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"THE PROTECTIVE EFFECT OF RELIGIOSITY ON SUBSTANCE USE: FINDINGS FROM NATIONAL SURVEY ON DRUG USE AND HEALTH"

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by

Ivan Nikiforov

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The thesis of Ivan Nikiforov was reviewed and approved* by the following:

Li Wang
Associate Professor, Department of Public Health Sciences
Thesis Advisor

Vernon Chinchilli
Distinguished Professor and Chair, Department of Public Health Sciences

Vonn Walter
Assistant Professor, Department of Biochemistry & Molecular Biology
Assistant Professor, Department of Public Health Sciences
Head of Public Health Sciences Department

*Signatures are on file in the Graduate School

Abstract

Introduction

Although many smaller studies looked at the impact of religiosity and substance abuse, there have not been large scale studies that look at the issue. Using large scale data from the National Survey on Drug Use and Health (NSDUH), this study investigates the impact of religiosity on lifetime use of tobacco, marijuana, cocaine, crack, heroin, misuse of pain medication, hallucinogens, and inhalant while controlling for confounders.

Methods

The NSDUH 2016 and 2017 were used. Religiosity was measured by how important a survey respondent considered his/her religious beliefs. Logistic regression was used to generate a separate model for each substance and analyze the impact of religiosity while adjusting for confounders.

Results

Those who had the lowest religiosity scores had higher odds of trying all substances in their lifetime than those who had the highest religiosity scores, for all the substances studied. The magnitude of the protective effect differed between substances and race.

Conclusion:

This study highlighted the protective effect of religiosity against any lifetime use of a number of substances while controlling for various covariates. Future studies can explore the effects on frequency and severity of substance use.

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I would also like to thank Dr. Vernon Chinchilli and Dr. Vonn Walter for being on my thesis committee.

Introduction

A number of studies suggest that religiosity decreases the odds of substance abuse and modifies other behaviors[1-21]. Despite this, most of the studies are fairly limited in scope, such as looking only at one or two substances[4,7], focusing on a certain age group[4] or certain race[15]. Knowledge in this area should be expanded by taking a more extensive look at a number of substances across a wide demographic range to examine the effects of religiosity comprehensively.

In the United States a number of studies explored the association between religiosity and substance use. Starting with alcohol, Koenig et al. showed that higher religiosity prevented recent but not lifetime alcohol disorders[1]. Booth et al. showed that higher religiosity decreased drinking and driving in at risk populations[2]. Windle et al. showed that higher religiosity decreased heavy drinking in 16-25 year olds[3]. Jackson et al. showed that religiosity was a prominent protective factor against heavy drinking those aged 18-26[4].

Other substance use was affected by religiosity in the United States. Wallace at al. showed that religious seniors were less likely to use marijuana[5]. Burdette et al. showed that those who attend religious services more frequently are less likely to use recreational marijuana[6]. Bell et al. showed that low religiosity was associated with higher marijuana use[7]. Low religiosity also increased MDMA[8] and methamphetamine use[9]. A number of other studies focused on the use of multiple substances in specific subpopulations, but all essentially showed that religiosity was a protective factor against substance abuse[10-13]. Other studies has similar results but only focused on Blacks[14,15] or Asians[16].

These findings are not limited to the United States. In Central America, Kliewer et al. showed that higher religiosity decreased the odds of lifetime use of alcohol, tobacco, marijuana, inhalants, tranquilizers, cocaine, crack, and ecstasy in adolescents[17]. In Switzerland, Gmel et al. found religion to be protective against substance abuse in young men[18]. A number of studies had been conducted in Brazil that showed that religion is a protective factor from substance abuse. Rezende-Pinto et al. specifically looked at the effects of religion on cocaine use and showed religion to be a protective factor[19]. Raposo et al. found a similar effect on binge drinking in children aged 13 to 19 years[20]. Finally religion was found to be a protective factor against substance abuse in a survey among Brazilian university students by Gomes et al[21].

