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Sexual Orientation, Religious Coping, and Drug Use in a Sample of HIV-Infected African-American Men Living in the Southern USA

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Abstract
Religiosity and spirituality are associated with reduced drug use in the general population, but it is unclear whether this relationship generalizes to sexual minorities. This study investigated the relationship between religious coping, drug use, and sexual orientation in a sample of HIV-infected African-American men (40 heterosexuals; 64 sexual minorities). Most participants (76%) reported being "moderately" or "very" religious. We found no main effect of religious coping or sexual orientation on frequency of drug use. However, there was an interaction between positive religious coping and sexual orientation. Among heterosexuals, positive religious coping was inversely associated with frequency of drug use. However, this relationship was not significant among sexual minorities. Findings suggest HIV-infected African-American sexual minorities living in the South may need additional coping resources to decrease vulnerability to drug use.

Keywords HIV/AIDS · Religious coping · African-Americans · Sexual orientation · Drug use

Background and Objectives

It is well known that drug use is common among HIV-infected persons. In a multisite study of over 3000 HIV-infected patients receiving HIV care in the USA, 9% used crack-cocaine and 10% used multiple drugs in the preceding 3 months

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(Mimiaga et al. 2013). Non-injection drug use among HIV-infected individuals can have significant public health consequences through its association with high-risk sexual behavior (Metzger et al. 2010) and non-adherence to antiretroviral medications (Gonzalez et al. 2011), which increases risk of transmitting the virus during sexual contact (Cohen et al. 2011). The burden of HIV infection is disproportionately high among African-American men who have sex with men (MSM) (Millett et al. 2012). The rate of new HIV infections is almost 8 times higher in African-Americans than in Whites (CDC 2016a), and despite making up only 2% of the population, sexual minority men account for 63% of estimated new HIV infections in the USA (CDC 2015). Further, national prevalence studies indicate that sexual minorities are at greater risk than heterosexuals for substance use disorders (McCabe et al. 2009). The intersection of these multiple risk factors suggests that HIV-infected African-American men who identify as sexual minorities are highly vulnerable to drug addiction. Therefore, it is critical to understand factors that may help to protect these individuals from drug use.

Religiosity/Spirituality and Substance Abuse Treatment

Prior research has examined the role of religiosity and spirituality in recovering from drug addiction. Spirituality is a core component of 12-step programs, such as Alcoholics Anonymous (AA) and Narcotics Anonymous (NA) (Alcoholics Anonymous 2001). A literature review of the effectiveness of AA concluded there is robust evidence that rates of abstinence are twice as high among those who attend AA, more frequent AA attendance is associated with higher rates of abstinence, and prior AA attendance is predictive of subsequent abstinence (Kaskutas 2009). Studies suggest that one of the mechanisms by which 12-step programs are effective is through increased spirituality (Kelly et al. 2011, 2012; Zemore 2007). A multisite, longitudinal study of 1726 adults with an alcohol use disorder found religiosity/spirituality to mediate the relationship between AA attendance and reduced drinking among more severely impaired individuals even after controlling for other potential mediators (e.g., social support, depression, self-efficacy) (Kelly et al. 2012).

Religiosity/Spirituality Among African-Americans and HIV-Infected Individuals

Interventions that include a religious or spiritual component may be particularly effective for HIV-infected African-Americans. A multisite national study of 22,929 adults found that African-Americans turned to prayer for health-related reasons significantly more often than Caucasians (Gillum and Griffith 2010). This is consistent with national prevalence reports indicating 79% of African-American adults endorse religion to be “very important”, compared to 56% of all adults in the general population (Pew Research Center 2009). Similarly, a large nationally representative study of 2266 patients receiving HIV care found that 85% indicated spirituality was “somewhat” or “very” important in their lives, and 65% indicated the same of religion (Lorenz et al. 2005). Further, research suggests that nearly half (45%) of individuals show increased religiousness/spirituality after receiving a diagnosis of HIV

(Ironson et al. 2006), which may develop out of a need to find meaning in the face of adversity (Jacobson et al. 2006).

Drug Use, Minority Status, and Religiosity/Spirituality

Among the general population, men who identify as sexual minorities are at increased risk of drug use disorders. According to the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), men who identified as gay or bisexual were 4.2 or 6.3 times more likely, respectively, to meet criteria for a drug dependence disorder other than marijuana compared to heterosexual men (McCabe et al. 2009). Regarding race, NESARC found substance use to be lower among racial minorities with the prevalence of a lifetime drug use disorder being 8.7% for Blacks and 11.3% for Whites (Compton et al. 2007; Hasin and Grant 2015). Similarly, among MSM specifically, Black MSM are less likely to report a history of substance use compared to MSM of other races (Millett et al. 2012).

