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The Role of Personality in Predicting Drug and Alcohol Use Among Sexual Minorities

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Abstract

Objectives—Research consistently demonstrates that sexual minority status is associated with increased risk of problematic substance use. Existing literature in this area has focused on group-specific minority stress factors (e.g., victimization and internalized heterosexism). However, no known research has tested the incremental validity of personality traits as predictors of substance use beyond identified group-specific risk factors.

Methods—A sample of 704 sexual minority adults were recruited nationally from LGBTQQ community organizations and social networking websites and asked to complete an online survey containing measures of personality, sexual minority stress, and substance use.

Results—Hierarchical regression models were constructed to test the incremental predictive validity of Five-Factor personality traits over and above known sexual minority risk factors. Consistent with hypotheses, extraversion and conscientiousness were associated with drug and alcohol use after accounting for minority stress factors, and all factors except agreeableness were associated with substance use at the bivariate level of analysis.

Conclusion—Future research should seek to better understand the role of normal personality structures and processes conferring risk for substance use among sexual minorities.

Keywords

personality traits; LGBT; sexual minority stress; drug use; alcohol use

Substance Use among Sexual Minorities

Sexual minority¹ status predicts elevated rates of psychological distress (Cochran, Sullivan, & Mays, 2003), alcohol and illicit drug use (McCabe, Hughes, Bostwick, West, & Boyd, 2009; Green & Feinstein, 2012; Marshal et al., 2008), and greater risk for substance use

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¹“Sexual minority” is operationalized in the current study as anyone who identifies as lesbian, gay, bisexual/pansexual, queer, questioning, or heterosexual so long as the individual reports a history of same-sex attraction or same-sex sexual behavior (LGBTQQ).

disorders (McCabe et al., 2013), relative to heterosexual people. This elevated risk is associated with higher concomitant rates of *sexual minority stress* (Meyer, 2003; Harper & Schneider, 2003; DiPlacido, 1998; Hequembourg & Dearing, 2013), a term referring to the psychological distress resulting from being stigmatized, oppressed, discriminated against, or victimized on the basis of one's known or presumed sexual minority status, or as a result of internalizing others' heterosexist attitudes and beliefs (Meyer, 2003).

Meyer's (2003) minority stress model identifies both sexual minority-specific proximal (i.e., internalized heterosexism and identity concealment) and distal (i.e., victimization and discrimination) stress factors shown to confer risk for psychological distress and substance use. More recently, Hatzenbuehler (2009) proposed a mediational component to Meyer's model in order to incorporate mechanistic psychological processes thought to underlie the minority stress-substance use association. Hatzenbuehler's contribution encouraged the integration of general psychological processes (e.g., emotion dysregulation, rumination, hopelessness, etc.) into the minority stress framework and, more broadly, the study of sexual minority health.

Sexual minority health research, however, continues to emphasize the role of minority-specific stressors at the expense of developing a better understanding of the general psychological factors shown to mediate (Hatzenbuehler, 2009; Hatzenbuehler, Nolen-Hoeksema, & Dovidio, 2009; Hatzenbuehler, Corbin, & Fromme, 2011; McKirnan & Peterson, 1988) and potentially moderate (e.g., hostility and neuroticism; Huebner, Nemeroff, & Davis, 2005) these associations. Although dozens of documented studies support associations between Five Factor personality traits and substance use in the general population (e.g., Kotov, Gamez, Schmidt, & Watson, 2010), excitement/sensation seeking is the only personality factor associated with drug and alcohol use among sexual minorities (Trocki, Drabble, & Midanik, 2009).

The Role of Personality

The Five Factor Model (FFM) represents the culmination of personality trait research. This framework offers a parsimonious personality trait taxonomy capable of describing both similarities and individual differences using five broad personality factors: neuroticism, extraversion, agreeableness, conscientiousness, and openness to experience (Costa & McCrae, 1992). Neuroticism is a measure of emotional stability/lability (Costa & McCrae, 1992). Higher neuroticism scores are associated with more transient and extreme mood states, elevated risk for experiencing psychological distress (Costa & McCrae, 1992; Griffith et al., 2009), and problematic substance use both directly (Kotov et al., 2010) and indirectly through coping motives (Kuntsche, Knibbe, Gmel, & Engels, 2006; Theakston, Stewart, Dawson, Knowlden-Loewen, & Lehman, 2004). At low levels, extraversion, a measure of sociability, positive emotions, and excitement seeking (Costa & McCrae, 1992), characterizes those with current substance use *disorders* (Kotov et al., 2010). However, certain facets, such as excitement/sensation seeking and sociability (via social networks) are positively correlated with substance use (Walton & Roberts, 2004; Hittner & Swickert, 2006). Higher conscientiousness suggests greater self-discipline, reliability, and achievement orientation. Conscientious people tend to engage in more health promoting

