

Acculturative Stress and Risky Sexual Behavior: The Roles of Sexual Compulsivity and Negative Affect

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Abstract

Recent syndemic models of sexual health disparities affecting racial/ethnic minorities have highlighted the role of discrimination. Yet no previous work has examined how acculturative stress (distress at the transition from one's original culture toward a new culture) associates with sexual HIV-risk behavior (SHRB). Work among other minority populations suggests sexual compulsion (SC) may contribute to syndemic sexual health disparities as a means of coping with distress. With this in mind, the present study examined whether SC explained the relation between acculturative stress and SHRB. Separate analyses were conducted for males and females within a sample of 758 sexually initiated racial/ethnic minority college students. Among males and females, acculturative stress had an indirect effect on SHRB via SC. As the first study to examine SHRB in relation to acculturative stress, findings provide preliminary evidence that targeting SC among racial/ethnic minorities may help reduce sexual health disparities.

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New human immunodeficiency virus (HIV) and other sexually transmitted infections (STI) disproportionately impact racial and ethnic minority adults, particularly young adults (Center for Disease Control and Prevention [CDC], 2014; CDC, 2015). Increased risk for HIV and other STIs is attributed to high rates of unsafe sexual practices among racial/ethnic minority young adults (Dariotis, Sifakis, Pleck, Astone, & Sonenstein, 2011; Pflieger, Cook, Niccolai, & Connell, 2013). Research suggests that increased HIV and other STI risk among racial/ethnic minorities results from a confluence of health disparities (González-Guarda, Florom-Smith, & Thomas, 2011; Halkitis, Wolitski, & Millett, 2013; Parsons, Grov, & Golub, 2012; Singer, 1994). The influence of poverty and discrimination, alongside increased rates of substance use, sexual (and other) trauma, and mental health problems in general, combine to increase rates of sexual HIV-risk behavior (SHRB) and subsequent HIV and STI incidence rates (González-Guarda et al., 2011; Singer, 1994). Within this context, minority-related stress has emerged as one factor that may help explain the disparity in sexual health between racial/ethnic minority young adults compared with their White counterparts (Gibbons et al., 2012; Roberts et al., 2012; Rosenthal et al., 2014; Stevens-Watkins, Brown-Wright, & Tyler, 2011).

Racial and ethnic minority-related stress has been operationalized in a number of ways, most commonly perceived discrimination (sometimes labeled race-related stress) and acculturation. There is a growing body of empirical work on perceived discrimination and acculturation in terms of SHRB, although findings from it have not always been consistent. For example, some work has found that perceived discrimination, defined as the frequency of negative life events attributable to being a racial/ethnic minority (D. R. Williams, Yu, Jackson, & Anderson, 1997), is associated with an increased likelihood of SHRB among adolescents and young adults (Roberts et al., 2012), including riskier sexual partners (e.g., HIV-positive sexual partners, sexual partners who have concurrent sexual partners; Rosenthal et al., 2014), greater number of sexual partners (Stevens-Watkins et al., 2011), and unprotected sex (Ayala, Bingham, Kim, Wheeler, & Millett, 2012); these relations are mediated by more proximal variables, such as negative affect (Roberts et al., 2012), deviant affiliations (Roberts et al., 2012), lack of social

support (Ayala et al., 2012), and situational barriers to condom use (Ayala et al., 2012). Other work suggests greater acculturation (the process of change from moving between two cultural groups) may be related to a reduced likelihood of having multiple sexual partners and inconsistent condom use in certain samples (Snowden & Hines, 1998), but may be related to increased SHRB among other groups such as African American women (Hines, Snowden, & Graves, 1998) and Latinas (Smith, 2015). Still other work suggests there is no effect of acculturation on SHRB, or that the relation of acculturation to SHRB may be better explained by other factors (Killoren & Deutsch, 2014; So, Wong, & DeLeon, 2005; Trejos-Castillo & Vazsonyi, 2009).

Overall, there are mixed and indirect effects of discrimination and acculturation on SHRB. Due to such inconsistency, there may be utility in exploring the role of acculturative stress in relation to SHRB. Acculturative stress reflects distress in response to the transition from a person's culture of origin toward a different culture (Berry, 1998), including stress related to experienced discrimination (Anderson, 1991; Joiner & Walker, 2002). Past work suggests acculturative stress is related to other forms of risk behavior, such as alcohol/substance use (Oshri et al., 2014; Unger, 2014; Zamboanga, Schwartz, Jarvis, & Van Tyne, 2009) and problematic gambling (Jacoby et al., 2013). Cross-sectional data also suggest increases in acculturative stress correlate with increased levels of negative affect (Paukert, Pettit, Perez, & Walker, 2006), as well as depression and anxiety severity (Baker, Soto, Perez, & Lee, 2012; Revollo, Qureshi, Collazos, Valero, & Casas, 2011; Walker, Wingate, Obasi, & Joiner, 2008), and prospective work supports this influence of acculturative stress on negative affect (Sirin, Ryce, Gupta, & Rogers-Sirin, 2013). This body of work suggests acculturative stress may play a formative role in emotional experience and health behaviors. However, to the best of our knowledge, no investigation has empirically explored whether acculturative stress is related to SHRB. Neither is there any scientific insight into how acculturative stress may be related to SHRB.

