified the beneficial role of religiosity in the prevention of substance use, very few studies have expanded upon this finding to investigate the role of religiosity in the utilization of treatment for SUD. To address this gap in the literature, this study examined the association between religiosity and the receipt of SUD treatment by using a nationally representative sample of 26,287 adults with SUD, which were drawn from the 2008 - 2012 National Survey on Drug Use and Health (NSDUH). With the Behavioral Model of Health Services Utilization as the theoretical framework, the sample was divided according to the type of SUD diagnosis and then a range of binomial logistic regressions were conducted to predict SUD treatment utilization, with particular focus on specialty and self-help treatment. Although an overall inverse relationship between religiosity and SUD treatment receipt was hypothesized, regression results indicated that religiosity actually increased the odds of any SUD treatment receipt among individuals with a drug use disorder by 52% ($p < 0.05$). Religiosity was also significantly associated with specialty SUD treatment receipt among individuals with a drug use disorder ($p < 0.01$). Finally, religiosity was associated with self-help SUD treatment receipt among individuals with an alcohol use disorder ($p < 0.01$) and individuals with a drug use disorder ($p < 0.01$). This study not only helped fill a gap in the existing research literature, but also produced findings which have important implications for drug treatment policy, clinical practice, and forthcoming public health research.

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INTRODUCTION

Public opinion polling has shown that religion is a critical aspect of American life. A national survey of 35,000 American adults conducted in 2008 found that 92% of survey respondents stated that they believed in God or a higher power. More specifically 71% argued that they are “absolutely certain” about their belief in a God and 56% agreed that religion was “very important” in their life.^[1] Considering the magnitude and prevalence of religiosity in the lives of a majority of Americans, understanding the role of religion as a possible social determinant of health remains a critical emerging field of research.^[88]

The current body of literature suggests that religiosity plays a beneficial role in the prevention of drug and alcohol use disorders. Consequently, faith-based prevention initiatives have been a cornerstone of U.S. drug prevention policy. Since 1992, the SAMHSA has funded and coordinated alcohol and drug prevention efforts with religious community organizations.^[2]

In addition to prevention of SUD, religious organizations are increasingly becoming involved in treatment of SUD as well. Data from the National Survey of Substance Abuse Treatment Services (N-SSATS) revealed that in 2008, there were 527 substance abuse treatment facilities or facilities affiliated with a religious organization.^[3] Yet despite these growing partnerships between religious organizations and substance abuse treatment practitioners, there is a considerable lack of systematic investigation into how religiosity impacts SUD treatment utilization. Clarifying the influence of religiosity on treatment utilization among substance users would be invaluable to improving treatment practice and coordination with religious community organizations. Therefore, the purpose of my current research is to investigate the association between religiosity and treatment receipt among adults with SUD.

LITERATURE REVIEW

Substance Use Disorders

Substance use disorders in the United States remain a significant national public health concern for healthcare providers, policymakers, community leaders, and health researchers. Data from NSDUH estimates that in 2012, among people 12 years of age and older, 22.2 million met the criteria specified in the *Diagnostic and Statistical Manual of Mental Disorders, 4th edition* (DSM-IV) for substance dependence or abuse.^[4] This constitutes approximately 8.5% of entire the U.S. population.^[4] Despite the high prevalence of SUD, there remains an exceptionally large substance abuse treatment gap in the U.S. For example, while 22.2 million people in 2012 met the criteria for SUD, only 4.0 million people reported receiving any type of substance abuse treatment. More specifically only 2.5 million people reported receiving substance abuse treatment in a *specialty* treatment setting.^[4] These large treatment gaps pose alarming public health implications given that untreated SUD causes a variety physical and mental health issues ranging from depression^[5-11], engagement in criminal and high-risk behaviors^[12,13], and death.^[14-18] Thus, identifying all possible barriers and inducements to seeking SUD treatment is an important public health priority. As with other areas of public health research, a growing body of literature is investigating the role of religion as a factor influencing the prevention and treatment of SUD.

Religiosity and Substance Use Disorders

A 2007 SAMSHA report revealed that highly religious adults were significantly less likely to use alcohol or illicit drugs than adults with lower levels of religiosity.^[19] Similarly, in a systematic literature review of 105 studies published between 1997 and 2006, Chitwood and colleagues found that religiosity was consistently found to have a negative relationship with

usage or abuse of alcohol, marijuana, and other illicit drugs.^[20] Nevertheless, the reliance on cross-sectional data as well as the significant heterogeneity and lack of clear standardization for religiosity measures within the majority of these studies, makes identifying the specific mechanisms that cause this negative relationship very difficult.^[20]

Currently the published literature posits three general mechanisms for the inverse relationship between religiosity and substance abuse. The first hypothesis argues that the reduced likelihood of substance abuse among religious people may be an effect of how religion offers adherents social support networks, which provide opportunities for social activities or interactions absent of drugs and alcohol.^[21-25] A few published articles have tested the social support hypothesis with regards to alcohol or drug use. Two separate studies were conducted using small samples of U.S. college students to investigate the relationship between religiosity, social support, and alcohol abuse. Neither study found any evidence of social support serving as a mediating role for the relationship between religiosity and substance abuse.^[22, 25] A longitudinal cohort study of young African-American adults also attempted to examine the role of social support and social resources in mediating the relationship between religiosity and alcohol use yet found that social support did not mediate the relationship.^[21] A 2010 study used a nationally representative sample of adults from NSDUH to investigate whether social support was a possible mechanism and again the research found that social support did not substantively mediate or explain the relationship.^[23]

A second possible explanation is that the better mental health profiles among religious individuals may be a mediating factor in the reduced risk of SUD. A 2003 meta-analysis of published studies found that overall the literature identifies a positive relationship between religiosity and mental health and psychological well-being.^[26] This finding was confirmed by a

more recent systematic review of the psychiatric literature which found strong evidence that religious involvement is correlated with better mental health specifically with regards to depression, stress disorders, and suicidality.^[27] Furthermore, persons with mental illness have a higher prevalence and incidence of SUD and mental illness has been recognized as a risk factor for substance abuse and addiction.^[23, 28] Not only have researchers identified high rates of comorbidity with mental health and SUD, but the literature has also found that among comorbid cases, the development of mental health disorders typically preceded the development of SUD.^[8-11]^[29-32] Therefore, given that poor mental health is correlated with the increased risk of SUD and that religiosity is related to better mental health, mental health may be an explanatory factor in the inverse relationship between religiosity and SUD.

A third hypothesis contends that since religious doctrine typically prohibits the use or abuse of drugs and alcohol, highly religious individuals who subscribe to these doctrines would be far more likely to adopt attitudes and behaviors that discourage substance use. Unlike the first two proposed mechanisms, there is strong evidence in the literature supporting the role of disapproving or injunctive attitudes and norms toward alcohol and drug use being a mediating factor in the inverse relationship between religiosity and SUD. The studies for the most part have utilized samples of adolescents and young adults. Among samples of college students, conservative or negative moral attitudes and norms around drug and alcohol use was an important factor in explaining the reduced substance use among religious adherents.^[33-35] Similarly, in an adult community sample, Drerup and colleagues also found that negative beliefs about alcohol mediated the relationship between religious involvement and alcohol problems.^[36] Using a nationally representative sample of adolescents collected from the National Youth Survey, Desmond and colleagues studied the impact of religious moral beliefs on a range of

delinquency behavior and found that religiosity had a stronger effect on marijuana and alcohol use when adolescents reported also believing that these behaviors were morally wrong. Thus they argued that based on their data the effect of religiosity on substance use depended on moral beliefs.^[37] Furthermore, three separated studies were conducted utilizing nationally representative samples of adolescents pulled from NSDUH data and all three studies found that disapproving respondent and peer attitudes partially explained or mediated the relationship between religiosity and substance use.^[38-40]

In summary, the literature has established that highly religious people are at a significantly reduced likelihood of using and abusing substances. The most consistently identified mechanism, thus far, for this phenomenon is that religious beliefs foster negative attitudes about alcohol and drug use, which affects the substance use behaviors of religious individuals. While negative attitudes can be helpful for preventing substance abuse among religious individuals, the strength of these negatives attitudes could potentially impact treatment seeking behaviors among religious individuals with substance problems. However, less is known about the association between religious beliefs on SUD treatment utilization.