behaviors, fewer risky behaviors (Bogg & Roberts, 2004), and tend to be more invested in work, family, and prosocial activities (Lodi-Smith & Roberts, 2007)—activities that discourage problematic drug or alcohol use. Predictably, conscientiousness is inversely related to substance use (Kotov et al., 2010; Ruiz, Pincus, & Dickinson, 2003). Agreeable people tend to be pleasant, social, warm, sympathetic, and easygoing (Costa & McCrae, 1992; 1995). Like conscientiousness, agreeableness shares an inverse relationship with substance use (Kotov et al., 2010; Ruiz et al., 2003). Openness to experiences is conceptualized as a measure of curiosity and openness to novel, cultural, and intellectual pursuits (Costa & McCrae, 1992; 1995). Data on the association between openness to experience and substance use have been inconsistent (Kotov et al., 2010). Mixed results might suggest that openness to experience is a poor predictor of substance use (when drug and alcohol use measures are combined), or that the relationship is more complex.

In the current study, we hypothesized that combined personality trait effects would significantly predict alcohol and illicit drug use over and above minority stress factors. Specifically, we expected that neuroticism and extraversion would be positively related, while conscientiousness and agreeableness would share inverse associations with drug and alcohol use. If significantly related, openness to experience was considered more likely to share a positive relationship with drug use than alcohol use.

Method

Participants

The sample included 730 sexual minority respondents who completed a one-time online survey. Inclusion criteria specified anyone who (a) identified as a sexual minority (i.e., lesbian, gay, bisexual, queer, questioning, or unsure), or identified as heterosexual with a history of same-sex attraction or same-sex sexual behavior, and (b) were at least 18 years old. “Exclusively heterosexual” participants who denied any history of same-sex sexual behavior or attraction were excluded from analyses ($n = 18$). Since recruitment targeted individuals residing in the U.S., eight international participants were excluded from analyses.

The analytic sample ($N = 704$) included 238 male, 324 female, 63 transgender, and 79 other-identified (i.e., intersex [$n = 2$], “gender queer” [$n = 52$], unspecified [$n = 25$]) sexual minorities between ages 18 and 91 ($M = 29.76$, $SD = 13.64$). Additionally, 205 respondents identified as gay, 158 as lesbian, 170 as bisexual/pansexual, and 171 were represented as “other” (i.e., “heterosexual” [$n = 17$], queer [$n = 106$], questioning [$n = 9$], and unspecified [$n = 39$]). Ethnic minorities comprised 11.4% of the sample, which included African American ($n = 12$), Asian ($n = 11$), Hispanic ($n = 22$), Native American/Alaskan Native ($n = 7$), and “other” (i.e., “mixed”, “bi-racial”) ($n = 28$) respondents from each state except Alaska.

Procedure

Data were collected between March and December 2013; the Institutional Review Board at the University of Montana approved the study procedures. Given previous concerns about

biased sampling (e.g., bars; Haldeman, Pantalone, & Martell, 2007), recruitment efforts focused on LGBTQ community organizations, PFLAG (Parents, Friends and Family of Lesbians and Gays) groups, college campuses, and social networking websites (i.e., Facebook) in order to collect a more representative sexual minority-based sample. The online recruitment message asked for help with an “online survey designed to answer some important questions regarding the LGBTQ experience,” outlined inclusion criteria and incentives for participating (raffle to win one of 10 \$20 gift cards), and provided a link to the survey (programmed using Lime Survey).