The relationship between religiosity/spirituality and drug use may be more complicated when individuals identify as a sexual minority. National prevalence data indicate that Americans who identify as lesbian, gay, bisexual, or transgender (LGBT) are less likely to endorse being "moderately" or "highly" religious than those who identify as heterosexual (53% vs. 70%) (Gallup 2014). Among sexual minorities who identify as religious or spiritual, there is some evidence that their beliefs are protective against drug use. For instance, young adult sexual minorities who considered themselves to be somewhat or very religious were less likely to report recent club drug use (Kipke et al. 2007). Further, in a national study of over 13,000 adolescents, religiosity was associated with reduced heavy drinking in males regardless of sexual orientation (Rostosky et al. 2010). Among Black MSM specifically, spiritual coping was associated with less likelihood of stimulant use (Carrico et al. 2017). However, in two studies of adult men religiosity among sexual minorities was not associated with the same decrease in drug use as it was in heterosexuals (Eliason et al. 2011; Rostosky et al. 2007).

Religious Coping and Drug Use

There are limitations to the literature on religiosity/spirituality and drug use. Most notably, measurement has often relied on global assessment, despite evidence supporting a multidimensional model of religiosity (Hall et al. 2008; Park et al. 2017). Religious coping is one dimension of religiosity/spirituality that is a powerful predictor of health outcomes (Cotton et al. 2006b; Koenig 2009). Religious coping is defined by Pargament et al. (2000) as "how the individual [makes] use of religion to understand and deal with stressors" (p. 521). Given that some researchers suggest the principle motivation behind drug addiction is to cope with negative emotions and stress (Baker et al. 2004), the concept of religious coping is highly relevant to drug use. This is consistent with studies conducted in HIV-infected samples in which individuals report using drugs to help manage difficult emotions (Halkitis et al. 2007; Semple et al. 2002). Therefore, HIV-infected individuals who are able to

effectively engage in religious coping strategies when faced with adversity may be less likely to turn to drugs to cope.

Religious Coping, Drug Use, and Minority Status

To our knowledge, only four studies have examined the relationship between religious or spiritual coping and drug use among HIV-infected individuals. Importantly, none of these studies tested whether sexual orientation moderated effects. In a sample of sexual minority men that included both HIV-positive and HIV-negative individuals, there was no association between religious coping and drug use (Hampton et al. 2010). In contrast, findings from the coping with HIV/AIDS in the Southeast study, which included 42% sexual minority men, 27% heterosexual men, and 31% women, found less frequent drug use among HIV-infected individuals who reported higher religious coping (Pence et al. 2008). Additionally, a multisite study of HIV-infected older adults with nearly half (46%) identifying as sexual minorities reported an inverse relationship between religious coping and drug use (Skalski et al. 2013). Similarly, in another sample of HIV-infected adults in which about half (55%) identified as a sexual minority, spiritual coping was lower among individuals with a substance use disorder (Kremer et al. 2015).

In order to design effective, culturally relevant drug treatment programs for HIV-infected African-Americans, it is important to understand how religious coping may interact with sexual orientation to impact drug use in this highly vulnerable population. The purpose of this study was to investigate the relationship between religious coping, drug use, and sexual orientation in a sample of HIV-infected African-American men. We hypothesized that sexual orientation would moderate the relationship between religious coping and drug use such that there will be a weaker negative relationship for sexual minorities than for heterosexuals.

Methods

Participants and Procedures

Participants included HIV-infected adult men who identified as being of African-American descent and were ≥ 18 years of age. Participants completed a 3-h comprehensive screening for a larger study of HIV infection and drug use (Meade et al. 2015). HIV-positive status was confirmed using medical record review. Exclusion criteria were acute psychiatric distress (e.g., suicidal ideation, severe depression), impaired mental status, or lack of fluency in English.

Participants were recruited from the community through advertisements in local newspapers and websites, flyers posted and brochures distributed at clinics and non-profit organizations serving persons with HIV/AIDS, and participant referrals. Interested individuals called into the study and completed a structured telephone screen to assess preliminary eligibility (e.g., HIV infection). If eligible, callers were invited for a comprehensive in-person screening.

At the screening, participants provided written informed consent. A breathalyzer was used to ensure sobriety. Participants then provided a urine sample for drug use and completed clinical interviews and questionnaires. All procedures were approved by the institutional review boards at Duke University Health System.

Measures

Demographic Characteristics

Participants indicated their age, race/ethnicity, education level, and sexual orientation.

Religiosity and Religious Coping

Participants selected their religious affiliation from the following choices: Catholic, Protestant, Baptist, Jewish, Buddhist, Hindu, Other, or None. They reported level of religiosity (i.e., "How religious are you?") using a 4-point scale ranging from 0 (not religious at all) to 3 (very religious). Religious coping was assessed with the Brief Measure of Religious Coping (Brief RCOPE) (Pargament et al. 2000). Participants indicated how often they engaged in each form of coping on a 4-point scale ranging from 1 (not at all) to 4 (very often). Positive religious coping items assessed the extent to which one believed their religion was helpful in managing stress, reflecting a secure relationship with a Higher Power, a sense of spiritual connectedness, and a benevolent worldview. Negative religious coping items assessed the extent to which one felt abandoned by a Higher Power or experienced conflict and doubt surrounding their religious faith.

