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Alcohol-Related Consequences Among Racial and Ethnic Minority
First-Year College Students

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A thesis
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ABSTRACT

Background: Risky drinking among college students and the associated negative health consequences are major public health concerns. The Brief Young Adult Alcohol Consequences Questionnaire (B-YAACQ) was originally developed and evaluated in a majority White, non-Hispanic/Latinx college student sample. Although the measure has been evaluated among different populations and languages, it has yet to be evaluated among racial and ethnic minority students. The present study conducted a principal components analysis of the B-YAACQ among racial and ethnic minority college students to determine whether the factor structure generalizes to this population. Differences by birth sex were also examined. **Methods:** The study involved first-year college students from a northeastern university who completed an online survey with items from the B-YAACQ (N=317; 57.7% female; 30.0% Asian, 19.9% Black, 24.0% Multiracial, 26.2% Hispanic/Latinx). The principal component factor analysis focused on reliability. Items were kept for each factor if they met the retention criteria of factor loadings > 0.7 , inter-item correlations > 0.5 , and Cronbach's alphas > 0.7 . The factor structure was then examined separately by males and females. **Results:** Results revealed two factors for the B-YAACQ: 1) blackout drinking, and 2) sexual consequences (all factor loadings > 0.7 ; correlations > 0.5 ; alphas > 0.7). The results were similar when examined by males and females. **Conclusions:** Blackout drinking and sexual consequences were reliable factors of the B-YAACQ in a sample of racial and ethnic minority students. The blackout drinking factor was reliable in both the original sample of B-YAACQ (majority White, non-Latinx) and the current study sample of racial/ethnic minority students. Sexual consequences were more salient for racial/ethnic minorities (i.e., not a factor in the B-YAACQ). The factor structure found for racial/ethnic minority students held for both males and females. Results suggest the full B-

YAACQ may not be a generalizable measure among racial/ethnic minority students. Future college drinking intervention and prevention efforts may need to be culturally tailored to address blackout and sexual consequences among racial/ethnic minority students.

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INTRODUCTION

College Student Drinking and Consequences

The prevalence of alcohol use among college students is a public health concern. National studies show that approximately 2 in 3 college students report being drunk in the past year (Johnston, O'Malley, Bachman, Schulenberg, & Miech, 2014) and 1 in 3 students engage in heavy episodic drinking (4+/5+ drinks for women/men in a single occasion; NIAAA, 2020) in the past two weeks (Schulenberg et al., 2017). Studies consistently show that the number of drinks a college student consumes is significantly positively associated with alcohol-related consequences (Hingson et al., 2017; Patrick et al., 2016; Singleton & Wolfson, 2009). Each year, risky college student drinking results in approximately 1,500 deaths, 600,000 unintentional injuries, 700,000 physical assaults, and 97,000 sexual assaults (NIAAA, 2020). About 25% of students experience academic impairment as a result of drinking, such as lower grades, missing class due to a hangover, or poor exam scores (White & Hingson, 2014). The risky drinking behaviors of college students, including harmful consequences to themselves and the broader communities, has created a need for identifying at-risk students.

Young Adult Alcohol Consequences Questionnaire

The Young Adult Alcohol Consequences Questionnaire (YAACQ; Read et al., 2006) measures a range of adverse consequences (e.g., blackout drinking, physiological dependence, poor-self-care) that young adults may experience while or after drinking. The questionnaire was originally evaluated in a college student sample at a northeastern university in the United States, with majority of the sample being non-Hispanic/Latinx White students. The psychometrics of the YAACQ have been replicated among different populations, such as Canadian college students (Keough, O'Connor & Read, 2016). The YAACQ has also been translated into Spanish and

Chinese and found to be reliable in these languages (Pilatti, Read & Caneto, 2016; Zhang et al., 2019). While the measure has been replicated and evaluated in different populations and languages, it has yet to be assessed among racial and ethnic minority college students (i.e., African Americans/Black, Asian/Asian American, Multiracial and Hispanic/Latinx). Despite the abundance of literature in the area of alcohol-related consequences, there are limited empirical reports of consequences among racial and ethnic minority college students.