Measures

Demographics—Participants responded to a set of standard demographic questions including age, sexual identity, gender identity, and ethnicity. Sexual orientation was assessed categorically by asking respondents to report their sexual identity, and continuously on a scale from 1 (*Exclusively heterosexual*) to 7 (*Exclusively homosexual*). Respondents also reported whether they had a history of same-sex sexual behavior or attraction.

Personality—The Big Five Inventory (BFI) is a 44-item FFM self-report questionnaire with item responses ranging from 1 (“Disagree strongly”) to 5 (“Agree Strongly”) (John & Srivastava, 1999). Trait scores for neuroticism (“Gets nervous easily”), extraversion (“Is outgoing, sociable”), agreeableness (“Has a forgiving nature”), conscientiousness (“Can be somewhat careless”), and openness to experience (“Has an active imagination”) were derived by combining survey items (eight to ten items each). Internal consistencies (Cronbach’s α) for neuroticism, extraversion, openness to experience, agreeableness, conscientiousness, and the full scale were .87, .90, .79, .78, .84, and .74, respectively.

Substance use—The 10-item Alcohol Use Disorders Identification Test (AUDIT) was used to measure alcohol use and use-related problems (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993). The AUDIT offers a 5-item response set (between 0 and 4); higher scores indicate greater use ($\alpha = .82$). The Drug Abuse Screening Test-10 (DAST-10; Skinner & Goldberg, 1986) is specific to the measurement any illegal drug use or illicit use of prescription medication and offers dichotomous “yes/no” (coded as one and zero, respectively) response options. Total scores range from 0 to 10, with increasing scores indicating greater use ($\alpha = .75$).

Sexual Minority Stress—*Discrimination* was measured using a sexual minority-specific version of the Schedule for Heterosexist Events (Selvidge, 2000) ($\alpha = .93$). Item responses ranged from 1 (“never”) to 5 (“very often”), with higher scores indicating greater frequency of discrimination. Our 10-item *victimization* measure (Herek & Berrill, 1990) ($\alpha = .85$) inquired about the number of times respondents experienced any of the items listed (e.g., In your lifetime have you... “been threatened with physical violence?”), perpetrated by others who knew or presumed them to be a sexual minority. Item responses ranged from 1 (“once”) to 5 (“more than 20 times”). *Internalized heterosexism* was measured using a 5-item Internalized Homophobia Scale (e.g., “If someone offered me the chance to be completely heterosexual, I would accept the chance”) (Herek, Gillis, & Cogan, 1997) ($\alpha = .76$). Response options ranged from 1 (“strongly disagree”) to 5 (“strongly agree”); higher scores

indicating increasingly negative self-views. *Concealment* was calculated by reverse scoring items from the 11-item Outness Inventory, which measures the extent to which respondents are out to their family, religion, and the world regarding their sexual orientation (Mohr & Fassinger, 2000) ($\alpha = .90$). Higher scores indicate greater concealment. *Expectations of rejection* (i.e., anticipated rejection on the basis of one's sexual identity) were measured on a 1 (“strongly disagree”) to 5 (“strongly agree”) scale using Herek & Glunt's (1997) 7-item Perceptions of Local Stigma questionnaire ($\alpha = .93$). Items on this measure assess the degree to which respondents feel that people from their geographic region would willingly trust, hire, or accept sexual minority individuals (e.g., as close friends).

Analytic Approach

Missing cases were omitted listwise. Variables were computed if participants completed at least 80% of any particular measure. Participants with zero lifetime drug and/or alcohol use were assigned the lowest possible scores on substance use measures. Dependent variable data were logarithmically transformed, base 10, to reduce skewness and satisfy linearity assumptions. All analyses were carried out using SPSS Version 21.0 (IBM Corp., 2013).

Analytic Strategy

After applying an *a priori* Bonferroni correction to account for the likely correlation between our dependent variables ($p = .025$), hierarchical regression models were constructed and used to predict DAST-10 and AUDIT scores separately. Block one of the model included age, gender (representing four gender groups with three dummy coded variables [female reference]: male, transgender, and “other”), and ethnicity (Caucasian = 1, ethnic minority = 0) to account for demographic variables related to substance use. In block two, discrimination, victimization, internalized heterosexism, expectations of rejection, concealment were entered to account for sexual minority stress. Block three included each FFM trait.