Substance Use

The Addiction Severity Index-Lite assessed frequency of substance use in the past 30 days (McLellan et al. 1980). To improve accuracy in reporting, timeline follow-back methodology was utilized to aid recall (Sobell and Sobell 1996). Participants provided a urine toxicology drug screen to ensure valid self-reported drug use. The drug screen results were shared with participants, and any discrepancies with self-report were addressed during the TLFB interview. Frequency of drug use by self-report was our primary outcome, which was categorized as follows: minimal (1 day/week or less), moderate (2–5 days/week) or heavy (6–7 days/week).

Mental Health

The Mini International Neuropsychiatric Interview (MINI), a structured clinical interview, was used to identify current and lifetime DSM-IV-TR mood, psychotic, and anxiety disorders (Sheehan et al. 1997). Endorsement of any current diagnosis was combined to create a dichotomous "current mental health disorder" category.

Data Analysis

Descriptive statistics were used to characterize the sample. *T* tests and Chi-square were used to compare sexual minorities and heterosexuals on demographics, substance use, mental health, and religiosity. Ordinal logistic regression was used to predict the main effects of religious coping and sexual orientation on drug use. Predictor variables were entered simultaneously, controlling for age, education, years diagnosed with HIV, and mental health. Next, interaction terms were added one by one to the model to examine interactions between religious coping and sexual orientation, age, and education. The Chi-square statistic was used to test the overall significance of each model, and the adjusted odds ratio for each predictor variable was computed. All analyses were conducted in SPSS for Windows 24.0.

Results

Participant Characteristics

The sample included 104 men, ranging in age from 21 to 70 (mean = 45, SD = 11). The majority identified exclusively as African-American (97%), and three participants identified as multiracial with African-American descent. Over half identified as Baptist (55%), and 76% reported being moderately or very religious. Over half (61%) self-identified as a sexual minority (40% gay, 21% bisexual). As shown in Table 1, sexual minorities completed more years of education compared to heterosexuals. Sexual minorities were also less likely to use cocaine. There were no group differences in mental health or religiosity.

Religious Coping, Sexual Orientation, and Substance Use

Main effects of religious coping and sexual orientation on drug use are summarized in Table 2. More frequent drug use in the past 30 days was associated with age (OR .914 (− .146 to − .033), $p = .002$), education (OR .797 (− .417 to − .036), $p = .020$), and current mental health disorder (OR 3.33 (− 2.216 to − .190), $p = .020$). There was no main effect of sexual orientation, positive religious coping, or negative religious coping on drug use.

Religious Coping Interactions

There was a significant interaction between sexual orientation and positive religious coping (Wald = 4.500, $p = .034$). Specifically, among heterosexuals, positive religious coping was inversely associated with frequency of drug use (OR .725 (− .607 to − .036), $p = .027$), while among sexual minorities this relationship was not significant (OR 1.107 (− .114 to .318), $p = .356$) (Fig. 1). There was no

Table 1 Sample characteristics by sexual orientation ($N = 104$)

	Heterosexual $n = 40$	Sexual minority $n = 64$	Statistic	p value
Demographic and HIV characteristics				
Age in years, M (SD)	47.6 (8.8)	44.0 (11.4)	$t(102) = -1.68$	0.097
Education in years, M (SD)	12.1 (1.8)	13.9 (2.4)	$t(102) = 4.04$	0.000***
Years infected with HIV, M (SD)	13.0 (7.3)	12.8 (8.6)	$t(101) = -0.097$	0.923
Substance use in past 30 days				
Any alcohol to intoxication	50.0%	40.6%	$\chi^2(1) = 0.88$	0.349
Days of use[a]	10.8 (11.1)	7.0 (9.0)	$t(44) = -1.28$	0.206
Any marijuana use	47.5%	42.2%	$\chi^2(1) = 0.28$	0.596
Days of use[a]	11.8 (11.9)	16.2 (12.4)	$t(44) = 0.65$	0.518
Any cocaine use	57.5%	32.9%	$\chi^2(1) = 4.64$	0.031*
Days of use[a]	8.2 (7.6)	7.4 (7.2)	$t(44) = -0.38$	0.707
Any other use	0.0%	3.1%	$\chi^2(1) = 1.28$	0.259
Any drug use			$\chi^2(2) = 3.85$	0.146
None/minimal	42.5%	57.8%		
Moderate	37.5%	20.3%		
Heavy	20.0%	21.9%		
Mental health				
Major depressive disorder, current	15.0%	9.4%	$\chi^2(1) = 0.76$	0.382
PTSD, current	10.0%	9.4%	$\chi^2(1) = 0.01$	0.916
Other anxiety disorder (panic, OCD, social phobia, GAD), current	7.5%	10.9%	$\chi^2(1) = 0.34$	0.563
Any current mental health disorder	22.5%	20.3%	$\chi^2(1) = 0.07$	0.488
Religiosity and religious coping				
Religion, %			$\chi^2(3) = 3.47$	0.324
Baptist	45.0%	60.9%		
Other protestant or catholic	2.5%	4.7%		
Other	40.0%	25.0%		
None	12.5%	9.4%		
How religious, %			$\chi^2(2) = 2.93$	0.403
Very	37.5%	26.6%		
Moderately	40.0%	48.4%		
Slightly	15.0%	21.9%		
Not at all	7.5%	3.1%		
Religious coping, M (SD)				
Positive	8.7 (2.7)	8.5 (2.5)	$t(102) = -0.33$	0.740
Negative	4.6 (1.8)	5.0 (2.0)	$t(102) = 1.06$	0.292
Overall	2.1 (1.0)	2.2 (1.1)	$t(102) = 0.67$	0.505

