

**Links between Body Image and Internalizing Behaviors Among College-Age Youth:  
Similarities or Differences by Sex, Level of Acculturation, and Racial/ethnic groups  
and  
Who's "Doing" What?: An Investigation of Regional Trends in Sexual Activity and Risky  
Sexual Behaviors Among College-Age Youth**

by

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## Abstract

The current studies were conducted based on data from the Multi-Site University Study of Identity and Culture (MUSIC) (Schwartz et al., 2010), a collaborative effort that began in 2006 and now has collected data on three cohorts of college-attending young adults. Data were collected from students at thirty colleges and universities around the United States so as to provide a more diverse sample than would have been available at any one site. Sites were selected so as to provide diversity in terms of geographic location, setting (urban, suburban, or college town), and type of institution.

The first study involved individual's ratings of their current and ideal bodies and the extent to which these ratings impact individual's internalizing behaviors (depression, anxiety, self-esteem) by sex, level of acculturation, and across racial ethnic groups. Findings indicate mean level differences of ideal bodies (both personal and cultural) across sexes, racial/ethnic groups and levels of acculturation. Furthermore, path models indicated significant associations where college students' deviations from ideal bodies predicted depression (up to 7% of the variance), anxiety (up to 4%), self-esteem (about 1%), and body image (up to 12%). However, multi-group tests provided evidence of metric invariance in these associations by sex, level of acculturation, and across racial/ethnic groups. This finding supports the idea that the relationships between ideal body discrepancies and internalizing behaviors are largely invariant across these groups, independent of personal or cultural figure ideals.

The second study examined male and female students' sexual lives across regions in the US in terms of their sexual activity, risky sexual behaviors, and engagement in oral or vaginal intercourse after drinking alcohol in four different situations common across college campuses. Empirical samples of college students are generally limited to one or a few locations; thus, previous empirical work has been unable address questions regarding regionally specific sexual behaviors or whether there exist similarities or differences. Hypotheses regarding regional differences were developed based on previous research that found differences in sexuality across the US (Santelli et al., 2006; Center for Disease Control, 2006; Guttmacher Institute, 2011; Ellingson et al., 2004) and using the Sexual Health Report Card (Trojan® Sexual Health Report Card, 2008). Findings indicated mean-level regional differences in typical sexual behaviors (engaging in oral, vaginal or anal intercourse), risky sexual behaviors (casual sex, sex with more than 4 partners, sex under the influence, and sex without a condom), and both oral sex as well as sexual intercourse after drinking alcohol among college students. In addition, findings from logistic regression analyses revealed that college students' sexual behaviors were significantly associated with regional variables, but unrelated to sex (gender) and mostly unrelated to racial/ethnic group membership. Context and regional norms regarding the extent to which sexuality is socialized among youth underscore the importance of the observed regional differences and how these differences manifest themselves in college students' sexual behaviors across the US.

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## Introduction to both studies

The following studies examine two different topical areas in late adolescent research—namely, the relationships between body image beliefs and internalizing behaviors among college students and an investigation of the extent to which college students' sexual behaviors vary across regions in the United States as well as whether regional characteristics explain variance in these behaviors. Both studies are exploratory in nature. The Multi-Site University Study of Identity and Culture (MUSIC) is a collaborative effort of 30 universities and colleges across the United States that began in 2006 and now has collected data on three cohorts of college-attending young adults. This dataset is particularly unique in the sense that it permits the study of large samples of college students using extensive measurement across the US, whereas samples are usually restricted to a few hundred individuals from one or a few sites and have limited measurements available.

The first study investigated college students' current and ideal bodies (both personal preference and interpretations of one's cultural ideals) and the extent to which these ratings impacted depression, anxiety, self-esteem and body image by sex, level of acculturation, and across racial/ethnic groups. Body image is a topic widely studied among adolescents, and findings across multiple disciplines show that lower levels of body image are negatively related to one's personal wellness or adjustment, where adjustment includes disordered eating, anxiety, depression, and lower self-esteem (Cafri & Thompson, 2004; Forbes & Fredrick, 2007; Leit et al. 2001; McCreary & Sasse, 2000; Pope et al., 2001; Sussman et al., 2007). Previous research has focused mostly on White females, although in recent years, the gaps in the body image literature

have been addressed by including males as well as ethnic or racial minorities, from childhood to older adulthood (Magnusson et al., 2005; Schwartz et al., 2010; Sussman et al., 2007).

Unfortunately, these studies are generally limited to relatively small sample sizes, and thus are not generalizable to larger populations. The findings vary and thus are challenging to interpret.

Some indicate that body image problems are common and similar for males and females

(Ricciardelli et al., 2007), for members of different ethnic groups (Overstreet et al., 2010;

Viladrich et al., 2009) and levels of acculturation (Magnusson et al., 2005), while others suggest different groups experience body dissatisfaction and its correlate outcomes differently from one another (Sussman et al., 2007).

Previous research informs the expectation of mean level differences; however, this study extends the current literature by making use of more sophisticated methods of between group comparison by evaluating path models where one's deviation from the ideal predicts internalizing behaviors, as well as multi-group tests to examine whether the relationships do, in fact, differ by sex, immigrant status, and racial/ethnic groups. The MUSIC data used in this study are uniquely positioned to bridge gaps in the body image literature by using a very large sample of students across the US which allows for investigation and comparison of large groups of understudied populations (namely, males and ethnic minorities) with groups more often studied.

The second study examines college students' sexual behavior. Most previous work has focused on risky sexual behaviors, pregnancy and contraception, the relationship between sex and alcohol consumption, the relationship between sex and religion, and efficacy of sexuality education programs and many others (Gilbert & Sawyer, 1994; Silva, 2002, Santelli et al., 2006; Center for Disease Control and Prevention, 2006, Simmons, Burt, and Peterson, 2009; Guttmacher Institute, 2011). The current study was primarily examined the extent to which

regions within the United States were associated with sexual activities, risky sexual behaviors, and engagement in oral sex or sexual intercourse after drinking alcohol in four different contexts or situations common at college campuses.

Despite the frequency and extensiveness of research regarding college student sexuality, there is not a comprehensive set of normative sexual standards. Instead, information is pieced together by looking collectively at empirical studies that have investigated the sexual lives of college students at single or a small number of locations in the US. Unfortunately, existing studies are typically not designed to make comparisons across colleges or regions, and in instances in which comparisons can be made—as is the case with the studies from the Center for Disease Control and Prevention and those that use the ADD Health dataset—they do not specifically address college students.

There is an trend regarding attitudes and beliefs about sexuality—particularly teenage sexuality—among the states in the US. Based on inconsistencies across the US—such as differences in how states choose to address sexuality education, or differences in how regions socialize youth regarding sexuality—it was expected that differences in college students' sexual behaviors are linked to the region in which they are located. For example, states in the Midwest and South that comprise the “Bible-belt,” tend to follow a more politically conservative agenda (Halpin & Agne, 2009), and hence usually implement sexuality education programs that stress abstinence (Guttmacher Institute, 2011). Coastal states (both East and West) are perceived to be more progressive (Halpin & Agne, 2009), and typically implement safer-sex sexuality education programs in schools (Guttmacher Institute, 2011).

There are very few studies that have examined regional differences among college students, in large part because of limitations in available datasets (cf. Davidson, 2008).

However, previous research informs the expectation of regional differences and underscores the importance of taking these differences into account (Rentfrow, 2010; Halpin & Agne, 2009).

Therefore, the current study extends the current literature by making use of the unique structure of the MUSIC dataset. By examining multiple regions within the United States, we are able to investigate the extent to which one's regional affiliation or culture impacts (or not) particular behaviors, in this case sexual behaviors of college students and allows for a more precise inspection of such effects.

We expected to find evidence of regional differences in rates of sexual behaviors, risky sexual behaviors as well as oral sex and sexual intercourse following drinking alcohol based on the observed regional differences in the pervasiveness of sexual education (Santelli et al., 2006; Center for Disease Control, 2006), based on perceived socialization differences of youth regarding sexuality (Guttmacher Institute, 2011; Ellingson et al., 2004), and based on the Sexual Health Report Card (Trojan® Sexual Health Report Card, 2008). On the one hand, we supposed that conservative values and behaviors more common in the Southern and Midwestern regions of the country would be related to lower levels of engagement in sexual behaviors when compared to the more liberal values typical of coastal regions, for instance. On the other hand, we also posited that differences in sexuality socialization and sexuality education observed across regions (Santelli et al., 2006; Center for Disease Control, 2006) could be associated with college students' decisions to engage (or not) in risky sexual behaviors as well as oral sex and sexual intercourse after drinking alcohol. In this case, we expected that higher levels of sexuality education and comprehensive sexuality socialization more typical of liberal values found in coastal regions, would in fact better prepare students to make positive choices about their sexual behaviors, ones that focus on personal well-being and health.

## Abstract Study 1

The current study assesses college students' body ideals and the impact of students' deviation from these ideals on internalizing behaviors and body image. Comparisons across sex, level of acculturation and racial ethnic groups were conducted to investigate mean levels as well as path models and multi-group models to assess similarities or differences. These analyses were conducted based on data from the Multi-Site University Study of Identity and Culture (MUSIC) (Schwartz et al., 2001), a collaborative effort has collected data on three cohorts of college-attending young adults, starting in 2006. Participants included students from thirty different colleges and universities around the US. Study findings indicate mean level differences of ideal bodies across sexes, racial/ethnic groups and levels of acculturation. Also, significant associations were found in path models where students' deviations predicted depression (up to 7% of the variance), anxiety (up to 4%), self-esteem (about 1%) and body image (up to 12%). Contrary to expectations, multi-group tests indicated metric invariance in these associations by sex, across level of acculturation, and across racial/ethnic groups. Study findings are discussed in terms of implications for college students' psychological adjustment as they related to perceived body image ideals.

**STUDY 1: Links between Body Image and Internalizing Behaviors among College-Age Youth: Similarities or Differences by Sex, Level of Acculturation, and Racial/ethnic groups**

Body image and associated body satisfaction/dissatisfaction is a topic that is widely studied. Findings across multiple disciplines show that poor body image is associated with a number of negative developmental outcomes, including disordered eating, anxiety, depression, lower self-esteem, among others (Cafri & Thompson, 2004; Forbes & Fredrick, 2007; Leit et al. 2001; McCreary & Sasse, 2000; Pope et al., 2001; Sussman et al., 2007). However, most research completed in this area has focused on a very particular subset of individuals—namely white, female collegiate students. In recent years, the gaps in body image literature have been addressed by including males and ethnic minorities, across age wide age range (Magnusson et al., 2005; Schwartz et al., 2010; Sussman et al., 2007); however, these studies are generally limited to relatively small samples with limited generalizability. Overall, the research findings vary; some studies indicate that body image problems are common and similar by sex (Ricciardelli et al., 2007), ethnicities (Overstreet et al., 2010; Viladrich et al., 2009) and level of acculturation (Magnusson et al., 2005). Other findings submit that there are differences in the frequency and intensity with which different groups experience body dissatisfaction or associated outcomes (Sussman et al., 2007).

Existing studies regarding the effects by poor body image show that the relationship between poor body image and internalizing behaviors is complex. In studies that compare male and female youth, findings of mean level differences are common, with females, on average,

reporting higher levels of body image problems and higher magnitude relationships between body image and internalizing behaviors when compared to their male counterparts (for review, see Moradi & Huang, 2008). Many attribute the difference in the experience of body image problems among females and males to differing expectations and pressures from society at large at the appearance of the male and female body (Lowery et al., 2005), and comparatively few studies even test this question by sex at all. Instead, the issue of poor body image is seen as two separate entities in the US—for females there is pressure for one’s body to meet a thin-but-still-curvaceous ideal, whereas males’ masculinity is often assessed by their muscularity (Cafri & Thompson, 2004).

Across racial/ethnic groups, there appears to be a prevailing belief that there are differences in cultural figure preferences, particularly when it comes to the female form. Stereotypically, Black and Latino Americans prefer a fuller-figured and more curvaceous female figure compared the “model-thin” ideal that most Caucasian and Asian Americans tend to prefer (Keski-Rahkonen, 2005); however, the ideal form for males across racial/ethnic groups is less varied. As one might expect, the explanation of this stereotype of racial/ethnic group differences in preferred male and female forms is sometimes linked to different levels of acculturation. For example, those that have recently emigrated to the U.S. from poorer areas often will see a comparably more “plump” figure as desirable (in part because it is an indication that the individual has the resources needed to gain a fuller or softer figure as opposed to a thinner and muscular figure typical of those lacking resources). For subsequent generations of immigrants, the adjustment to US culture often shifts perceptions of the ideal figure where thinness and muscularity are ideal (and represent having resources linked with success, for example, gym memberships, plastic surgeries, etc.) and plumpness and softness are less desirable. When

considering both racial/ethnic group and level of acculturation, perceptions of “ideal” figures are positively linked with acculturation; that is, higher acculturation is linked with thinner (for females) and more muscular (for males) body ideals. The Multi-Site University Study of Identity and Culture (MUSIC) data is uniquely positioned to address some of these shortcomings in the literature on the links between body image and internalizing behaviors (depression, anxiety, and self-esteem) by sex, level of acculturation, and racial/ethnic group.

### *Body Image and Sex*

Body image research historically tends to focus on investigating body image dissatisfaction and objectification in exclusively female populations (Pope et al., 2000; Moradi & Huang, 2008). Current research has shown an increased interest in assessing body image and objectification in male samples, though it is unclear if this increase is due to overall rising in male body image concern and objectification experiences (Schwartz et al. 2010; Slater & Tiggemann, 2010), rising interest in assessment of male body image and objectification by researchers, or perhaps some combination of these. However, one thing is clear regarding body image for both sexes—it is qualitatively different; males feel pressure to become more muscular (Leit et al. 2001; Pope et al., 2001), whereas females feel pressure to become thinner (Cafri and Thompson, 2004) in American culture. Research findings suggest that poor body image is linked to a variety of negative psychological outcomes for both sexes including anxiety, depression, shame, and low self-esteem (McCreary & Sasse, 2000; Ricciardelli et al., 2007; Schwartz et al, 2010; Viladrich et al., 2009).

### *Body Image and Racial/Ethnic Group*

Most studies that have considered racial/ethnic groups in the effects of poor body image on adjustment have considered either European Americans or African Americans (Grabe and

Hyde, 2006). Those studies that do include other ethnic/racial groups—namely Hispanic Americans, Asian Americans, and others—almost invariably chose to also investigate European Americans as the comparison group. Findings regarding ethnic/racial differences in body image reveal that ethnic/racial minority males engage in more extreme body change strategies and binge eating than White males (Ricciardelli et al., 2007); however, when considering females of different ethnic/racial groups, findings vary considerably. Some research findings support the notion that European American females tend to have thinner body ideals, higher body dissatisfaction, and higher breast dissatisfaction, compared to other ethnic groups (Overstreet, Quinn, & Agocha, 2010; DeBraganza & Hausenblas, 2010; Forbes & Fredrick, 2008). Latinas in the US seem to be in a particularly precarious position—they are juxtaposed between conventional cultural messages that affords privileges to those that are excessively thin while their Hispanic cultural heritage tends to value more rounded physiques (Viladrich et al., 2009).

#### *Body Image and Level of Acculturation*

There is considerably less research that considers level of acculturation when studying the effect by poor body image on adjustment, though recent globalization trends warrant that additional research be conducted to address this gap in the literature. In this work, the focus was on examining racial/ethnic group differences or similarities in measures of body image, with a consideration of acculturation (Ricciardelli et al., 2007). Some researchers posit that ideals regarding body image and physical attractiveness are not immune to the process of acculturation. For example, body weight is commonly considered to be an important element in determining physical attractiveness, though the preferred weight and body type is often culturally specific. As such, particularly for immigrants coming from poverty stricken areas, a rounded and “plump” appearance is considered to be a sign of wealth and success and a gaunt frame is reminiscent of a

lack of resources; on the other hand, for White Americans, the dominant preferred body type is thin but curvaceous (Keski-Rahkonen, 2005). Investigating body image and its relationship with internalizing behaviors across levels of acculturation will help shed some light on the competing ideas of body image concerns and whether they are a global epidemic or a process unique to Western cultures. The former idea is supported by findings from a study by Sussman and colleagues (2007), where higher levels of acculturation were linked with lower levels of self-esteem, body image, and body dissatisfaction.