Alcohol-Related Consequences Among Racial and Ethnic Minorities

The majority of studies that examine alcohol-related consequences among racial and ethnic minorities (i.e., African American/Black, Asian/Asian American, Multiracial, and Hispanic/Latinx) have been conducted in non-college student samples. These studies show that racial and ethnic minorities have significantly higher rates of alcohol-related deaths and liver cirrhosis relative to White, non-Latinx populations (Greenfield, 2001; Yoon et al., 2001). Mulia and colleagues (2009) found that non-Latinx Black drinkers over 18 years of age experience significantly higher rates of social consequences than their non-Latinx White counterparts, while Latinx drinkers' rates of consequences were two-fold that of non-Latinx White drinkers. Drinking patterns vary across different Asian populations in the U.S. (e.g., Chinese, Japanese, and Korean), with Korean Americans drinking at higher rates compared to the general U.S. population (Lee, Han, & Gfoerer, 2013). Lastly, research shows Multiracial adolescents have elevated levels of lifetime alcohol use compared to non-Latinx White adolescents (Subica & Wu, 2018). These findings provide evidence that rates of alcohol-related consequences differ across racial and ethnic minorities, but less is known specifically about college students.

Literature has shown that alcohol-related consequences among college students differ by race and ethnicity. Research shows that Black and Latinx students drink at relatively moderate

levels, but experience significantly more negative consequences compared to non-Latinx White students (Boynton et al., 2015; Cheng & Mallinckrodt, 2015). Perceived racial/ethnic discrimination, which is associated with mental health and behavioral changes in Black and Latinx college students, is a potential reason behind these findings (Boynton et al., 2015; Gibbons et al., 2012; Grekin, 2012). Unlike non-Latinx White students, Black and Latinx minority students face discrimination and pressure to acculturate to mainstream drinking norms at predominantly White institutions (Cheng et al., 2020; Desalu et al., 2019; Feagin, 1992). Non-Latinx Black and Latinx students are more likely to drink to cope and forget their worries due to discrimination-related stress (Cheng et al., 2020; Desalu et al., 2019). For Asian American students, perceived discrimination is associated with antisocial behaviors and negative mental health outcomes (e.g., state anxiety, trait anxiety, and depression; Desalu et al., 2019; Hwang & Goto, 2008; Park et al., 2013). Asian U.S. born young adults (18-25) are increasingly engaging in heavy episodic drinking, but only certain sub-groups (i.e., Japanese, Filipino, Multi-Asian) of Asian U.S. born college students experienced alcohol-related consequences (Iwamoto et al., 2016; Iwamoto, Takamatsu & Castellanos, 2012). Multiracial college students experience more academic problems as a result of drinking than White students, but also experience positive alcohol-related consequences (i.e., felt-more confident, easier to socialize, had a good time) at similar rates to White students (Barnett et al., 2014).

Racial and ethnic minority college student populations are at risk for experiencing alcohol-related consequences, but there is currently no reliable and published measure on alcohol-related consequences for racial/ethnic minority college students. Identifying consequences most salient among racial and ethnic minority students may significantly reduce harm if used in culturally tailored college drinking prevention or intervention programs.

Differences of Alcohol-Related Consequences Among Biological Sexes

Similarly, little is known about how alcohol-related consequences differ based on biological sex in racial and ethnic minority college students. The World Health Organization (WHO, n.d.) and National Institutes of Health describe sex as a biological characteristic (NIH, 2017). Biological factors account for sex differences in drinking and consequences. Alcohol is more concentrated in women's bodies due to lower average body weight and higher fat percentage than men (Collins and Mcnair, 2002). Compared to men, women have approximately 50% less of the alcohol dehydrogenase (ADH) enzyme that metabolizes alcohol in the stomach (Freire et al., 2011) resulting in higher concentrations of unmetabolized alcohol in the bloodstream (Freire et al., 2011; Lieber, 1997). As a result of less ADH, women produce the same blood alcohol levels as men with 40% less alcohol consumption (York and Welte, 1994). Thus, women can drink less to produce the same intoxicated effects as men when drinking (Advocat et al., 2014).

In addition to biological risk factors, psychosocial factors also account for sex differences in drinking and related consequences. Regardless of race or ethnicity, research shows that women are at a higher risk of experiencing mental health issues and negative sexual situations, which in turn makes them more likely to experience alcohol-related consequences (Barnett et al., 2014; Pitpitan et al., 2012). Research shows that 30% of regretted sex in college involves alcohol and women are more likely to report regretted sex after drinking than men (Barnett et al., 2014; Peterson et al., 2020;). Due to these findings, women are more likely to experience sexual assault from heavy alcohol use. On the other hand, traditional masculine norms (i.e., risk-taking, sexual prowess, self-reliance) in the United States have been found to be associated with alcohol-related consequences in college men (Iwamoto et al., 2011). Studying sex differences in alcohol-related

consequences can determine whether future drinking interventions need to be tailored on the basis of birth sex to be more effective.