*$p < .05$; **$p < .01$; ***$p < .001$

[a]Reflecting days of use among those who use the drug, not the full sample

Table 2 Ordinal logistic regression model examining predictors of drug use ($N = 104$)

	Logistic coefficient	SE	*p* value	Odds ratio	95% CI
Current mental health disorder					
Yes	1.203	.517	.020*	3.330	.190 to 2.216
No	Ref				
Sexual orientation					
Sexual minority	− .438	.457	.337	1.550	− 1.333 to .457
Heterosexual	Ref				
Years since HIV diagnosis	− .001	.033	.985	.999	− .066 to .065
Age in years	− .090	.029	.002**	.914	− .146 to .033
Education in years	− .226	.097	.020*	.797	− .417 to .036
Positive religious coping	− .078	.079	.328	.925	− .233 to .078
Negative religious coping	− .110	.114	.332	.896	− .333 to .112

*$p < .05$; **$p < .01$

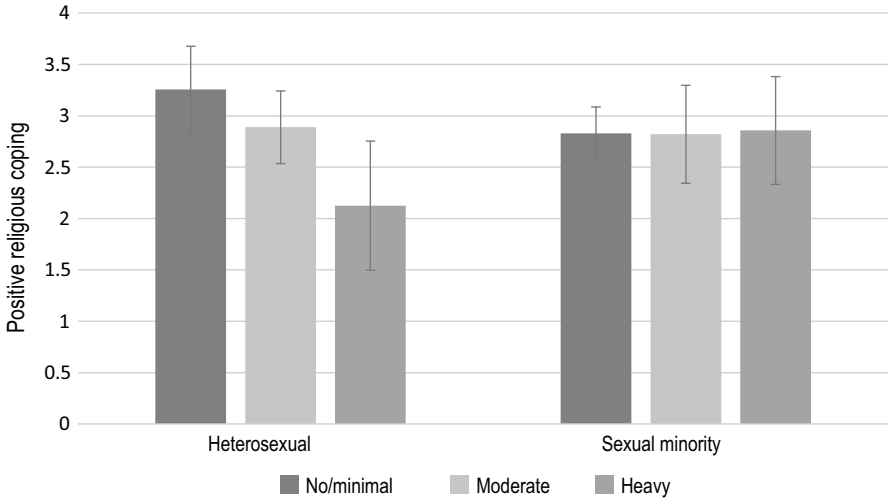

Fig. 1 Mean positive religious coping by sexual orientation and frequency of drug use

interaction between negative religious coping and sexual orientation nor between religious coping and age or education.

Discussion

This study is among the first to examine whether sexual orientation moderates the relationship between religious coping and drug use in a sample of HIV-infected persons. In regression models, we found no main effect of religious coping or sexual orientation on drug use. However, there was an interaction between positive

religious coping and sexual orientation, such that positive religious coping was associated with reduced drug use among heterosexuals, but not among sexual minorities.

Across both groups, our sample was comprised of individuals reporting high levels of religiosity. This is consistent with national data indicating that religion is more prevalent in the South than other regions in the USA (Pew Research Center 2015). This may explain why sexual minorities in our sample reported that religion was equally important to them as their heterosexual counterparts, whereas a national study found lower levels of religious involvement among sexual minorities (Gallup 2014). Individuals infected with HIV may be even more likely to turn to religion. Often individuals report increased religiosity/spirituality after being diagnosed with HIV (Cotton et al. 2006a; Ironson et al. 2006). This may be explained by high levels of stress experienced by HIV-infected individuals, including disclosure concerns (Henry et al. 2015; Rodkjaer et al. 2011), and stigmatization (Mahajan et al. 2008). Religious coping is often mobilized during times of high stress when individuals find their typical coping resources are not sufficient (Pargament et al. 2000), and qualitative data indicate religiosity/spirituality is a primary element of resilience among substance—using African-American men who have sex with men (Buttram 2015).

However, despite high religiosity and frequent use of religious coping strategies, sexual minorities in our sample were not deriving the same benefits with regard to reduced drug use as their heterosexual counterparts. It has been suggested that sexual minorities face additional stressors that heterosexuals do not experience (Meyer 1995, 2003), and religious coping strategies may only be effective up to a certain threshold. A large study of over 15,000 individuals receiving publicly funded substance use treatment found that openly LGBT clients enter treatment with more severe substance use problems, greater psychopathology, and higher medical service utilization when compared to heterosexual patients (Cochran and Cauce 2006). Stigma, prejudice, and discrimination may create a hostile environment for sexual minorities that leads to chronically high levels of stress and psychological distress (Meyer 1995, 2003). In the South, discrimination and negative attitudes toward sexual minorities are particularly high (Swank et al. 2012), and in our sample this societal stigma is compounded by HIV-positive status and being a racial minority. Experiencing stigma at multiple levels of identity significantly elevates risk of drug addiction. For instance, a large national sample of LGBT adults found that the odds of having a substance use disorder in the past year increased fourfold when individuals reported experiencing three types of discrimination (i.e., race/ethnicity, sexual orientation, and gender) compared to LGBT adults who did not report discrimination (McCabe et al. 2010).