Little work has yet examined how acculturative stress relates to other forms of health risk behavior, which may provide insight into potential mechanisms linking acculturative stress with SHRB. So far, only one preliminary study suggests that greater identity confusion may explain the relation of acculturative stress with intoxication frequency (Oshri et al., 2014). Similar studies examining acculturative stress itself as a mediator of riskier health behavior are more prevalent. There again, findings are mixed. One study concludes acculturative stress does not mediate the relation of acculturation with drinking outcomes (Mills & Caetano, 2012). A different study, however, suggests that acculturative stress may explain the influence of greater American

orientation on less alcohol use, as well as that of greater Hispanic orientation on greater alcohol use (Zamboanga et al., 2009). These few existent studies suggest much remains to be learned about how acculturative stress relates to health risk behavior. In addition to the mixed findings reported, the current literature has focused on more distal risk factors, such as identity development. Given the relation of acculturative stress with affect experiences, as noted above, affective and coping-related constructs may be more proximal risk factors linking acculturative stress with health risk behavior.

Negative affect is one possible explanatory factor for the relation between acculturative stress and SHRB. Put simply, negative affect describes the tendency to experience distress (Watson, Clark, & Tellegen, 1988) and is predicted by perceived stress (Watson, 1988). Associative and prospective evidence points to negative affect as a risk factor for SHRB (Roberts et al., 2012), especially sexual intercourse with casual sexual partners (Blood & Shrier, 2013; Lewis, Granato, Blayne, Lostutter, & Kilmer, 2012). However, other research suggests that negative affect may increase the likelihood of SHRB for only a subset of individuals (Bancroft et al., 2003; Houck et al., 2014).

Another possible mechanism linking acculturative stress with SHRB is sexual compulsivity (SC), defined as the repeated inability to control one's own sexual preoccupations and behavior despite the resulting consequences and distress (Miner, Coleman, Center, Ross, & Rosser, 2007; Reid, Garos, & Carpenter, 2011). Past work suggests SC is associated with negative affect and related constructs (Bancroft & Vukadinovic, 2004; Jerome, Woods, Moskowitz, & Carrico, 2015; Klein, Rettenberger, & Briken, 2014; Miner & Coleman, 2013; Reid, Stein, & Carpenter, 2011; Rhodes et al., 2013), including sexual minority-related stress (Pachankis et al., 2014). Such strong relations with negative affect are not surprising given that a hallmark feature of SC is using sexual behavior to cope with distress (Reid, Garos, & Carpenter, 2011). Moreover, SC has been linked to increased rates of SHRB, including more sexual partners (S. C. Kalichman & Rompa, 2001; Klein et al., 2014; Miner et al., 2007) and greater likelihood of unprotected sex (Miner & Coleman, 2013; Miner et al., 2007). Although studies to date have not examined SC as a potential explanatory factor in the relation between negative affect-related constructs and SHRB, it is possible that SC may serve to regulate acculturative stress (i.e., SC may function to escape/avoid or otherwise modify acculturative stress, placing a person at higher risk for SHRB; see Figure 1).

Therefore, the present study aimed to test whether SC explained the effect of acculturative stress on SHRB, over and above the explanatory effect of negative affect, among racial/ethnic minority young adults in a multiple mediator model (see Figure 1). Multiple mediator models afford comparison

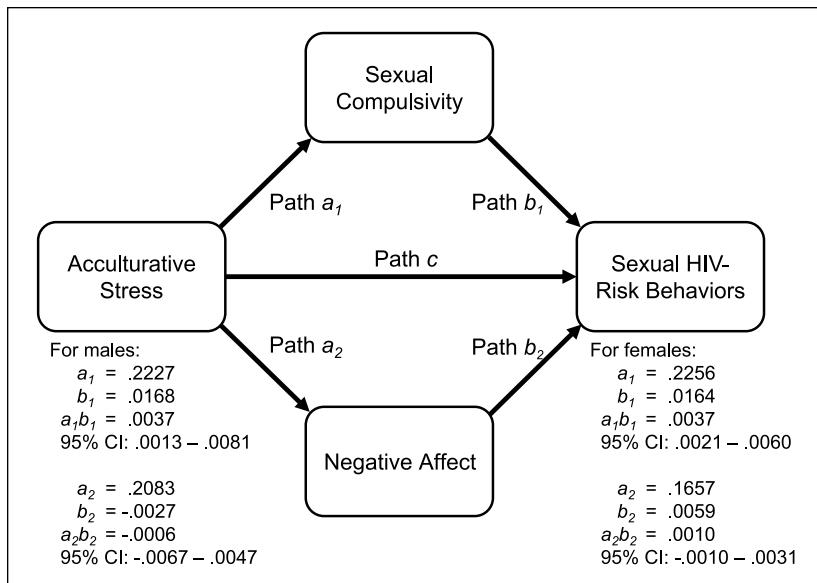


Figure 1. Proposed model examining whether sexual compulsivity and negative affect explained the relation of acculturative stress with an index of sexual HIV-risk behavior in the past 6 months.