Religiosity and Self-Help Treatment Utilization

While not always explicitly religious, research indicates that the belief models that underlie 12-step or self-help programs include a strong emphasis on spirituality and a higher power.^[41, 42] Thus, researchers have been interested in whether religiosity is a predictor of self-help treatment utilization among those with SUD. Several studies have found that among drug users who have completed specialty substance abuse treatment, higher levels of religiosity is predictor of self-help treatment utilization. In a sample of rural drugs users admitted to publicly funded treatment programs, religious affiliation was found to be a positive predictor of attendance for self-help

treatment.^[43] In a longitudinal study of self-help treatment program participation among patients who completed intensive outpatient SUD treatment, researchers found that patients who expressed no religious preference attended self-help sessions less frequently than patients with an expressed religious preference.^[44, 45] Two separate studies using samples of veterans receiving inpatient SUD treatment from Veteran Affairs programs both discovered that patients who reported greater religious beliefs and greater religious involvement were more likely to initiate and maintain participation in 12-step self-help programs post-treatment.^[41,42] Lastly, two additional studies with samples of drug users who received outpatient treatment within hospitals located in large urban cities found that atheist and non-religious drug users reported that the perceived religious nature of self-help programs reduced likelihood of their involvement.^[47, 48]

Since all these studies utilized small or non-random samples, the results may have limited generalizability. In addition, the studies mostly collected samples of drug and alcohol users who were receiving formal, medical treatment prior to participation in self-help treatment programs, which could lead to bias in their conclusions. As a result, it would be difficult to make conclusions about the relationship between religiosity and self-help participation among alcohol and drug users who are not receiving any treatment. Nonetheless, these studies provide insight on how religiosity is likely positively associated with self-help treatment particularly given that the spiritual nature and character of self-help programs make them a more conducive environment for religious substance users.^[41, 42]

Religiosity and Specialty Treatment Utilization

As mentioned previously, there is a serious dearth of literature on the relationship between religiosity and utilization or receipt of specialty SUD treatment. Only two articles were identified that provide any information on a relationship between religiosity and specialty

substance abuse treatment. In a study investigating the predictors of drug abuse treatment entry, Carroll and Rounsaville recruited a sample of 89 cocaine users who were seeking treatment and 89 cocaine users who were not seeking treatment. Within this sample, the authors found treatment seekers were more likely than non-treatment seekers to possess a range of demographics characteristics, one of which included reporting a religious preference.^[49] In a 2004 study, the authors investigated what factors influenced help-seeking behavior using a sample of 167 problem drinkers in cities from Alabama and Georgia. Each participant was interviewed and asked to rate factors that were barriers or inducements to treatment seeking and the results of the study found that within the sample, “religious concerns and legal inducements” was identified by the participants as an inducement to seeking specialty or medical SUD treatment.^[50]

Limitations of these two studies include the use of very small sample sizes and that neither study was focused on examining the relationship between religiosity and SUD treatment utilization specifically. Instead both studies were interested in providing descriptive statistics of the differences between drug users who sought treatment and those who did not seeking treatment, with religiosity being just one of an array of demographic variables examined. Thus, these studies lacked any in-depth analysis of the association between religiosity and SUD treatment utilization. Moreover both of these studies included drug-specific populations and therefore results cannot be generalized to abusers of different types of drugs. Thus, little is known about the association between religiosity and specialty SUD treatment services.

Religiosity and Mental Health Treatment Utilization

Due to the scarcity of research investigating the relationship between religiosity and specialty SUD treatment use, understanding the role of religiosity as a predictive factor in other

fields of health research could potentially inform our understanding of religiosity and SUD treatment. Throughout the literature, religious involvement has been shown to be positively associated with higher utilization of mammograms, cholesterol screening, and a range of other preventive treatment services.^[51-56] In contrast, religiosity has also been shown to be negatively associated with utilization of treatments related to more stigmatized health problems including family planning^[57], STIs^[58,59], HIV/AIDS^[60-62], and mental illness.^[63-66] Because of the high prevalence of comorbidity between SUD and mental illness as well as the well-documented identification of similar risk factors and etiology, research examining the association between religiosity and mental health treatment is particularly salient.^{[8-11] [29-32]} Although the findings from this literature are slightly mixed,^{[69][70]} most studies suggest that high levels of religiosity predicted lower levels of mental health treatment. . Using a sample of women recruited from an urban women's clinic, researchers found that women in the sample who reported a belief in religious or supernatural causes for mental illness had lower rates of mental health service utilization.^[63] Neighbors and colleagues used data from the National Survey of Black Americans and found that regardless of severity of mental illness those who sought support from the clergy first were less likely to then seek professional, medical help.^[65] Among sample of Catholics from south Florida, Kane and Williams discovered that participants not only preferred seeking mental health support from a priest, but that they also reported not wanting to seek help from professionals such as psychologists, psychiatrists, or mental health counselors.^[64]

Explanations offered in the research for the negative association between religiosity and mental health treatment vary. Most often, the literature argues that among religious communities, clergy often serve as the initial and primary source of counseling and this counseling sometimes acts as a substitute for professional mental health treatment.^[65, 71, 72] In addition, even though

clergy also serve as informal “gatekeepers” to mental health services, research has reported that these individuals have gaps in knowledge about how to make mental health referrals. ^[72, 73]

One study utilized a nationally representative sample of adults collected from NSDUH survey data to investigate the relationship between religiosity and mental health service utilization. The authors found that results varied based on how religiosity was operationalized. The frequency of attending religious activities was positively associated with mental health treatment utilization, with the impact being much more pronounced among those with severe mental illness.^[73] Yet when religiosity was defined based on influence of religious beliefs to decision making, the authors found that religious beliefs were negatively associated with mental health treatment utilization.^[73]

New Contribution

While interest in understanding how religiosity affects health behaviors is growing, there is a major gap in the literature with regard to studies investigating the relationship between religiosity and SUD treatment utilization. Generally, research has identified that religiosity is associated with a reduced risk of SUD and that the relationship is likely mediated by negative or disapproving attitudes towards substance use promoted by religious doctrine or norms. There is also evidence to suggest that religious persons with SUD and mental health problems prefer seeking help from clergy and that religiosity may likely be associated with self-help SUD treatment utilization. However, the effect of religiosity on specialty SUD treatment utilization is largely unknown. From the mental health literature I can conjecture that religiosity could reduce utilization of medical treatment, particularly if religious beliefs favor using religious methods of coping with substance problems. My current study, nevertheless, will be the first study to my

knowledge that will investigate the relationship between religiosity and receipt of SUD treatment (either self-help or specialty treatment) using a nationally representative sample of adults.

RESEARCH QUESTIONS AND HYPOTHESES

*Q*₁: Does religiosity predict the receipt of any substance abuse treatment services among adults with SUD?

*H*₁: Among adults with SUD, those with high levels of religiosity will be less likely to receive substance abuse treatment services compared with persons with low levels of religiosity.

*Q*₂: Does religiosity predict the receipt of *specialty* substance abuse treatment services among adults with SUD?

*H*₂: Among adults with SUD, those with high levels of religiosity will be less likely to receive specialty substance abuse treatment services compared with persons with low levels of religiosity.

*Q*₃: Does religiosity predict the receipt of *self-help* substance abuse treatment services among adults with SUD?

*H*₃: Among adults with SUD, those with high levels of religiosity will be more likely to receive self-help substance abuse treatment services compared with persons with low levels of religiosity.