### **The Current Study**

This study extends the current literature by 1) using a large, multi-site sample of male and female American college students of different racial/ethnic groups and different levels of acculturation (1<sup>st</sup> generation - , 2<sup>nd</sup> generation immigrant youth, and native youth), 2) evaluating personal body ideals, cultural body ideals, and deviations from these ideals by sex, across levels of acculturation, and across racial/ethnic groups, and 3) examining the relationships between deviations from body ideals and internalizing behaviors by sex, across levels of acculturation, and across racial/ethnic groups.

### **Research Questions**

- 1.) Are mean levels of current reported figure (RF), ideal figure (IF), and cultural ideal figure (CIF) similar or different between males and female youth, across levels of acculturation, and across racial/ethnic groups using the figural components of the Body Image Scale (Agocha et al., 2006)? *It was hypothesized that there would be mean level differences by sex, across levels of acculturation, and across racial/ethnic groups. It was expected based on previous research that females on average, would report smaller IFs and CIFs compared to males, that Whites and Asians would report smaller CIFs*

*compared to other ethnic/racial groups, and that native youth would report cultural group body standards that were lower/smaller on than 1<sup>st</sup> and 2<sup>nd</sup> generations immigrant youth (Sussman et al., 2007).*

2.) Do college students' deviation from ideal figure (self-reported personal and cultural) impact internalizing behaviors (such as anxiety, depression, and self-esteem) and body image by sex, across levels of acculturation, and across racial/ethnic groups? *It was hypothesized that larger deviations (either positive or negative) would be associated with higher levels of internalizing behaviors and lower scores on body images measures across all groups based on previous empirical work (Lowery et al., 2005).*

3.) Do the relationships between deviations from desired figure (personal and cultural) and internalizing behaviors vary by sex, across levels of acculturation, and across racial/ethnic groups? *It was hypothesized based on previous empirical work (Moradi & Huang, 2008) that females would report stronger/larger relationships between body image deviations and measures of internalizing behaviors when compared to males. It was also hypothesized based on previous empirical work (Overstreet, Quinn, & Agocha, 2010) that White youth would report the strongest/largest relationships between these deviations and internalizing behaviors when compared to other ethnic/racial groups. Furthermore, it was hypothesized based on previous empirical work (Sussman et al., 2007) that native youth would report stronger/larger magnitude relationships between body image deviation score and internalizing behaviors when compared to 1<sup>st</sup> or 2<sup>nd</sup> generation immigrant youth.*

## **Method**

### *Procedures and Participants*

Participants were recruited from courses in psychology, family studies, sociology, and education. These data were collected online between September 2007 and October 2009 as part of a national collaborative: the Multi-Site University Study of Identity and Culture (MUSIC; Schwartz et al., 2010). The 2008–2009 data collection, which was used in the present study, included measures of personal and cultural identity, well-being, depression and anxiety, personality, and health risk behaviors. Data were collected from students at thirty colleges and universities around the United States so as to provide a more diverse sample than would have been available at any one site. Sites were selected so as to provide diversity in terms of geographic location, setting (urban, suburban, or college town), and type of institution. Of the 30 sites, 15 were major state universities, eight were smaller state universities, three were major private universities, and four were private colleges. Six sites were located in the Northeast, six in the Southeast, six in the Midwest, four in the Southwest, and eight in the West. In total, students from colleges and universities in 30 U.S. states participated in the study. The study was approved by the Institutional Review Boards at each participating institution. The number of participants surveyed at each site ranged from 29 to 1,450, largely depending on the size of the institution and the number of classes that were available to be surveyed. The median number of participants per site was 207 (25th percentile: 73, 75th percentile: 466).

Participants logged in to the study website using their university name and student number. Both of these pieces of information were replaced with code numbers to ensure

confidentiality both for individual participants and for universities, as well as to decrease the risk of “deductive disclosure” (i.e., where data on multiple variables can be used to identify participants). In fact, this was also requested by most university IRBs such that no information can be provided in the current effort about participation rates or representation of the total student body. Participation rates across schools were 93% of invited students. The survey was divided into six separate pages, and students were permitted to save their work and resume at a later time.

Participants were directed to the study website using printed and e-mailed announcements. Respondents received credit toward their course grades in exchange for their participation. Completion time for the entire survey ranged from 1 to 2 hrs. Participants completed the assessment battery as a anonymous online survey. The sample for the present study consisted of 9,697 undergraduate students (73% women, mean age 19.77 years, SD 1.61) from the larger MUSIC data collection (N=10,573). We selected for inclusion in the present analyses only students within late adolescent/ young adulthood age range (18–25 years of age). The present sample was 61% White, 15% Hispanic, 14% Asian, and 9% Black. Thirty-eight percent of participants were in their first year of college, 22% were in their second year, 20% were in their third year, 12% were in their fourth year, and 8% had been in college for more than four years. Twenty percent of participants reported annual family incomes less than \$30,000, 18% between \$30,000 and \$50,000, 33% between \$50,000 and \$100,000, and 29% above \$100,000.

### **Measures**

All items and associated response categories can be found in Appendix A. In addition to examining potential sex, racial/ethnic, and level of acculturation differences, we also controlled

for family structure and socioeconomic status, each known to co-vary with both independent and dependent measures of the study.

*Age, sex, level of acculturation, and racial/ethnic group*

Students responded to a question which asked “What is your age?” by indicating their age in years and indicated their sex (male or female). Level of acculturation was assessed using a series of questions that asked whether the student and the student’s mother or father were born in the US. The answers to these questions were used to categorize late adolescents into the following categories: 1<sup>st</sup> generation immigrant youth (selected “No” when asked “Were you born in the United States), 2<sup>nd</sup> generation immigrant youth (selected “No” for either parent or both when asked “Was your mother [father] born in the United States), and native youth (selected “Yes” for all three questions). Racial/ethnic group was assessed by having adolescents answer, “My ethnicity is . . .” Responses included 1 = Black, African American, Afro-Caribbean, Black African, Other in this category, 2 = Caucasian, White, European American, White European, Other in this category, 3 = East Asian, Asian American, Amerasian, Asian-Caribbean, Other in this category, 4 =Latino/a, Hispanic, Spanish, Latin American, of Spanish speaking- South American/Caribbean heritage, Other in this category, 5 = South Asian, South Asian American, of South Asian heritage, Other in this category, 6 = Middle Eastern, Arab, Non-Black North African, Other in this category, and 7 = Coloured-South African, Khoi San, Cape Malay, Other in this category. For the purposes of this study, racial/ethnic groups were recoded using terms consistent with how the students referred to themselves. Groups were collapsed into the five most frequently used self-assessment of racial/ethnic groups and labeled as follows: 1 and 7 were coded as “Black;” 2 was coded as “White;” 3 and 5 were coded as “Asian;” 4 was coded as Latino/a; and 6 was coded as “other minority.”

### *Family Structure*

Family structure was assessed by asking students, “How would you characterize your family?” Five living arrangements were given as answer choices, 1 = Parents still married; 2 = Parents separated/divorced; 3 = Parents never married to one another; 4 = One or both parents deceased; and 5 = other (please specify). For data analyses, this variable was re-coded into two main categories, namely, 0 = parents still married, and 1 = other.

### *Socio-economic Status (SES)*

SES was assessed by asking students to indicate their family’s (or the individual’s) annual household income on a scale that included 4 ranges: Below \$30,000; \$30,000 to \$50,000; \$50,000 to \$100,000; and above \$100,000.

### *Body Image*

Body image was assessed using a measure created by Agocha and colleagues (2006). Students were asked to rate 12 statements, including “I am proud of my body” on a 5-point Likert-type scale, ranging from “strongly agree” to “strongly disagree.” A scale score was computed by averaging the responses to these items, with lower scores indicating lower body image and higher scores indicating higher body image (items 136 and 141 were reverse scored—see Appendix A;  $\alpha = .86$ ; see Table 1 for descriptive statistics of background variables and main study constructs).

### *Current Figure, Ideal Figure, Cultural Ideal, and Deviations*

In addition, students were asked to pick from a series of figural models, “Which of the figures best represents your current appearance?” as well as “Which of the figures is the way you would most like to look?” and “Which of the figures best represents your cultural (e.g., racial/ethnic) group’s standards for a (wo)man your age?” Deviation from personal ideals

(DEV-PI) and deviation from cultural ideal (DEV-CI) scores were created by calculating the absolute value of the difference between one's self reported current figure (CF) and one's self reported ideal figure (IF) and one's reported cultural ideal figure (CIF) ( $DEV-PI = \text{abs}[CF-IF]$  and  $DEV-CI = \text{abs}[CF-CIF]$ ).

### *Internalizing behaviors*

Three internalizing behaviors were assessed. *Depression* was assessed using the Center for Epidemiologic Studies Depression Scale, a 20 item measure that includes statements such as, "I have felt down and unhappy this week." Responses were given on a 5 point Likert-type scale ranging from "strongly agree" to "strongly disagree." ( $\alpha = .93$ ). *Anxiety* was measured using Beck's Anxiety Inventory, an 18 item measure that includes statements such as, "I have been worrying a lot this week." Responses were given on a 5 point Likert-type scale ranging from "strongly agree" to "strongly disagree." ( $\alpha = .94$ ). Finally, *self esteem* was assessed using Rosenberg's Self Esteem Scale, a 10 item measure that includes statements such as, "On the whole, I am satisfied with myself." Responses were given on a 5 point Likert-type scale ranging from "strongly agree" to "strongly disagree." ( $\alpha = .88$ ). For internalizing behavior indicators, scale scores were computed by averaging the items.

### **Plan of Analyses**

As a first step, a MANOVA was used to test for significant mean level differences in self-reported CF, IF, and CIF by sex, level of acculturation, and racial/ethnic group. Next, path models tested the relationships between the deviations from body image ideals and internalizing behaviors across the same groups (sex, level of acculturation, racial/ethnic group). As a final step, multi-group invariance tests were conducted to determine whether the relationships between body image ideal deviation scores and measures of internalizing behaviors were similar

or different by sex, across levels of acculturation, and across racial/ethnic groups. This method included models where all paths freely varied (default model), where all paths are constrained to equality, and path by path equality tests. Model fit was assessed by standard goodness of fit indices (GFIs) ( $\chi^2$  fit statistic and the  $\chi^2/df$  ratio) as well as difference tests ( $\Delta\chi^2$  and  $\Delta\chi^2/df$  ratio) and alternative GFIs less sensitive to sample size (CFI; RMSEA; Cheung & Rensvold, 2002; Meade et al., 2006). Analyses were completed in PASW and AMOS Version 18.0.

## **Results**

### *Descriptive Statistics and Mean Level Comparisons*

The means, standard deviations, and reliability estimates (or range where appropriate) are summarized in Table 1. There were  $n = 9,652$  student participants (72.5% female; mean age = 19.77 years,  $sd = 1.61$ ). Sixty-four percent of females resided with both biological parents, and 71% of males resided with both biological parents. In addition, correlational analyses were conducted to examine the effects by known correlates of body image and internalizing behaviors, including age, family structure, and SES (Table 2). Main study constructs had few significant correlations with background variables (SES was significantly related to body image and depression). Internalizing behaviors were highly and significantly correlated with students' current figure, and to a lesser extent students' ideal figures (IF) and cultural ideal figures (CIF).

Table 1. Descriptive statistics of demographic variables, internalizing behaviors, current figure, and ideal figures for male and female college students

Scale	# of items	$\alpha$ /range	Mean	SD	F	<i>p</i> -value
Age	1	18-25	19.74/19.69	1.57/1.49	-	-
Two Biological Parents (%)	1	-	71%/64%	.46/.48	45.37	<.001
SES	1	1-4	2.80/2.64	1.08/1.09	42.96	<.001
Body Image	8	.84/.87	3.12/3.11	.57/.54	24.10	<.001
Depression	20	.93/.92	2.5/2.55	.76/.75	2.97	.085
Anxiety	18	.95/.94	2.27/2.32	.92/.90	7.16	.007
Self-Esteem	10	.88/.88	3.22/3.21	.47/.42	1.24	.265
Current Figure	1	0-9	5.58/4.99	1.38/1.73	237.45	<.001
Ideal Figure	1	0-9	5.28/3.70	.90/1.21	3127.91	<.001
Cultural Ideal Figure	1	0-9	5.51/4.03	1.26/1.63	1493.49	<.001

Note: Males/Females. F test from ANOVA comparing males and females.

Table 2. Correlations: Demographic variables, internalizing behaviors, current figure, and ideal figures for male and female college students

	Age	Bio Parents	SES	Body Image	Depression	Anxiety	Self Esteem	Current Figure	Ideal Figure	Cultural Ideal
Age	-	.09**	-.14**	.02	-.03	-.02	-.04	.01	-.02	.02
Bio Parents	.08**	-	-.25**	.04	-.01	.01	-.01	-.04	-.03	-.02
SES	-.13**	-.30**	-	.10**	-.06**	-.04	.03	-.03	.02	.05*
Body Image	.02	.04**	.05**	-	.04*	.11**	.28**	-.07**	.13**	.18**
Depression	-.02	.01	-.05	.02	-	.85**	.33**	.09**	.06**	.04
Anxiety	-.01	.01	-.05**	.04**	.84**	-	.31**	.08**	.08**	.09**
Self Esteem	-.03*	-.02	.01	.22**	.33**	.32**	-	.10**	.10**	.11**
Current Figure	.07**	.04**	-.09**	-.36**	.08**	.07**	.04**	-	.42**	.22**
Ideal Figure	.03*	.06**	-.13**	-.09**	-.02	-.02	-.02	.62**	-	.39**
Cultural Ideal	.00	.08*	-.10**	.09**	.02	.04**	-.02	.23**	.42**	-

Note: Males are above the diagonal and females are below the diagonal. \*\*  $p < 0.01$  level (2-tailed). \*  $p < 0.05$  level (2-tailed).

### *Mean Level Differences*

Results from MANOVA tests indicated that there were significant differences among groups. As a follow up, multiple ANOVA tests (with posthoc Scheffe's contrasts) were conducted for males and females, by levels of acculturation, and by racial/ethnic group to test for mean level differences in current figure, ideal figure, cultural ideal figure and deviation scores (Tables 3 and 4). For males, level of acculturation was significantly related to one's reported current figure, and one's reported cultural ideal. In addition, significant differences in the calculated deviation scores from personal ideals (DEV-PI) and the calculated deviation scores from cultural ideals (DEV-CI) were found. For females, level of acculturation was not significantly related to one's reported current figure or DEV-PI, but it was significantly related to one's ideal figure, cultural ideal, and DEV-CI. As expected, ideals were smaller for native females than for 1<sup>st</sup> and 2<sup>nd</sup> generation immigrant female youth. When examining racial/ethnic groups, there were significant mean level differences for all variables. For females, White and Asian youth reported the smallest reported CFs, and the smallest reported IFs. When considering cultural ideals, there were also significant differences across racial/ethnic groups (see Table 4). White and Asian youth had the lowest ideals, and Black and Latina youth had the largest ideals. For males, patterns were similar—White and Other youth reported the smallest current figures and ideal figures; however, there was much less variation from one racial/ethnic group to another for males when compared to the female racial/ethnic groups.