Note. CI = confidence interval.

of competing theories of explanatory factors. Much like the inclusion of covariate controls for the effect of theoretically relevant factors on an outcome, testing the indirect effect via negative affect alongside that via SC enabled the indirect effect of negative affect to be statistically controlled (Hayes, 2013). A significant indirect effect via SC would then be observed over and above the indirect effect via negative affect. As gender may affect the expression of acculturative stress (Castillo et al., 2015), as well as SHRB (Brodbeck, Vilén, Bachmann, Znoj, & Alsaker, 2010; S. C. Kalichman & Rompa, 2001; Morrill, Kasten, Urato, & Larson, 2001), separate analyses were completed for males/females. Theoretically relevant covariates known to influence SHRB were also included: age (Pfleger et al., 2013), sexual minority status (Glick et al., 2012), relationship status (Cooper, Barber, Zhaoyang, & Talley, 2011), sexual trauma history (Littleton, Grills, & Drum, 2014), financial strain (Huebner et al., 2014), binge drinking (Fielder & Carey, 2010), and trait positive affect (Houck et al., 2014). It was hypothesized that, for both males and females and while controlling for the indirect effect via negative affect, acculturative stress would exert an indirect effect

on SHRB via SC. Support for this hypothesis would suggest that targeting reductions in both acculturative stress and SC may reduce SHRB and sexual health disparity among racial and ethnic minorities.

Method

Participants

A sample of 1,691 college students (78.4% female; $M_{age} = 22.21$; $SD = 4.67$; age range = 18–56 years) was recruited from a large, southwestern university between April 2014 and April 2015. Participants received extra credit toward their psychology course as compensation and were recruited via flyers and posting on the extra credit website. Exclusion criteria included being younger than age 18 and non-proficiency in English (to ensure comprehension of study questions). There were 315 participants excluded from analyses for incomplete study measures ($n = 167$) and inconsistent responding ($n = 148$). Finally, White participants were excluded ($n = 396$) to more accurately measure acculturative stress, and participants who reported having 0 lifetime sexual partners (i.e., sexually uninitiated) were excluded ($n = 222$) to focus the study on sexually initiated college students. The final sample consisted of 758 participants (78.8% female; $M_{age} = 22.24$; $SD = 4.27$; age range = 18–51 years). Participants in the final sample identified as follows: 91.8% heterosexual, 4.1% gay/lesbian, 3.6% bisexual, and 0.5% other/unsure. The final sample was 16.2% African American (non-Hispanic), 51.5% Hispanic, 24.9% Asian, and 7.4% Other races/ethnicities.

Materials

Demographics. Sex, age, race/ethnicity, sexual minority status (coded: *heterosexual* = 0; *gay/lesbian/bisexual/other* = 1), and relationship status (coded: *single/non-exclusive dating* = 0; *exclusive relationship* = 1) were assessed to serve as covariates.

Risky sexual behavior. A modified version of the *Sexual Behavior Questionnaire* (SBQ; Durant & Carey, 2000) assessed SHRBs over the previous 6 months. The SBQ contained 14 items assessing the number of male and the number of female partners with whom they had penetrative sex; and the frequency of three types of sexual intercourse (i.e., vaginal, anal, and oral) in the previous 6 months. Frequency for each type of intercourse was assessed separately for male and female partners; and for events when condoms were and were not used. The SBQ has shown excellent test-retest reliability ($\rho = .84$ to

.96, $M_p = .92$; Durant & Carey, 2000). In the present study, an index of SHRB assessed numbers of sexual partners and the proportion of sexual events in which a condom was not used (i.e., inconsistent condom use, as the frequency of events in which a condom was not used divided by the total frequency of sexual events; DiClemente, Brown, Sales, & Rose, 2013; S. Kalichman et al., 2002). Report of two or more sexual partners was dummy coded as 1, while one or zero partners was coded as 0 (separately for male and female partners). Then, separately for each type of sexual intercourse, inconsistent condom use was coded as 0 for reporting *always using condoms* (i.e., condom non-use proportion = 0) or for reporting *no engagement* in each type of sexual intercourse (e.g., vaginal, anal, or oral sex), and 1 for reporting not using a condom *one or more times* (i.e., condom non-use proportion $\neq 0$). The SHRB index was composed as the sum of dummy coded variables for number of male partners (1 or 0), number of female partners (1 or 0), and inconsistent condom use in vaginal (1 or 0), anal (1 or 0), and oral (1 or 0) sexual intercourse events, yielding an index range of 0 to 5. The SHRB index served as the dependent variable in the present study.