Current Study

To date, there is still no published measure on alcohol-related consequences that has been replicated and evaluated among racial and ethnic minority college students. Gaining a better understanding of alcohol-related consequences among this population is crucial in order to develop effective culturally tailored college drinking prevention and intervention programs. The current study aims to address this gap in the literature by evaluating the Brief Young Adult Alcohol Consequences Questionnaire (B-YAACQ) among a sample of racial and ethnic minority college students attending a predominantly White institution (PWI). It is currently unknown whether the factor structure of the B-YAACQ generalizes to racial and ethnic minority college students. Aim 1 is to conduct an exploratory factor analysis to determine whether the existing B-YAACQ measure is reliable for racial and ethnic minority college students. Reliability will be assessed by examining the internal consistency of each subscale.

Aim 2 is to conduct principal component factor analyses by birth sex on the items finalized from the exploratory factor analysis to see if they are reliable for racial/ethnic minority male and female college students. Due to lower body weight on average, women tend to feel more drunk at a lower number of drinks than men (Advocat et al., 2014; Freire et al., 2011), making them more vulnerable to experience alcohol-related consequences, especially unwanted sex (Barnett et al., 2014; Peterson et al., 2020). Thus, it is hypothesized that the sexual consequence items in the risky behavior factor of the B-YAACQ will emerge for females, but not for males.

METHODS

Participants & Procedures

Participants were recruited during their first semester on campus from the registrar's list at three large public universities (N=4000). Eligibility criteria included the following: (1) enrollment as a traditional 4-year college student, (2) at least 18 years of age, and (3) a current drinker (endorsed more than 1 drink on typical weekly drinking and peak drinking in past month). Students were provided details on the study and invited to participate through a pre-notification letter and email invitation. A URL and identification number to access the survey were included in all recruitment materials (i.e., the pre-notification letter, email invitation and up to seven email reminders). From the 4000 invited participants, 2690 (67.3%) completed the baseline survey during their first fall semester. In order to reflect drinking patterns, data collection periods did not overlap with midterm exam schedules. As compensation for survey completion, students received \$25 and an extra \$5 if the survey was completed within five days of receiving the email invitation.

The final analytic sample of 317 students (11.8%; $M(SD)_{\text{age}} = 18.11(0.31)$) were only racial and ethnic minorities. The demographic breakdown of the sample was as follows: 57.7% self-identified as female at birth, 30.0% Asian, 19.9% Black, 22.4% Multiracial, and 26.2% Hispanic/Latinx. Of the students, 11% were involved in social Greek organizations (i.e., fraternities/sororities). Majority of students lived in a resident hall/dorm room (98.4%) and the rest either lived off campus or with their parents (1.6%).

Measures

Alcohol-related consequences were assessed with the 24-item Brief Young Adult Alcohol Consequences Questionnaire (B-YAACQ; Kahler, Strong & Read, 2005). The original

B-YAACQ consisted of eight subscales: (1) social/interpersonal (e.g., I have become very rude, obnoxious or insulting after drinking), (2) academic/occupational (e.g., I have neglected my obligations to family, work, or school because of my drinking), (3) risky behavior (e.g., regretted sexual experiences), (4) impaired control (e.g., drinking more than originally planned), (5) poor self-care (e.g., less physically active due to drinking), (6) diminished self-perception (e.g., I have felt badly about myself because of my drinking), (7) blackout drinking (i.e., I have passed out from drinking), and (8) physiological dependence (e.g., I have felt like I needed a drink after I'd gotten up (that is, before breakfast)). Students were provided with the following responses for how frequently they experienced each consequence in the past semester: (0) *Never* to (8) *40 or more times*.

Data Analytic Plan

All analyses were conducted in IBM SPSS Statistics Version 26. Prior to conducting principal components analyses (PCAs), items that had <5% endorsement were removed from further analyses and items that had skew >3 and/or kurtosis >8 were adjusted for outliers using standardized procedures (Tabachnick & Fidell, 1996). The following equation determined the outlier cutoff: $(3.29 * \text{Standard Deviation}) + \text{Mean}$. Any score that was larger than the solution of this equation was recoded to be equal to the number obtained by the equation.

Aim 1 conducted an exploratory factor analysis (EFA) using PCAs with oblimin rotation to identify factors within the Brief Young Adult Alcohol Consequences Questionnaire (B-YAACQ). The PCA used oblimin rotation to allow for the factors to be correlated. The internal consistency of the subscales was tested by assessing factor loadings, inter-item correlations within a factor, and Cronbach's alpha for each factor. Items that met the following criteria were removed in order to create and develop reliable subscales for the current sample: 1) factor

loadings <0.7 , 2) inter-item correlations <0.5 within a factor 3) Cronbach's alpha would improve to be >0.7 within a factor if removed, and 4) did not theoretically fit with other items in the factor.