Table 3. Means and standard deviations for current figure, ideal figure, cultural ideals, and deviations across levels of acculturation by sex

	Male					Female				
	Native	2 <sup>nd</sup>	1 <sup>st</sup>	F	<i>p</i>	Native	2 <sup>nd</sup>	1 <sup>st</sup>	F	<i>p</i>
	n = 1,677	n = 597	n = 349			n = 4,805	n = 1,407	n = 817		
Current Figure	5.48 (1.35) <sup>2</sup>	5.78 (1.35) <sup>0</sup>	5.60 (1.43)	8.81	<.001	4.92 (1.69)	5.01 (1.81)	4.85 (1.76)	1.97	.140
Ideal Figure	5.28 (0.86)	5.29 (0.89)	5.27 (1.00)	0.14	.868	3.64 (1.19) <sup>2</sup>	3.82 (1.27) <sup>0</sup>	3.76 (1.24)	12.11	<.001
Cultural Ideal	5.67 (1.17) <sup>1,2</sup>	5.17 (1.30) <sup>0</sup>	5.21 (1.34) <sup>0</sup>	37.47	<.001	3.90 (1.56) <sup>1,2</sup>	4.35 (1.69) <sup>0</sup>	4.17 (1.62) <sup>0</sup>	39.15	<.001
Dev-PI	0.91 (0.90) <sup>2</sup>	1.06 (0.94) <sup>0</sup>	0.95 (0.92)	4.79	.008	1.44 (1.13)	1.43 (1.18)	1.37 (1.18)	0.65	.522
Dev-CI	1.19 (1.03) <sup>1</sup>	1.37 (1.17) <sup>0</sup>	1.36 (1.08)	6.71	.001	1.86 (1.40) <sup>1,2</sup>	1.65 (1.34) <sup>0</sup>	1.61 (1.29) <sup>0</sup>	16.74	<.001

Mean (Standard Deviation); Dev-PI= Deviation from Personal Ideal; Dev-CI= Deviation from Cultural Ideal; F-test from ANOVA comparing 1<sup>st</sup> Generation, 2<sup>nd</sup> Generation and non-immigrants. Investigation of mean level differences across sex by immigrant status revealed significant differences between males and females at all levels of immigrant status. Superscripts indicate significant differences; 0 = non-immigrant, 1 = 1<sup>st</sup> generation, 2 = 2<sup>nd</sup> generation.

Table 4. Means and standard deviations for current figure, ideal figure, cultural ideals, and deviations across ethnic/racial groups by sex

	White	Black	Asian	Latino/a	Other	F	<i>p</i>
Females	n = 1,548	n = 194	n = 466	n = 350	N = 46		
Current	4.88 (1.67) <sup>2,4</sup>	5.14 (1.95) <sup>1,3</sup>	4.77 (1.76) <sup>2,4</sup>	5.11 (1.74) <sup>1,3</sup>	5.31 (1.76)	7.30	<.001
Ideal	3.57 (1.16) <sup>2,3,4</sup>	4.30 (1.28) <sup>1,3,4,5</sup>	3.60 (1.26) <sup>1,2,4</sup>	3.90 (1.19) <sup>1,2,3</sup>	3.71 (1.16) <sup>2</sup>	48.18	<.001
Cultural	3.69 (1.49) <sup>2,3,4,5</sup>	5.33 (1.39) <sup>1,3,4</sup>	3.39 (1.47) <sup>2,4,5</sup>	5.06 (1.41) <sup>1,3</sup>	4.78 (1.47) <sup>1,3</sup>	287.16	<.001
Dev-PI	0.88 (0.88) <sup>2</sup>	0.87 (1.09) <sup>1,3</sup>	1.13(0.99)	0.99 (0.81)	0.97 (1.03)	5.95	.001
Dev-CI	1.19 (1.04) <sup>2,4</sup>	1.07 (1.09) <sup>1,3</sup>	1.53 (1.22) <sup>4</sup>	1.22 (0.96) <sup>1,3</sup>	1.22 (1.05)	8.54	<.001
Males	n = 4,298	n = 642	n = 872	n =1074	N =83		
Current	5.47 (1.34) <sup>4</sup>	5.63 (1.41)	5.68 (1.44)	5.84 (1.33) <sup>1</sup>	5.22 (1.59)	5.94	<.001
Ideal	5.27 (0.87) <sup>3</sup>	5.37 (1.01) <sup>3</sup>	5.21 (0.94) <sup>1,2,4</sup>	5.39 (0.75) <sup>3</sup>	5.14 (1.31)	2.48	.042
Cultural	5.67 (1.14)	5.46 (1.30)	5.67 (1.14)	5.77 (1.12)	5.33 (1.69)	46.33	<.001
Dev-PI	1.44 (1.15) <sup>3</sup>	1.27 (1.12)	1.50 (1.18) <sup>1</sup>	1.39 (1.14)	1.70 (1.19)	4.52	<.001
Dev-CI	1.89(1.42) <sup>3</sup>	1.55 (1.23) <sup>3</sup>	1.89 (1.47) <sup>1,2</sup>	1.48 (1.14)	1.40 (1.41)	21.44	<.001

Mean (Standard Deviation); Current = Reported Current Figure; Ideal = Reported Ideal Figure; Cultural = Reported Cultural Ideal Figure; Dev-PI= Deviation from Personal Ideal; Dev-CI= Deviation from Cultural Ideal; F-test from ANOVA comparing White, Black, Asian, Latino/a, and Other. Investigation of mean levels differences across sex by racial/ethnic groups, the only comparison that was not significant was cultural ideal between Black males and females. Superscripts indicate significant differences; 1 = White, 2 = Black, 3 = Asian, 4 = Latino/a, and 5 = other.

### *Links between Deviation Scores and Internalizing Behaviors*

In order to address the second research question, a path model tested the relationships between DEV-PI and DEV-CI and the three internalizing behaviors and body image by sex, across levels of acculturation, and across racial/ethnic groups. Table 5 includes standardized path coefficients from these tests. Findings provided evidence that many of the relationships between deviations and each of the internalizing behaviors were statistically significant for males and females, native, 2<sup>nd</sup> generation, and 1<sup>st</sup> generation youth, and for members of racial/ethnic groups. As expected, there was a positive relationship between deviation scores and internalizing behaviors (higher deviations were significantly related to higher reports of depression, anxiety and self-esteem and negatively related to body image; higher deviations were significantly related to lower reports of body image).

For the paths tested by sex, only the path from DEV-CI to anxiety (males) was not significant. Overall, the relationships observed were of larger magnitude for female youth when compared to male youth, with the exception of the relationship between DEV-CI and self-esteem, which was identical for both groups ( $\beta = .05$ ). For the paths tested across levels of acculturation, only the paths from DEV-CI to depression, anxiety (2<sup>nd</sup> generation) and self-esteem (1<sup>st</sup> generation and 2<sup>nd</sup> generation) were not significant. There were no specific patterns across the groups. In general, native youth reported the largest magnitude relationship between DEV-PI and internalizing behaviors and body image, with the exception of the relationship between DEV-PI and self-esteem, which was highest for 1<sup>st</sup> generation immigrants ( $\beta = .09$ ). However, when assessing the relationship between DEV-CI and internalizing behaviors, 1<sup>st</sup> generation immigrants had the largest magnitude relationships, with the exception of the relationship between DEV-CI and self-esteem, which was largest for natives ( $\beta = .05$ ). For the

paths tested across racial/ethnic groups, the results were also mixed. White youth were the only group in which all tested paths were significant, while Black youth had the fewest significant paths observed. Overall, there were more observed significant paths from DEV-PI than those between DEV-CI and internalizing behaviors and body image.

Table 5. Path model coefficients for deviations from personal ideals and deviations from cultural ideals by sex, across levels of acculturation, and across racial/ethnic groups

	<u>Sex</u>		<u>Level of Acculturation</u>			<u>Racial/Ethnic Group</u>				
	Males	Females	1 <sup>st</sup> Gen	2 <sup>nd</sup> Gen	Native	Black	White	Asian	Latino	Other
	N=2,623	n=7,029	n=1,169	N=2,012	n=6,516	n=842	N=5,864	n=1,343	n=1,434	n=129
Dev-PI										
→Depression	.11***	.14***	.11***	.10***	.17***	.07	.18***	.08 **	.10 **	.31***
→Anxiety	.07 **	.14***	.11***	.08***	.15***	.09 *	.16***	.06*	.10 **	.27 **
→Self-esteem	.07 **	.08***	.10**	.08 **	.08***	.06	.09***	.06	.07 **	.18
→Body Image	-.30***	-.35***	-.27***	-.35***	-.39***	-.38***	-.38***	-.35***	-.36***	-.36***
Dev-CI										
→Depression	.05 *	.08***	.11**	.01	.09***	-.02	.09***	.04	.09*	.18
→Anxiety	.03	.07***	.08**	.01	.07***	-.01	.08***	.03	.09*	.16
→Self-esteem	.06 *	.06***	.05	.05*	.06***	.07	.05***	.08 *	.03	.20
→Body Image	-.14***	-.29***	-.21***	-.22***	-.27***	-.18 ***	-.28***	-.23***	-.25***	-.20

1<sup>st</sup> Gen-First Generation Immigrants; 2<sup>nd</sup> Gen-Second Generation Immigrants; \*  $p < .05$ , \*\* $p < .01$ , \*\*\*  $p < .001$ ; Constructs shown have controlled for the following background variables: Family Structure (2 biological parents), Age, and SES.

Subsequently, a series of nested multi-group invariance tests examined whether these paths from deviation scores to internalizing behaviors (paths a, b, c, and d; see Figure 1) differed by sex (Table 6), across levels of acculturation (Table 7), or across racial/ethnic groups (Table 8), following the same approach as previously described. For the model by sex, inspection of the difference test indicated that there were significant differences for females and males in the relationship between the both DEV-PI and DEV-CI and internalizing behaviors, for the fully constrained model and the model constraining path “d.” However, inspection of the change in alternative GFIs that are less sensitive to sample size showed that the changes in model fit were very small (largest changes in CFI = .01, largest change in RMSEA =.03), indicating that there are no differences in the strength of the tested relationships by sex (Cheung & Rensvold, 2002; Meade et al., 2006).

The multi-group invariance findings across levels of acculturation were similar in that inspection of the difference tests suggest that there were a significant differences for the fully constrained model and the models constraining paths “a” and “c” (DEV-PI) as well as significant differences for the fully constrained model and the model constraining path “a” (DEV-CI). Again, due to the sensitivity to sample size of the  $\chi^2$  test, alternative fit indices were assessed (no change in CFI; largest change in RMSEA =.02) which provided evidence that the relationships between the deviation scores and internalizing behaviors did not significantly differ among youth of different levels of acculturation (Cheung & Rensvold, 2002; Meade et al., 2006).

The final multi-group invariance test examined racial/ethnic groups, and results were again similar to the previous findings. The difference tests suggested that there were significant differences when comparing the for the fully constrained model to the free model, but also when comparing individual constrained paths “b” and “d” (DEV-PI). However, there appeared to be no

significant differences in the strength of the relationships between deviation scores and internalizing behaviors after conducting an inspection of the change in GFIs (no change in CFI; largest change in RMSEA =.02) (Cheung & Rensvold, 2002; Meade et al., 2006).

Figure 1. Path model of deviations predicting internalizing behaviors and body image

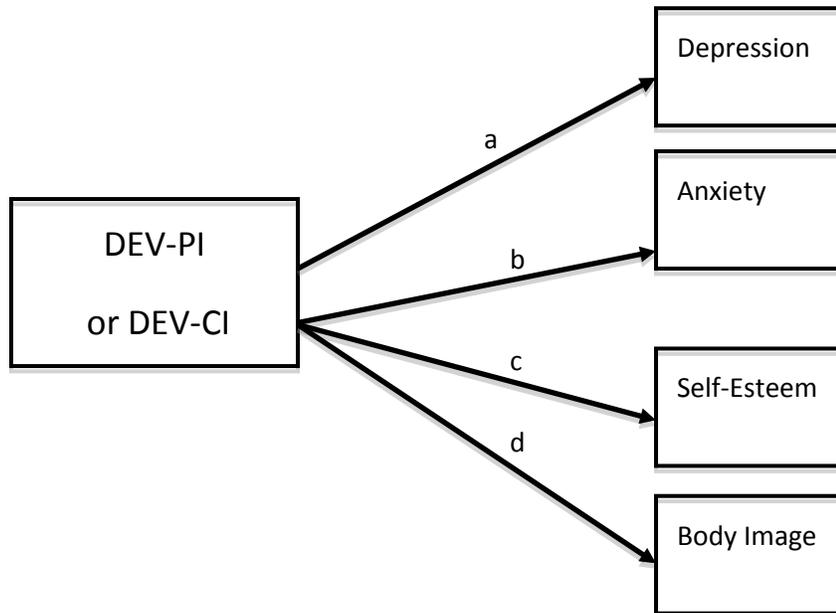


Table 6. Model fit (default/free/constrained) for path models of deviation from ideals to internalizing behaviors by sex (males, n=2,623; females, n=7,029)

	Model Tests					Difference Tests				
	$\chi^2$	Df	<i>p</i>	$\chi^2/df$	CFI	RMSEA	$\Delta\chi^2$	<i>P</i>	$\Delta$ CFI	$\Delta$ RMSEA
<u>DEV_PI</u>										
Default	115.600	2	<.001	57.800	0.99	.08	-	-	-	-
Fully Constrained	128.419	6	<.001	21.403	0.99	.05	12.820	.012	.00	.03
Path a	116.799	3	<.001	38.933	0.99	.06	1.200	.273	.00	.02
Path b	120.876	3	<.001	40.292	0.99	.06	5.276	.022	.00	.02
Path c	115.640	3	<.001	38.547	0.99	.06	0.040	.841	.00	.02
Path d	120.021	3	<.001	40.007	0.99	.06	4.421	.035	.00	.02
<u>DEV_CI</u>										
Default	56.388	2	<.001	28.194	1.00	.05	-	-	-	-
Fully Constrained	72.640	6	<.001	12.107	0.99	.03	17.099	.002	.01	.02
Path a	56.447	3	<.001	18.816	1.00	.04	00.056	.812	.00	.01
Path b	57.126	3	<.001	19.042	1.00	.04	00.718	.397	.00	.01
Path c	56.457	3	<.001	18.819	1.00	.04	00.066	.798	.00	.01
Path d	70.097	3	<.001	23.366	0.99	.05	13.635	<.001	.01	.00

Note. DEV\_PI=Deviation from Personal Ideal; DEV\_CI=Deviation from Cultural Ideal; Path “a” (Deviation→ Depression), path “b” (Deviation→Anxiety); path “c” (Deviation→Self Esteem); “d” (Deviation→Body Image); Controls include age, family structure (dummy coded) and SES.

Table 7. Model fit (default/free/constrained) for path models of deviation from ideals to internalizing behaviors by level of acculturation (1<sup>st</sup> generation, n=1,169; 2<sup>nd</sup> generation, n=2,012; Non-immigrant, n=6,516)

	$\chi^2$	df	Model Tests				Difference Tests			
			<i>P</i>	$\chi^2/df$	CFI	RMSEA	$\Delta\chi^2$	<i>p</i>	$\Delta$ CFI	$\Delta$ RMSEA
<u>DEV_PI</u>										
Default	114.893	3	<.001	38.298	0.99	.06	-	-	-	-
Fully Constrained	140.223	11	<.001	12.748	0.99	.04	25.329	.001	.000	.02
Path a	122.119	5	<.001	24.424	0.99	.05	7.226	.027	.000	.01
Path b	119.589	5	<.001	23.918	0.99	.05	4.696	.096	.000	.01
Path c	115.237	5	<.001	23.047	0.99	.05	0.344	.842	.000	.01
Path d	132.277	5	<.001	26.455	0.99	.05	17.384	<.001	.000	.01
<u>DEV_CI</u>										
Default	57.005	3	<.001	19.002	1.00	.04	-	-	-	-
Fully Constrained	72.807	11	<.001	6.619	1.00	.02	15.802	.045	.000	.02
Path a	66.724	5	<.001	13.345	1.00	.04	9.719	.008	.000	.00
Path b	61.434	5	<.001	12.287	1.00	.03	4.429	.109	.000	.01
Path c	57.031	5	<.001	11.406	1.00	.03	0.026	.987	.000	.01
Path d	60.625	5	<.001	12.125	1.00	.03	3.620	.164	.000	.01

Note. DEV\_PI=Deviation from Personal Ideal; DEV\_CI=Deviation from Cultural Ideal; Path “a” (Deviation→ Depression), path “b” (Deviation→Anxiety); path “c” (Deviation→Self Esteem); “d” (Deviation→Body Image); Controls include age, family structure (dummy coded) and SES.