Acculturative stress. The *SAFE Acculturative Stress Scale* (SAFE; Mena, Padilla, & Maldonado, 1987) is a 24-item measure used to assess acculturative stress. The SAFE is composed of four subscales examining acculturative stress related to Environmental, Attitudinal, Social, and Familial contexts (sample item: "I have more barriers to overcome than most people"). Response options for each item ranged from 1 = *not stressful* to 5 = *extremely stressful*. Internal reliability of the SAFE in previous studies across different ethnic groups has been good ($\alpha = .87$ to $.89$; Fuertes & Westbrook, 1996; Joiner & Walker, 2002; Mena et al., 1987). In the present study, the total scale score was used as the independent variable. Internal reliability of the total scale was excellent ($\alpha = .94$).

Sexual compulsivity. The *Hypersexual Behavior Inventory-19* (HBI; Reid, Garos, & Carpenter, 2011) is a 19-item self-report measure used to assess SC. The HBI is based upon the diagnostic criteria that had been proposed for the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; *DSM-V*; American Psychiatric Association, 2013) for Hypersexual Disorder (Reid, Garos, & Carpenter, 2011). The HBI produces three subscales that reflect the use of sexual behavior to cope with negative affect (Coping subscale), the consequences experienced from compulsive sexual behavior (Consequences subscale), and the inability to control sexual behavior (Control subscale). Response options span a Likert-type scale from 1 = *never* to 5 = *very often*. In previous research, the HBI has shown excellent internal reliability ($\alpha = .96$)

and test-retest reliability ($r = .91$; Carpenter, Reid, Garos, & Najavits, 2013; Reid, Garos, & Carpenter, 2011), and strong convergent validity (Reid, Garos, & Carpenter, 2011). In the present sample, the internal reliability of the total scale was excellent ($\alpha = .94$). The total scale score of the HBI served as the proposed statistical mediator.

Trait affect. The *Positive and Negative Affect Schedule* (PANAS; Watson et al., 1988) is a self-report measure that assesses the degree to which participants typically experience 20 different positive (e.g., excited, proud) or negative affective states (e.g., afraid, distressed). Responses are based on a Likert-type scale ranging from 1 = *very slightly or not at all* to 5 = *extremely*. The PANAS produces two subscales, positive affect (PA) and negative affect (NA), both of which have shown good internal reliability (PA: $\alpha = .86$; NA: $\alpha = .87$) and validity (Watson et al., 1988). In the present study, the internal reliability of the PA subscale ($\alpha = .92$) was excellent, and that of the NA subscale ($\alpha = .89$) was good. Both subscales served as covariates in the present study.

Sexual trauma history. The *Posttraumatic Distress Scale* (PDS; Foa, Cashman, Jaycox, & Perry, 1997) was used to code for having experienced a sexual trauma. The PDS has shown good internal consistency ($\alpha = .73$ to $.94$) and convergent validity (Foa et al., 1997). For the purpose of this study, endorsement of any item regarding sexual assault by family member, sexual assault by stranger, or child sexual abuse (items 5, 6, and 8) was coded as having a sexual trauma history. Sexual trauma history served as a covariate.

Financial stress. The *Financial Strain Questionnaire* (FSQ; Pearlin, Menaghan, Lieberman, & Mullan, 1981) is an eight-item self-report measure used to assess stress related to financial difficulties. The FSQ operationalizes economic stress via the level of difficulty associated with obtaining life necessities (e.g., food, clothing, housing) and conveniences (e.g., furniture, automobiles, recreation) at the present time (sample item: “Are you able to afford a home suitable for [yourself/your family]?”). Response options are as follows: 1 = *yes, I can afford*, 2 = *I can somewhat afford*, and 3 = *No, I cannot afford*. In previous research, the FSQ has shown excellent internal reliability ($\alpha = .91$; E. D. Williams, Steptoe, Chambers, & Kooner, 2009). The internal reliability of the FSQ was excellent ($\alpha = .90$).

Binge drinking. Alcohol use during the past month was measured using the *Drinking Patterns Questionnaire* (DPQ; Collins, Parks, & Marlatt, 1985). The DPQ has shown good reliability and convergent validity with other

measures of drinking behavior (Collins et al., 1985). Binge drinking was assessed as the frequency of having *five or more* (for males) or *four or more* (for females) drinks on one occasion. The present study included binge drinking frequency as a covariate to account for the influence of alcohol use on risky sexual behavior.

Procedures

This study was conducted in compliance with the Institutional Review Board at the University of Houston. Informed consent was completed by each participant over the Internet before proceeding to the online self-report survey. Identifying information was not retained for each participant; there was no link between each participant's identity and study responses. Data for the present study were collected between April 2014 and April 2015.

Data Analytic Strategy

The difference between included (sexually initiated) versus excluded (sexually uninitiated) participants was examined via Pearson chi-square (dichotomous variables) and *t* tests (continuous variables).