METHODOLOGY

Data Source and Sample

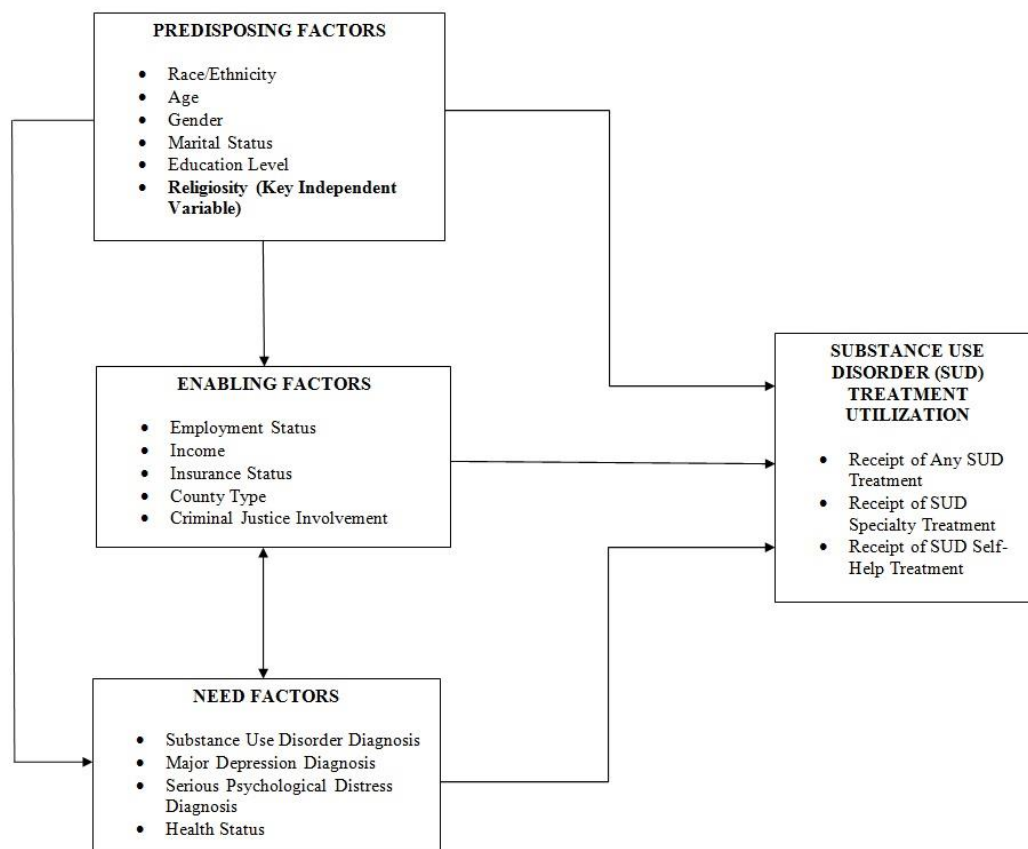
Data utilized for this study was acquired from The National Survey on Drug Use and Health (NSDUH), which is funded and administered by the Substance Abuse and Mental Health Services Administration, an agency of the United States Department of Health and Human Services (DHHS).^[4] NSDUH provides a wide range of statistical information on the use of drugs, alcohol, and tobacco by the U.S. population aged 12 or older as well as data regarding the prevalence of SUDs and SUD treatment utilization.^[4] NSDUH does not collect survey data from homeless persons who do not reside in a shelter, military personnel on active duty, and person who are institutionalized in facilities such as correctional facilities or hospitals.^[4] Data from NSDUH has been collected annually since 1971 and is representative at both the national and state level.^[4] For the purposes of this study, 5 years of NSDUH data (2008-2012) were pooled together for the analysis. I restricted my sample to only include adults over the age of 18 years who were classified with having either illicit drug or alcohol abuse or dependence in the past year (N= 26,822). After excluding persons with missing data for any of the variables included in my models, the final sample size was 26,287 adults.

Theoretical Framework

The theoretical framework that will guide my methodology and analysis will be the Behavioral Model of Health Services Utilization developed by Ronald Anderson and Lu Ann Aday. The Anderson and Aday model describes three categories of the various determinants of healthcare utilization: predisposing factors, enabling factors, and need factors. Predisposing factors are individual characteristics or demographics, enabling factors system-level or structural factors, and need factors related to severity of illness or health needs.^[77, 78] Below is the

conceptual model I developed for my research study based on the Anderson and Aday model. The model groups the relevant variables for the current study into the three categories defined by the Anderson and Aday model. Predisposing factors for this study include a range of demographic variables such as race, age, gender, education, etc. which past research has identified as being associated with SUD treatment utilization.^[79] The enabling factors in this study are employment, insurance status, and criminal justice involvement, which have been identified in the literature as facilitating access to SUD treatment or influencing treatment seeking behavior.^[79] Lastly need factors include measures of the type of SUD diagnosis and the mental health co-morbidity diagnosis, which can also influence the type of SUD treatment utilized.

Figure 1: Conceptual Model



Variables

Dependent Variables

The study included six dependent variables, which were all measurements of substance abuse treatment utilization. The first dependent variable was a dichotomous (yes/no) measurement of whether a person reported receiving any type of treatment for alcohol use disorder in the past year. The second dependent variable was a dichotomous (yes/no) measurement of whether a person reported receiving any type of treatment for illicit drug use disorder in the past year. These treatment services included a wide range of services such as detoxification, medication-assisted treatment, individual and group counseling, 12-step peer support programs, and a range of other services rendered at rehabilitation facilities, hospitals, mental health centers, private doctor's office, or public health and community centers across the country.^[4]

The third dependent variable was a dichotomous (yes/no) measurement of whether a person reported receiving any *specialty* treatment for alcohol use disorder in the past year. The fourth dependent variable was a dichotomous (yes/no) measurement of whether a person reported receiving any *specialty* treatment for illicit drug use disorder in the past year. In NSDUH, specialty treatment is mainly categorized according to the setting of treatment. Hence, specialty treatment is defined as any treatment services received at a drug or alcohol rehabilitation facility, any inpatient services received at a hospital, or any treatment services received at a mental health center.^[4]

To examine the third research question, I created two dichotomous (yes/no) measurements of receipt of any *self-help* treatment for alcohol use disorder and receipt of any

self-help treatment for drug use disorder. Self-help treatments are services provided by 12-step, peer support programs such as Alcoholics Anonymous (AA), Narcotics Anonymous (NA), etc.

Independent Variable

The independent variable for both research questions was a categorical measurement of religiosity. Respondents were asked in the NSDUH surveys to rank how much they agree with the following statement “Your religious beliefs influence how you make decisions in your life.” The available responses included “strongly disagree”, “disagree”, “agree”, and “strongly agree”.

Covariates

The covariates of the study included social and demographic factors such as age, race/ethnicity, gender, educational level, income, marital status . Also included were variables to measure overall health and possible mental health comorbidities. Variables that have in the past been linked to substance abuse treatment utilization such as insurance status, criminal justice involvement, and severity of SUD were factored in the model as well. For an overview of all the covariates included in the model please refer to Table 1.

Table 1: Covariates		
Variable Name	Type of Variable	Categories/Responses
Race	Categorical	1 = Non-Hispanic White 2 = Non-Hispanic Black 3 = Hispanic of Any Race 4 = Non-Hispanic Other
Age	Categorical	1 = 18-25 years of age 2 = 26-34 years of age 3 = 35-49 years of age 4 = 50 or older
Gender	Dichotomous	0 = Male 1 = Female
Marital Status	Dichotomous	0 = Currently Married 1 = Not Currently Married
Education	Categorical	1 = Less Than High School 2 = High School Graduate 3 = Some College 4 = College Graduate
Income	Categorical	1 = Less Than \$20,000 2 = \$20,000 - \$49,999 3 = \$50,000 - \$74,999 4 = \$75,000 or More
Depression	Dichotomous	0 = No major depressive episode in the past year 1 = Had a major depressive episode in the past year
Psychological Distress	Dichotomous	0 = No serious psychological distress in the past year 1 = Had serious psychological distress in the past year
Insurance	Categorical	1 = Uninsured 2 = Covered by Medicaid 3 = Covered by private insurance 4 = Covered by other type of insurance
Employment	Dichotomous	1 = Currently Employed 2 = Not Currently Employed
Self-Reported Health Status	Categorical	1 = Excellent 2 = Very Good 3 = Good 4 = Fair 5 = Poor
County Type	Categorical	1 = Large Metro 2 = Small Metro 3 = Non-Metro
Alcohol Use Disorder Diagnosis	Categorical	0 = No Alcohol Use Disorder 1 = Alcohol Abuse 2 = Alcohol Dependence
Drug Use Disorder Diagnosis	Categorical	0 = No Drug Use Disorder 1 = Drug Abuse 2 = Drug Dependence
Criminal Justice Involvement	Dichotomous	0 = No criminal justice involvement in the past year 1 = Had criminal justice involvement in the past year

Data Analysis

For my data analysis I conducted two sets of binomial logistic regressions. Treatment options, practice guidelines, and standards of care vary widely between alcohol use disorders and drug use disorders and by the severity of the SUD. Consequently, utilization of substance abuse treatment could differ depending on the type and severity of the SUD diagnosis. Consequently, regression models were stratified for based on the SUD diagnosis.