Existing studies investigate only one or two substances within a given study, or multiple substances within a specific subpopulation. Our study looked at eight substances to represent almost the whole US population, using one common database and one uniform analytical framework. The following substances were considered in our study: tobacco, marijuana, cocaine, crack, heroin, misuse of pain medication, hallucinogens, and inhalants. Since modest alcohol use can have positive health effects, and this study focused solely on any lifetime use, alcohol use was not included[22].

The only substance legalized by the federal government in this study is tobacco, and it is the second most commonly used substance after alcohol[23,24]. Cigarettes and cigars are respectively the first and second most commonly used tobacco products in all states[23]. The third most commonly used tobacco product varied from state to state, but in 32 states it was e-cigarettes, making it the third most used tobacco product in the nation[23]. Overall, there was a decline in the smoking of cigarettes by Americans since 2000[25].

In the US, marijuana use has become substantially more acceptable over the last several years. Currently, 62% of Americans support marijuana legalization, which is considered to be the biggest factor for increase in use[26,27]. Over half of all states have medical marijuana laws, though this does not necessarily mean you can use medical marijuana in those states, and several states even went as far as to adopt recreational marijuana laws. It is the predominant substance responsible for the overall increased substance use in the US, which rose form 8.3% to 9.4% of the population[28]. The US federal government still considers marijuana to be an illegal substance. It has been shown that consistent marijuana use is associated with increased development of psychosis in certain genetically vulnerable individuals[29]. Although driving while intoxicated by marijuana increases the risk of car crashes[30], overall marijuana use does not increase the risk of mortality[31].

Cocaine has been found to have profound negative health effects, since cocaine has a strong impact on the cardiovascular system[32]. Vasoconstrictions and arrhythmias can impact multiple other systems including neural, renal, and gastrointestinal[32]. This can lead to a number of acute and long term complications including myocardial infarction, stroke, kidney and heart failure, and intestinal ischemia[32].

Crack cocaine, also called crack, is derived from powered cocaine that can be smoked. Crack has similar effects as cocaine but is more likely to cause bronchospasm since it is more frequently smoked[32].

Heroin and opioid or prescription pain medication misuse, has been a growing problem over the last decade[33]. Between the years of 2007 and 2017 the amount of overdoses due to

these substances more than doubled increasing from 18,515 to 47,600[33]. While the increase in overdose due to prescription medications was modest, 12,798 to 17,029, the increase in overdoses due to heroin was drastic, 2,399 to 15,482[33]. The primary cause of death is respiratory failure.

Hallucinogens are a group of drugs that in this survey included lysergic acid diethylamide (LSD), phencyclidine (PCP), peyote, mescaline, mushrooms – active ingredient psilocybin, Ecstasy - 3,4- methylenedioxymethamphetamine (MDMA), ketamine, dimethyltryptamine (DMT), alphamethyltryptamine (AMT), and 5-methoxy-di-isopropyltryptamine – (Foxy) Salvia divinorum. Of these only salvia is legal in select states, and peyote may be used by Native Americans for religious ceremonies under the American Indian Religious Freedom Act[34].

The final substance we considered in this study was inhalants. Inhalant use consists of inhaling various chemical substances most commonly gasoline and paint[35]. Long term use may lead to brain damage as the inhaled chemicals penetrate the blood brain barrier[36].

This paper will use data from the U.S. National Survey on Drug Use and Health (NSDUH) to examine the association between religiosity and any lifetime use of the above-mentioned substances, while adjusting for a number of confounders.

Methods

Data Source

All of the data that was used for this study came from the NSDUH[37]. NSDUH, supervised by the Substance Abuse and Mental Health Services Administration (SAMHSA) of the U.S.

Department of Health and Human Services, is conducted yearly in the US across 50 states and the District of Columbia. This data set comes from the US civilian non-institutional population, and contains a number of demographic, mental health, and substance use variables obtained through questionnaire or survey[38]. The NSDUH data sets from the years 2016 and 2017 were used for this study.

Variables

Religiosity - Religiosity is an ordinal variable that was measured based on respondent's level of agreement to the statement "My religious beliefs are very important". Respondents chose one and only one of the following - 1 – Strongly Disagree, 2 – Disagree, 3 – Agree, 4 – Strongly Agree.