Table 8. Model fit (default/free/constrained) for path models of deviation from personal ideal to internalizing behaviors by Racial/ethnic Group (Black, n= 842; White, n=5,864; Asian, n=1,343; Latino/a, n=1,434; Other, n=129)

	Model Tests							Difference Tests		
	$\chi^2$	df	<i>P</i>	$\chi^2/df$	CFI	RMSEA	$\Delta \chi^2$	<i>P</i>	$\Delta$ CFI	$\Delta$ RMSEA
<u>DEV_PI</u>										
Default	138.801	5	<.001	27.760	0.99	.05	-	-	-	-
Fully Constrained	168.597	21	<.001	8.028	0.99	.03	29.796	.019	.000	.02
Path a	156.373	9	<.001	17.375	0.99	.04	17.572	.001	.000	.01
Path b	152.015	9	<.001	16.891	0.99	.04	13.214	.010	.000	.01
Path c	141.736	9	<.001	15.748	0.99	.04	2.935	.569	.000	.01
Path d	145.472	9	<.001	16.164	0.99	.04	6.671	.154	.000	.01
<u>DEV_CI</u>										
Default	80.534	5	<.001	-	0.99	.04	-	-	-	-
Fully Constrained	97.741	21	<.001	17.207	0.99	.04	17.572	.372	.000	.00
Path a	87.916	9	<.001	7.383	0.99	.02	13.214	.117	.000	.02
Path b	85.504	9	<.001	4.971	0.99	.03	2.935	.290	.000	.01
Path c	81.005	9	<.001	0.472	0.99	.03	6.671	.976	.000	.01
Path d	89.539	9	<.001	9.006	0.99	.03	29.796	.061	.000	.01

Note. DEV\_PI=Deviation from Personal Ideal; DEV\_CI=Deviation from Cultural Ideal; Path “a” (Deviation→ Depression), path “b” (Deviation→Anxiety); path “c” (Deviation→Self Esteem); “d” (Deviation→Body Image); Controls include age, family structure (dummy coded) and SES.

## Discussion

This study is unique in that it highlighted college students across the US and investigated body image and its relationship with internalizing behaviors by sex, across levels of acculturation, and across racial/ethnic groups. Findings indicate that the relationships between ideal body deviation scores and internalizing behaviors are consistently negative across all groups tested, where a poorer body image was associated with poorer adjustment. Therefore, in order to continue to increase our understanding of the complex relationship between body image and mental health correlates, it is necessary to examine causes and consequences of body image and its relationships with internalizing behaviors on a broader scale (i.e. biologically or developmentally) beyond the assumption of group differences based only on investigations of mean levels.

### *Mean-Level Differences*

Consistent with our expectations and previous research (Sussman et al., 2007; Moradi & Huang, 2008), significant mean level differences were found by sex, across levels of acculturation and ethnic/racial groups. Likewise, the findings supported the hypothesis that female youth would report smaller ideal figures and cultural ideal figures, on average, when compared to male youth. However, results regarding level of acculturation and racial/ethnic group were not consistent with our hypothesis or previous research (Sussman et al., 2007). We expected body image ideals to be linked with acculturation in such a manner that those who recently immigrated to the US would report physically larger ideals when compared to those more acculturated to Western ideals. This hypothesis was supported, in general, for female youth, but not for male college students. For female youth, native youth had the lowest average ideals, followed by 1<sup>st</sup> generation immigrants, and then 2<sup>nd</sup> generation immigrants. For male

youth, ideal figures were almost identical across the level of acculturation groups, and natives had the highest cultural ideals, followed by 1<sup>st</sup> generation males and 2<sup>nd</sup> generation males, respectively. We also expected that there would be racial/ethnic group differences such that White and Asian youth would report the lowest figure ideals for both men and women. For female youth, these hypotheses were consistent with the results from the analyses, with White and Asian students reporting lower current figures, ideal figures and cultural ideals than Black, Latina, and other minority youth. Interestingly, there was almost a full two point difference between the lowest cultural ideal (Asians = 3.39) and the highest (Blacks = 5.33). The results for male participants, however, were much more varied. Overall, youth in the Other minority racial/ethnic category reported the lowest values for current figure, ideal figure, and cultural ideal. Contrary to expectations, there was very little variation in the reports of the ideal male figure across racial/ethnic groups with youth from the Others minority group reporting the lowest average at 5.14 and Latinos reporting the highest average at 5.39. In addition, Black males reported the second lowest cultural ideals (after other minorities), followed by Whites, Asians, and Latinos.

From these findings, it is clear that a complex relationship exists between demographic variables (sex, level of acculturation, racial/ethnic group) and body ideals among college students, and this research brings to light new questions that warrant further investigation. It is interesting, and not surprising that hypotheses were supported for female youth, but not for male youth. After all, a majority of empirical research conducted regarding body image focuses exclusively on female populations (see Moradi & Huang, 2008); thus, the applicability of the information garnered from this research is likely to be biased toward females.

### *Deviations and Internalizing Behaviors*

The path models that tested the links between deviations from personal (DEV-PI) or cultural (DEV-CI) ideals with internalizing behaviors (depression, anxiety, self-esteem) and body image were significant by sex, level of acculturation and racial/ethnic groups with few exceptions (see Table 5).

As expected, the relationships were stronger for females than their male counterparts; likewise, native youth reported stronger relationships between deviation scores and internalizing behaviors than either 1<sup>st</sup> or 2<sup>nd</sup> generation immigrant groups. Interestingly, the links between DEV-CI and depression, anxiety (2<sup>nd</sup> Generation only) and self-esteem (1<sup>st</sup> and 2<sup>nd</sup> generation) were not significant.

Consistent with previous results from this study, relationships observed across racial/ethnic groups were more varied than expected. White youth were the only racial/ethnic group in which all relationships tested were significant, followed by Latino, Asian, “Other,” and Black youth. Additionally, the relationships observed were strongest for others minorities (for DEV-PI only) followed by Whites, Latino/as, Asians, and Blacks.

#### *Multi-group Tests*

The findings for the multi-group tests were contrary to study hypotheses. We expected to find differences by sex, across levels of acculturation, and across racial/ethnic groups. At first, it appeared that there were differences in the magnitude of the relationships across groups; however, statistical tests provided evidence to the contrary.

One might conclude that the relationships between these variables differ based on observed mean level differences, for instance, by assuming that since the relationship between DEV-PI and depression is significant for Whites and not Blacks, that the relationship is different across racial/ethnic groups. Assuming differences in relationships based on observed mean level

differences is common; however, in order to truly assess differences in relationship across groups requires the use of definitive statistical tests, like the multi-group tests conducted here, to examine whether or not the links between deviations and internalizing behaviors differ (Rowe et al., 1994). In this case, they do not. Put differently, the relationships between body ideal deviations (DEV-PI and DEV-CI) and internalizing behaviors are the same—higher deviations are related to higher levels of internalizing behaviors and lower levels of body image—regardless of one’s sex, racial/ethnic group or level of acculturation. This finding of similarity is important because it shows that deviations for body ideals have a comparable effect on all college students, which is counter to some more nuanced hypotheses developed based on existing research.

Overall, these findings suggest that there are mean-level differences across sexes, racial/ethnic groups, and levels of acculturation in mean levels of personal ideal figures (IF) and cultural ideal figures (CIF). In some cases the differences in reported ideal forms are large—for example, there is almost a full point difference between men and women and a two point difference between Black females and Asian females. The reasons for these differences are likely a combination of many different factors; however, it is beyond the scope of this effort to dissect the variables that predict and explain these differences. Likewise, there appear to be differences in significance and magnitude of the observed relationship between one’s deviations from these ideals and internalizing behaviors and body image. However, findings from definitive statistical tests show that these relationships, in fact, do not differ significantly across sex, level of acculturation, and racial/ethnic group. Instead, this research makes the case that when one’s current figure does not match one’s ideal figure, a rise in internalizing behaviors and lower body image are a likely result.

### **Limitations and Directions for Future Research**

The current study is not without limitations. The exclusive reliance on self-reports and the cross-sectional nature of the data are some of our biggest concerns. Due to the cross-sectional nature of the data collected, causal relationships related to body ideals and discrepancies and their links with internalizing behaviors could not be examined. Thus, in addition to the previous suggestions, future empirical work should include a longitudinal data, spanning a number of years that would permit tests of developmental and quasi-causal pathways.

Furthermore, in the interest of parsimony, the variables that measure students' deviation from ideal body were calculated using absolute values to assess the overall discrepancy from one's ideal figure. Future research may choose to investigate the direction of the deviation (i.e. those wanting to lose weight or those wanting to gain weight), as these deviations could be qualitatively different. In addition, future research should investigate desired body changes that are normative and healthy (i.e. an underweight person wishing to gain weight or vice versa) vs. those that may indicate distorted body ideals (i.e. a normal or underweight individual that wishes to lose weight).

### **Conclusions**

Our findings mirror findings of other body image research where members of different racial/ethnic groups and level of acculturation groups were more likely to report mean level differences in ideal figure and cultural ideal figures. We then took another step to create two different discrepancies scores for college student—one was the calculated difference between one's self reported current figure and one's self reported ideal figure (DEV-PI); the other was the

calculated difference between one's self-reported current figure and one's self-reported cultural ideal (DEV-CI)—and investigated the relationship between these DEV scores and internalizing behaviors. We found significant relationships between deviations and internalizing behaviors in all cases with the exception of the “other” racial/ethnic group category for DEV-CI. Then, we used multi-group testing to investigate these relationships across racial/ethnic groups and levels of acculturation and found that they lacked invariance among the groups tested, which would support (in this multi-site national collegiate sample) the idea that the relationships between ideal body discrepancies and internalizing behaviors are perhaps universal, and applicable across these groups, regardless of personal and cultural figure ideals. However, few studies have addressed body image and body ideals in this way. On the contrary, much of the literature regarding body image supports racial/ethnic group differences and differences linked to acculturation. While this study neither refutes nor supports that claim, we did bring to light a competing argument that body image and its relationship to internalizing behaviors may be linked to a process universal to all humans. We believe, in order to truly examine body image—particularly, deviations from ideal figures—it is necessary to take into account that though group average level differences are likely, deviations from body ideals have the same impact on internalizing behaviors and body image without prejudice for one's sex, racial/ethnic group, or level of acculturation.

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## APPENDIX A.

### Age

What is your age?

### Sex

Gender (check one): Male, Female

Racial/ethnic group My ethnicity is (choose one):

- a. Black, African American, Afro-Caribbean, Black African, Other in this category.
- b. Caucasian, White, European American, White European, Other in this category.
- c. East Asian, Asian American, Amerasian, Asian-Caribbean, Other in this category.
- d. Latino/a, Hispanic, Spanish, Latin American, of Spanish speaking- South American/Caribbean heritage, Other in this category.
- e. South Asian, South Asian American, of South Asian heritage, Other in this category.
- f. Middle Eastern, Arab, Non-Black North African, Other in this category.
- g. Coloured-South African, Khoi San, Cape Malay, Other in this category.

### Level of acculturation

Were you born in the United States? 1= Yes, 2 = No. If no, where were you born?

Was your mother born in the United States? 1= Yes, 2 = No. If no, where was she born?

Was your father born in the United States? 1= Yes, 2 = No. If no, where was he born?

Recorded as 0 = non-immigrant, 1=1<sup>st</sup> Generation Immigrant (student not born in US), and 2 = 2<sup>nd</sup> Generation immigrant (student born in US but at least one parent was not).

### SES

Please indicate your family's annual household income. If you are supporting yourself, please indicate **your** income. If your family is supporting you, please indicate **their** income: Below \$30,000; \$30,000 to \$50,000; \$50,000 to \$100,000; Above \$100,000

### Family Structure

How would you characterize your family (check one)? Parents still married; Parents separated/divorced;

Parents never married to one another; one or both parents deceased; other (please specify).

Recorded into parents still married = 0, and other = 1.

### Body Image Scale (Agocha and Williams)

Response Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

135. [Men Only] I have a good body build.

[Women Only] I have a good figure.

136. I often feel ugly.

137. My weight is about right — not too fat or too skinny.

138. I am better looking than the average person.

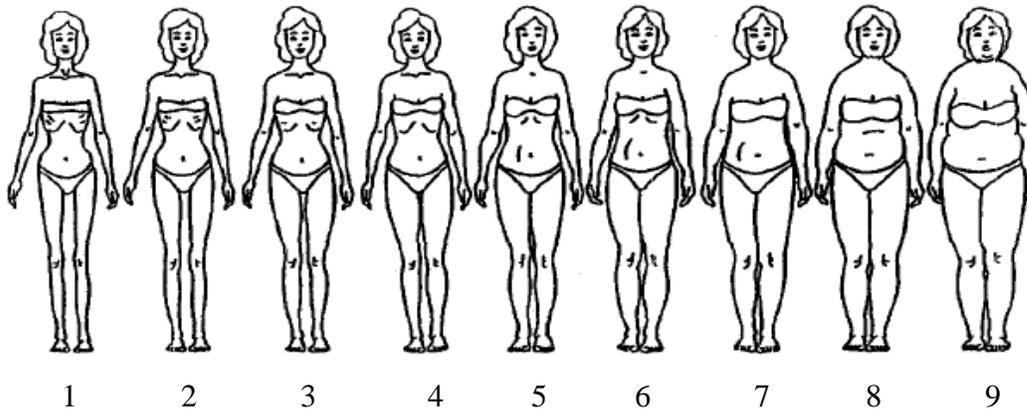
139. Most people would probably think that I am good-looking.

140. I am proud of my body.

141. It bothers me that I am not better looking.  
 142. I have a pretty/handsome face.

Women ONLY complete items 143-145. Men go onto to item 12.

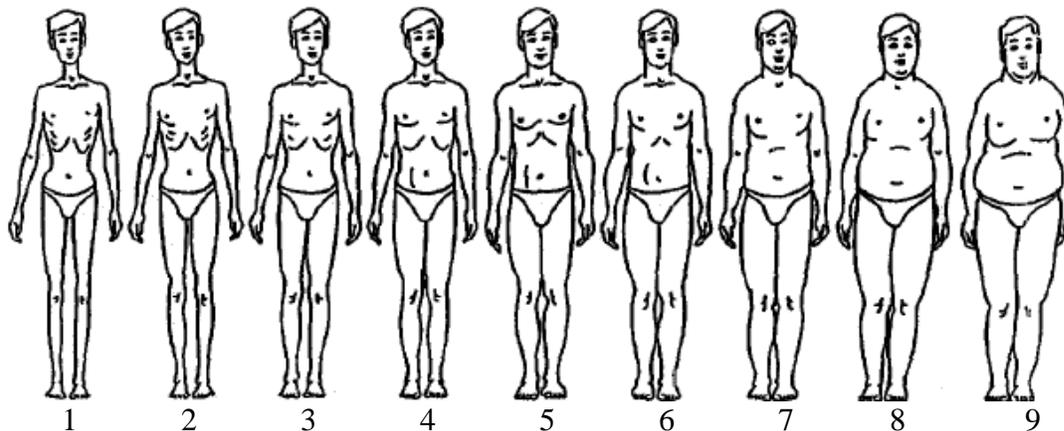
Using the numbers below each figure, please answer the following questions.