For the first set of regression models, I divided my sample by both the type of substance used by respondents (drug or alcohol) and the severity of the substance abuse disorder (abuse or dependence). In the second set of regression models, I divided my sample only by the type of substance used (drug or alcohol). The rationale behind the decision stems from changes made by the American Psychiatric Association with regards to diagnosing and classifying SUDs. Specifically, the 5th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-V) combined the categories of “abuse” and “dependence” into a single category due to lack of clarity and practical justification for this distinction found in the early DSM-IV edition.^[80] Nevertheless, NSDUH survey data utilized in my study was collected with questionnaires designed and based on criteria specified on the DSM-IV. Therefore, I decided to conduct my analysis with samples divided between abuse and dependence and samples in which no distinctions between abuse and dependence were made. When examining the association between religiosity and treatment for alcohol use disorders, I estimated three logistic models for the following subsamples: (1) adults diagnosed with alcohol abuse (N= 11,763); (2) adults diagnosed with alcohol dependence (N= 9,510); and (3) adults diagnosed with any alcohol use disorder diagnosis (N = 21,273). For each of these subsamples, I estimated a logistic regression

that predicted: 1) the receipt of any type of alcohol use disorder treatment, 2) the receipt of *specialty* alcohol use disorder treatment, and 3) the receipt of self-help alcohol treatment.

Similarly, when examining the association between religiosity and treatment for drug use disorders, I estimated three logistic models for the following subsamples: (1) adults diagnosed with drug abuse (N=2,581); adults diagnosed with drug dependence (N= 6,570);and (3) adults diagnosed with any drug use disorder diagnosis (N = 9,151). For each subsample, I estimated a logistic regression that predicted: 1) the receipt of any type of drug use disorder treatment, 2) the receipt of *specialty* drug use disorder treatment, and 3) the receipt of self-help drug disorder treatment. I used SAS version 9.4 of the SAS Institute for the data cleaning, formatting and manipulation while I utilized STATA 13.0 to conduct my regression and data analysis.

RESULTS

Demographics

While there were variations in reported treatment receipt between the sub-samples, treatment receipt was fairly low across all the sub-samples. The highest percentage of treatment receipt was observed among those with drug dependence (17.6%), whereas the lowest percentage was among those with alcohol abuse (3.7%). Turning next to religiosity, the majority of the individuals within each subsample reported that they either agreed or strongly agreed that religion influenced the decisions they make in life.

When examining the distribution of the other covariates, the majority of each sub-sample was male, married, employed, between the ages of 18-34 years, and White. The percentage of individuals who reported involvement in the criminal justice system in the past year ranged from 14.6% among those with alcohol abuse to 25.94% among those with drug dependence. At least one-fifth of each subsample was uninsured, and , a sizeable percentage suffered from a mental illness co-morbidity. For example, approximately 42.5% of people with drug dependence and 34.5% of people with alcohol dependence also met the criteria for serious psychological distress.

Table 2. Weighted Demographics Statistics by Sample Sub-Population				
Variable	Percentage (%)			
	Alcohol Abuse	Alcohol Dependence	Drug Abuse	Drug Dependence
<i>Any Treatment Receipt</i>				
Yes	3.73	13.02	7.46	17.59
<i>Specialty Treatment Receipt</i>				
Yes	2.01	8.84	4.94	13.31
<i>Self-Help Treatment Receipt</i>				
Yes	1.81	8.72	3.76	10.34
<i>Religiosity</i>				
Strongly Disagree	19.62	19.31	23.52	23.45
Disagree	21.80	20.20	24.03	22.56
Agree	40.69	40.06	37.05	36.64
Strongly Agree	17.88	20.42	15.40	17.34
<i>Race/Ethnicity</i>				
White	72.17	66.71	61.04	66.32
Black	8.80	12.32	15.54	15.63
Hispanic	14.77	15.96	19.12	13.37
Other	4.25	5.02	4.31	4.67
<i>Age</i>				
18-25 years	34.64	27.38	46.39	44.21
26-34 years	23.95	24.25	22.28	25.59
35-49 years	24.17	28.36	20.74	20.99
50 years or older	17.24	20.01	10.60	9.22
<i>Gender</i>				
Male	67.95	63.15	70.94	63.19
<i>Marital Status</i>				
Married	66.60	66.76	79.28	81.11
<i>Education</i>				
Less Than High School	13.83	17.85	25.76	22.52
High School Graduate	27.80	30.83	35.78	35.57
Some College	29.78	29.65	24.18	29.52
College Graduate	28.59	21.68	14.28	12.39
<i>Income</i>				
Less Than \$20,000	19.27	26.81	30.58	32.50
\$20,000-\$49,999	31.58	32.41	34.83	33.90
\$50,000-\$74,999	16.33	14.96	13.00	14.09
\$75,000 or More	32.82	25.82	21.59	19.51
<i>Criminal Justice Involvement</i>				
Yes	14.62	18.69	23.55	25.94
<i>Major Depression</i>				
Yes	10.16	21.72	15.53	24.44
<i>Serious Psychological Distress</i>				
Yes	17.92	34.53	29.47	42.50
<i>Insurance Coverage</i>				
Uninsured	22.85	25.82	32.77	31.22
Medicaid	6.92	10.99	14.57	19.02
Private	64.41	55.24	45.92	42.84
Other	5.82	7.96	6.75	6.92
<i>Health Status</i>				
Excellent	23.54	16.14	16.95	13.93
Very Good	41.67	35.25	39.01	35.21
Good	25.55	31.93	30.27	32.59
Fair/Poor	9.25	16.68	13.77	18.27
<i>County Type</i>				
Large Metro	53.46	54.98	55.32	56.21
Small Metro	31.78	31.20	30.05	31.27
Non-Metro	14.76	13.82	14.63	12.52
<i>Employment Status</i>				
Employed	75.34	68.86	66.29	59.55
<i>N</i>	11763.00	9510.00	2581.00	6570.00

Any Treatment Receipt

In analyzing the first research question, I conducted six separate binomial logistic regressions predicting the receipt of any treatment services in the past year for my sample stratified by SUD diagnosis. Among the sample of individuals who reported any alcohol use disorder (alcohol abuse or alcohol dependence), religiosity had no statistically significant association with the receipt of alcohol treatment services. In contrast, religiosity increased the odds of drug treatment receipt among persons with a drug use disorder. Specifically the regression results indicated that among the sample of people classified with either drug abuse or drug dependence, those who strongly agreed that religion impacts their decisions in life had 51% greater odds of reporting receipt of any drug treatment in the past year compared to the reference group of people who strongly disagreed that religion impacts their decisions in life ($p < 0.05$). A very similar association was found among the subset of people with drug dependence ($p < 0.05$), but religiosity had no statistically significant association with the subset of people with drug abuse.

Furthermore, covariates that were significant positive predictors of any treatment receipt across nearly all sample populations included past year criminal justice involvement ($p < 0.001$), age ($p < 0.001$), having serious psychological distress, reporting a major depressive episode in the past year ($p < 0.05$), and being married ($p < 0.05$). Criminal justice involvement had the largest association with treatment receipt. The odds of treatment receipt among criminally involved substance users ranges from 3.7 to 11.7 times that of substance users who had no involvement with the criminal justice system. In most models, minority race and ethnicity was negatively associated with past year treatment receipt. In particular, Blacks and Hispanics had significantly lower odds of reported treatment receipt in the past year compared to their White counterparts ($p < 0.05$; $p < 0.01$).