To examine whether sexual compulsivity explained the relation between acculturative stress and SHRB, the PROCESS Macro (Hayes, 2013) was used in SPSS 22.0. The PROCESS Macro is a publicly available syntax package designed for mediation analyses. The PROCESS Macro combines a regression framework with bootstrapping to examine the indirect effect of an independent variable on a dependent variable through a proposed mediator. Indirect effects are calculated as the product of the beta coefficients from two linear models ($a \times b$): the first predicting the mediator from the proposed independent variable (path a), and the second predicting the proposed outcome variable from the proposed mediator (path b ; see Figure 1). Bootstrapping is a resampling method that generates, with replacement, thousands of smaller "samples" from a sample of observed scores. Within the PROCESS Macro, the sampling distribution of the indirect effect is estimated from the indirect effect calculated within each bootstrapped sample (Hayes, 2013). The present study estimated the indirect effect from 10,000 bootstrapped samples. Bias-corrected (BC) confidence intervals were calculated, and an indirect effect was determined to be significant if the confidence interval did not include 0. To measure the size of the indirect effect, both completely standardized indirect effects and the κ^2 statistic (Preacher & Kelley, 2011) were calculated. The PROCESS Macro calculated from a model in which all covariates (see below) were removed (Hayes, 2013).

Benchmarks for the κ^2 statistic are suggested as small (.01), medium (.09), and large (.25), following Cohen's benchmarks for r^2_{xy} (Cohen, 1977; Preacher & Kelley, 2011).

Separate models were estimated for males and females. To examine whether the effect of acculturative stress on SHRB is not better explained by negative affect compared with SC, a parallel multiple mediator model was examined with indirect effects via both SC and negative affect. In multiple mediator models, the indirect effect for each statistical mediator is tested while controlling for all other mediators, which affords the testing of competing theoretical mechanisms (Hayes, 2013). Other theoretically relevant covariates included in the proposed model were age (Pflieger et al., 2013), sexual minority status (Glick et al., 2012), relationship status (Cooper et al., 2011), sexual trauma history (Littleton et al., 2014), financial strain (Huebner et al., 2014), binge drinking (Fielder & Carey, 2010), and trait positive affect (Houck et al., 2014). In addition, as the present study utilized cross-sectional data, two comparison models were tested to verify the order of influence among the variables (Preacher & Hayes, 2008; Shrout & Bolger, 2002). In the first comparison model, the predictor and theoretical mediator (i.e., SC) variables were switched; in the second, the mediator (i.e., SC) and outcome variables were switched. To be consistent with the theoretical model, both multiple mediator comparison models tested the indirect effects of the predictor (model 1) and outcome (model 2) variables while controlling for the indirect effect via negative affect.

Results

The difference between excluded and included participants, based on lifetime sexual experience (uninitiated versus initiated), was examined. Significant differences were observed for all study variables except gender, sexual minority status, negative affect, and acculturative stress (see Table 1). Notably, there were no differences between included and excluded participants in levels of acculturative stress, $t(1, 978) = 1.461, p = .144$.

All descriptive statistics and bivariate correlations are presented in Table 2. Acculturative stress score averages were 51.76 ($SD = 19.34$) for males and 52.22 ($SD = 18.47$) for females. Average scores on the SHRB index were 1.71 (range = 0 to 4) for males and 1.59 (range = 0 to 4) for females. For SC, average scores were 38.81 (range = 19 to 94) for males and 30.50 (range = 19 to 95) for females.

For the proposed model, there was a significant positive indirect effect via sexual compulsivity for both males (unstandardized point estimate = .0037, $SE = .0016$, BC 95% CI = [.0013, .0081]; direct effect of acculturative stress

Table I. Comparison of Included Versus Excluded Participants, Based on Whether Participants Reported Being Sexually Initiated.

Dichotomous variables	Pearson χ^2	<i>p</i>	Continuous variables	<i>t</i> (1, 978)	<i>p</i>
Gender	0.304	.581	Age	-7.673	<.001
Race: Asian	83.483	<.001	Financial Strain	5.492	<.001
Race: African American	3.951	.047	Binge Drinking	-4.892	<.001
Ethnicity: Hispanic	50.517	<.001	Positive Affect	-3.232	.001
Sexual Minority	1.312	.252	Negative Affect	0.616	.538
Relationship Status	151.559	<.001	Acculturative Stress	1.461	.144
Sexual Trauma History	34.556	<.001	Sexual HIV-Risk Behavior	-21.327	<.001
			Sexual Compulsivity	-6.777	<.001

Note. Excluded (sexually uninitiated) participants were coded 0 and included (sexually initiated) participants were coded 1. Follow-up analyses for dichotomous variables showed significantly higher proportions of Asian and single/casually dating participants were excluded, while significantly higher proportions of African American, Hispanic, and sexually traumatized participants were included (analyses not shown).