Substance Use – Substance use was defined as any lifetime use of a given substance: This information was obtained by asking the respondent whether or not a given substance was used at some point in their lifetime several times throughout the questionnaire. If an answer could not be obtained, it was logically assigned through statistical imputation[38]. Any lifetime misuse of pain medication was identified as any use of pain medication that was not directed by a doctor. This is categorical variables with two categories, 0 – No Lifetime Use (Non-Users), and 1 – Lifetime use present (Users).

There were a number of confounding variables considered: gender, *age, marital status, race, education, employment status, and family income*. *Marital status* was a categorical variable with five possibilities – married, widowed, divorced or separated (referenced as divorced), or never been married (referenced as single). *Age* was an ordinal variable with four

categories – Under 18, 18 -34, 35 – 64, and those over 65. The NSDUH split *race* into seven categories - White Non-Hispanic (White NH), Black or African American Non-Hispanic (Black NH), Native American or Alaskan Native Non-Hispanic (Native NH), Pacific Islander or Native Hawaiian Non-Hispanic (Pacific NH), Asian Non-Hispanic (Asian NH), more than one race Non-Hispanic (Mixed NH), and Hispanic (Hispanic).

Education level is categorical and split into 5 groups, less than high School and over 17 years old (Dropout), high school graduate and over 17 years old (High School), some college or associate degree and over 17 years old (Some College), college graduate and over 17 years old (College Grad), and age 12-17. *Employment status* was a categorical variable split into 5 groups, employed Full time (Full time), employed Part time (Part time), unemployed, other, and aged 12-14, since in the US labor laws prohibit those who are under 14 from being employed[39]. Those that were a house keeper, disabled, retired, or a student fell into the other category. Family Income was an ordinal variable with 4 levels $0 to $19,999, $20,000 to $49,999 $50,000 to $74,999 and $75,000 or higher.

Data analysis methods

SAS 9.4 was used for data analysis. Every variable was checked for invalid or missing data, however, once the invalid or missing entries for religiosity were removed, no additional entries were removed due to other variables. The survey logistic procedure in SAS was used to assess the relationship between religiosity and each of the substances, while adjusting for confounders. Survey sampling weights were used to account for sample selection.

Results

The sample demographics were fairly representative of the United State population. The majority of respondents were female - 51.57%, and 48.43% were male. Most of the respondents were White, 63.39%, with good representation of Hispanics, 16.45%, and African Americans, 11.98%. The percentage of respondents under 18 were 9.11%, 18-34 were 27.12%, 35-64 were 45.59%, and 65 and older were 18.18%. The distribution of education level was 11.27% dropouts, 22.46% with a high school education, 28.28% with some college or an associate's degree, and 28.90% college grads. Employment status was split into 45.38% full time workers, 13.04% part time workers, 4.45% unemployed, 32.68% other, and 4.36% who were 12-14 years old. Family income was divided into 16.29% making under $20,000, 29.45% making $20,000 to $39,999, 15.82% making $40,000 to $59,999, and 38.44% making $75,000 or more. Finally, the partitioning of the religiosity variable was 17.44% who answered "Strongly Disagree", 13.00% who answered "Disagree", 33.18% who answered "Agree", and 36.385 who answered "Strongly Agree". The results are summarized below in Table 1.

Table 1: General Demographics & Demographics

	Frequency	Weighted Frequency	Percent %
Male	52,777	256,822,582	48.43%
Female	57,748	273,452,667	51.57%
White NH	65,608	336,159,990	63.39%
Black NH	13,963	63,565,121	11.99%
Native NH	1,645	2,965,782	0.56%
Pacific NH	528	2,253,475	0.43%
Asian NH	4,878	28,516,506	5.38%
Mixed NH	4,185	9,558,096	1.80%