Table 3. Logit Models Predicting Past Year Receipt of Any Treatment by SUD Diagnosis (Odds Ratios)

	Any Alcohol Treatment			Any Drug Treatment		
	Alcohol Abuse or Dependence	Alcohol Abuse	Alcohol Dependence	Drug Abuse or Dependence	Drug Abuse	Drug Dependence
<i>Religiosity</i>						
Strongly Disagree	Ref	Ref	Ref	Ref	Ref	Ref
Disagree	1.16 (0.20)	1.06 (0.29)	1.26 (0.26)	1.17 (0.17)	1.31(0.51)	1.14 (0.18)
Agree	0.93 (0.15)	0.89 (0.22)	0.95 (0.18)	1.24 (0.20)	1.09 (0.40)	1.30 (0.24)
Strongly Agree	1.39 (0.25)	1.14 (0.32)	1.50 (0.32)	1.52 [†] (0.28)	1.83 (0.67)	1.50 [†] (0.30)
<i>Race</i>						
White	Ref	Ref	Ref	Ref	Ref	Ref
Black	0.60 ^{**} (0.10)	0.86 (0.24)	0.53 ^{**} (0.11)	0.46 ^{***} (0.06)	0.86 (0.28)	0.38 ^{***} (0.06)
Hispanic	0.73 [†] (0.11)	0.87 (0.20)	0.62 ^{**} (0.11)	0.61 ^{**} (0.10)	0.62 (0.24)	0.63 [†] (0.11)
Other	0.89 (0.20)	1.27 (0.46)	0.73 (0.21)	0.65 (0.16)	1.86 (0.97)	0.50 [†] (0.14)
<i>Age</i>						
18-25 years	Ref	Ref	Ref	Ref	Ref	Ref
26-34 years	1.65 ^{***} (0.21)	1.03 (0.27)	1.92 ^{***} (0.26)	1.50 ^{**} (0.21)	1.54 (0.50)	1.44 [†] (0.21)
35-49 years	3.19 ^{***} (0.40)	2.42 ^{***} (0.60)	3.46 ^{***} (0.49)	2.65 ^{***} (0.35)	3.70 ^{***} (1.31)	2.57 ^{***} (0.41)
50 years or older	3.39 ^{***} (0.75)	1.56 (0.73)	4.16 ^{***} (0.96)	1.57 (0.57)	0.93 (0.53)	1.72 (0.70)
<i>Gender</i>						
Male	Ref	Ref	Ref	Ref	Ref	Ref
Female	0.80 (0.10)	0.86 (0.20)	0.79 (0.11)	0.95 (0.13)	0.76 (0.25)	0.94 (0.13)
<i>Marital Status</i>						
Not Married	Ref	Ref	Ref	Ref	Ref	Ref
Married	1.40 [†] (0.21)	2.00 [†] (0.60)	1.36 (0.24)	1.75 ^{***} (0.28)	1.36 (0.67)	1.85 ^{***} (0.33)
<i>Education</i>						
Less Than High School	Ref	Ref	Ref	Ref	Ref	Ref
High School Graduate	1.07 (0.15)	0.76 (0.19)	1.20 (0.22)	1.04 (0.14)	0.84 (0.28)	1.09 (0.16)
Some College	1.29 (0.20)	0.89 (0.24)	1.48 (0.30)	1.01 (0.17)	0.92 (0.40)	1.00 (0.17)
College Graduate	0.86 (0.16)	0.61 (0.17)	1.05 (0.24)	0.57 [†] (0.14)	0.74 (0.35)	0.57 [†] (0.16)
<i>Income Level</i>						
Under \$20,000	Ref	Ref	Ref	Ref	Ref	Ref
\$20,000 - \$49,999	0.76 [†] (0.10)	0.93 (0.20)	0.75 (0.12)	0.77 (0.11)	0.84 (0.27)	0.74 (0.12)
\$50,000 - \$74,999	0.73 [†] (0.11)	0.72 (0.23)	0.78 (0.17)	0.84 (0.13)	1.41 (0.50)	0.75 (0.13)
\$75,000 or More	0.70 [†] (0.11)	0.96 (0.26)	0.72 (0.14)	1.22 (0.20)	0.96 (0.36)	1.27 (0.23)
<i>Criminal Justice Involvement</i>						
No	Ref	Ref	Ref	Ref	Ref	Ref
Yes	7.18 ^{***} (0.77)	11.70 ^{***} (2.21)	6.31 ^{***} (0.86)	4.08 ^{***} (0.44)	7.42 ^{***} (2.51)	3.67 ^{***} (0.43)
<i>Depression</i>						
No	Ref	Ref	Ref	Ref	Ref	Ref
Yes	1.39 ^{**} (0.17)	0.93 (0.25)	1.34 [†] (0.19)	1.40 [†] (0.22)	0.70 (0.31)	1.54 ^{**} (0.24)
<i>Psychological Distress</i>						
No	Ref	Ref	Ref	Ref	Ref	Ref
Yes	2.05 ^{***} (0.23)	1.41 (0.40)	1.95 ^{***} (0.25)	1.55 ^{**} (0.20)	2.46 ^{**} (0.90)	1.36 [†] (0.16)
<i>Insurance</i>						
Uninsured	Ref	Ref	Ref	Ref	Ref	Ref
Medicaid	1.31 (0.19)	1.57 (0.39)	1.26 (0.22)	1.56 ^{**} (0.22)	1.40 (0.44)	1.57 ^{**} (0.22)
Private	1.23 (0.14)	1.24 (0.26)	1.28 (0.17)	0.87 (0.13)	0.89 (0.33)	0.85 (0.13)
Other	1.43 (0.25)	0.80 (0.27)	1.63 [†] (0.35)	1.15 (0.25)	0.92 (0.38)	1.22 (0.29)
<i>Health Status</i>						
Excellent	Ref	Ref	Ref	Ref	Ref	Ref
Very Good	0.92 (0.11)	0.80 (0.14)	0.96 (0.14)	1.01 (0.17)	1.14 (0.38)	1.00 (0.20)
Good	1.12 (0.18)	0.98 (0.23)	1.12 (0.21)	0.94 (0.17)	0.85 (0.30)	0.96 (0.19)
Fair	0.93 (0.18)	0.64 (0.23)	0.91 (0.19)	0.86 (0.16)	0.46 (0.24)	0.91 (0.20)
Poor	0.63 (0.19)	0.17 ^{**} (0.09)	0.70 (0.24)	0.57 (0.19)	0.57 (0.50)	0.62 (0.21)
<i>County Type</i>						
Large Metro	Ref	Ref	Ref	Ref	Ref	Ref
Small Metro	0.87 (0.09)	1.17 (0.24)	0.80 (0.09)	0.81 (0.09)	1.54 (0.44)	0.73 [†] (0.10)
Non-Metro	0.77 (0.10)	1.06 (0.24)	0.70 [†] (0.12)	0.82 (0.12)	1.10 (0.36)	0.83 (0.15)
<i>Employment</i>						
Not Employed	Ref	Ref	Ref	Ref	Ref	Ref
Employed	0.82 (0.10)	0.80 (0.15)	0.86 (0.13)	0.80 (0.10)	0.56 (0.17)	0.87 (0.13)
<i>Co-Diagnosis for Alcohol Use Disorder</i>						
None	-	-	-	Ref	Ref	Ref
Alcohol Abuse	-	-	-	1.39 ^{**} (0.16)	1.33 (0.36)	1.41 ^{**} (0.17)
Alcohol Dependence	-	-	-	0.55 ^{***} (0.07)	0.37 ^{**} (0.12)	0.67 ^{**} (0.09)
<i>Co-Diagnosis for Drug Use Disorder</i>						
None	Ref	Ref	Ref	-	-	-
Drug Abuse	2.35 ^{***} (0.25)	2.09 ^{***} (0.44)	2.29 ^{***} (0.30)	-	-	-
Drug Dependence	1.36 (0.22)	0.66 (0.16)	1.96 ^{**} (0.42)	-	-	-
<i>Constant</i>	0.02 ^{***} (0.01)	0.01 ^{***} (0.01)	0.02 ^{***} (0.01)	0.05 ^{***} (0.01)	0.02 ^{***} (0.01)	0.06 ^{***} (0.02)
<i>N</i>	21273	11763	9510	9151	2581	6570

Exponentiated coefficients; Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Specialty Treatment Receipt

For the second research question I again conducted six separate binomial logistic regressions each predicting the receipt of *specialty* treatment services in the past year for my sample by SUD diagnosis. With regard to my key independent variable, I found similar results compared to the first set of regressions discussed above. For example, religiosity had no statistically significant association with receipt of specialty treatment services among people with alcohol use disorders. However, religiosity increased the odds of specialty treatment receipt among persons with a drug use disorder. Among the sample of people classified with either drug abuse or drug dependence, those who strongly agreed that religion impacts their decisions in life had 1.74 times the odds of specialty treatment receipt compared to those who strongly disagreed that religion impacts their decisions in life ($p < 0.01$). A similar association was found among the subset of people with drug dependence ($p < 0.01$). Similar to results found in the regressions predicting any treatment receipt, past year criminal justice involvement ($p < 0.001$) and age ($p < 0.001$) were positively associated with the receipt of specialty treatment services across all SUD diagnosis groups. Having serious psychological distress, reporting a major depressive episode ($p < 0.05$), Medicaid coverage (versus being uninsured) ($p < 0.05$), and being married ($p < 0.05$) were significantly associated with past year specialty treatment receipt among some, but not all the SUD diagnosis groups.