143. Which of the figures best represents your current appearance?  
 144. Which of the figures is the way you would most like to look?  
 145. Which of the figures best represents your cultural (e.g., racial/ethnic) group's standard for a woman your age?

Men ONLY complete items 146-148.

Using the numbers below each figure, please answer the following questions.



146. Which of the figures best represents your current appearance?  
 147. Which of the figures is the way you would most like to look?  
 148. Which of the figures best represents your cultural (e.g., racial/ethnic) group's standard for a man your age?

Center for Epidemiologic Studies Depression Scale

Response Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

1. This week, I have been bothered by things that usually don't bother me.
2. This week, I did not feel like eating

3. This week, my friends tried to cheer me up, but I didn't feel happy.
4. This week, I felt just as good as other people.
5. I have had trouble paying attention this week.
6. I have felt down and unhappy this week
7. This week, I have felt too tired to do many things.
8. This week, I felt something good was going to happen.
9. This week, things I usually did well before didn't work out right.
10. I felt scared this week.
11. This week, I didn't sleep as well as usual.
12. I was happy this week.
13. I was more quiet than usual this week.
14. This week, I felt lonely, like I didn't have friends.
15. People I know were not friendly to me this week.
16. I had a good time this week.
17. I felt like crying this week.
18. I felt sad this week.
19. People didn't like me this week.
20. I had a hard time getting started doing things this week.

### Beck Anxiety Inventory

Response Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

1. I have had difficulty falling asleep this week.
2. My appetite has been poor this week.
3. I have had to force myself to eat this week.
4. Other people have had to urge me to eat this week.
5. This past week, I have been waking up a lot in the middle of the night (other than to go to the bathroom).
6. This past week, I have had trouble falling back asleep after I wake up in the middle of the night.
7. My sleep has often been restless or disturbed this past week.
8. I have been worrying a lot this week.
9. This week, I have found myself worrying about the worst possible things that can happen to me.
10. This week, I have been afraid of what was going to happen to me.
11. This week, I have been very irritable and in a bad mood.
12. This week, I have felt very tense and have had trouble relaxing.
13. This week, I have found myself worrying a lot about things I don't normally worry about.
14. This week, I have startled easily.
15. This week, I have cried very easily.
16. This past week, I have felt very afraid.
17. This past week, I have had sinking feelings or "butterflies" in my stomach.
18. This past week, I have felt my heart racing when I wasn't exerting myself physically.

### Rosenberg Self Esteem Scale

Response Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

1. On the whole, I am satisfied with myself.

2. At times, I think I am no good at all.
3. I feel that I have a number of good qualities.
4. I am able to do things as well as most other people.
5. I feel I do not have much to be proud of.
6. I certainly feel useless at times.
7. I feel that I am a person of worth, at least on an equal plane with others.
8. I wish I could have more respect for myself.
9. All in all, I am inclined to feel that I am a failure.
10. I take a positive attitude toward myself.

## ABSTRACT STUDY 2

The current study examined college students' sexual behavior across regions in the US using data the Multi-Site University Study of Identity and Culture (MUSIC;. Participants included students from thirty different colleges and universities around the US. These data were uniquely positioned to conduct regional comparisons as previous empirical samples of college students have been generally limited to one or a small number of locations, and as a consequence, are unable address questions regarding regionally specific sexual behaviors or whether there exist similarities or differences.

Hypotheses were developed based observed regional differences in sexuality across the US (Santelli et al., 2006; Center for Disease Control, 2006; Guttmacher Institute, 2011; Ellingson et al., 2004). Mean-level differences in typical sexual behaviors, risky sexual behaviors, and intercourse after drinking alcohol were significantly different across region. Furthermore, logistic regression analyses revealed that college students' sexual behaviors were significantly associated with regional variables, but mostly unrelated to sex (gender) or racial/ethnic group membership (only 2 of 20 relationship examined were significant). Findings of significant differences by region suggest that perhaps contextual norms regarding the extent to which sexual conduct is socialized in youth underscore the importance of the observed regional differences sexuality and sexual behaviors across the US.

## **STUDY 2: Who’s “Doing” What?: An Investigation of Regional Trends in Sexual Activity and Risky Sexual Behaviors Among College-Age Youth**

### **Introduction/Rationale**

Sexuality and sexual development are essential parts of human behavior. Currently, American culture is organized in such a way that there is a progression in the norms of sexual behaviors that are appropriate at each of life’s developmental stages. However, during the college years, the cultural norms of sexual propriety are blurred. While most can agree that the sexual behaviors of individuals in college vary greatly—perhaps, there are other factors besides individual differences that contribute to these variances.

#### **WHY STUDY REGIONAL DIFFERENCES?**

There is a colloquial and perhaps stereotypical understanding that there are distinct differences in the personalities of Americans living in certain regions (Rodgers & Woods, 2010). This understanding has been corroborated by recent research which confirms the validity of personality differences (both real and stereotypical) of Americans on a state level (Rentfrow, 2008; Rodgers & Wood, 2010). Beyond these real and stereotyped personality differences, there are a variety of reasons that investigating regional science is an important element to consider. For instance, particular ethnic minority groups tend to be clustered in certain regions of the country; there are clear differences in political climates among states (hence, the red and blue colored maps that are prevalent during election periods); and, there appear to be trends in physical health, rates of obesity, and prevalence of regular exercise on a regional level (Rentfrow, 2010; Halpin & Agne, 2009). Often, researchers will pick and choose to include

aspects of regional differences in their research, for instance, by controlling for levels of religiosity or political stance; however, simply controlling for these aspects of regional cultural may lead to fallacies in research (see Inglehard & Wetzel, 2003).

Among the social sciences, there are relatively few studies that have examined regional difference in behavior among certain groups in large part because there simply do not exist datasets that would allow for comparisons across all regions of the US. In the studies that have been able to investigate regional differences, their findings support the notion that a region's cultural climates are related to social capital (Putnam, 2000), political orientation (Jost, 2006), social and psychological determinants of health (Wilson, Ainsworth & Bowles, 2007) and others. By examining multiple regions within the same nation, researchers interested in particular behaviors within one's cultural environment (such as one's sexual behavior in the different regional college environments) will allow for a more precise estimates of the effects of these differing regional cultures on these behavioral processes.

When it comes to the sexual behavior of college students, there are a myriad of factors that impact youth's decision making regarding their behaviors. The current study investigated sexual behaviors for male and female college students across regions based on observed differences in school's cultural climate specific to sexuality as well as differences in sexual education, sexuality socialization, and documented differences in sexual health resources.

#### THE COLLEGE ENVIRONMENT AS "SEXUAL MARKETS"

Late adolescents that enter into college have a "place" in which they can learn about and experiment with sexuality. This "place" exists literally in the sense of having housing separate from one's family of origin; developmentally, in the sense that youth enter into college after a period of pubertal and psychological development that makes this time period prime for

developing sexual relationships; and figuratively in that college is a time that many youth and others have the expectation of “finding oneself” and developing into a successful and productive member of the adult world. For many, the beginnings of sexual behavior start in high school or earlier (Center for Disease Control and Prevention, 2006). However, the relative freedom and the decrease in parental monitoring that accompanies moving from a family home into a college dorm or apartment combined with the increase in the pool of eligible partners a collegiate environment affords, allows late adolescents to have their own space in which to develop sexual relationships. Ellingson and colleagues (2004) articulated a theory of “sex markets” as areas that are spatially and culturally bounded and allow individuals search for sex partners and engage in a variety of sexual transactions. Undoubtedly, colleges and universities can be seen as “sex markets” that impact, and possibly alter, youth’s sexual attitudes and behaviors (Davidson et al., 2008)

Though there is a wide range of empirical interest regarding the sexual behavior of college students including engagement in risky sexual behaviors, pregnancy and contraception, the relationship between sex and alcohol consumption, the relationship between sex and religion, and efficacy of sexuality education programs and many others (Gilbert and Sawyer, 1994; Silva, 2002, Santelli et al., 2006; Center for Disease Control and Prevention, 2006, Simmons, Burt, and Peterson, 2009; Guttmacher Institute, 2011). However, despite the range of interest in the sexual lives of college students, there is not an accepted standard of sexual behavior during this developmental period. Instead, information is pieced together by looking collectively at empirical studies that have investigated the sexual lives of college students at one or a few sites across the US. Unfortunately, the findings from these studies are not generalizable to the American college student population at large and are not designed to make comparisons across

colleges or regions. And, while there are some advantages to using national samples to study adolescent and young adult sexuality—as is the case with the studies from the Center for Disease Control and Prevention and those that use the ADD Health dataset—they aren't positioned to specifically address college students. Furthermore, there are quite a few inconsistencies across the US—such as differences in how states choose to address sexuality education, or differences in how regions socialize youth regarding sexuality—that are likely linked to regional differences in youths' sexual behavior.

### SEX EDUCATION IN DIFFERENT REGIONS

Sexuality education in a school setting typically fall into one of two categories, namely those that promote abstinence (referred to in the literature as abstinence-only or value based) and those that promote safer sexual behavior (referred to in the literature as comprehensive, safer-sex, secular, or abstinence plus) (Silva, 2002). In the 1990s and 2000s, programs that promote abstinence were in the forefront of American sexual education, both in schools and supported by the federal government (Gilbert and Sawyer, 1994; Santelli et al., 2006). However, findings from recent empirical research suggest that even though abstinence is the desired outcome from abstinence-based approaches, the effectiveness of these programs and interventions is far from settled (Silva, 2002; Santelli et al., 2006; Center for Disease Control, 2006). Regardless, individual States throughout America tend to follow regionally specific norms when it comes to sexuality education for their youth, which has implications for how youth develop related to sexuality, and how college students behave in sexual matters once they leave home.

Attitudes and beliefs about sexuality—particularly teenage sexuality—among the states in the US tend to follow a stereotypical trend based on inconsistencies across the US—such as differences in how states choose to address sexuality education, or differences in how regions

socialize youth regarding sexuality. One could expect differences in college students' sexual behaviors to be linked to the region in which the student attends college. For example, states in the Midwest and South that comprise the "Bible-belt," tend to follow a more politically conservative agenda (Halpin & Agne, 2009), and hence usually implement sexuality education programs that stress abstinence (Guttmacher Institute, 2011). Coastal states (both East and West) are perceived to be more progressive (Halpin & Agne, 2009), and typically implement safer-sex sexuality education programs in schools (Guttmacher Institute, 2011). In 2011, an analysis of states' policies regarding sex and HIV education found that only 20 states required sex education in schools (Guttmacher Institute, 2011). Of those states, most were located within the Eastern regions and the Midwest, with only three states residing in the Western regions (Oregon, Utah, and New Mexico) (Guttmacher Institute, 2011). States also have control over what topics are covered in their schools' sexuality education programs, such as abstinence, contraception, sexual orientation, etc., in addition to whether or not the information is medically accurate (of the states in the Bible belt, only North Carolina has this requirement), age appropriate, culturally appropriate and unbiased, and whether or not the program can promote religion (only California and Louisiana have policies against this) (Guttmacher Institute, 2011).

#### SEXUALITY SOCIALIZATION IN DIFFERENT REGIONS

Three institutions in particular—religion, education, and family—are important in socializing sexual behaviors among youth through stigmatization, surveillance, and other processes (Ellingson et al., 2004). Often, differences in socialization are linked with regional differences in these three institutions. For example, a defining feature of States included in the "Bible belt" is that religion permeates most aspects of life including politics and education (Vazsonyi & Jenkins, 2010). Research findings from a 2002 study suggest that youth from the

Southern states are most religious and youth from the northeast are least religious when compared the youth across the country (Smith et al. 2002). These regional differences play a role in youth's sexual behavior, particularly because religiosity, and to some extent religious affiliation, are linked with their choices to engage (or not) in certain sexual behaviors (Regnerus, 2007). However, the relationship between religiosity and sexuality may be counterintuitive based on conceptions that religions widely practiced in the US recognize sexual behaviors as appropriate only within the confines of marriage. The expectation is that highly religious youth will engage in less sexual activity when compared to less- or non-religious youth. Recent research, though, links religiosity with higher rates of teenage pregnancy ( $r = 0.53, p < .001$ ), even after taking into account youth's SES and abortion rates (Strayhorn & Strayhorn, 2009). The same study's findings suggest that religiosity is negatively related to abortion ( $r = -0.45, p = .002$ ), suggesting a correlation between higher levels of religiosity and rates of teen pregnancy may be due to the idea that youth from more religious communities being less likely to use contraception (Strayhorn & Strayhorn, 2009), which we know is in turn linked to more pervasive sexual education practices.

Regional differences in the sexual socialization of youth are not limited to differences in youth's levels of religiosity. At the state-level, decisions regarding sexual education in school settings are set by law-makers and legislators. Particularly for Southern and Midwestern regions, mandated sexuality education programs tend to veer toward more conservative values by stressing abstinence for teens, the importance of sex only within marriage and the negative outcomes of teen sex. For example, States in the Bible belt include components of sexuality typically linked with conservative, Christian values such as stressing abstinence and the importance of sex only within marriage in their sexuality education programs. Of the States in

other regions, only 5 included information on the importance of sex within marriage, namely Illinois, Indiana, Michigan, Ohio, and Utah (Guttmacher Institute, 2011). When it comes to the negative outcomes of teen sex, again the Bible Belt had the highest representation across all States (9 of 15) with the only 4 states from other regions covering the topic, namely, Arizona, Illinois, Michigan and Ohio. However, the opposite is true when it comes to covering contraception, with only 18 states and Washington D.C. requiring the information to be disseminated to students. Of those 18, only 5 are from the Bible Belt, namely Alabama, North Carolina, South Carolina, Virginia, and West Virginia (Guttmacher Institute, 2011). Thus, we would expect differences in students' comprised sexual knowledge gleaned from formal education. These differences, we suggest, would lead to differences in sexual behaviors among college students in the current study.

It is difficult to determine whether these differences in religiosity and sex education are cause or consequence of differences in sexual behavior among America's youth, though, one thing is clear—there are differences in sexual practices of youth across the US. In 2009, the Center for Disease Control and Prevention assessed sexual behaviors among high school students. The risky sexual behaviors studied, among others, included drinking or using alcohol before last sexual intercourse, having sex with four or more persons in one's lifetime, and not using a condom during last sexual intercourse. When it comes to having sex under the influence, Bible Belt states were the least likely to be above the national average of 21.6%, with only 3 of 18 states (of 42 states assessed in total) hailing from –this conservative region. However, when it comes to other risky sexual behaviors, Bible-belt states fared worse than others, with 13 of 22 states (of 42 assessed in total) above the national average of 13.8% for having sex with four or

more persons and 13 of 19 states (of 40 assessed in total) above the national average of 38.9% for not using a condom during last sexual intercourse.

If, as proposed, differences in sex education and sexuality socialization help to organize college and universities as distinct areas in which students develop culturally appropriate norms regarding sexuality and sexual behavior, then it is reasonable to conclude that there will be regional differences in sexual experiences for college students across the US. That line of thinking is corroborated by the Trojan® Sexual Health Report Card (SHRC).

#### SEXUAL HEALTH REPORT CARD

In 2005, the SHRC started its annual ranking of the sexual health resources and information available to students at American colleges and universities in effort to encourage students to “make a tangible change and to take their school’s sexual health into their own hands” (p. 4, Trojan® Sexual Health Report Card, 2010). In the SHRC, school’s health centers were ranked based on 13 separate categories including: student opinion of health center, hours of operation, whether the center allows drop-ins or require appointments for student scheduling, separate sexual health awareness programs for students (eg: sex week, etc.), contraceptive availability, condom availability, HIV testing on-site, STI testing on-site, anonymous advice for students available through center (email, phone, text), lecture/outreach programs for sexual health issues, student peer groups, availability of sexual assault programs, resources or service, and Website usability. Composite scores are created for each institution, and then they were ranked where schools with superior sexual health information have the lowest scores.