Aim 2 conducted PCAs by birth sex to determine if the factor structure and items within factors were reliable for males and females. The items that were finalized from the EFA in Aim 1 were analyzed for the PCAs on males and females in Aim 2. The number of factors specified for the PCAs on males and females were set to be equal to the number of factors found in the EFA. The same criteria (e.g., factor loadings >0.7 , alpha >0.7 , inter-item correlations within the factor >0.5) were used to determine whether the factors within the finalized items were reliable for males and females.

RESULTS

Descriptive Statistics

See Table 1 for ranges, item means, standard deviations, and number of participants completed. Cronbach's alpha was excellent indicating high internal consistency of the full measure ($\alpha=0.92$). See Table 2 for inter-item correlations.

Table 1. Descriptive statistics

Young Adult Alcohol Consequence Items	Min-Max	Mean (SD)	N
1) While drinking, I have said or done embarrassing things.	0-6	1.92 (1.86)	316
2) I have had a hangover (headache, sick stomach) the morning after drinking.	0-6	1.63 (1.77)	317
3) I have felt very sick to my stomach or thrown up after drinking.	0-6	1.15 (1.43)	317
4) I have passed out from drinking.	0-6	0.58 (1.27)	317
5) I have found that I needed larger amounts of alcohol to feel any effect, or that I could no longer get high/drunken on the amount that used to get me high or drunk.	0-6	0.91 (1.65)	317
6) When drinking, I have done impulsive things that I later regretted.	0-6	0.97 (1.56)	317
7) I have not been able to remember large stretches of time while drinking.	0-6	1.10 (1.69)	317
8) I have not gone to work or have missed class because of drinking, a hangover, or other illness caused by drinking.	0-6	0.68 (1.36)	317
9) My drinking has gotten me into sexual situations I later regretted.	0-6	0.48 (1.26)	317
10) I have become very rude, obnoxious, or insulting after drinking.	0-6	0.66 (1.40)	317
11) The quality of my work or school work has suffered because of drinking.	0-6	0.50 (1.30)	317
12) My drinking has created problems between myself and my boyfriend/girlfriend, spouse/parents, or other near relatives.	0-3	0.30 (0.76)	317
13) I have been injured or my physical appearance has been harmed by my drinking.	0-4	0.28 (0.79)	317
14) I have been pressured or forced to have sex with someone because I was too drunk to prevent it.	0-3	0.17 (0.63)	317
15) I have driven a car when I knew I had too much to drink to drive.	0-2	0.06 (0.37)	317
16) I have found it difficult to limit how much I drink.	0-6	0.75 (1.52)	317
17) I have felt like I needed a drink after I'd gotten up (that is, before breakfast).	0-3	0.18 (0.69)	317

Table 2. Inter-item correlations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1) While drinking I have said or done embarrassing things.	1																
2) I have had a hangover (headache, sick stomach) the morning after drinking.	0.52**	1															
3) I have felt very sick to my stomach or thrown up after drinking.	0.55**	0.64**	1														
4) I have passed out from drinking.	0.43**	0.45**	0.55**	1													
5) I have found that I needed larger amounts of alcohol to feel any effect, or that I could no longer get high/drunken on the amount that used to get my high or drunk.	0.34**	0.41**	0.41**	0.43**	1												
6) When drinking, I have done impulsive things that I later regretted.	0.60**	0.51**	0.58**	0.57**	0.46**	1											
7) I have not been able to remember large stretches of time while drinking.	0.57**	0.54**	0.53**	0.67**	0.45**	0.59**	1										
8) I have not gone to work or have missed class because of drinking, a hangover, or other illness caused by drinking.	0.42**	0.53**	0.51**	0.60**	0.42**	0.57**	0.61**	1									
9) My drinking has gotten me into sexual situations I later regretted.	0.44**	0.39**	0.48**	0.52**	0.40**	0.66**	0.49**	0.54**	1								
10) I have become very rude, obnoxious, or insulting after drinking.	0.43**	0.39**	0.32**	0.35**	0.35**	0.48**	0.52**	0.43**	0.41**	1							
11) The quality of my work or school work has suffered because of drinking.	0.39**	0.49**	0.50**	0.50**	0.46**	0.51**	0.48**	0.76**	0.50**	0.46**	1						
12) My drinking has created problems between myself and my boyfriend, girlfriend, spouse, parents, or other near relatives.	0.33**	0.34**	0.39**	0.41**	0.36**	0.40**	0.41**	0.45**	0.56**	0.41**	0.49**	1					
13) I have been injured or my physical appearance has been harmed by my drinking.	0.37**	0.33**	0.44**	0.54**	0.39**	0.51**	0.50**	0.56**	0.62**	0.46**	0.57**	0.67**	1				
14) I have been pressured or forced to have sex with someone because I was too drunk to prevent it.	0.27**	0.26**	0.36**	0.36**	0.27**	0.48**	0.33**	0.44**	0.71**	0.34**	0.41**	0.50**	0.62**	1			
15) I have driven a car when I knew I had too much to drink to drive.	0.22**	0.25**	0.41**	0.41**	0.29**	0.37**	0.28**	0.56**	0.49**	0.31**	0.58**	0.61**	0.72**	0.70**	1		
16) I have found it difficult to limit how much I drink.	0.43**	0.45**	0.40**	0.60**	0.36**	0.51**	0.62**	0.57**	0.56**	0.45**	0.49**	0.35**	0.46**	0.48**	0.33**	1	
17) I have felt like I needed a drink after I'd gotten up (that is, before breakfast).	0.25**	0.30**	0.33**	0.45**	0.30**	0.42**	0.39**	0.53**	0.40**	0.38**	0.50**	0.50**	0.55**	0.51**	0.66**	0.43**	1