Table 4. Logit Models Predicting Past Year Receipt of Specialty Treatment by SUD Diagnosis (Odds Ratios)

	Specialty Alcohol Treatment			Specialty Drug Treatment		
	Alcohol Abuse or Dependence	Alcohol Abuse	Alcohol Dependence	Drug Abuse or Dependence	Drug Abuse	Drug Dependence
<i>Religiosity</i>						
Strongly Disagree	Ref	Ref	Ref	Ref	Ref	Ref
Disagree	1.35 (0.28)	1.20 (0.43)	1.45 (0.34)	1.33 (0.21)	1.86 (0.89)	1.26 (0.21)
Agree	1.00 (0.18)	0.99 (0.30)	1.01 (0.21)	1.21 (0.20)	1.12 (0.52)	1.26 (0.24)
Strongly Agree	1.46 (0.33)	1.14 (0.42)	1.51 (0.38)	1.74** (0.33)	1.01 (0.63)	1.87** (0.38)
<i>Race</i>						
White	Ref	Ref	Ref	Ref	Ref	Ref
Black	0.71 (0.13)	1.10 (0.40)	0.61* (0.14)	0.40*** (0.07)	0.70 (0.33)	0.35*** (0.07)
Hispanic	0.52** (0.10)	0.49* (0.16)	0.47** (0.11)	0.65* (0.13)	0.30* (0.15)	0.723 (0.15)
Other	0.77 (0.27)	1.90 (0.87)	0.50 (0.23)	0.73 (0.19)	2.05 (1.05)	0.58 (0.18)
<i>Age</i>						
18-25 years	Ref	Ref	Ref	Ref	Ref	Ref
26-34 years	1.54** (0.22)	0.82 (0.27)	1.75** (0.29)	1.77*** (0.27)	1.62 (0.66)	1.73*** (0.26)
35-49 years	3.88*** (0.51)	2.63*** (0.69)	4.18*** (0.70)	2.46*** (0.38)	3.78** (1.48)	2.36*** (0.41)
50 years or older	4.85*** (1.30)	1.53 (0.42)	6.03*** (1.76)	1.40 (0.51)	1.81 (1.09)	1.36 (0.56)
<i>Gender</i>						
Male	Ref	Ref	Ref	Ref	Ref	Ref
Female	0.95 (0.13)	1.01 (0.25)	0.94 (0.15)	0.89 (0.10)	0.88 (0.35)	0.86 (0.11)
<i>Marital Status</i>						
Not Married	Ref	Ref	Ref	Ref	Ref	Ref
Married	1.46 (0.28)	2.56* (0.97)	1.40 (0.32)	1.93*** (0.32)	1.12 (0.65)	2.07*** (0.34)
<i>Education</i>						
Less Than High School	Ref	Ref	Ref	Ref	Ref	Ref
High School Graduate	1.03 (0.16)	0.72 (0.20)	1.15 (0.22)	1.09 (0.17)	1.00 (0.36)	1.11 (0.18)
Some College	1.13 (0.22)	0.75 (0.26)	1.31 (0.29)	1.22 (0.21)	1.43 (0.83)	1.17 (0.20)
College Graduate	0.71 (0.19)	0.51 (0.19)	0.85 (0.27)	0.69 (0.16)	1.60 (0.89)	0.62 (0.15)
<i>Income Level</i>						
Less Than \$20,000	Ref	Ref	Ref	Ref	Ref	Ref
\$20,000 - \$49,999	0.84 (0.13)	1.25 (0.31)	0.78 (0.15)	0.85 (0.13)	0.88 (0.34)	0.84 (0.14)
\$50,000 - \$74,999	0.79 (0.18)	0.76 (0.38)	0.87 (0.23)	0.98 (0.18)	0.82 (0.34)	0.99 (0.20)
\$75,000 or More	0.78 (0.14)	0.87 (0.31)	0.86 (0.18)	1.14 (0.20)	0.50 (0.31)	1.29 (0.24)
<i>Criminal Justice Involvement</i>						
No	Ref	Ref	Ref	Ref	Ref	Ref
Yes	7.34*** (0.98)	14.96*** (3.43)	6.36*** (0.97)	4.34*** (0.53)	13.20*** (5.41)	3.76*** (0.47)
<i>Depression</i>						
No	Ref	Ref	Ref	Ref	Ref	Ref
Yes	1.37* (0.21)	1.37 (0.48)	1.21 (0.21)	1.44* (0.21)	0.68 (0.31)	1.59** (0.25)
<i>Psychological Distress</i>						
No	Ref	Ref	Ref	Ref	Ref	Ref
Yes	2.00*** (0.27)	0.93 (0.27)	2.03*** (0.33)	1.45* (0.21)	2.31* (0.97)	1.29 (0.18)
<i>Insurance</i>						
Uninsured	Ref	Ref	Ref	Ref	Ref	Ref
Medicaid	1.40* (0.22)	1.46 (0.48)	1.37 (0.23)	1.70*** (0.24)	1.26 (0.48)	1.74*** (0.27)
Private	1.03 (0.16)	1.05 (0.36)	1.07 (0.20)	0.83 (0.12)	0.78 (0.35)	0.83 (0.14)
Other	1.25 (0.26)	1.13 (0.48)	1.30 (0.32)	1.10 (0.23)	1.21 (0.64)	1.13 (0.26)
<i>Health Status</i>						
Excellent	Ref	Ref	Ref	Ref	Ref	Ref
Very Good	0.87 (0.15)	1.05 (0.28)	0.81 (0.15)	1.04 (0.18)	0.89 (0.32)	1.10 (0.22)
Good	0.95 (0.21)	0.96 (0.29)	0.91 (0.23)	1.00 (0.18)	0.79 (0.33)	1.07 (0.22)
Fair	0.65 (0.17)	0.75 (0.36)	0.57* (0.16)	0.83 (0.17)	0.21* (0.14)	0.93 (0.22)
Poor	0.54 (0.19)	0.24 (0.20)	0.54 (0.21)	0.81 (0.28)	1.17 (1.12)	0.89 (0.32)
<i>County Type</i>						
Large Metro	Ref	Ref	Ref	Ref	Ref	Ref
Small Metro	0.98 (0.13)	1.28 (0.30)	0.91 (0.15)	0.89 (0.12)	1.83 (0.73)	0.80 (0.12)
Non-Metro	1.02 (0.17)	1.51 (0.52)	0.94 (0.20)	0.81 (0.12)	1.23 (0.51)	0.84 (0.15)
<i>Employment</i>						
Not Employed	Ref	Ref	Ref	Ref	Ref	Ref
Employed	0.82 (0.10)	0.85 (0.18)	0.85 (0.13)	0.71* (0.10)	0.64 (0.23)	0.74* (0.11)
<i>Co-Diagnosis for Alcohol Use Disorder</i>						
None	-	-	-	Ref	Ref	Ref
Alcohol Abuse	-	-	-	1.12 (0.14)	0.81 (0.27)	1.13 (0.16)
Alcohol Dependence	-	-	-	0.49*** (0.07)	0.31** (0.12)	0.57*** (0.09)
<i>Co-Diagnosis for Drug Use Disorder</i>						
None	Ref	Ref	Ref	-	-	-
Drug Abuse	2.52*** (0.34)	1.63* (0.39)	2.60*** (0.41)	-	-	-
Drug Dependence	1.08 (0.26)	0.56* (0.16)	1.44 (0.44)	-	-	-
Constant	0.01*** (0.00)	0.00*** (0.00)	0.01*** (0.01)	0.03*** (0.01)	0.01*** (0.01)	0.03*** (0.01)
<i>N</i>	21273	11763	9510	9151	2581	6570

Exponentiated coefficients; Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Self-Help Treatment Receipt