Hispanic	19,718	87,256,279	16.45%
Under 18	27,083	48,301,342	9.11%
18-34	44,043	143,825,157	27.12%
35-64	32,183	241,769,180	45.59%
over 65	7,216	96,379,569	18.18%
Dropout	10,454	59,645,524	11.27%
High School	21,989	119,098,482	22.46%
Some College	28,265	149,990,437	28.28%
College Grad	22,734	153,239,463	28.90%
Under 18	27,083	48,301,342	9.11%
Full time	44,385	240,648,109	45.38%
Part time	16,694	69,127,092	13.04%
Unemployed	6,618	24,097,139	4.54%
Other	29,743	173,299,723	32.68%
12-14 years old	13,085	23,103,186	4.36%
$0 - $19,999	21,108	86,373,542	16.29%
$20,000 - $39,999	33,867	156,153,002	29.45%
$40,000 - $59,999	17,115	83,906,812	15.82%
$75,000 or greater	38,435	203,841,893	38.44%
Strongly Disagree	20,294	92,481,089	17.44%
Disagree	16,258	68,925,481	13.00%
Agree	38,647	175,932,412	33.18%
Strongly Agree	35,326	192,936,267	36.38%

Table 2 presented the percentage of users by religiosity. Tobacco was the only substance that consistently had more than half of the population use it all levels of religiosity. Despite this it can be clearly seen that as religiosity increased the proportion of people who tried it compared to those who have not decreased.

The next most commonly used substance was marijuana. Marijuana use was also unique in that those who answered "Strongly Disagree" and "Disagree" had more users than non-users. This trend reversed itself for those who answered "Agree" and "Strongly Agree" as these two categories had less users than non-users.

For the rest of the substances: cocaine, crack, heroin, misuse of pain medication, hallucinogens, and inhalants, the users were a minority with ranges from 1.9% for heroin to 15.5% for hallucinogens. As religiosity increases to "Agree" and "Strongly Agree" the percentage user's decreases.

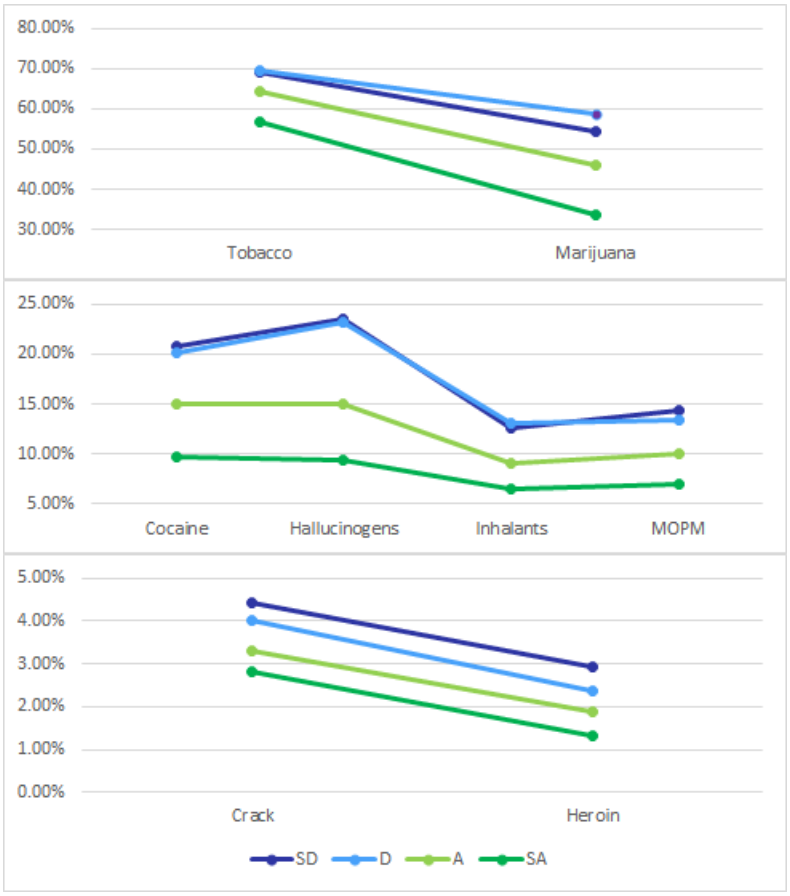
Table 2: Substance Use Prevalence*

**SD =Strongly Disagree D = Disagree A =Agree SA =Strongly Agree*

	Users in Study Pop	SD	D	A	SA
		Users %	Users %	Users %	Users %
Tobacco	63.06%	69.21%	69.62%	64.23%	56.71%
Marijuana	44.78%	54.45%	58.77%	45.93%	33.61%
Cocaine	14.77%	20.81%	20.15%	14.95%	9.76%
Crack	3.42%	4.42%	4.00%	3.29%	2.83%
Heroin	1.90%	2.92%	2.38%	1.87%	1.32%
Misuse of Pain Medication	10.12%	14.40%	13.38%	9.98%	7.04%
Hallucinogens	15.46%	23.45%	23.15%	14.92%	9.37%
Inhalants	9.24%	12.61%	13.00%	9.01%	6.49%