Note: **Correlation is significant at the 0.01 level, *0.05 level.

Aim 1: Exploratory Principal Components Analysis

The identification of factors and item reduction was determined through a principal components analysis performed for the B-YAACQ using an oblique (correlated) rotation. The following item was eliminated from analyses due to <5% endorsement: *“I have driven a car when I knew I had too much to drink to drive.”* Analyses revealed two factors: 1) blackout drinking, and 2) sexual consequences. All four items were kept for blackout consequences along with the two sexual consequence items from the risky behavior subscale. The following four items were eliminated because they did not theoretically fit into the blackout drinking or sexual consequence factors: 1) *“While drinking, I have said or done embarrassing things”*, 2) *“When drinking, I have done impulsive things that I later regretted”*, 3) *“My drinking has created problems between myself and my boyfriend/girlfriend, spouse/parents, or other near relatives”*, 4) *“I have been injured or my physical appearance has been harmed by my drinking”*, 5) *“I have not gone to work or have missed class because of a hangover, or other illness caused by drinking.”* See Table 3 for subscales, items, factor loadings and alphas for the measure.

Table 3. Exploratory Principal Components Analysis

Subscale	Item	Factor Loadings	Alpha
Blackout Drinking Consequences	Black1. I have had a hangover (headache, sick stomach) the morning after drinking.	0.90	0.86
	Black2. I have felt very sick to my stomach or throw up after drinking.	0.82	
	Black3. I have passed out from drinking.	0.73	
	Black4. I have not been able to remember large stretches of time while drinking.	0.79	
Sexual Consequences	Sex1. My drinking has gotten me into sexual situations I later regretted.	0.79	0.81
	Sex2. I have been pressured or forced to have sex with someone because I was too drunk to prevent it.	0.97	

Aim 2: Principal Components Analyses by Birth Sex

For both males and females, PCAs revealed the same two factors: 1) blackout drinking, and 2) sexual consequences. Items for both PCAs in males and females met the retention criteria as explained in the data analytic procedures section (e.g., factors loadings >0.7 ; alpha >0.7 ; correlations > 0.5). For parsimony, we have not included tables because the same criteria were met for both males and females. The factor structure was similar to the full sample for both males and females.

DISCUSSION

Alcohol use among racial and ethnic minority college students is a public health concern, especially given the high amount of consequences in this population. Racial and ethnic minority students (i.e., Black, Latinx, Multiracial, Asian) are drinking at lower rates than their White counterparts, yet they are experiencing alcohol-related consequences at a relatively higher rate (Bonyton et al., 2014). To date, there is still no published measure on alcohol-related consequences that has been replicated among racial and ethnic minority college students. By better understanding the specific alcohol-related consequences in racial and ethnic minority college students, more efficacious culturally tailored drinking intervention and prevention programs can be developed.

The 24-item Brief Young Adult Alcohol Consequences (B-YAACQ) was used to assess negative consequences among racial and ethnic minority students. The B-YAACQ is a shortened version of the longer 48-item YAACQ measure (Kahler, Strong & Read, 2005; Read et al., 2006). The B-YAACQ accounts for all of the alcohol-related consequences in the full YAACQ but has less participant burden as there are less items in each subscale. The YAACQ has been verified as a generalizable measure among different populations (e.g., Canadian) and languages (e.g., Chinese and Spanish) (Keough, O'Connor & Read, 2016; Pilatti, Read & Caneto, 2016; Zhang et al., 2019). However, the YAACQ (and B-YAACQ) have not been replicated among racial and ethnic minority college students (e.g., Asian, Black, Multiracial, Latinx).