I also conducted binomial logistic regressions predicting the receipt of *self-help* treatment services in the past year for each subsample. In accordance with my hypothesis, religiosity was positively associated with the receipt of self-help treatment receipt. Among the sample classified with either alcohol abuse or alcohol dependence, people who strongly agreed that religion impacts their decisions in life had 1.8 times the odds of receiving self-help treatment compared to those who strongly disagreed that religion impacts their decisions in life ($p < 0.01$). Among the subset with alcohol dependence, the odds of self-help treatment receipt for those who strongly believed that religion influences their decisions was 2.1 times greater than among those who strongly disagreed that religion influences their decisions ($p < 0.05$). This overall pattern of findings is similar among those with drug use disorders. Past year criminal justice involvement ($p < 0.001$) was a strong predictor of receipt of self-help treatment services across all SUD diagnosis groups. Being married ($p < 0.01$), having serious psychological depression ($p < 0.05$), having a major depressive episode ($p < 0.05$), and age ($p < 0.05$) also increased the odds of self-help treatment among most of the subgroups that were examined

Table 5. Logit Models Predicting Past Year Receipt of Self-Help Treatment by SUD Diagnosis (Odds Ratios)

	Self-Help Alcohol Treatment Receipt			Self-Help Drug Treatment Receipt		
	Alcohol Abuse or Dependence	Alcohol Abuse	Alcohol Dependence	Drug Abuse or Dependence	Drug Abuse	Drug Dependence
<i>Religiosity</i>						
Strongly Disagree	Ref	Ref	Ref	Ref	Ref	Ref
Disagree	1.10 (0.22)	0.88 (0.25)	1.23 (0.29)	1.29 (0.26)	2.18 (1.34)	1.13 (0.24)
Agree	0.92 (0.18)	0.87 (0.26)	0.97 (0.22)	1.38 (0.28)	1.18 (0.60)	1.42 (0.33)
Strongly Agree	1.80** (0.39)	1.01 (0.40)	2.07* (0.57)	2.05** (0.47)	2.23 (1.32)	2.00** (0.47)
<i>Race</i>						
White	Ref	Ref	Ref	Ref	Ref	Ref
Black	0.49*** (0.09)	0.67 (0.23)	0.46*** (0.10)	0.32*** (0.07)	0.43 (0.25)	0.29*** (0.07)
Hispanic	0.77 (0.15)	0.84 (0.24)	0.66 (0.15)	0.82 (0.17)	0.44 (0.21)	0.90 (0.18)
Other	0.50* (0.15)	0.94 (0.33)	0.37* (0.16)	0.831 (0.24)	2.99* (1.47)	0.62 (0.22)
<i>Age</i>						
18-25 years	Ref	Ref	Ref	Ref	Ref	Ref
26-34 years	2.15*** (0.32)	1.19 (0.45)	2.51*** (0.40)	1.51* (0.25)	2.21 (0.92)	1.41* (0.24)
35-49 years	3.90*** (0.51)	1.68 (0.54)	4.93*** (0.76)	2.36*** (0.43)	4.01** (1.78)	2.21*** (0.45)
50 years or older	4.05*** (1.18)	0.84 (0.55)	5.54*** (1.63)	2.03 (0.73)	4.96* (3.51)	1.84 (0.72)
<i>Gender</i>						
Male	Ref	Ref	Ref	Ref	Ref	Ref
Female	0.926 (0.16)	1.013 (0.33)	0.935 (0.19)	0.875 (0.10)	1.392 (0.49)	0.81 (0.11)
<i>Marital Status</i>						
Not Married	Ref	Ref	Ref	Ref	Ref	Ref
Married	1.60** (0.28)	1.23 (0.42)	1.88** (0.38)	2.25*** (0.47)	3.24* (1.86)	2.14*** (0.46)
<i>Education</i>						
Less Than High School	Ref	Ref	Ref	Ref	Ref	Ref
High School Graduate	1.17 (0.19)	1.14 (0.34)	1.15 (0.24)	1.00 (0.17)	1.08 (0.39)	1.00 (0.19)
Some College	1.69** (0.33)	1.85 (0.67)	1.65* (0.39)	1.25 (0.24)	0.62 (0.29)	1.32 (0.27)
College Graduate	1.21 (0.27)	1.66 (0.64)	1.27 (0.32)	0.79 (0.20)	0.81 (0.61)	0.80 (0.22)
<i>Income Level</i>						
Less Than \$20,000	Ref	Ref	Ref	Ref	Ref	Ref
\$20,000-\$49,999	0.84 (0.14)	1.20 (0.35)	0.83 (0.16)	0.95 (0.17)	1.02 (0.40)	0.94 (0.17)
\$50,000-\$74,999	0.88 (0.20)	0.93 (0.43)	0.98 (0.26)	1.12 (0.21)	1.34 (0.82)	1.07 (0.21)
\$75,000 or More	0.76 (0.13)	1.00 (0.33)	0.85 (0.18)	1.22 (0.26)	0.62 (0.33)	1.35 (0.30)
<i>Criminal Justice Involvement</i>						
No	Ref	Ref	Ref	Ref	Ref	Ref
Yes	9.24*** (1.25)	24.02*** (8.08)	8.16*** (1.36)	5.23*** (0.77)	32.90*** (22.14)	4.26*** (0.67)
<i>Depression</i>						
No	Ref	Ref	Ref	Ref	Ref	Ref
Yes	1.75*** (0.27)	1.23 (0.45)	1.66** (0.27)	1.49* (0.24)	0.93 (0.48)	1.62** (0.28)
<i>Psychological Distress</i>						
No	Ref	Ref	Ref	Ref	Ref	Ref
Yes	1.78*** (0.24)	0.75 (0.20)	1.77*** (0.27)	1.79*** (0.27)	2.69* (1.06)	1.56** (0.23)
<i>Insurance</i>						
Uninsured	Ref	Ref	Ref	Ref	Ref	Ref
Medicaid	1.16 (0.20)	1.43 (0.42)	1.13 (0.22)	1.47* (0.28)	1.17 (0.56)	1.44 (0.28)
Private	1.27 (0.20)	1.04 (0.27)	1.43 (0.26)	0.82 (0.12)	0.89 (0.40)	0.79 (0.13)
Other	1.38 (0.30)	1.15 (0.53)	1.51 (0.38)	1.32 (0.34)	1.34 (0.71)	1.33 (0.38)
<i>Health Status</i>						
Excellent	Ref	Ref	Ref	Ref	Ref	Ref
Very Good	0.93 (0.14)	1.01 (0.25)	0.89 (0.18)	0.98 (0.20)	0.79 (0.31)	1.05 (0.22)
Good	1.01 (0.23)	1.06 (0.31)	0.95 (0.24)	0.79 (0.16)	0.42 (0.21)	0.90 (0.19)
Fair	0.86 (0.23)	0.79 (0.36)	0.75 (0.22)	0.65 (0.16)	0.14* (0.10)	0.74 (0.19)
Poor	0.53 (0.22)	0.052* (0.06)	0.52 (0.24)	0.50 (0.20)	0.34 (0.38)	0.55 (0.22)
<i>County Type</i>						
Large Metro	Ref	Ref	Ref	Ref	Ref	Ref
Small Metro	0.85 (0.11)	1.26 (0.30)	0.78 (0.13)	0.67** (0.09)	0.91 (0.31)	0.63** (0.10)
Non-Metro	0.74 (0.13)	1.13 (0.31)	0.68 (0.15)	0.70** (0.09)	0.63 (0.30)	0.76 (0.12)
<i>Employment</i>						
Not Employed	Ref	Ref	Ref	Ref	Ref	Ref
Employed	0.80 (0.12)	0.57** (0.12)	0.92 (0.16)	0.84 (0.13)	0.97 (0.38)	0.83 (0.13)
<i>Co-Diagnosis for Alcohol Use Disorder</i>						
None	-	-	-	Ref	Ref	Ref
Alcohol Abuse	-	-	-	1.26 (0.22)	0.70 (0.28)	1.34 (0.23)
Alcohol Dependence	-	-	-	0.54* (0.10)	0.44 (0.19)	0.60* (0.12)
<i>Co-Diagnosis for Drug Use Disorder</i>						
None	Ref	Ref	Ref	-	-	-
Drug Abuse	2.33*** (0.34)	1.71 (0.59)	2.32*** (0.40)	-	-	-
Drug Dependence	1.54* (0.32)	0.85 (0.29)	2.00* (0.53)	-	-	-
<i>Constant</i>	0.01*** (0.00)	0.00*** (0.00)	0.01*** (0.00)	0.01*** (0.01)	0.00*** (0.00)	0.02*** (0.01)
<i>N</i>	21273	11763	9510	9151	2581	6570