As a preliminary analysis for this study, the 2008 SHRC was analyzed because those rankings were calculated during the same time period in which the MUSIC data were collected. In the 2008 SHRC, 139 colleges and universities were assessed. Of the 30 schools in the MUSIC

data, 8 were not represented in the 2008 SHRC. Schools that were represented in both studies were grouped into regional categories and their scores were averaged. Lower scores indicated higher levels of sexual health and higher scores indicated lower levels of sexual health among the schools. In 2008, the Midwest had the best overall ranking with an average score of 42. The Northeast had the next highest ranking with an average score of 53, followed by the Southwest and Southeast with scores of 71 and 75, respectively. The West fared the worst of the regions, with an average score of 132.

### **The Current Study**

This current study extended the current literature by using a large multi-site sample of male and female American college students from different regions of the US to evaluate college students' 1) typical sexual behaviors (i.e. intercourse with a partner, engagement in oral sex, engagement in anal intercourse), 2) risky sexual behaviors (i.e. sex with someone known for less than one week, sex without a condom, sex while drunk or high, and sex with more than 4 partners, and 3) oral sex and sexual intercourse after drinking alcohol in a variety of situations common to college campuses such as a bar, at an on-campus dorm, at a Greek Party, or at an off-campus residence, while considering the broader social context of region.

#### *Research Questions*

- 1.) Are mean levels of a variety of sexual behaviors similar or different for male and female college students depending on the geographical region in which the college is located (Northeast, Southeast, Midwest, Southwest and West Coast)? The following behaviors will be investigated:
  - Typical sexual behaviors (sex with a partner, oral sex, anal sex). *It was hypothesized that there would be sex differences in the reports of typical sexual behaviors among*

*college students such that males would be more likely to report engagement in sexual behaviors compared to their regional female counterparts. Although there were no a priori hypotheses regarding sexual behaviors by region, an investigation of the sexual behaviors in college students across the US in all of the regions analyzed here suggest that there we would find regional differences of the engagement in sexual behaviors for college men and women.*

- *Risky sexual behaviors (sex with more than 4 partners, casual sex, sex without a condom, sex while drunk or high). It was hypothesized that there would be sex differences in engagement of risky sexual behaviors, where males would report engaging in more risky sexual behaviors than females in each region. It was also hypothesized based on the Trojan® Sexual Health Report Card (2008) that students in the West Coast region would engage in the highest levels of risky sexual behaviors, followed by students in the Southern Regions, and students in the Northeast and Midwest would engage in the lowest levels of risky sexual behaviors.*
- *Engagement in oral sex or sexual intercourse after drinking alcohol at a bar, at a dorm or residence hall, at a Greek party, and at an off-campus residence. It was hypothesized based on previous empirical work (Lindgren et al., 2009) that there would be no significant differences in male and female students' reports of engaging in oral sex or sexual intercourse after drinking alcohol across regions. There were no a priori hypotheses as to what regional groups would be most likely to engage in oral sex or sexual intercourse after drinking or which drinking contexts would be most predictive of oral sex and sexual intercourse. Predictions based on the Trojan® Sexual Health Report Card (2008) support the hypothesis that students in the West*

*Coast region would engage is the highest levels of oral sex and sexual intercourse after drinking alcohol, followed by students in the Southern Regions, and that students in the Northeast and Midwest would engage in the lowest levels of oral sex or sexual intercourse.*

- 2.) Do demographic and background variables (age, sex, family structure, SES, racial/ethnic groups, level of acculturation, sexual orientation, and region) impact college students typical sexual behavior, risky sexual behavior, and oral sex or sexual intercourse after drinking alcohol? *It was hypothesized that there would be significant a relationship between age and sexual behavior variables such that older college students would report engaging in more sexual behaviors than younger college students. In addition, it was expected that there would be significant differences in the relationship between sex (gender) and sexual behavior variables such that males would engage in more sexual behaviors than females. Furthermore, it was expected that lower SES college students and minority college student would engage in more sexual behaviors than their higher SES and majority college student peers, respectively. In addition, it was expected that immigrant (1<sup>st</sup> or 2<sup>nd</sup> generation youth) and those from two parent households would engage in less sexual behavior that their native peers. Lastly, it was hypothesized that sexual minority college students would engage in more sexual behaviors than heterosexual college students. There were no a priori hypotheses as to whether or not regional groups would impact sexual behavior outcomes; however, predictions based on the Trojan® Sexual Health Report Card (2008) would support hypotheses that students in the West Coast region engage is the highest levels of sexual behavior outcomes,*

*followed by students in the Southern Regions, and that students in the Northeast and Midwest would engage in the lowest levels of sexual behavior outcomes.*

## **Method**

### Procedures and Participants

Participants were recruited from courses in psychology, family studies, sociology, and education. These data were collected online between September 2007 and October 2009 as part of a national collaborative: the Multi-Site University Study of Identity and Culture (MUSIC). The 2008–2009 data collection, which was used in the present study, included measures of personal and cultural identity, well-being, depression and anxiety, personality, and health risk behaviors. Data were collected from students at thirty colleges and universities around the United States so as to provide a more diverse sample than would have been available at any one site. Sites were selected so as to provide diversity in terms of geographic location, setting (urban, suburban, or college town), and type of institution. Of the 30 sites, 15 were major state universities, eight were smaller state universities, three were major private universities, and four were private colleges. Six sites were located in the Northeast, six in the Southeast, six in the Midwest, four in the Southwest, and eight in the West. In total, students from colleges and universities in 30 U.S. states participated in the study. The study was approved by the Institutional Review Boards at each participating institution. The number of participants surveyed at each site ranged from 29 to 1,450, largely depending on the size of the institution and the number of classes that were available to be surveyed. The median number of participants per site was 207 (25th percentile: 73, 75th percentile: 466).

Participants logged in to the study website using their university name and student number. Both of these pieces of information were replaced with code numbers to ensure

anonymity both for individual participants and for universities, as well as to decrease the risk of “deductive disclosure” (i.e., where data on multiple variables can be used to identify participants). In fact, this was also requested by most university IRBs such that no information can be provided in the current effort about participation rates or representation of the total student body. Participation rates across schools were 93% of invited students. The survey was divided into six separate pages, and students were permitted to save their work and resume at a later time.

Participants were directed to the study website using printed and e-mailed announcements. Respondents received credit toward their course grades in exchange for their participation. Completion time for the entire survey ranged from 1 to 2 hrs. Participants completed the assessment battery as a confidential online survey. The sample for the present study consisted of 9,697 undergraduate students from the larger MUSIC data collection (N=10,573). We selected for inclusion in the present analyses only students within the late adolescent/young adulthood age range (18–25 years of age).

## Measures

All items and associated response categories can be found in Appendix A. In addition to examining potential sex and regional differences, controls were used for age, family structure, racial ethnic group, socioeconomic status, and sexual orientation, each known to co-vary with both independent and dependent measures of the study.

### *Age, sex, racial/ethnic group, and level of acculturation*

Students responded to a question which asked “What is your age?” by indicating their age in years and indicated their sex (male or female) and. Racial/ethnic group was assessed by having adolescents answer, “My ethnicity is . . .” Responses included 1 = Black, African

American, Afro-Caribbean, Black African, Other in this category, 2 = Caucasian, White, European American, White European, Other in this category, 3 = East Asian, Asian American, Amerasian, Asian-Caribbean, Other in this category, 4 = Latino/a, Hispanic, Spanish, Latin American, of Spanish speaking- South American/Caribbean heritage, Other in this category, 5 = South Asian, South Asian American, of South Asian heritage, Other in this category, 6 = Middle Eastern, Arab, Non-Black North African, Other in this category, 7 = Coloured-South African, Khoi San, Cape Malay, Other in this category. For the purposes of this study, racial/ethnic groups were recoded using terms consistent with how the students referred to themselves. Groups were collapsed into the five most frequently used self-assessment of racial/ethnic group and labeled as follows: 1 and 7 were coded as “Black”; 2 was coded as “White”; 3 and 5 were coded as “Asian”; 4 was coded as Latino/a; and 6 was coded as “other minority.” Level of acculturation was assessed using a series of questions that asks if the student and the student’s mother and father were born in the US. The answers to these questions were used to categorize adolescents into the following categories: 1<sup>st</sup> generation immigrant youth (selected “No” when asked “Were you born in the United States), 2<sup>nd</sup> generation immigrant youth (selected “No” for either parent or both when asked “Was your mother [father] born in the United States), and native youth (selected “Yes” for all three questions).

### *Family Structure*

Family structure was assessed by asking students, “How would you characterize your family?” Five living arrangements were given as answer choices, 1 = Parents still married; 2 = Parents separated/divorced; 3 = Parents never married to one another; 4 = One or both parents deceased; and 5 = Other (please specify). This variable was re-coded into two main categories, namely, 0 = parents still married, and 1 = other.

### *Socio-economic status (SES)*

SES was assessed by asking students to indicate their family's (or the individual's) annual household income on a scale that included 4 ranges: Below \$30,000; \$30,000 to \$50,000; \$50,000 to \$100,000; and above \$100,000.

### *Sexual Orientation*

Sexual orientation was assessed by asking students, "How would you characterize your sexual orientation?" Answers choices included 1= completely heterosexual, 2 = mostly heterosexual, 3 = bisexual, 4 = mostly homosexual, 5 = completely homosexual, 6 = not sure. Responses were recoded into two groups: 1 and 2 = heterosexual and 3 through 6 = sexual minority.

### *Region*

Regions were divided into five groups based on observed similarities and differences in multicultural heritage as well as distinct demographic characteristics like age and occupation, use of language and dialects, and geography. The States included in the study for each region are as follows. *Northeast*: Connecticut, Massachusetts, New York, Pennsylvania; *Southeast*: Alabama, Arkansas, Florida, Georgia, North Carolina; *Southwest*: Arizona, Texas; *Midwest*: Indiana, Michigan, Minnesota, Missouri, Nebraska, South Dakota; *West*: Colorado, California, Utah.

### *Typical Sexual Behavior (TSB)*

TSB was assessed using three items. The first addresses overall sexual activity for the student by asking, "Which of the following best characterizes your vaginal, oral, or anal sexual activity in the last month?" Responses included 1 = Sex with one committed partner (boyfriend, girlfriend, fiancé(e), spouse); 2 = Sex with one casual partner ("friends with benefits"); 3 = Sex with one partner most of the time, but also with other people; 4 = Sex with a number of different

people; 5 = I have not had sex in the last month. These responses were recoded into 1= I have had sex with a partner in the last month, and 0= I have not had sex with a partner in the last month. The second item assessed students' engagement in oral sex behaviors by asking, "In the last 30 days, how many times have you engaged in oral sex?" The final item assessed students' engagement in anal sex behaviors by asking, "In the last 30 days, how many times have you engaged in anal sex?" Responses for all items, with the exception of the first item were continuous integers provided by the student and were recoded into 1=have engaged in behavior and 0 = have not engaged in behavior.

#### *Risky Sexual Behavior (RSB)*

RSB was assessed using 4 items. The first item assessed students' number of sexual partners by asking, "In the past 30 days, how many different sexual partners have you had?" The second item assessed students' recent sexual activity with an acquaintance by asking, "In the last 30 days, how many times have you had sex with someone you known for less than a week?" The third item assessed students' recent condom use by asking, "In the last 30 days, how many times have you had sex without using a condom?" The final RSB item assessed students' recent engagement in sexual behavior while under the influence of drugs or alcohol by asking, "In the last 30 days, how many times have you had sex while you were drunk or high?" Responses for all items were continuous integers provided by the student.

#### *Oral sex and Sexual Intercourse after Drinking*

Eight items were used to assess oral sex and sexual intercourse following a period of drinking alcohol in four different situations common for college students. The items were worded identically for each of the four situations and asked, "Please indicate how many times you experienced any of the following, either during or shortly after drinking at (location) . . . I

had vaginal intercourse with someone I just met or an acquaintance” and “I had oral sex with someone I just met or an acquaintance.” The locations included a bar context (at a bar), a residence hall context (at a dorm/residence hall), a Greek party, and a non-university affiliated house or apartment (at an off-campus house or apartment). Scale scores were calculated by combining responses for either oral sex or sexual intercourse across the four locations, to create an overall oral sex after drinking score and an overall sexual intercourse after drinking score.

### **Plan of Analyses**

As a preliminary step, descriptive analyses were completed for items and scale scores (Tables 1, 2, and 3). In a first step, an analysis of variance (ANOVA) was used to test for significant mean level similarities or differences across region and by sex for the three typical sexual behavior items, the four risky sexual behavior items, and the eight items that assess oral or vaginal intercourse after drinking alcohol. Next, logistic regressions were used to test the relationships between demographic and background variables and sexual behavior variables (typical sexual behaviors, risky sexual behaviors, and oral sex or sexual intercourse after drinking). Analyses were completed in PASW Version 18.0.

### **Results**

#### *Descriptive Statistics*

The means and ANOVA tests are summarized in Tables 1, 2, and 3. There were  $n = 9,697$  student participants (72.8% female; mean age = 19.77 years,  $sd = 1.61$ ). Overall, 66% of college students came from a home in which they resided with both biological parents. The sample was mostly White (60.5%), with 14.8% of the sample reporting that they were Latino/a, 13.8% Asian, 8.7% Black, and 1.3% other minority. Ninety-five percent of respondents reported that they were heterosexual, and about 33% were 1<sup>st</sup> or 2<sup>nd</sup> generation immigrants.

Socioeconomic status was assessed using students' families' income: 19.7% reported an annual household income of less than \$30,000, 18.6% reported an income of \$30,000 through \$50,000, 32.6% reported an income of \$50,000 to \$100,000, and 29.1% reported an annual family income of greater than \$100,000.

ANOVA tests were conducted for males and females to test for mean level differences in TSB, RSB, as well as oral sex and sexual intercourse after drinking items (Tables 1 and 2). To be thorough, ANOVA tests with Scheffe's contrasts were also used for scale scores for the following four measures: TSB, RSB, oral sex after drinking and sexual intercourse after drinking (Table 3). For the first two measures, dummy-coded scores were created such that if a student engaged in any single or combination of the typical sexual behavior items, they received a score of 1 and if they did not, then they received a score of 0. Scheffe's contrasts indicated a consistent pattern in which all significant differences involved the Western region. Effect size calculations were completed by sex and across region pairs using means and standard deviations for each of the fifteen individual behaviors items by sex (1 comparison) and across each regional comparison (10 comparisons total, i.e., Northeast vs. Southeast, Northeast vs. Midwest, Northeast vs. Southwest, etc). In total, 165 effect sizes were calculated. The median effect sizes in comparisons by sex and across regions were .31 (mean = 0.25; range = 0.07 to 0.46) and .07 (mean = 0.10; range = 0.00 to 0.37), respectively (see Appendix B for details). For the intercourse after drinking items, reported instances of intercourse (either vaginal or oral) after drinking were summed across the four locations (at a bar, at a dorm, at a Greek party and at an off-campus residence) to create composite scores of oral sex and sexual intercourse after drinking for male and female students. These scores were then recoded into 0 = did not engage in

intercourse after drinking, and 1 = did engage in intercourse after drinking (regardless of location).