For Aim 1, an exploratory factor analysis was used to examine whether the B-YAACQ was a generalizable measure for racial and ethnic minority college students. Partial support was found for the B-YAACQ being generalizable for racial and ethnic minority college students. The subscales in the original B-YAACQ (Read et al., 2006) include: 1) social/interpersonal, 2)

academic/occupational, 3) risky behavior, 4) impaired control, 5) poor self-care, 6) diminished self-perception, 7) blackout drinking, and 8) physiological dependence. The current study assessing the B-YAACQ among racial/ethnic minority college students determined two reliable factors compared to the original B-YAACQ which had eight factors (assessed among majority non-Latinx, White students; Read et al., 2006). The blackout drinking factor was the same for both the original B-YAACQ sample and the current racial and ethnic minority sample. The sexual consequences subscale that emerged in the current study is similar to the original B-YAACQ 'risky behavior' subscale. Two items from the risky behavior subscale emerged, but it was only the two sexual consequence items 1) regretted sexual situations, and 2) pressured/forced into sexual situations. Consequently, a new subscale renamed 'sexual consequences' was developed as the other risky behavior items did not load onto the same factor. Other items within the B-YAACQ measure were dropped due to either low endorsement or not fitting the criteria to be included within each factor.

The emergence of blackout consequences could be the result of racial and ethnic minority students facing discriminatory stressors at a predominantly White institution (Cheng et al., 2020; Desalu et al., 2019; Feagin, 1992). Students experiencing discrimination could be engaging in heavy episodic drinking (leading to more blackouts and unwanted sex) to cope with perceived discrimination, high visibility at predominantly White institutions, and other race-related stressors (Cheng et al., 2020; Desalu et al., 2019; Grekin, 2012).

For Aim 2, principal components factor analyses assessed the finalized items from the exploratory factor analysis in Aim 1 by females and males. It was hypothesized that the sexual consequence items would only emerge for females. Partial support was found for this hypothesis as sexual consequences emerged for both males and females.

From a biological perspective, females are more likely to experience alcohol-related consequences as the same intoxicated effects are produced with less alcohol consumption compared to males (Advocat et al., 2014; Collins and Mcnair, 2002; Freire et al., 2011; Lieber, 1997). Studies have shown that women are more likely to experience negative sexual situations when drinking, such as regretted sex and sexual assault (Barnett et al., 2014; Peterson et al., 2020; Pitpitan et al., 2012). It was hypothesized that the sexual consequence items would emerge from the risky behavior subscale for females. It was found that both blackout consequences and sexual consequences were reliable for males and females. Although this association has usually been stronger for females, these samples have mainly used non-Latinx White participants (Valenstein-Mah et al., 2015). Results from the current study suggest that racial/ethnic minority males and females are equally likely to experience blackouts and sexual consequences.

Limitations/Future directions

The current study was conducted at a predominantly White institution (i.e., 50% or more students are White; PWI; Brown & Dancy, 2010). Alcohol-related consequences may differ at Historically Black Colleges and Universities (HBCUs) or Hispanic Serving Institutions (HSIs) due to alcohol use and heavy episodic drinking rates being lower than the national undergraduate average at these universities and institutions (Braby, Holcomb & Leonhard, 2020). While alcohol consumption rates are relatively lower, it has been shown that Black and Latinx student populations at HBCUs and HSIs still experience negative alcohol-related consequences (Boynton et al., 2015). Although not measured in this study, it is possible blackout and sexual consequences emerged as a result of coping mechanisms related to experienced racial or ethnic discrimination. It is expected that results would differ at HBCUs or HSIs as the probability of racial and ethnic discrimination is lower relative to PWIs where racial ethnic minorities

experience discrimination due to hyper-visibility, underrepresentation, and microaggressions (Clark & Mitchell, 2018; Frazier, 2016; Wei, Ku, & Liao, 2011). It is possible that racial and ethnic minorities may experience consequences more similar to White students (e.g., interpersonal and academic problems) when they attend HBCUs and HSIs where they are part of the racial or ethnic majority. Future studies should evaluate the B-YAACQ in racial and ethnic minority students at HBCUs and HSIs to fully understand the range of consequences.