Results

Within range of previous population-based estimates (see Ritter, Matthew-Simmons, & Carragher, 2012), 92.3% reported lifetime use of alcohol, 60.2% reported lifetime use of illicit drugs, and 59.7% reported alcohol and drug use; 7.4% reported never trying either drugs or alcohol. Bivariate correlations between each trait and alcohol use indicate that neuroticism and extraversion are positively associated, while conscientiousness is inversely associated with alcohol use (see Table 1). Interestingly, openness was associated with drug but not alcohol use. Neuroticism was not a significant predictor of drug use at the $p < .05$ level. These associations illustrate the relevance of personality trait consideration when it comes to understanding substance use, and suggest that certain traits might be more characteristic of specific use patterns.

Alcohol Use

The overall model was statistically significant and accounted for 10.8% of the variance regarding alcohol use (see Table 2). The hypothesis that personality traits would predict alcohol use beyond sexual minority stress was supported, $R^2 = .031$, $F(5, 610) = 4.27$, p

= .001. Beyond significant effects for age, victimization, and internalized heterosexism, extraversion and conscientiousness remained significant in the hypothesized direction.

Drug Use

The model used to predict drug use was significant overall and accounted for 9.4% of the variance (see Table 3). Personality variables were again significant beyond sexual minority stress, $R^2 = .037$, $F(5, 597) = 4.92$, $p < .001$. Young age, male, transgender identification, and victimization each predicted drug use. Extraversion and conscientiousness remained significant in the hypothesized direction after accounting for measured covariates.

Discussion

Sexual minority health research demonstrates consistent links between minority stress and substance use behaviors (McCabe et al., 2009; Green & Feinstein, 2012; Marshal et al., 2008; McCabe et al., 2013). Meanwhile, the broader literature base is saturated with findings documenting associations between personality traits and substance use in the general population. The current investigation demonstrates that personality traits can contribute meaningful information to minority stress theory (Meyer, 2003), and the field sexual minority health more broadly. As hypothesized, personality factors predicted alcohol and drug use over and above minority stress factors. Extraversion and conscientiousness were each associated with substance use at the multivariate level; and neuroticism, extraversion, conscientiousness, and openness to experience were each associated with substance use at the bivariate level of analysis (albeit differentially, in the case of neuroticism and openness to experience), as hypothesized.

The fact that extraversion and conscientiousness were statistically significant after accounting for minority stress factors is noteworthy. These data suggest that extraversion represents a potential risk factor to the degree that it is positively associated with drug and alcohol use, which may seem counterintuitive in light of research linking higher extraversion scores to social support seeking (e.g., Shewchuk, Elliot, MacNair Semands, & Harkins, 1999). However, extraversion may confer risk via one's propensity to socialize more or seek social support from substance using others, or those with more tolerant attitudes surrounding substance use (e.g., members of the LGBTQQ community; Cochran, Grella, & Mays, 2012). The positive association between extraversion and substance use might also be attributable to the excitement/sensation seeking facet of extraversion, which has been reported on extensively (Ruiz et al., 2003; Hittner & Swickert, 2006). Further research is needed to test these possibilities.

As anticipated, a significant inverse relationship between conscientiousness and substance use was detected after accounting for minority stress factors. This was expected given this trait's strong and positive relation to health promoting behaviors (Bogg & Roberts, 2004) and adaptive, problem-focused coping when distressed (DeLongis & Holtzman, 2005; Shewchuk et al., 1999). Greater conscientiousness is also a protective factor to the degree that it predicts adherence to therapeutic and medical recommendations (e.g., Hill & Roberts, 2011), which likely generalizes to substance use treatment settings.

Implications

These results demonstrate that personality effects are important beyond minority risk factors, and are the first to generalize personality trait effects to an LGBTQQ sample. The current findings demonstrate that variance in substance use attributable to personality effects are relatively proportional to the variance explained by minority stress factors (see Tables 2 and 3). Rather than undermine the importance of minority stress factors, these results suggest that personality factor consideration might facilitate efforts to detect individuals at greater risk for substance use among this demographic, and inform the development of targeted interventions.

Limitations and Future Directions

Although this study offers several scientific contributions, methodological limitations exist. Reliance on online, self-reported data and convenience sampling limit the generalizability of our findings. Although online recruitment resulted in a broad and geographically diverse sample of sexual minorities, given our recruitment outlets, the sample might over-represent individuals with access to social and community support. It is difficult to know to that extent these results might have differed based on knowledge of these unmeasured protective factors.