Exponentiated coefficients; Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

DISCUSSION

Summary of Findings

In contrast to my hypothesis, my analysis provides no evidence to support an inverse relationship existing between religiosity and any SUD treatment receipt. In fact, the only statistically significant associations I found in any of my analyses between religiosity and SUD treatment receipt were positive. This association, however, differed by SUD diagnosis. No statistically significant associations appeared in the regressions I conducted for people with alcohol use problems,. Yet among those with drug dependence, I found a positive association between religiosity and SUD treatment utilization, for both specialty and self-help treatment. In partial support of my third hypothesis, religiosity was a positive predictor of self-help treatment among those with alcohol dependence and those with drug dependence. My finding of a positive association between religiosity and self-help treatment receipt aligns with the current literature, which has hypothesized that the belief models within self-help peer support programs likely provide a favorable environment for those with substance problems who are religious.^[41, 42]

While most national self-help addiction groups deny any specific religious affiliation, many rely on treatment programs based on notions of spirituality. For example Alcohol Anonymous denies being a religious program, but states that their “program of recovery from alcoholism is undeniably based on acceptance of certain spiritual values” and within their 12 step guide there are references to prayer, God, spiritual awakening, and a higher power.^[81] Given the compatibility between spiritual-based self-help treatment programs and religious philosophies within faith communities, religious leaders might be comfortable referring to self-help programs. For example, a SAMHSA publication on the role of faith communities in substance abuse prevention and treatment identified that in 1999, Alcoholics Anonymous reported about 36% of

their members stated they had been referred to AA after receiving religious or spiritual counseling.^[82] Of course additional research would still be required to clearly characterize and understand the current SUD prevention strategies or treatment referral patterns among religious leaders.

Another interesting finding from my research is that the positive relationships between religiosity and treatment receipt, whether specialty or self-help, only existed within the sample of people with alcohol or drug dependence. I can hypothesize that given the severity of symptoms related to substance dependence, religious leaders or member of religious social networks may not feel capable enough to handle these issues and be more likely to refer individual's or strongly encourage them to seek out SUD treatment services. Mental health research has found that while religious people with moderate mental health issues rely heavily on religious counseling versus formal treatment, people with serious mental illness are less likely to rely exclusively on religious counseling and more likely to receive formal mental health treatment.^[73, 83] A similar phenomenon could help explain why the positive relationship between religiosity and SUD treatment receipt was only present among people with drug dependence and absent among people with drug abuse. However, further research would be needed to really examine the underlying reasons behind this phenomenon.

Policy and Clinical Implications

Partnering with religious communities and faith-based organizations is already an essential aspect of U.S. alcohol and drug prevention policy. SAMHSA reports that over 800 faith-based community organizations are receiving grants through SAMHSA's Community Substance Abuse Prevention Partnership Program^[2] and, as noted previously, there are about 527 substance abuse treatment facilities or facilities affiliated with a religious organization.^[3] There

is clearly recognition among public health practitioners, healthcare providers, religious organizations, and policy makers of the importance of bridging the gap between faith communities and the substance abuse treatment gaps persist. In a sample of 1,200 active parish clergy and 230 presidents of Christian seminaries, researchers at The National Center on Addiction and Substance Abuse at Columbia University found that 94% of religious leaders surveyed believed that substance abuse was an important issue among people in their congregations. Moreover, 38% reported that alcohol abuse appears in at least half of the family problems they confronted.^[84] In spite of their recognition of the problem, only 12.5% of clergy surveyed reported completion of any training related to substance abuse and only 36.5% of reported talking about substance abuse in their sermons.^[84] And while no national data exists on religious referrals to SUD treatment, the Treatment Episode Data Set (TEDS) reported that only 12.1% of people who were admitted for specialty SUD treatment in 2012 were referred to treatment by a community-based or religious organization.^[85]

Hence, there are opportunities available to strengthen national as well as local and state level partnerships between faith-based organizations and the substance abuse treatment system. Since my results indicate that religiosity is a positive predictor for treatment receipt among specific groups of substance users, substance abuse treatment providers and public health practitioners could possible leverage this relationship to develop ways to further collaborate religious communities on public health prevention and treatment strategies. Community-based or hospital-based SUD treatment facilities could even offer to provide faith-based communities short training opportunities to help screen and identify substance problems and how to provide appropriate referrals. Moreover, my results may also suggest that these faith-based outreach and referral strategies may need to be specifically be targeted at reaching people with drug or alcohol

problems that may not be as severe as dependence. Ensuring that this population is receiving counseling and treatment early could be vital to preventing substance problems from advancing into more acute substance dependence issues.

Limitations

This study has several important limitations. First and foremost, the data utilized in this study was cross-sectional and, thus, I cannot directly conclude any causal relationships. Most importantly, the use of cross-sectional data circumscribed my ability to factor in any possible temporal changes in an individual's alcohol and drug use as well as temporal changes in his or her religiosity. Prospective or longitudinal studies are needed to help examine possible causal relationships that underlie the statistical associations uncovered in my current study.

Religiosity measures included in NSDUH also pose limits for my current study. As in most large health services datasets, the measures of religious belief in the NSUDH have not been validated^[73] nor do they include several key dimensions of religiosity identified by the literature. For example, NSDUH does not collect data on the respondent's involvement in what are considered private, non-organized religious activities such as prayer, meditation, reading religious texts, etc. NSDUH also has no measure of spirituality. This a significant shortcoming given the extensive emphasis of spirituality in self-help treatment programs^[41, 42] and the growing recognition in public health research of the importance of measuring spirituality as a phenomenon occurring both distinct from and in tandem with religiosity.^{[20][76]} Furthermore, no data on religious affiliation is collected through NSDUH and, thus, I were not able to investigate or control for how this factor influenced SUD treatment receipt. Being able to include this factor in my model could be relevant and important given that religious doctrine regarding alcohol and drug use can vary significantly by religious tradition in the severity of prohibition and

acceptance.^[86] Future research may build on these findings by including an established and multi-dimensional measure of religiosity capturing different aspects of religiosity.

Another major limitation is that although NSDUH does include direct measures of contact with religious leaders or clergy for mental health treatment counseling, no equivalent or similar measure exists for substance abuse treatment. Had there been a measure of whether a person sought out religious counseling or spoke to religious leader regarding an alcohol or drug problem, I could have evaluated whether seeking out assistance from religious figures was positively or negatively associated with receipt of formal SUD treatment.

Future Research

Religiosity is a complex, multi-faceted social variable, which poses challenges for researchers who attempt to examine its impact on health and healthcare utilization with only quantitative research methodology. Therefore, I would recommend utilizing qualitative data or taking a mixed methods approach to understanding how religious community members seek help for substance problems. Qualitative data would provide more nuanced understanding of how religious beliefs and norms specifically impact treatment-seeking behaviors for SUD. Another important issue that could be examined is whether religious alcohol and drug users feel comfortable reaching out to clergy members and if they did reach out, how helpful are these meetings and counseling sessions with religious leaders were. Focus groups conducted with religious leaders and substance abuse health providers on how to improve the ability to screen, counsel, and refer religious people with substance problems for treatment would be extremely helpful.

CONCLUSION

The current study provides a significant contribution to the current research literature on religion and SUD treatment. To my knowledge, this is the only study to examine the impact of religiosity on the receipt of specialty SUD treatment and the first study to examine the impact of religiosity on the receipt of self-help SUD treatment using a nationally representative sample. From my research, I found that the importance of one's religious beliefs in their decisions was a positive predictor of specialty SUD treatment receipt among people with drug use disorder and a positive predictor of self-help treatment receipt among people with drug use disorder and people with alcohol use disorder. In contradiction to my hypothesis, the research findings found no evidence that religiosity was a barrier to or negative predictor of SUD treatment utilization. This provides a rationale for increasing and strengthening current relationships between religious and faith-based organizations and substance abuse treatment system. Future research is necessary to explore the casual mechanisms behind the statistical associations I identified.

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