Given this context, HIV-infected African-American sexual minorities living in the South likely need additional coping resources to manage high levels of chronic stress that increases vulnerability for drug use. This should be a public health priority given that African-American sexual minorities are the highest risk category for new HIV diagnoses (CDC 2016b). In fact, the National HIV/AIDS Strategy for the USA indicates that reducing disparities in the rate of new diagnoses for young African-American sexual minorities and persons living in the South is a central priority (The White House 2015). Our findings are consistent

with several reviews conducted in HIV-infected populations that concluded HIV prevention strategies tailored to the unique needs of African-American men who have sex with men are urgently needed (Johnson et al. 2008; Maulsby et al. 2013; Mays et al. 2004). To date, there has been minimal research on the effectiveness of drug treatment programs for HIV-infected African-American sexual minorities living in the South. A randomized control trial found an empowerment-based intervention to effectively reduce substance use among African-American sexual minorities in Miami and Ft. Lauderdale (Kurtz et al. 2013). However, these findings may not generalize to the rest of the South, given this region is a hub for sexual minority men and has among the highest proportion of same-sex households in the country (Smith and Gates 2001). Another study found that a spiritually based program designed for African-American drug users at risk for HIV infection in Tennessee was effective in reducing drug use and HIV risk behaviors, but sexual orientation of participants was not reported (MacMaster et al. 2007).

While the study has multiple strengths, including multiple measures of drug use and assessment of both positive and negative religious coping, there are also notable limitations. First, the cross-sectional design does not allow for conclusions regarding causality, and it is possible that successful reductions in drug use lead to increased religious coping. However, this is unlikely given extant longitudinal evidence that changes in religiosity predict changes in drug use (DeWall et al. 2014; Moscati and Mezuk 2014). Second, our measures did not assess the full range of coping strategies nor aspects of religiosity/spirituality besides religious coping that may also impact drug use. It will be important for future research to assess multiple coping strategies in the same sample in order to obtain a more nuanced understanding of how religious coping uniquely impacts drug use. Third, we collapsed all classes of illicit drug use together when creating our outcome variable. Our sample was not large enough to examine whether the relationship between religious coping and drug use varied by drug type. Fourth, although we controlled for a number of relevant variables in analyses, other variables that were not included in the model may better explain the relationship between religious coping and drug use. Fifth, use of a convenience sample of volunteers raises the possibility of selection bias and may limit generalizability of findings. Finally, self-report data are also subject to response bias.

In sum, HIV-infected African-American men living in the South report high levels of religiosity and frequent use of religious coping. Findings suggest that positive religious coping is associated with reduced drug use among heterosexuals, but not among sexual minorities. While religious coping may effectively reduce drug use among heterosexuals, these strategies are not sufficient for sexual minorities living in the South. Thus, there is an urgent need to develop effective, culturally appropriate treatments that take into consideration unique stressors faced by this population that is at high risk for drug use.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

References

Alcoholics Anonymous. (2001). *Alcoholics anonymous: The story of how many thousands of men and women have recovered from alcoholism* (4th ed.). New York: Alcoholics Anonymous World Series.

Baker, T. B., Piper, M. E., McCarthy, D. E., Majeskie, M. R., & Fiore, M. C. (2004). Addiction motivation reformulated: An affective processing model of negative reinforcement. *Psychological Review, 111*(1), 33–51. https://doi.org/10.1037/0033-295X.111.1.33.

Buttram, M. E. (2015). The social environmental elements of resilience among vulnerable African American/Black men who have sex with men. *Journal of Human Behavior in the Social Environment, 25*(8), 923–933. https://doi.org/10.1080/10911359.2015.1040908.

Carrico, A. W., Storholm, E. D., Flentje, A., Arnold, E. A., Pollack, L. M., Neilands, T. B., et al. (2017). Spirituality/religiosity, substance use, and HIV testing among young black men who have sex with men. *Drug and Alcohol Dependence, 174,* 106–112. https://doi.org/10.1016/j.drugalcdep.2017.01.024.

Centers for Disease Control and Prevention (CDC). (2015). *HIV among gay and bisexual men*. Retrieved January 2017 from http://www.cdc.gov/hiv/group/msm/.

Centers for Disease Control and Prevention (CDC). (2016a). *New HIV infections in the United States*. Retrieved January 2017 from http://www.cdc.gov/nchhstp/newsroom/docs/factsheets/new-hiv-infections-508.pdf.

Centers for Disease Control and Prevention (CDC). (2016b). *HIV in the Southern United States*. CDC Issue Brief. Retrieved January 2017 from http://www.cdc.gov/hiv/pdf/policies/cdc-hiv-in-the-south-issue-brief.pdf.

Cochran, B. N., & Cauce, A. M. (2006). Characteristics of lesbian, gay, bisexual, and transgender individuals entering substance abuse treatment. *Journal of Substance Abuse Treatment, 30*(2), 135–146. https://doi.org/10.1016/j.jsat.2005.11.009.