Figure 1: Substance Use Prevalence*

**(The lines do not show any trend and are there for aesthetic purposes only)*



For every substance included in this study a separate full logistic regression model was generated to evaluate the association between religiosity and substance use for each substance. For the tobacco use model, Table 3, those that answered strongly disagree, disagree, or agree to the statement "My religious beliefs are very important" always had higher odds of lifetime tobacco use. Additionally, Table 3 also shows that males had higher odds of trying tobacco products in the lifetime than females. Those that were married or divorced had higher odds of trying tobacco compared to those that had never been married, while those who were under 15 had substantially lower odds of trying tobacco products. There was no effect for those who were divorced versus those who have never been married.

Black or African Americans, Asian, Pacific Islanders or Native Hawaiians, and Hispanics all had lower odds of trying tobacco products then Whites. There was no effect for Native Americans or Alaskan Natives when they were compared to Whites. Those that finished high school or had some college had higher odds for use of tobacco products in their lifetime than those that did not finish high school. There was no effect for those that finished college when compared those that did not finish high school. Those that were aged 12 to 17 had substantially lower odds to have tried tobacco products.

Those that worked part time or were part of the other category had lower odds of using tobacco products that those employed full time. There was no difference between those that were employed full time and those that were unemployed. Households that made under $20,000 had slightly higher odds of lifetime tobacco use than households that made $75,000 or more. No other income bracket comparison was statistically significant.

Table 3: Logistic Regression Results for Tobacco Use

Group	**Effect**	**p-value**	**OR (95% CI)**
Religion *(p-value <.0001)*	Strongy Agree	Ref	
	Strongly Disagree	<.0001	1.570 (1.454 - 1.696)
	Disagree	<.0001	1.757 (1.635 - 1.889)
	Agree	<.0001	1.454 (1.364 - 1.550)
Age *(p-value <.0001)*	Under 18	Ref	
	18 -34	<.0001	5.479 (4.994 - 6.013)
	35 - 64	<.0001	6.491 (5.910 - 7.129)
	65 or older	<.0001	5.862 (5.212- 6.594)
Gender *(p-value <.0001)*	Male vs Female	<.0001	2.116 (2.023 - 2.213)
Martial Status *(p-value <.0001)*	Never Been Married	Ref	
	Married	0.0105	1.097 (1.023 - 1.175)
	Widowed	0.4475	1.060 (0.910 - 1.233)
	Divorced or Separated	<.0001	1.514 (1.394 - 1.646)
	White Non-Hispanic (NH)	Ref	

Race *(p-value <.0001)*	Black NH	<.0001	0.458 (0.423 - 0.496)
	Native NH	0.206	1.150 (0.924 - 1.432)
	Pacific NH	<.0001	0.439 (0.299 - 0.645)
	Asian NH	<.0001	0.192 (0.175 - 0.210)
	Mixed NH	0.6694	0.968 (0.832 - 1.126)
	Hispanic	<.0001	0.389 (0.369 - 0.409)
Education *(p-value <.0001)*	Dropout	Ref	
	High School	0.0027	1.138 (1.048 - 1.236)
	Some College	<.0001	1.272 (1.170 - 1.383)
	College Grad	0.1397	1.074 (0.976 - 1.181)
Employment Status *(p-value <.0001)*	Full time	Ref	
	Part time	<.0001	0.831 (0.781 - 0.885)
	Unemployed	0.4271	0.963 (0.876 - 1.059)
	Other	<.0001	0.776 (0.732 - 0.823)
	12-14 years old	<.0001	0.180 (0.159 - 0.204)
Family Income *(p-value = 0.0304)*	$75,000 or greater	Ref	
	$0 - $19,999	0.0142	1.105 (1.021 - 1.196)
	$20,000 - $39,999	0.4851	1.019 (0.965 - 1.077)
	$40,000 - $59,999	0.8466	1.006 (0.943 - 1.074)