controlling for sexual compusivity = -.0065, $SE = .0053$, $p = .221$) and females (unstandardized point estimate = .0037, $SE = .0010$, BC 95% CI = [.0021, .0060]; direct effect of acculturative stress controlling for sexual compusivity = -.0050, $SE = .0025$, $p = .048$). However, the indirect effect via NA was not significant for males (unstandardized point estimate = -.0006, $SE = .0029$, BC 95% CI = [-.0067, .0047]) or females (unstandardized point estimate = .0010, $SE = .0010$, BC 95% CI = [-.0010, .0031]). The size of the indirect effect via sexual compusivity was small for males (completely standardized point estimate = .0663, $SE = .0287$, BC 95% CI = [.0226, .1421]; $\kappa^2 = .0699$, $SE = .0276$, BC 95% CI = [.0255, .1357]) and for females (completely standardized point estimate = .0657, $SE = .0179$, BC 95% CI = [.0362, .1071]; $\kappa^2 = .0689$, $SE = .0176$, BC 95% CI = [.0380, .1074]). Table 3 presents the model coefficients for all variables in the proposed model.

The comparison models for males (Comparison Model 1: unstandardized point estimate = -.0022, $SE = .0019$, BC 95% CI = [-.0067, .0012]; comparison model 2: unstandardized point estimate = -.0101, $SE = .0152$, BC 95% CI = [-.0504, .0139]) did not yield significant indirect effects, which supported the directionality proposed within the theoretical model. However, for

Table 2. Zero-Order Correlations Among Study Variables.

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Age (years) ^a	—	-.053	-.228*	-.185†	.134	.268*	.006	-.105	-.155†	.240*	-.024
2. Sexual Minority Status ^a	-.042	—	.220*	.048	.187†	-.048	-.016	.120	.088	-.021	.109
3. Relationship Status ^a	-.141*	-.026	—	.094	-.055	-.144	-.051	.093	.067	-.211*	.056
4. Financial Strain ^a	-.261**	.027	.053	—	-.097	-.028	-.079	.169†	.224*	-.173†	.035
5. Sexual Trauma History ^a	.082†	.012	.015	—	-.005	—	.180†	.126	-.066	.119	.091
6. Binge Drinking ^a	-.009	-.011	.047	.007	—	-.063	—	-.033	.012	.026	.100
7. Positive Affect ^a	.045	.011	.065	-.132*	.033	-.048	—	-.077	.001	-.147	-.152
8. Negative Affect ^a	-.114*	-.007	.108*	.117*	.017	-.036	-.082†	—	.522***	-.043	.338***
9. Acculturative Stress ^b	-.098†	.009	.100*	.097†	.045	-.059	-.111*	.422***	—	-.110	.275***
10. Sexual HIV-Risk Behavior ^c	.058	.050	-.197**	-.044	.159***	.093*	.012	.047	-.033	—	.200†
11. Sexual Compulsivity ^d	-.053	.036	.115*	.066	.096†	.026	-.143***	.358***	.330***	.182***	—
Males (n = 161)											
M (n)	22.26	23	90	15.74	28	1.60	33.61	20.40	51.76	1.71	36.28
SD (%)	4.37	14.30	55.90	4.87	17.40	2.86	8.83	7.72	19.35	1.12	15.33
Females (n = 597)											
M (n)	22.24	39	227	16.41	171	1.19	32.95	21.19	52.22	1.59	30.50
SD (%)	4.25	6.50	38.00	4.54	28.60	3.20	8.46	7.64	18.47	1.06	13.71

Note. Data for males are presented above, while data for females are presented below. Age = age in years; Sexual Minority Status, coded as heterosexual = 0, gay/lesbian/bisexual/other = 1, with descriptive statistics for number and percentage gay/lesbian/bisexual/other; Relationship Status = romantic relationship status, coded as single/non-exclusive dating = 0 and exclusive relationship = 1, with descriptive statistics for number and percentage single/non-exclusive dating; Financial Strain, total scale score of the Financial Strain Questionnaire; Sexual Trauma History = endorsement of sexual assault or child sexual abuse items on the Posttraumatic Distress Scale; Binge Drinking = frequency of 5+ (males) or + (females) drinks at a time in the past month, as reported on the Drinking Patterns Questionnaire; Positive Affect = trait positive affect, the total score for the Positive and Negative Affect Scale-Positive Affect subscale; Negative Affect = trait negative affect, reported as the total score for the Positive and Negative Affect Scale-Negative Affect subscale; Acculturative Stress total scale score; Sexual HIV-Risk Behavior = index of Sexual HIV-Risk Behavior Inventory-19 total scale score.

^aCovariates.

^bPredictor.

^cOutcome variables.

^dMediator.

*p < .05. **p < .01. ***p < .001.

Table 3. Model Fit Statistics.