The current study also examined four different groups of racial and ethnic minority college students: Asian, Black, Latinx and Multiracial. While racial and ethnic minorities were sub-divided into these categories, future studies should focus on subgroup differences within these racial and ethnic groups (e.g., Korean vs. Vietnamese students in the Asian group). The literature shows that this is typically the norm for Asian populations as there is significant cultural distance between Asian populations (Kane et al., 2017; Lee, Han, & Groerer, 2013). The same can be said for Latinx, Black, or Multiracial populations (Motel & Patten, 2012). Classifying students under a broad category is not sufficient as there is great heterogeneity within and between these racial and ethnic sub-groups. A sample population that is focused on one subgroup (i.e., Brazilians, Chinese, Ethiopians) may result in a different factor structure.

An additional limitation was the relatively small sample size for each race/ethnicity subgroup (~100 participants per group), which is why the study was not able to confidently assess subgroup differences. Future studies should aim to recruit more participants per race/ethnicity subgroup to confidently assess differences by group with enough statistical power.

The groups included were not a comprehensive list of all students considered a racial or ethnic minority at predominantly White institutions. Pacific Islanders/Native Hawaiians and Native Americans/Alaska Natives were not included in this study due to low sample populations

that would result in low statistical confidence. Future studies should aim to obtain a population size that can include these populations with statistical confidence.

Lastly, it is suspected that blackout and sexual consequences emerged due to discrimination. However, this cannot be explicitly concluded as discrimination was not measured in the current study. Future studies should measure discrimination to determine whether it is a predictor of blackouts and sexual consequences.

CONCLUSIONS

Blackout drinking and sexual consequences were reliable factors of the B-YAACQ in a sample of racial/ethnic minority students. The blackout drinking factor was reliable in both the original majority White, non-Latinx study sample (Read et al., 2006) and the current racial/ethnic minority study sample. However, sexual consequences were more salient for racial/ethnic minorities (i.e., not a factor in the B-YAACQ). Similar findings for blackout and sexual consequences were produced for both males and females suggesting that they are equally likely to experience these consequences. Results suggest the full B-YAACQ, which consists of eight factors, may not be generalizable to racial/ethnic minority students. Culturally sensitive intervention and prevention efforts may benefit from targeting blackout drinking and sexual consequences for racial/ethnic minority college students.

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ACADEMIC VITA

Academic Vita of Alexa Plisiewicz
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EDUCATION

Schreyer Honors College at The Pennsylvania State University

Major: Biology, vertebrate physiology option

Minor: Smeal College of Business Fundamentals Certificate

Anticipated Graduation: May 2021

Danville Senior Area High School, Danville, PA 17821

Graduation: June 2017

Rank: 10/147

Language Proficiency: English

THESIS TITLE: Alcohol-Related Consequences Among Racial and Ethnic Minority
First-Year College Students

Thesis Supervisor: Robert Turrisi, PhD

WORK EXPERIENCE

Grand View Nursing & Rehabilitation Center | Nursing Angels, Inc.

Danville, PA

Nursing Assistant

January 2021 – current

- Acts as a personal care giver for 30+ residents at a nursing and rehabilitation center
- Assists with typical daily activities of living (i.e., bathing, changing linens, feeding)
- Safely transfers patients who lack mobility (i.e., hoist lift, sit-to-stand lift)

Geisinger Medical Center

Danville, PA

Nursing Assistant

June 2020 – current

- Supports the needs of ~26 patients on a medical surgical unit (BP7)
- Helps effectively manage routine bathing, grooming and other hygiene needs on the medical surgical unit
- Confers with multidisciplinary healthcare team to help effectively manage patient conditions with regular testing and vitals assessments
- Monitors, tracks and conveys important patient information to healthcare staff to help optimize treatment planning and care delivery

**Eberly College of Science New Student Orientation Team
Biology Department, The Pennsylvania State University, PA**

Student Mentor

May 2019 – July 2019

- Scheduled classes for incoming first-year students via LionPath
- Assisted Joel Waters, manager, with educating students on the opportunities that Penn State and the biology department offers
- Communicated and socialized with students to showcase the inclusiveness of the Biology Department and student community at Penn State

SC135N | Biology Department

The Eberly College of Science, The Pennsylvania State University, PA

Teaching Assistant

May 2019 – current

- Grade papers, quizzes and miscellaneous assignments for 40-50 students enrolled in SC 135N, which is a course focused on society and disease management
- Support student learning through personalized assistance via email
- Coordinate with course instructor to enhance material delivery and better the learning experience for all enrolled students

GAP Factory Outlet

Muncy, PA

Sales Associate

May 2018 – January 2019

- Organized racks and shelves to maintain store visual appeal, engage customers and promote specific merchandise
- Improved operational efficiencies while managing customers' requests, store inventory, transactions, new purchase orders and pricing needs.
- Informed customers about promotions, customer programs and products, helping drive high customer retention.