For other substances only the effect of religiosity is shown in Table 4. Full logistic regression models was generated for all substances, but were not included to save space. They are available upon request. The key finding was that those who answered the question "My religious beliefs are very important" with "Strongly Agree" were less likely to be users than those who answered "Strongly Disagree" or "Disagree." Religiosity had a p-value of <0.0001 for all substances.

Table 4: Odds Ratios and Confidence Intervals for Other Religiosity Answers Versus "Strongly Agree"

	Strongly Disagree	**Disagree**	**Agree**
	OR (CI)	**OR (CI)**	**OR (CI)**
Tobacco	1.570 (1.454 - 1.696)	1.757 (1.635 - 1.889)	1.454 (1.364 - 1.550)
Marijuana	2.155 (2.005 - 2.316)	2.553 (2.375 - 2.744)	1.649 (1.563 - 1.740)
Cocaine	2.067 (1.903 - 2.246)	1.974 (1.770 - 2.201)	1.467 (1.348 - 1.595)

Crack	1.399 (1.231 - 1.591)	1.284 (1.065 - 1.548)	1.038 (0.911 - 1.183)
Heroin	1.690 (1.363 - 2.095)	1.398 (1.058 - 1.846)	1.138 (0.934 - 1.387)
Hallucinogens	2.323 (2.162 - 2.496)	2.215 (2.014 - 2.435)	1.476 (1.386 - 1.573)
Inhalants	1.583 (1.426 - 1.757)	1.554 (1.406 - 1.717)	1.206 (1.109 - 1.310)
Misuse of Pain Medication	1.752 (1.610 - 1.906)	1.561 (1.399 - 1.742)	1.282 (1.165 - 1.410)

Apart from the effect of religiosity, there were a number of other important findings found in the full logistic regression models. We found that males were always more likely to try drugs than females. Age had a tremendous impact on most substances except inhalants and misuse of pain medication. Generally speaking those that were under 18 had the lowest odds of trying any substance. Those that were aged 35-64 were substantially more likely to have used one of the remaining substances in their lifetime than all other age categories. Those that were aged 18-34 also had fairly high odds of using those substances. For inhalants, those aged 18-34 or 65 and older had lower odds of lifetime use. For misuse of pain medication, those that were aged 18-34 had the highest odds of use followed by those aged 35-64. Those that were aged 65 or older had the lowest odds of misusing pain medication.

Blacks or African American had decreased odds of trying all other substances except crack which were not statistically significant when compared to Whites or Caucasians. Asians had decreased odds of trying all substances except heroin which was not statistically significant compared to Whites or Caucasians. Hispanics had decreased odds of trying any substances compared to White or Caucasians.

Those that did not finish high school were generally less likely to try most drugs than those who finished high school, had an associate's degree, or finished college. The exception to

this was crack and heroin where an increase in education was always protective, with those who finished college having roughly half the odds of trying those substances. For all other substances, attending college increased the odds of trying them.

Those that were employed part time or in the other category – retired, in school, disabled, or housekeeper – were generally less likely to try drugs than those that worked full time. Being unemployed increased the odds of trying heroin and misusing pain medication. Those who had a family income of under $20,000 generally had increased odds of trying all substance except marijuana when compared with those that made more than $75,000. Those that had a family income of $20,000 to $49,999 were more likely to try crack, heroin, hallucinogenic, inhalants, and misuse pain medication those who made $75,000 or more.

Discussion

The key finding of this study is that those that strongly agreed with the statement "my religious beliefs are very important" were substantially less likely to abuse tobacco, marijuana, cocaine, crack, heroin, pain medication, hallucinogens, or inhalants in their lifetime. Factors like gender, age, marital status, race, education, employment status, and family income also had an impact. Even after adjusting for these confounders the effect of religion was incredibly strong with all p-values being less than 0.0001. It is important to note that even with such a large sample size, a number of variables were still constantly not significant.