	Consequent											
	Mediator I: Sexual compulsion					Mediator 2: Negative affect						
	Path	Coefficient	SE	p	Path	Coefficient	SE	p	Path	Coefficient	SE	p
Males-only antecedent												
Acculturative Stress	a_1	0.223	0.064	<.001	a_2	0.208	0.028	<.001	c'	-0.007	0.005	.221
Sexual Compulsivity	—	—	—	—	—	—	—	—	b_1	0.017	0.006	.005
Negative Affect	—	—	—	—	—	—	—	—	b_2	-0.003	0.013	.838
Age	0.091	0.293	.757	—	0.007	0.130	.960	—	—	0.039	0.021	.056
Sexual Minority	3.482	3.517	.324	—	2.047	1.564	.192	0.010	0.245	0.969	—	—
Relationship Status	0.579	2.496	.817	—	0.462	1.110	.678	-0.381	0.176	0.322	—	—
Financial Strain	-0.131	0.253	.606	—	0.045	0.113	.690	-0.026	0.018	0.150	—	—
Sexual Trauma	0.040	3.299	.990	—	-2.863	1.467	.053	0.201	0.235	.394	—	—
Binge Drinking	-0.092	0.436	.928	—	0.084	0.194	.667	0.007	0.031	.815	—	—
Positive Affect	-0.267	0.135	.050	—	-0.047	0.060	.436	-0.018	0.010	.067	—	—
Constant	33.079	10.182	.001	—	10.147	4.528	.027	1.780	0.745	.018	—	—
		$R^2 = .108$				$R^2 = .305$					$R^2 = .180$	
		$F(8, 152) = 2.310, p = .023$				$F(8, 152) = 8.321, p < .001$					$F(10, 150) = 3.296, p < .001$	
Females-only antecedent												
Acculturative Stress	a_1	0.226	0.029	<.001	a_2	0.166	0.016	<.001	c'	-0.005	0.003	.048
Sexual Compulsivity	—	—	—	—	—	—	—	—	b_1	0.016	0.003	<.001
Negative Affect	—	—	—	—	—	—	—	—	b_2	0.006	0.006	.339

(continued)

Table 3 (continued)

	Consequent										
	Mediator I: Sexual compulsion					Criterion: Sexual HIV-risk behavior					
	Path	Coefficient	SE	p	Path	Coefficient	SE	p	Path	Coefficient	SE
Age	-0.026	0.130	.842		-0.092	0.070	.192		0.004	0.010	.735
Sexual Minority	1.957	2.127	.358		-0.402	1.148	.727		0.165	0.167	.322
Relationship Status	2.390	1.104	.031		0.881	0.596	.140		-0.485	0.087	<.001
Financial Strain	0.041	0.121	.734		0.098	0.065	.133		-0.008	0.010	.392
Sexual Trauma	2.647	1.169	.024		0.043	0.631	.946		0.350	0.091	<.001
Binge Drinking	0.173	.165	.296		-0.042	0.089	.637		0.035	0.013	<.001
Positive Affect	-0.184	0.063	.004		-0.029	0.034	.393		0.006	0.005	.253
Constant	22.699	4.898	<.001		13.655	2.644	<.001		1.128	0.396	.005
									$R^2 = .191$		
										$F(8, 588) = 17.375, p < .001$	
											$F(10, 586) = 8.398, p < .001$

Note. Age = age in years; Sexual Minority Status, coded as heterosexual = 0, gay/lesbian/bisexual/other = 1, with descriptive statistics for number and percentage gay/lesbian/bisexual/other; Relationship Status = romantic relationship status, coded as single/non-exclusive dating = 0, exclusive relationship = 1, with descriptive statistics for number and percentage single/non-exclusive dating; Financial Strain, total scale score of the Financial Strain Questionnaire; Sexual Trauma History = endorsement of sexual assault or child sexual abuse items on the Posttraumatic Distress Scale; Binge Drinking = frequency of 5+ (males) or 4+ (females) drinks at a time in the past month, as reported on the Drinking Patterns Questionnaire; Positive Affect = trait positive affect, the total score for the Positive and Negative Affect Scale—Positive Affect subscale; Negative Affect = trait negative affect, reported as the total score for the Positive and Negative Affect Scale—Negative Affect subscale; Acculturative Stress = SAFE Acculturative Stress total scale score; Sexual HIV-Risk Behavior = index of Sexual HIV-Risk Behavior the previous 6 months as reported on the Sexual Behaviors Questionnaire; Sexual Compulsivity = Hypersexual Behavior Inventory-19 total scale score.

females, Comparison Model 1 (unstandardized point estimate = $-.0021$, $SE = .0011$, BC 95% CI = $[-.0044, -.0001]$) demonstrated a significant indirect effect (via acculturative stress), while Comparison Model 2 did not (unstandardized point estimate = $-.0008$, $SE = .0058$, BC 95% CI = $[-.0128, .0103]$). This suggests that, for females, the hypothesized direction of effects was not supported, as acculturative stress and SC demonstrated reciprocal effects upon one another.