Cohen, M. S., Chen, Y. Q., McCauley, M., Gamble, T., Hosseinipour, M. C., Kumarasamy, N., et al. (2011). Prevention of HIV-1 infection with early antiretroviral therapy. *New England Journal of Medicine, 365*(6), 493–505. https://doi.org/10.1056/NEJMoa1105243.

Compton, W. M., Thomas, Y. F., Stinson, F. S., & Grant, B. F. (2007). Prevalence, correlates, disability, and comorbidity of DSM-IV drug abuse and dependence in the United States: Results from the national epidemiologic survey on alcohol and related conditions. *Archives of General Psychiatry, 64*(5), 566–576. https://doi.org/10.1001/archpsyc.64.5.566.

Cotton, S., Puchalski, C. M., Sherman, S. N., Mrus, J. M., Peterman, A. H., Feinberg, J., et al. (2006a). Spirituality and religion in patients with HIV/AIDS. *Journal of General Internal Medicine, 21*(Suppl 5), S5–S13.

Cotton, S., Zebracki, K., Rosenthal, S. L., Tsevat, J., & Drotar, D. (2006b). Religion/spirituality and adolescent health outcomes: A review. *Journal of Adolescent Health, 38*(4), 472–480. https://doi.org/10.1016/j.jadohealth.2005.10.005.

DeWall, C. N., Pond, R. S., Jr., Carter, E. C., McCullough, M. E., Lambert, N. M., Fincham, F. D., et al. (2014). Explaining the relationship between religiousness and substance use: Self-control matters. *Journal of Personality and Social Psychology, 107*(2), 339–351. https://doi.org/10.1037/a0036853.

Eliason, M. J., Burke, A., van Olphen, J., & Howell, R. (2011). Complex interactions of sexual identity, sex/gender, and religious/spiritual identity on substance use among college students. *Sexuality Research and Social Policy, 8*(2), 117–125. https://doi.org/10.1007/s13178-011-0046-1.

Gallup. (2014). *LGBT population in U.S. significantly less religious*. Retrieved January 2017 from http://www.gallup.com/poll/174788/lgbt-population-significantly-less-religious.aspx?version=print.

Gillum, F., & Griffith, D. M. (2010). Prayer and spiritual practices for health reasons among American adults: The role of race and ethnicity. *Journal of Religion and Health, 49*(3), 283–295. https://doi.org/10.1007/s10943-009-9249-7.

Gonzalez, A., Barinas, J., & O'Cleirigh, C. (2011). Substance use: Impact on adherence and HIV medical treatment. *Current HIV/AIDS Reports, 8*(4), 223–234. https://doi.org/10.1007/s11904-011-0093-5.

Halkitis, P. N., Mukherjee, P. P., & Palamar, J. J. (2007). Multi-level modeling to explain methamphetamine use among gay and bisexual men. *Addiction, 102*(S1), 76–83. https://doi.org/10.1111/j.1360-0443.2007.01769.x.

Hall, D. E., Meador, K. G., & Koenig, H. G. (2008). Measuring religiousness in health research: Review and critique. *Journal Religion and Health, 47*(2), 134–163. https://doi.org/10.1007/s10943-008-9165-2.

Hampton, M. C., Halkitis, P. N., & Mattis, J. S. (2010). Coping, drug use, and religiosity/spirituality in relation to HIV serostatus among gay and bisexual men. *AIDS Education and Prevention, 22*(5), 417–429.

Hasin, D. S., & Grant, B. F. (2015). The National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) Waves 1 and 2: Review and summary of findings. *Social Psychiatry and Psychiatric Epidemiology, 50*(11), 1609–1640. https://doi.org/10.1007/s00127-015-1088-0.

Henry, E., Bernier, A., Lazar, F., Matamba, G., Loukid, M., Bonifaz, C., et al. (2015). "Was it a mistake to tell others that you are infected with HIV?": Factors associated with regret following HIV disclosure among people living with HIV in five countries (Mali, Morocco, Democratic Republic of the Congo, Ecuador and Romania). Results from a community-based research. *AIDS and Behavior, 19*(2), 311–321. https://doi.org/10.1007/s10461-014-0976-8.

Ironson, G., Stuetzle, R., & Fletcher, M. A. (2006). An increase in religiousness/spirituality occurs after HIV diagnosis and predicts slower disease progression over 4 years in people with HIV. *Journal of General Internal Medicine, 21,* S62–S68.

Jacobson, C. J., Luckhaupt, S. E., DeLaney, S., & Tsevat, J. (2006). Religio-biography, coping, and meaning-making among persons with HIV/AIDS. *Journal for the Scientific Study of Religion, 45*(1), 39–56. https://doi.org/10.1111/j.1468-5906.2006.00004.x.

Johnson, W. D., Diaz, R. M., Flanders, W. D., Goodman, M., Hill, A. N., Holtgrave, D., et al. (2008). Behavioral interventions to reduce risk for sexual transmission of HIV among men who have sex with men. *The Cochrane Database of Systematic Reviews*. https://doi.org/10.1002/14651858.cd001230.pub2.