The strong effect of religiosity is consistent with other studies that were previously done. However, our study is on a much larger scale with diverse populations considered, and highlights another less considered but important factor that plays a role in substance abuse.

Unlike previous studies that only looked a specific substance, age group, or race, this study simultaneously looks at all age groups, races, education levels, and economic levels. The relationship between religiosity and substance use was very strong across all substances. Additionally, as the order of the religiosity variable increased, there was a stronger protective effect.

In the US the majority of the population, 70.6%, identifies as Christian. Those that are unaffiliated with religion are the next biggest group, making up 22.8% of the population[40]. Non-Christian Faiths make up 5.9% of the population, with the remaining 0.6% of the population being unsure of their religious affiliation[40]. The overwhelming majority of the population falls into two categories – Christian or No religious affiliation. Christianity forbids being intoxicated, while those who have no religious affiliation have no religious barriers to intoxication. Due to the demographics of religions in the US, this study should provide a good evaluation of the impact of religion on substance abuse, though the NSDUH data has no information on religious affiliation.

Some previous studies have suggested that the impact of religiosity differs by race[14-16], and this seems to be true in this study. A subgroup analysis of the all of the races included in the study was performed to see if there was any difference on the protective effect offered by religiosity by race. Religiosity had a protective effect against all substances for Whites or Caucasians. For other races, religiosity had a protective effect for all substances with some exceptions. For Asians, religiosity did not have a protective effect against inhalants. Additionally, very few Asians used heroin in their lifetime, only 17 out of 4878, so the results were inconclusive for this substance. For Blacks or African Americans and Hispanics, religiosity

did not have protective effect against crack or heroin. For Native Americans, religiosity did not have a protective effect against marijuana, crack, hallucinogens, and misuse of prescription pain medication. Those of mixed race did not receive a protective effect from religiosity against crack, heroin, inhalants, and misuse of prescription pain medication. Analysis on Pacific Islanders was not performed because some subgroups had low frequencies.

One possible explanation for these results is that there were substantially more Whites or Caucasians in the data so that made it easier to get significant results. However, Asians received a protective effect from strong religious belief for most drugs despite having lower or comparable numbers to other races. It is important to consider that Blacks or African Americans and Hispanics are less likely to attend college or complete college than Whites or Caucasians[41]. Since in this study education level is a stronger predictor of using crack or heroin than religiosity for all races, the protective effect of religiosity for crack and heroin in these two races may be overshadowed by the difference in college attendance. Finally, it is a strong possibility that Native Americans do not to receive a protective effect from high religiosity against hallucinogenic due to the American Indian Religious Freedom Act[34].

This study does have some limitations. First, the survey is the US non-institutionalized, civilian population. This is specifically a problem because as of May 2019, 45.3% of all prison offenses were drug offenses[42]. On the other hand as of 2014 only 2.2 million were prisoners which was under 1% of the US population at that time[43,44]. Still, it would be better if this population was considered. Another limitation was that the religious affiliation of the participants was unknown. So it is unclear if actually belonging to an organized religious group makes a difference. Specifically, it is quite possible that those who are unaffiliated with a

religion still have high religiosity scores. Finally, the study measures only if there was any lifetime experimentation with a substance and no conclusions can be drawn about whether or not there is any habitual substance use. Follow up studies could explore other factors such as whether religiosity impacts the frequency of drug use or the likelihood of substance dependence.

Despite the limitations, this study has major strengths due to its large sample size, the study of large amount of drug classes within one single study framework, and the reliability of the NSDUH data set. To our knowledge, this is the largest study to examine the relationship between religiosity and substance use. Although there were only two years of data included, there were over one hundred thousand participants across all races, education levels, and income levels. The sample was very representative of the United States population as a whole. The NSDUH data set is the largest data set to look at substance use in the United States. It is widely used in academic journal articles, and reports by federal organizations such as the National Institute of Health and the Centers of Disease Control and Prevention. The universally strong association of religiosity on substance use found across all drugs using quality NSDUH data provides further comprehensive evidence to support the literature on the protective effect of religiosity against substance use.

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