Discussion

The purpose of the present study was to test whether SC explained the relation between acculturative stress and SHRB among racial/ethnic minority young adults. The results partially supported what was predicted. Specifically, for males and females, acculturative stress exerted an indirect effect on SHRB via SC. As the pathway through SC was tested alongside that of trait negative affect in a parallel multiple mediator model, the significant indirect effect on SHRB was not better explained by the relations of acculturative stress with trait negative affect (Hayes, 2013). Importantly, support for the indirect effect of acculturative stress on SHRB via SC was observed over and above other factors known to influence SHRB, including age, sexual minority status, relationship status, sexual trauma history, financial strain, binge drinking, and trait positive and trait negative affect. The indirect effect of acculturative stress accounted for additional variance amid the effects of study covariates.

Two comparison models were tested to test the hypothesized direction of effects. For males, neither of the comparison models yielded a significant indirect effect, which further supported the hypothesis that, under the stress of acculturation, minority males may be more prone to develop sexually compulsive behavior leading to SHRB. However, for females, the first comparison model yielded a significant indirect effect; that is, acculturative stress exerted an indirect effect on SHRB via SC (proposed model) and SC exerted an indirect effect on SHRB via acculturative stress (comparison model 1). This suggests that, for minority females, acculturative stress may increase the likelihood of SC, and greater levels of SC may exacerbate acculturative stress. These reciprocal effects of acculturative stress and SC on one another may function to maintain SHRB in response to stress.

Examining the link between acculturative stress and SHRB is the key to identifying malleable targets for intervention among racial and ethnic minorities. As recent research suggests SC is a key risk factor for SHRB and sexual health disparity among sexual minorities (Parsons et al., 2012), the present findings extend the relevance of SC to similar health disparities among racial/ethnic minorities. The finding that SC may “link” acculturative stress with

SHRB is generally in line with past research that suggests sexual behavior is often used to cope with minority-related stress (Stevens-Watkins et al., 2011). Although work examining the mechanisms that link negative affect-related constructs with SC is still preliminary, findings suggest sexual compulsivity may result from attempts to avoid (Levin, Lillis, & Hayes, 2012; Wetterneck, Burgess, Short, Smith, & Cervantes, 2012) or regulate (Pachankis et al., 2014; Reid, Bramen, Anderson, & Cohen, 2014) distressing thoughts and emotions. The present results also support work linking discrimination and minority-related stress to SHRB as an important element of the syndemic contributing to sexual health disparity (González-Guarda et al., 2011; Halkitis et al., 2013; Pachankis et al., 2014; Singer, 1994). It may be that acculturative stress precipitates and maintains both SC and SHRB. SC and SHRB may initially serve to avoid/regulate distress resulting from minority-related discrimination; however, the conflict of SC/SHRB with the individual's cultural values may then create further distress (Smith, 2015) that elicits attempts to avoid/regulate, paradoxically, via SC/SHRB. Among racial/ethnic minorities, targeting acculturative stress may be an effective strategy to reduce SHRB.

The present study had several limitations. First, the study was cross-sectional and could not determine causal relationships. Future research should examine the predictive validity of acculturative stress on SHRB via CS in a prospective research design. Second, study data were based solely on self-report questionnaires, leaving the potential for measurement effects within study results. A variety of measurement methods could be used in future work, including perhaps most notably clinical interviews, time sampling tactics, and biologic sampling of sexually transmitted disease. Third, exclusion of participants who were not proficient in English may have prevented individuals experiencing high acculturative stress (due to difficulties with communicating with the majority culture) from taking part in the study. Therefore, study findings may underrepresent the relation between acculturative stress and SHRB. Future work should include questionnaires in multiple languages to facilitate wider participation and increase the generalizability of findings. Fourth, the number of sexual minorities within the sample was small, precluding meaningful comparisons by sexual minority status. Over-sampling gay, lesbian, bisexual, and transgendered persons would afford testing moderation analyses to determine how well the proposed model fits across sexual identities. Last, the study's college sample may not be representative of the experience of all young adults. Sampling across a variety of educational backgrounds would afford better generalizability for future work examining the proposed model.

In summary, this study provides the first empirical data that there is a relation of acculturative stress with SHRB and identifies SC as an explanatory factor in this association among racial/ethnic minority young adults. Study

results suggest the importance of accounting for SC when examining the relation of minority-related stress (e.g., discrimination) with SHRB. Clinically, interventions to reduce SHRB and sexual health disparities among racial and ethnic minorities may benefit by targeting SC and suggesting alternative ways to cope with minority-related stress. Based upon these data, future longitudinal research is needed to determine the causal relations among acculturative stress, SC, and SHRB among racial/ethnic minority young adults.

Authors' Note

All research materials related to the present study (e.g., study data) may be obtained from the corresponding author by request.

Declaration of Conflicting Interests

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Author Biographies

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Carla Sharp is the director of the Developmental Psychopathology Laboratory and an associate professor in the Department of Psychology at the University of Houston. Her published work reflects her interests in social-cognitive, affective, and reward processing as it relates to child and adolescent disorders and problems of behavioral health, as well as her interest in psychometrics.

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