Kaskutas, L. A. (2009). Alcoholics Anonymous effectiveness: Faith meets science. *Journal of Addictive Diseases, 28*(2), 145–157. https://doi.org/10.1080/10550880902772464.

Kelly, J. F., Hoeppner, B., Stout, R. L., & Pagano, M. (2012). Determining the relative importance of the mechanisms of behavior change within Alcoholics Anonymous: A multiple mediator analysis. *Addiction, 107*(2), 289–299. https://doi.org/10.1111/j.1360-0443.2011.03593.x.

Kelly, J. F., Stout, R. L., Magill, M., Tonigan, J. S., & Pagano, M. E. (2011). Spirituality in recovery: A lagged mediational analysis of Alcoholics Anonymous' principal theoretical mechanism of behavior change. *Alcoholism, Clinical and Experimental Research, 35*(3), 454–463. https://doi.org/10.1111/j.1530-0277.2010.01362.x.

Kipke, M. D., Weiss, G., Ramirez, M., Dorey, F., Ritt-Olson, A., Iverson, E., et al. (2007). Club drug use in Los Angeles among young men who have sex with men. *Substance Use and Misuse, 42*(11), 1723–1743. https://doi.org/10.1080/10826080701212261.

Koenig, H. G. (2009). Research on religion, spirituality, and mental health: A review. *Canadian Journal of Psychiatry, 54*(5), 283–291.

Kremer, H., Ironson, G., Kaplan, L., Stuetzele, R., Baker, N., & Fletcher, M. A. (2015). Spiritual coping predicts CD4-cell preservation and undetectable viral load over four years. *AIDS Care, 27*(1), 71–79. https://doi.org/10.1080/09540121.2014.952220.

Kurtz, S. P., Stall, R. D., Buttram, M. E., Surratt, H. L., & Chen, M. (2013). A randomized trial of a behavioral intervention for high risk substance-using MSM. *AIDS and Behavior, 17*(9), 2914–2926. https://doi.org/10.1007/s10461-013-0531-z.

Lorenz, K. A., Hays, R. D., Shapiro, M. F., Cleary, P. D., Asch, S. M., & Wenger, N. S. (2005). Religiousness and spirituality among HIV-infected Americans. *Journal of Palliative Medicine, 8*(4), 774–781.

MacMaster, S. A., Jones, J. L., Rasch, R. F. R., Crawford, S. L., Thompson, S., & Sanders, E. C., II. (2007). Evaluation of a faith-based culturally relevant program for African American substance users at risk for HIV in the southern United States. *Research on Social Work Practice, 17*(2), 229–238. https://doi.org/10.1177/1049731506296826.

Mahajan, A. P., Sayles, J. N., Patel, V. A., Remien, R. H., Ortiz, D., Szekeres, G., et al. (2008). Stigma in the HIV/AIDS epidemic: A review of the literature and recommendations for the way forward. *AIDS, 22*(Suppl 2), S67. https://doi.org/10.1097/01.aids.0000327438.13291.62.

Maulsby, C., Millett, G., Lindsey, K., Kelley, R., Johnson, K., Montoya, D., et al. (2013). A systematic review of HIV interventions for black men who have sex with men (MSM). *BMC Public Health, 13,* 625. https://doi.org/10.1186/1471-2458-13-625.

Mays, V. M., Cochran, S. D., & Zamudio, A. (2004). HIV prevention research: Are we meeting the needs of African American men who have sex with men? *The Journal of Black Psychology, 30*(1), 78–105. https://doi.org/10.1177/0095798403260265.

McCabe, S. E., Bostwick, W. B., Hughes, T. L., West, B. T., & Boyd, C. J. (2010). The relationship between discrimination and substance use disorders among lesbian, gay, and bisexual adults in the United States. *American Journal of Public Health, 100*(10), 1946–1952. https://doi.org/10.2105/AJPH.2009.163147.

McCabe, S. E., Hughes, T. L., Bostwick, W. B., West, B. T., & Boyd, C. J. (2009). Sexual orientation, substance use behaviors and substance dependence in the United States. *Addiction, 104*(8), 1333–1345. https://doi.org/10.1111/j.1360-0443.2009.02596.x.

McLellan, A. T., Luborsky, L., Woody, G. E., & O'Brien, C. P. (1980). An improved diagnostic evaluation instrument for substance abuse patients: The Addiction Severity Index. *The Journal of Nervous and Mental Disorders, 168,* 26–33.

Meade, C. S., Towe, S. L., Skalski, L. M., & Robertson, K. R. (2015). Independent effects of HIV infection and cocaine dependence on neurocognitive impairment in a community sample living in the southern United States. *Drug and Alcohol Dependence, 149,* 128–135. https://doi.org/10.1016/j.drugalcdep.2015.01.034.

Metzger, D. S., Woody, G. E., & O'Brien, C. P. (2010). Drug treatment as HIV prevention: A research update. *Journal of Acquired Immune Deficiency Syndromes, 55*(Suppl 1), S32–S36.

Meyer, I. H. (1995). Minority stress and mental health in gay men. *Journal of Health and Social Behavior, 36*(1), 38–56.

Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin, 129*(5), 674–697.