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Table 1

Pearson's r Correlation Table

	AUDIT	DAST
<i>Neuroticism</i>	.085*	.070 [†]
<i>Extraversión</i>	.094*	.119**
<i>Agreeableness</i>	-.067	-.009
<i>Conscientiousness</i>	-.121**	-.140***
<i>Openness to Experience</i>	.003	.092*

[†]
 $p < .10$

*
 $p < .05$

**
 $p < .01$

 $p < .001$

Table 2

Hierarchical Regression Predicting Alcohol Use (AUDIT) (N = 626)

Predictor Variables	Block 1	Block 2	Block 3	β
	<i>b</i>	<i>b</i>	<i>b</i> [95% CI]	
<i>Demographics</i>				
Age	-.001 ^{***}	-.001 ^{***}	-.001 ^{***} [-.002, -.001]	-.165 ^{***}
Ethnicity	-.008	-.008	-.012 [-.036, .011]	-.040
Male	.013	.005	.011 [-.007, .029]	.053
Transgender	-.005	-.018	-.020 [-.049, .010]	-.054
Other gender	.009	.001	-.002 [-.030, .027]	-.004
<i>Minority Stress</i>				
Victimization		.028 ^{***}	.026 ^{**} [.011, .040]	.176 ^{**}
Discrimination		-.003	-.002 [-.016, .012]	-.016
Internalized Heterosexism		.012 [*]	.013 [*] [.003, .023]	.106 [*]
Expectation of rejection		.000	.001 [-.007, .008]	.006
Concealment		-.008 [*]	-.006 [†] [-.012, .001]	-.081 [†]
<i>FFM</i>				
Neuroticism			.007 [-.003, .018]	.064
Extraversion			.017 ^{***} [.008, .026]	.161 ^{***}
Agreeableness			-.002 [-.016, .011]	-.015
Conscientiousness			-.016 [*] [-.028, -.004]	-.110 [*]
Openness to Experience			-.007 [-.021, .007]	-.040
<i>Model Summary</i>				
<i>R</i> ²	.027 ^{**}	.050 ^{***}	.031 ^{**}	
<i>F</i>	3.411 ^{**}	6.652 ^{***}	4.272 ^{**}	

Note: "Female and "Caucasian" categories, each coded as 0, served as references.

[†] $p < .10$

^{*} $p < .05$

^{**} $p < .01$

^{***} $p < .001$

Table 3

Hierarchical Regression Predicting Drug Use (DAST) (N = 613)

Predictor Variables	Block 1	Block 2	Block 3	β
	<i>b</i>	<i>b</i>	<i>b</i> [95% CI]	
<i>Demographics</i>				
Age	.000 [†]	.000*	.000* [-.001, .000]	-.092*
Ethnicity	-.001	.000	-.002 [-.014, .009]	-.017
Male	-.009*	-.012**	.011** [-.019, .003]	.017**
Transgender	-.010	-.015	-.017* [-.031, .004]	-.104*
Other gender	-.002	-.006	-.009 [-.023, .004]	-.056
<i>Minority Stress</i>				
Victimization		.012**	.011** [.004, .018]	.158**
Discrimination		-.001	-.001[-.007, .006]	-.010
Internalized Heterosexism		.003	.003 [-.002, .008]	.055
Expectation of rejection		-.002	-.001 [-.005, .002]	-.032
Concealment		-.003*	-.003 [†] [-.006, .000]	-.089 [†]
<i>FFM</i>				
Neuroticism			.003 [.002, .008]	.051
Extraversion			.005* [.001, .009]	.102*
Agreeableness			.003[-.004, .009]	.034
Conscientiousness			-.010*** [-.016, -.005]	-.154***
Openness to Experience			.005 [-.002, .011]	.062
<i>Model Summary</i>				
R^2	.017 [†]	.040***	.037***	
F	2.11 [†]	5.067***	4.923***	

Note: "Female and "Caucasian" categories, each coded as 0, served as references.

[†] $p < .10$

* $p < .05$

** $p < .01$

*** $p < .001$