Table 1: Means and Percentages from Individual Items of Typical and Risky Sexual Behavior Measures for Males and Female College Students by Region

	Northeast		Southeast		Southwest		Midwest		West		F	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
TSB	n= 264	n=633	n=738	n=2,340	n=437	N=1,127	n=188	n=1,011	n=489	n=1,252		
Sex with Partner †	66% <sup>5</sup>	60% <sup>5</sup>	68% <sup>5</sup>	62% <sup>5</sup>	67% <sup>5</sup>	60% <sup>5</sup>	64% <sup>5</sup>	59% <sup>5</sup>	48% <sup>1,2,3,4</sup>	47% <sup>1,2,3,4</sup>	14.39*	21.11*
Oral Sex	0.89	0.90 <sup>5</sup>	1.05 <sup>5</sup>	1.01 <sup>5</sup>	0.94	0.92 <sup>5</sup>	0.85	0.96 <sup>5</sup>	0.72 <sup>2</sup>	0.62 <sup>1,2,3,4</sup>	5.73*	20.37*
Anal Sex	0.19	0.08	0.23	0.11 <sup>5</sup>	0.17	0.11 <sup>5</sup>	0.25	0.09	0.15	0.05 <sup>2,3</sup>	1.94	5.09*
RSB	n= 316	n=676	n=921	n=2,540	n=501	N=1,192	n=226	n=1,076	n=595	n=1,381		
# of Partners	0.82	0.61 <sup>5</sup>	0.97	0.61 <sup>5</sup>	1.27	0.53 <sup>5</sup>	0.78	0.51	0.68	0.34 <sup>1,2,3</sup>	4.50	5.33*
Casual Sex	0.29	0.08	0.29	0.10	0.29	0.11	0.28	0.08	0.23	0.07	1.15	6.43*
No Condom	0.51	0.72	0.76 <sup>5</sup>	0.87 <sup>5</sup>	0.76	0.74	0.67	0.84 <sup>5</sup>	0.49 <sup>2</sup>	0.59 <sup>2,4</sup>	0.71*	2.56*
Sex UI	0.44	0.47 <sup>5</sup>	0.49 <sup>5</sup>	0.59 <sup>5</sup>	0.49 <sup>5</sup>	0.48 <sup>5</sup>	0.49 <sup>5</sup>	0.45 <sup>5</sup>	0.27 <sup>2,3,4</sup>	0.23 <sup>1,2,3,4</sup>	5.08*	12.53*

\*  $p < .05$ . † = Percentage of individuals in region that report engaging in the criteria. TSB = Typical Sexual Behavior; RSB = Risky Sexual Behavior; Sex UI = Sex under the influence. Note: Means are calculated using raw variables, F and  $p$ -values from ANOVA tests were conducted after controlling for the following background variables: age, sex, family structure, SES, racial/ethnic group, level of acculturation and sexual orientation. Superscripts indicate significant differences between groups: 1 = Northeast, 2 = Southeast, 3 = Southwest, 4 = Midwest, and 5 = West.

Table 2: Means of Individual Items for Oral Sex and Sexual Intercourse after drinking alcohol measures for male (M) and female (F) college students by region.

Alcohol Situations	Northeast		Southeast		Southwest		Midwest		West		<i>F</i>	
	M	F	M	F	M	F	M	F	M	F	M	F
Oral Sex after drinking alcohol												
...at a Bar	1.36	1.10 <sup>5</sup>	1.52 <sup>5</sup>	1.11 <sup>5</sup>	1.45 <sup>5</sup>	1.11 <sup>5</sup>	1.44	1.10 <sup>5</sup>	1.20 <sup>2,3</sup>	0.99 <sup>1,2,3,4</sup>	6.22*	8.51*
...at a Dorm	1.35 <sup>5</sup>	1.07 <sup>5</sup>	1.31 <sup>5</sup>	1.07 <sup>5</sup>	1.32 <sup>5</sup>	1.10 <sup>5</sup>	1.32	1.06 <sup>5</sup>	1.10 <sup>1,2,3</sup>	0.97 <sup>1,2,3,4</sup>	5.30*	15.05*
...at a Greek Party	1.26	1.07 <sup>5</sup>	1.31 <sup>5</sup>	1.09 <sup>5</sup>	1.26	1.08 <sup>5</sup>	1.20	1.07 <sup>5</sup>	1.09 <sup>2</sup>	0.95 <sup>1,2,3,4</sup>	4.72*	13.85*
...Off-Campus	1.27	1.12 <sup>5</sup>	1.45 <sup>5</sup>	1.10 <sup>5</sup>	1.39 <sup>5</sup>	1.15 <sup>5</sup>	1.42 <sup>5</sup>	1.11 <sup>5</sup>	1.07 <sup>2,3,4</sup>	0.97 <sup>1,2,3,4</sup>	11.12*	13.08*
Sexual Intercourse after drinking alcohol												
...at a Bar	1.38	1.15 <sup>5</sup>	1.48 <sup>5</sup>	1.15 <sup>5</sup>	1.39 <sup>5</sup>	1.15 <sup>5</sup>	1.39	1.14 <sup>5</sup>	1.67 <sup>2,3</sup>	1.02 <sup>1,2,3,4</sup>	7.23*	6.97*
...at a Dorm	1.37 <sup>5</sup>	1.09 <sup>5</sup>	1.27	1.08 <sup>5</sup>	1.32 <sup>5</sup>	1.13 <sup>5</sup>	1.27	1.06 <sup>5</sup>	1.12 <sup>1,3</sup>	0.97 <sup>1,2,3,4</sup>	3.94*	11.28*
...at a Greek Party	1.28	1.08 <sup>5</sup>	1.30 <sup>5</sup>	1.09 <sup>5</sup>	1.32 <sup>5</sup>	1.09 <sup>5</sup>	1.18	1.09 <sup>5</sup>	1.08 <sup>2,3</sup>	0.95 <sup>1,2,3,4</sup>	6.21*	12.98*
...Off-Campus	1.36 <sup>5</sup>	1.15 <sup>5</sup>	1.44 <sup>5</sup>	1.12 <sup>5</sup>	1.40 <sup>5</sup>	1.17 <sup>5</sup>	1.47 <sup>5</sup>	1.14 <sup>5</sup>	1.08 <sup>1,2,3,4</sup>	0.97 <sup>1,2,3,4</sup>	10.01*	13.72*

Note: Means are calculated using raw variables, *F* and *p*-values from ANOVA tests were conducted after controlling for the following background variables: age, sex, family structure, SES, racial/ethnic group, level of acculturation and sexual orientation. Superscripts indicate significant differences between groups: 1 = Northeast, 2 = Southeast, 3 = Southwest, 4 = Midwest, and 5 = West

Table 3: Regional comparison in overall means and percentages of typical sexual behavior, risky sexual behavior, oral sex after consuming alcohol and sexual intercourse after consuming alcohol for male and female college students

Item/Scale	Northeast	Southeast	Southwest	Midwest	West	F	<i>p</i>
<b><u>Males</u></b>							
Typical Sexual Behavior*	67.7% <sup>5</sup>	71.9% <sup>5</sup>	63.7% <sup>5</sup>	62.4%	55.6% <sup>1,2,3</sup>	12.78	<.001
Risky Sexual Behavior*	63.9%	67.6% <sup>5</sup>	60.9%	61.1%	54.5% <sup>2</sup>	6.99	<.001
Oral sex **	1.34 <sup>5</sup>	1.41 <sup>5</sup>	1.37 <sup>5</sup>	1.35 <sup>5</sup>	1.12 <sup>1,2,3,4</sup>	11.66	<.001
Intercourse **	1.31 <sup>5</sup>	1.44 <sup>5</sup>	1.39 <sup>5</sup>	1.35 <sup>5</sup>	1.12 <sup>1,2,3,4</sup>	13.30	<.001
<b><u>Females</u></b>							
Typical Sexual Behavior*	66.9% <sup>5</sup>	71.0% <sup>5</sup>	69.3% <sup>5</sup>	68.9% <sup>5</sup>	55.6% <sup>1,2,3,4</sup>	27.57	<.001
Risky Sexual Behavior*	63.3% <sup>5</sup>	67.6% <sup>5</sup>	65.0% <sup>5</sup>	64.8% <sup>5</sup>	51.8% <sup>1,2,3,4</sup>	25.80	<.001
Oral Sex **	1.13 <sup>5</sup>	1.12 <sup>5</sup>	1.13 <sup>5</sup>	1.13 <sup>5</sup>	1.00 <sup>1,2,3,4</sup>	21.09	<.001
Sexual Intercourse**	1.10 <sup>5</sup>	1.09 <sup>5</sup>	1.10 <sup>5</sup>	1.09 <sup>5</sup>	0.98 <sup>1,2,3,4</sup>	25.29	<.001

Oral sex =Oral sex after consuming alcohol; Sexual Intercourse =Sexual intercourse after consuming alcohol. \* = Percentages reported of individuals in region that report engaging in at least one of the criteria variables. \*\* = mean of instances reported. Superscripts indicate significant differences between groups: 1 = Northeast, 2 = Southeast, 3 = Southwest, 4 = Midwest and 5 = West

Initially, mean-level comparisons were conducted with the individual items that assess typical sexual behavior, risky sexual behavior, and oral sex or sexual intercourse after drinking. When investigating the individual TSB and RSB items, males tended to report higher mean levels than females, with some exceptions (oral sex in the Northeast and Midwest). Subsequent ANOVA tests comparing males and females within the same region (for instance, males in the Northeast compared to females in the Northeast) revealed mixed findings. In the Northeast, Midwest, Southwest, and West there was a significant difference by sex in 4 of the 7 variables. In the Southeast 6 of 7 items were significantly different by sex. For the oral sex and sexual intercourse after drinking items, there was a trend for males to report higher mean levels (when compared to females in the same region) across all regions. Subsequent analyses (discussed below) reveal that the sexual behaviors did not vary by sex.

Further ANOVA tests were conducted by region to test for mean level differences in main study construct scales, (as opposed to individual sexual behavior items) using dummy coded variables for TSB and RSB, such that if a student engaged in any of the sexual behavior, they received a score of 1 and if they did not report any of the behavior, they received a score of 0. Contrary to our expectations, students in the West reported the significantly lower mean levels than all other regions (with the exception of RSB scale for males, in which only Southeastern and Western regions were significantly different; for details see Table 3).

### *Multivariate Analysis*

Logistic regression models indicated that the odds of college students engaging in sexual behaviors, namely, TSB, RSB, oral sex after drinking, and sexual intercourse after drinking, were independently associated with demographic and regional variables (see Table 4). For TSB, there were two significant associations with racial/ethnic group—Latino/as and other minorities.

Age was positively associated with all four sexual behaviors, and had the highest magnitude relationship with vaginal intercourse after drinking such that for each year increase in age, college students were 52% more likely to engage in sexual intercourse after drinking. Sex (gender) was not significantly associated with any of the sexual behaviors, indicating that males were no more or less likely than females to engage in any of these behaviors. Family structure was independently associated with TSB and RSB, such that being from non-traditional home (i.e. parents are not still married) increased college students' likelihood of engaging in TSB and RSB by 55% and 41%, respectively. Similarly, level of acculturation was significantly associated with TSB and RSB such that being a native youth (in this study, 3<sup>rd</sup> generation or higher were considered native) increased college students' likelihood of engaging in TSB or RSB. Sexual orientation was significantly associated with all sexual behaviors, such that being a sexual minority increased college students' likelihood of engaging in sexual behaviors. In addition, SES was significantly associated with intercourse after drinking, such that for every one unit increase in SES, college students were about 8% more likely to engage in oral sex or sexual intercourse after drinking. Interestingly, and perhaps surprisingly, racial/ethnic groups were not significantly associated with any of the sexual behaviors, with the exception of Latino/as and the other category when predicting TSB. The odds ratios suggest that Latinos are more likely than all other racial groups to engage in TSB, and the "other minority" racial group is the least likely to engage in TSB.

Region, however, was independently associated with every type of sexual behavior with two exceptions—oral sex and sexual intercourse after drinking for the Southeast region. The Northeastern region emerged as the region most likely to engage in all four of the sexual behavior variables tested; students from the Northeastern region were 74% more likely than the

reference group (West) to engage in TSB, 51% more likely to engage in RSB, 121% more likely to engage in oral sex after drinking, and 107% more likely to engage in sexual intercourse after drinking. Southeastern college students were the only group to surpass Northeastern students' likelihood of engaging in any of the sexual behaviors, with an odds ratio of 1.66 vs. 1.51 for engaging in RSB. Midwestern college students were the next most likely to engage in sexual behaviors with odds ratios of 1.67 for TSB, 1.47 for RSB, 1.78 for oral sex after drinking, and 1.76 for sexual intercourse after drinking. Midwestern college students were the second least likely to engage in sexual behaviors, with a likelihood ranging from 32% to 34% more likely than the reference group for each of the four sexual behavior variables. Western college students (the reference group) were the least likely to engage in any of the sexual behaviors.

Table 4. Logistic regression odds ratios (95% confidence intervals) for demographic, racial/ethnic, and regional variables predicting typical sexual behavior, risky sexual behavior, oral sex after drinking, and sexual intercourse after drinking.

	TSB	RSB	Oral Sex	Intercourse
<i>Demographic</i>				
Age	1.18*(1.16-1.22)	1.15*(1.12-1.18)	1.04*(1.01-1.08)	1.04*(1.00-1.08)
Sex (Gender)	1.08 (0.98-1.19)	1.00 (0.91-1.10)	1.01 (0.89-1.14)	1.01 (0.89-1.14)
Family Structure	1.55*(1.42-1.71)	1.41*(1.28-1.56)	1.07 (0.94-1.21)	1.07 (0.94-1.20)
Sexual Orientation	1.51*(1.19-1.91)	1.52*(1.18-1.94)	0.72*(0.56-0.94)	0.71*(0.55-0.92)
Level of Acculturation	0.77*(0.67-0.88)	0.87*(0.76-0.99)	1.01 (0.86-1.19)	1.01 (0.86-1.19)
SES	0.99 (0.95-1.04)	0.99 (0.95-1.04)	1.08* (1.02-1.14)	1.08*(1.02-1.14)
<i>Racial Ethnic Groups</i>				
Black	0.71 (0.42-1.20)	0.83 (0.48-1.42)	0.97 (0.54-1.72)	0.98 (0.54-1.76)
White	0.86 (0.52-1.43)	0.85 (0.51-1.44)	1.48 (0.83-2.62)	1.48 (0.84-2.63)
Asian	0.61 (0.36-1.03)	0.67 (0.39-1.13)	1.40 (0.78-2.53)	1.39 (0.77-2.50)
Latino/a	1.06*(0.63-1.77)	0.98 (0.58-1.66)	1.35 (0.76-2.42)	1.36 (0.76-2.43)
Other	0.43*(0.23-0.81)	0.61 (0.32-1.14)	1.18 (0.57-2.42)	1.18 (0.58-2.42)
<i>Region</i>				
Northeast	1.74*(1.48-2.06)	1.51*(1.28-1.79)	2.12*(1.67-2.69)	2.08*(1.64-2.63)
Southeast	1.56*(1.38-1.77)	1.66*(1.47-1.88)	1.05 (0.90-1.21)	1.04 (0.89-1.20)
Midwest	1.66*(1.44-1.91)	1.47*(1.27-1.69)	1.78*(1.47-2.14)	1.76*(1.45-2.13)
Southwest	1.34*(1.15-1.56)	1.32*(1.14-1.54)	1.33*(1.09-1.61)	1.33*(1.10-1.61)
West (ref)	1.00*	1.00*	1.00*	1.00*
Overall % predicted	61.1	64.0	82.4	82.4

\* p <.05; TSB = Typical Sexual Behavior, RSB = Risky Sexual Behavior, Oral sex= Oral sex after drinking, Intercourse = Sexual intercourse after drinking, SES = Socio-economic Status; Overall % predicted = Overall percentage of cases predicted correctly.