Millett, G. A., Peterson, J. L., Flores, S. A., Hart, T. A., Jeffries, W. L. T., Wilson, P. A., et al. (2012). Comparisons of disparities and risks of HIV infection in black and other men who have sex with men in Canada, UK, and USA: A meta-analysis. *The Lancet, 380*(9839), 341–348. https://doi.org/10.1016/S0140-6736(12)60899-X.

Mimiaga, M. J., Reisner, S. L., Grasso, C., Crane, H. M., Safren, S. A., Kitahata, M. M., et al. (2013). Substance use among HIV-infected patients engaged in primary care in the United States: Findings from the Centers for AIDS Research Network of Integrated Clinical Systems cohort. *American Journal of Public Health, 103*(8), 1457–1467. https://doi.org/10.2105/ajph.2012.301162.

Moscati, A., & Mezuk, B. (2014). Losing faith and finding religion: Religiosity over the life course and substance use and abuse. *Drug and Alcohol Dependence, 136,* 127–134. https://doi.org/10.1016/j.drugalcdep.2013.12.018.

Pargament, K. I., Koenig, H., & Perez, L. M. (2000). The many methods of religious coping: Development and initial validation of the RCOPE. *Journal of Clinical Psychology, 56*(4), 519–543.

Park, C. L., Masters, K. S., Salsman, J. M., Wachholtz, A., Clements, A. D., Salmoirago-Blotcher, E., et al. (2017). Advancing our understanding of religion and spirituality in the context of behavioral medicine. *Journal of Behavioral Medicine, 40*(1), 39–51. https://doi.org/10.1007/s10865-016-9755-5.

Pence, B. W., Thielman, N. M., Whetten, K., Ostermann, J., Kumar, V., & Mugavero, M. J. (2008). Coping strategies and patterns of alcohol and drug use among HIV-infected patients in the United States Southeast. *AIDS Patient Care & STDs, 22*(11), 869–877. https://doi.org/10.1089/apc.2008.0022.

Pew Research Center. (2009). *A religious portrait of African-Americans*. Retrieved January 2017 from http://www.pewforum.org/2009/01/30/a-religious-portrait-of-african-americans/.

Pew Research Center. (2015). *American's changing religious landscape*. Retrieved January 2017 from http://www.pewforum.org/religious-landscape-study/region/south/.

Rodkjaer, L., Sodemann, M., Ostergaard, L., & Lomborg, K. (2011). Disclosure decisions: HIV-positive persons coping with disease-related stressors. *Qualitative Health Research, 21*(9), 1249–1259. https://doi.org/10.1177/1049732311405803.

Rostosky, S. S., Danner, F., & Riggle, E. D. B. (2007). Is religiosity a protective factor against substance use in young adulthood? Only if you're straight! *Journal of Adolescent Health, 40*(5), 440–447. https://doi.org/10.1016/j.jadohealth.2006.11.144.

Rostosky, S. S., Danner, F., & Riggle, E. D. B. (2010). Religiosity as a protective factor against heavy episodic drinking (HED) in heterosexual, bisexual, gay, and lesbian young adults. *Journal of Homosexuality, 57*(8), 1039–1050. https://doi.org/10.1080/00918369.2010.503515.

Semple, S. J., Patterson, T. L., & Grant, I. (2002). Motivations associated with methamphetamine use among HIV+ men who have sex with men. *Journal of Substance Abuse Treatment, 22*(3), 149–156. https://doi.org/10.1016/S0740-5472(02)00223-4.

Sheehan, D. V., Lecrubier, Y., Harnett-Sheehan, K., Janavs, J., Weiller, E., Bonara, L. I., et al. (1997). Reliability and validity of the MINI International Neuropsychiatric Interview (MINI): According to the SCID-P. *European Psychiatry, 12,* 232–241.

Skalski, L. M., Sikkema, K. J., Heckman, T. G., & Meade, C. S. (2013). Coping styles and illicit drug use in older adults with HIV/AIDS. *Psychology of Adictive Behaviors, 27*(4), 1050–1058. https://doi.org/10.1037/a0031044.

Smith, D. M., & Gates, G. J. (2001). *Gay and lesbian families in the United States: Same-sex unmarried partner households.* Retrieved from 2000 United States census data. Washington, D.C.: Urban Institute.

Sobell, L. C., & Sobell, M. B. (1996). *Timeline follow-back user's guide: A calendar method for assessing alcohol and drug use*. Toronto: Addiction Research Foundation.

Swank, E., Frost, D. M., & Fahs, B. (2012). Rural location and exposure to minority stress among sexual minorities in the United States. *Psychology and Sexuality, 3*(3), 226–243. https://doi.org/10.1080/19419899.2012.700026.

The White House. (2015). *National HIV/AIDS strategy for the United States: Updated to 2020*. Retrieved January 2017 from http://www.aids.gov/federal-resources/national-hiv-aids-strategy/nhas-update.pdf.

Zemore, S. E. (2007). A role for spiritual change in the benefits of 12-step involvement. *Alcoholism: Clinical and Experimental Research, 31,* 76–79. https://doi.org/10.1111/j.1530-0277.2007.00499.x.