## **Discussion**

A number of studies have investigated the sexual behavior of college students; however, this study found it equally compelling to investigate regional differences, in addition to mean-level differences, for four types of sexual behaviors in which college students engage. The very large multi-site sample used in this study makes it uniquely positioned to investigate questions regarding regional differences, where previously, researchers have been unable to explore (cf., Davidson, 2008). This study supported our hypotheses of mean level differences by sex and by region for college students' engagement in sexual behaviors. It also supported some of the hypothesis regarding the significant impact of background (namely, age, family structure, sexual orientation, level of acculturation, and socioeconomic status) and regional variables. Contrary to our expectations, racial/ethnic groups were not significantly related to college students' engagement in sexual behaviors, with only two exceptions.

The following important findings were made. Overall, males reported trends of higher mean levels than females for TSB items in all regions with a two exceptions—engagement in oral sex for students in the Northeast and Midwest. In addition, males reported higher mean levels than females for RSB items in all regions with a few exceptions: females reported higher instances of not using a condom in the Northeast, Southeast, and the West; female youth also reported higher instances of sex under the influence in the Eastern regions. The mean level differences found between males and females were expected; however, the multiple logistic regression investigated the impact of sex on TSB, RSB, and intercourse after drinking variables and found that sex did not significantly impact any of these behaviors. Put differently, although

there appears to be a difference between male and female college student's engagement in sexual behaviors—for example, in this study 68% of males in the Southeast have engaged in sex with a partner and 62% of females have engaged in sex with a partner—statistical tests indicated that the difference is not significant. The same statistical tests investigated other background variables as well, and found age and sexual orientation to be significantly associated with all 4 sexual behaviors in the hypothesized direction. Furthermore, results from the logistic regression indicated that those from a two parent family, and 1<sup>st</sup> and 2<sup>nd</sup> generation immigrants were less likely to engage in TSB and RSB, consistent with our hypothesis. Contrary to our expectations, higher SES was linked with greater odds for engaging in intercourse after drinking (both oral and vaginal). Perhaps this can be attributed to greater overall alcohol use from college students with higher SES backgrounds.

Another important implication of this study is the lack of significant differences in engagement in sexual behaviors found across racial/ethnic groups. This is in contrast with some previous studies (Buhi et al., 2010) and in-line with others, which make the case that the gap between levels of sexual activity by race/ethnicity is disappearing (Upchurch et al., 1998). There were two notable exceptions from the logistic regression that indicated that Latino/as had significantly greater odds (1.06) of engaging in TSB and “other minority” racial/ethnic group had significantly lower odds (0.43) of engaging in TSB.

Perhaps the most important contribution this study makes is in regards to the observed regional differences in college students' sexual behaviors. ANOVA and multiple logistic regression tests both indicated that there are differences among regions in college students' engagement in sexual behaviors, corroborating Davidson and colleagues research (2008) and Ellingson and colleagues (2004) concept of “sexual markets.” Although there were no a priori

hypotheses regarding regional differences in college students' sexual behavior based on previous empirical work, hypotheses were based on calculations from the SHRC. The findings from this study are not in line with these hypotheses, as results indicate that the Western region actually has the lowest odds of engaging in any of the four sexual behaviors tested. Furthermore, the Northeastern region had the highest odds among all regions on three of the four sexual behaviors tested, which was divergent from our expectations. Interestingly, the findings suggest a pattern of likelihood that decreases as one travels westward across the US with the Northeastern region having the greatest likelihood of engaging in all four sexual behaviors, followed by the Southeastern region, then the Midwest, Southwest and finally the Western region. This pattern appears to mirror migratory patterns for immigration into the US, but interestingly, level of acculturation was only significantly associated with TSB and RSB (1<sup>st</sup> and 2<sup>nd</sup> generation immigrants were significantly less likely to engage in TSB and RSB when compared to native).

### **Limitations**

Although the current study adds to our understanding of regional differences in college students' sexual behavior, it is not without limitations. First, the study relied exclusively on self-reports from college students, although it is unclear what alternative method might have improved on this bias. Also, due to the cross-sectional nature of the data collected, causality related to predictor variables (background, racial/ethnic group, and region) and sexual behaviors cannot be inferred. Thus, in addition to the previous suggestions, future empirical work should include a longitudinal data, spanning a number of years that would permit tests of quasi-causal, developmental pathways, which might provide further insights into the developmental course of sexual behaviors.

Furthermore, this investigation was limited in that the inclusion of regional variables was simply a heuristic and abstraction, a proxy to study potential effects by locale. Because there is very limited previous empirical work among the social sciences that addresses regional differences in sexual behaviors among youth (Rogers & Wood, 2008; Rentfrow, 2010; Davidson et al., 2008), there is no broadly accepted organization of regional divisions or of how to define regions. Furthermore, it is unclear to what extent heterogeneity exists even within each region, in addition to across regions. For example, one could make the case that a small, private, and religiously affiliated school and a large public land-grant university in the same region will have substantial differences in their campus culture related to norms and values governing sexual behaviors. The final decision to incorporate five regions included in the present study was based on a careful consideration of a region's spatial and cultural climates related to social capital (Putnam, 2000), political orientation (Jost, 2006), social and psychological determinants of health (Wilson, Ainsworth & Bowles, 2007), among others. In addition, only a small number of colleges and universities within each region were used to define the same. Finally, it is also important to note that the schools part of the study were not chosen at random, and thus are not fully representative of regions, thus limiting the generalizability of study findings pertaining to regions.

### **Conclusions**

A key finding from this research indicates regional differences in college students' sexual behavior. Analyses from the study suggest, perhaps, that context and culture of colleges within specific regions across the US manifest themselves in college students' sexual behaviors. These findings, however, are an important first step in that they document some regional differences in sexual behaviors despite the inclusion of a number of competing explanatory

constructs in model tests. An important next step for future research will be to consider what might account for these observed differences among regions; candidate explanatory variables might include religiosity, political stance, or socialization practices in homes or schools.

The findings of significant differences between regions and the levels of sexual behavior reported by each of the regions speak against common stereotypes, for instance, that more liberal coastal regions will have higher reports of engagement in sexual behaviors than more conservative southern and Midwestern regions. Instead, the findings in fact mirror differences in sex education and sexuality socialization. The findings from this study imply that there appears to be a negative relationship between sexuality socialization—and by proxy sex education—and engagement in risky sexual behaviors, such that higher levels of sexuality socialization and education are related to lower levels of engagement in risky sexual behavior or intercourse after drinking alcohol. These findings, given the large sample size of college students across the US, have important implications for the future of sexuality education in our country. Thus, it appears that contrary to popular beliefs, teaching adolescents about sex and sexuality most generally speaking did not increase their risk to engage in risky sexual behavior and intercourse after drinking, but instead, increased awareness is linked with lower reports of risky sexual behaviors and intercourse after drinking.

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## APPENDIX A.

### *Age*

What is your age?

### *Sex*

Gender (check one): Male, Female

### *Ethnicity/race*

My ethnicity is (choose one):

- h. Black, African American, Afro-Caribbean, Black African, Other in this category.
- i. Caucasian, White, European American, White European, Other in this category.
- j. East Asian, Asian American, Amerasian, Asian-Caribbean, Other in this category.
- k. Latino/a, Hispanic, Spanish, Latin American, of Spanish speaking- South American/Caribbean heritage, Other in this category.
- l. South Asian, South Asian American, of South Asian heritage, Other in this category.
- m. Middle Eastern, Arab, Non-Black North African, Other in this category.
- n. Coloured-South African, Khoi San, Cape Malay, Other in this category.

### *Level of acculturation*

Were you born in the United States? 1= Yes, 2 = No. If no, where were you born?

Was your mother born in the United States? 1= Yes, 2 = No. If no, where was she born?

Was your father born in the United States? 1= Yes, 2 = No. If no, where was he born?

Recoded as 0 = non-immigrant, 1=1<sup>st</sup> Generation Immigrant (student not born in US), and 2 = 2<sup>nd</sup> Generation immigrant (student born in US but at least one parent was not).

### *SES*

Please indicate your family's annual household income. If you are supporting yourself, please indicate your income. If your family is supporting you, please indicate their income: Below \$30,000; \$30,000 to \$50,000; \$50,000 to \$100,000; Above \$100,000.

### *Family Structure*

How would you characterize your family (check one)? Parents still married; Parents separated/divorced; Parents never married to one another ; One or both parents deceased; Other (please specify)

### *Sexual Orientation*

How would you characterize your sexual orientation? 1= Completely Heterosexual, 2 = Mostly Heterosexual, 3 = Bisexual, 4 = Mostly Homosexual, 5 = Completely Homosexual, 6 = Not Sure

### *Sexual Behavior*

#### *Overall Sexual Activity*

Which of the following best characterizes your vaginal, oral, or anal sexual activity in the last month?

1 = Sex with one committed partner (boyfriend, girlfriend, fiancé(e), spouse); 2 = Sex with one casual partner (“friends with benefits”); 3 = Sex with one partner most of the time, but also with other people; 4 = Sex with a number of different people; 5 = I have not had sex in the last month.

#### *Oral Sex*

In the last 30 days, how many times have you engaged in oral sex?

#### *Anal Sex*

In the last 30 days, how many times have you engaged in anal sex?

### *Risky Sexual Behavior*

#### *Number of Partners*

In the past 30 days, how many different sexual partners have you had?

#### *Sex with Acquaintance*

In the last 30 days, how many times have you had sex with someone you known for less than a week?

*No Condom*

In the last 30 days, how many times have you had sex without using a condom?

*Sex under the influence of drugs or alcohol*

In the last 30 days, how many times have you had sex while you were drunk or high?

Intercourse after drinking alcohol at . . .

*A Bar*

Please indicate how many times you experienced any of the following, either during or shortly after drinking at a BAR?

- a. I had vaginal intercourse with someone I just met or an acquaintance. If so, did you use a condom?
- b. I had oral sex with someone I just met or an acquaintance. If so, did you use a condom?

*A Residence Hall or Dorm*

Please indicate how many times you experienced any of the following, either during or shortly after drinking at RESIDENCE HALLS/DORM?

- a. I had vaginal intercourse with someone I just met or an acquaintance. If so, did you use a condom?
- b. I had oral sex with someone I just met or an acquaintance. If so, did you use a condom?

*A Greek Party*

Please indicate how many times you experienced any of the following, either during or shortly after drinking at a GREEK PARTY?

- a. I had vaginal intercourse with someone I just met or an acquaintance. If so, did you use a condom?
- b. I had oral sex with someone I just met or an acquaintance. If so, did you use a condom?

*An off-campus residence*

Please indicate how many times have you experienced any of the following, either during or shortly after drinking at an OFF-CAMPUS HOUSE/APARTMENT

a. I had vaginal intercourse with someone I just met or an acquaintance. If so, did you use a condom?

b. I had oral sex with someone I just met or an acquaintance. If so, did you use a condom?

APPENDIX B.

Table 1. Mean, median, and range of Effect Sizes by sex and across regions.

Comparison	Range	Mean Effect Size	Median Effect Size
Males vs. Females	0.07-0.46	0.25	0.31
NE vs. SE	0.00-0.14	0.01	0.02
NE vs. MW	0.00-0.04	0.02	0.03
NE vs. SW	0.01-0.15	0.04	0.04
NE vs. W	0.06-0.34	0.23	0.26
SE vs. MW	0.00-0.10	0.00	0.00
SE vs. SW	0.01-0.09	0.05	0.06
SE vs. W	0.06-0.33	0.24	0.26
MW vs. SW	0.01-0.14	0.06	0.07
MW vs. W	0.06-0.37	0.24	0.26
SW vs. W	0.01-0.31	0.20	0.20

NE = Northeast, SE = Southeast, MW = Midwest, SW = Southwest, and W = West

### **Conclusion to both studies**

These studies used data from the Multi-Site University Study of Identity and Culture (MUSIC), to investigate body image and sexual behaviors among college students. They add to the existing literature in the following ways: 1) by using sophisticated analyses to examine between group similarities/differences in the relationship between body ideals and internalizing behaviors and 2) by investigating regional differences across the United States in the report of engagement in different types of sexual behavior.

The first study involved individual's ratings of their current and ideal bodies and the extent to which these ratings impact individual's internalizing behaviors (depression, anxiety, self-esteem) and body image by sex, level of acculturation, and across racial/ethnic groups.

Findings mirror findings of other body image research where members of different racial/ethnic groups and level of acculturation groups were more likely to report mean level differences in ideal figure and cultural ideal figures. As a next step, we calculated scores to signify the extent to which individual college students deviated from their ideal body (DEV-PI and DEV-CI) and found significant relationships between deviations and internalizing behaviors in all cases with the exception of the "other" racial/ethnic group category for DEV-CI. Lastly, multi-group testing investigated these relationships across racial/ethnic groups and levels of acculturation and found that they lacked invariance among the groups tested; this brings to light a contending line of reasoning that posits body image and its relationship to internalizing behaviors may be linked to a process universal to all humans. This is in contrast to many empirical studies in which findings (usually from mean level investigations) point toward differences among sexes, levels of acculturation, and racial/ethnic groups (Ricciardelli et al.,

2007; Overstreet et al., 2010; Viladrich et al., 2009; Magnusson et al., 2005). This study challenges the conventional ways of thinking about the extent to which body image beliefs impact psychological wellness and makes the case that, in order to truly examine body image, we must entertain the possibility that ideal body deviations, perhaps, may have the same impact on internalizing behaviors and body image without prejudice for one's sex, racial/ethnic group, or level of acculturation. The implications of these possibilities can shape future studies and challenge researchers to investigate both similarities and differences among sexes, racial/ethnic groups and levels of acculturation and tailor intervention programs toward the population at large instead of focusing on specific groups.

The second study examined aspects of male and female students' sexual lives in terms of their sexual activity, risky sexual behaviors, and engagement in oral or vaginal intercourse after drinking alcohol in four different situations common across college campus on a regional level. Findings from ANOVA tests indicated mean level regional differences and multiple logistic regression analysis revealed that college students' sexual behavior is significantly associated with regional variables and not significantly associated with sex (gender) or racial/ethnic group, with only two exceptions.

The findings of significant differences among the regions and the levels of sexual behavior reported by each of the regions are in direct contrast with our hypotheses based on (incorrect) common beliefs that more liberal coastal regions will have higher reports of engagement in sexual behaviors than more conservative southern and Midwestern regions. Instead of the findings are in line with the differences in sexuality socialization observed across regions (Santelli et al., 2006; Center for Disease Control, 2006), which might also include sexuality education in addition to informal parental socialization or media influences. The

implications of these findings, given the large sample size of college students across the US, are important for the future of sexuality education in our country. In particular, it seems that regional climate (such as education and socialization regarding sexuality) may have a greater impact on college students' sexual behaviors than personal, and socialized values.

These findings, given the large sample size of college students across the US, have important implications for the future of sexuality education in our country. Thus, it appears that contrary to popular beliefs, teaching adolescents about sex and sexuality most generally speaking did not increase their risk to engage risky sexual behavior and intercourse after drinking, but instead, might have increased awareness that is linked with lower reports of risky sexual behaviors and intercourse after drinking.

Findings from both studies add to the existing adolescent development literature, and challenge researchers to think about body image and sexuality in new ways. In each of the studies, some of the findings were contrary to expectations drawn from investigating the respective body image or sexuality literature. In the first study, sophisticated statistical tests provided evidence that there were no differences between the sexes, among racial/ethnic groups or by levels of acculturation in the relationship between body image discrepancies and internalizing behaviors. In the second study, the inclusion of a regional variable in logistic regressions brings to light the existence of regional "climate" in influencing the likelihood of sexual behavior among college students. In both instances, the findings of invariance for males and females, among racial ethnic groups or levels of acculturation or of significant differences among the regions and the levels of sexual behavior reported by each of the regions speak against commonly held stereotypes, for instance, that more liberal coastal regions will have higher reports of engagement in sexual behaviors than more conservative southern and

Midwestern regions. This highlights the need for researchers to carefully frame the questions they ask regarding adolescent development and perhaps to think of their questions in a way that is all together different from common stereotypes.