RESEARCH EXPERIENCE

Sea Education Association | SEA Semester Study Abroad

Christiansted, St. Croix | British Virgin Islands | San Juan, Puerto Rico

Research student & crew member

December 2019 – January 2020

- Sailed along a cruise track from Christiansted, St. Croix to San Juan, Puerto Rico as a crew member and research student
- Functioned as a crew member and learned the fundamentals of navigation, sailing and data analysis
- Conducted oceanographic research that added to a 50-year-old database at the Woods Hole Oceanographic Institution
- Headed a project with Abigail Brauer, my student colleague at the time, to investigate ocean acidification through pH level analyses

**The Preventive Research to Optimize (PRO) Health Lab
Biobehavioral Health, The Pennsylvania State University, PA**

Undergraduate Research Assistant

August 2019 – current

Supervisor: Robert Turrisi, PhD, Director; Professor of Bio-behavioral Health

Graduate Mentor: Katja Waldron

- Researches skin cancer and substance abuse intervention and prevention efforts in high-risk populations; currently focused on substance abuse research
- Currently writing Schreyer Honors College Thesis on alcohol-related consequences among racial and ethnic minority first-year college students
- Performs statistical, qualitative and quantitative analyses on SPSS
- Validates incoming data to check information accuracy and integrity while independently locating and correcting concerns

The Medina Lab

Biology, The Pennsylvania State University, PA

Undergraduate Research Assistant

September 2018 – current

- Conducts algal cell counts for 6 different strains with 3 replicates to establish Symbiodiniaceae growth curves
- Studies beta-carotene involvement in the metamorphic transition of the upside-down jellyfish, *Cassiopeia xamachan*
- Prepares food, feed and maintain a stable environment for over 100 jellyfish ranging in species and age

PUBLICATIONS

Waldron, K. A., Mallett, K. A., Turrisi, R. J., Reavy, R., Wolfe, E., & Plisiewicz, A. (2021). Motivations to combine alcohol and nicotine in college students: A validation of the Alcohol and Nicotine Motives Scale. *Addictive Behaviors*, 112, 106645.

PROJECTS / POSTERS

Waldron, K.A., Plisiewicz, A.R., Glenn, S., Wolfe, E., Reavy, R.R., Turrisi, R.J., & Mallett, K.A. (2021, June). Alcohol-related consequences among racial and ethnic minority college students: A validation of the Brief Young Adult Alcohol Consequences Questionnaire. To be presented at the 44th Annual Meeting of the Research Society on Alcoholism, San Antonio, TX.

Waldron, K.A., Wolfe, E., Glenn, S., Plisiewicz, A.R., Reavy, R.R., Turrisi, R.J., & Mallett, K.A. (2021, June). Enculturation as protective factor for drinking and consequences among Hispanic/Latinx college students? Examination of a longitudinal structural equation model. To be presented at the 44th Annual Meeting of the Research Society on Alcoholism, San Antonio, TX.

Plisiewicz, A. & Brauer, A. (2020, February). pH Level Analysis in Relation to Oceanic Depths in the Caribbean Sea and Atlantic Ocean. Virtual presentation at the Undergraduate Research Exhibition at The Pennsylvania University, PA.

Plisiewicz, A., Waldron, K., Gall-Myrick, J., & Turrisi, R. (2020, April). Sorority Membership Moderates the Association Between Tanning Norms and Efficacy. Virtual presentation at the Undergraduate Research Exhibition at The Pennsylvania State University, PA.

VOLUNTEER AND LEADERSHIP EXPERIENCE

Gamma Sigma Sigma National Service Sorority, Inc. The Pennsylvania State University, PA

President

January 2020 – December 2020

- Served as the President of a National Service Sorority for 50+ members in the Tau Chapter
- Oversaw 20+ executive board and chair positions while delegating respective tasks
- Developed and implemented new strategies and policies in collaboration with executive partners to establish and achieve long-term objectives (i.e., recruitment strategies, member retention, service events)
- Held weekly general body, executive board and chair meetings
- Communicated regularly with District Advisor

Penn State Fresh START The Pennsylvania State University, PA

Community Partnerships Director

September 2019 - August 2020

- Coordinated 20+ service sites for Fresh START Day of Service 2020, Penn State's largest day of community service
- Educated volunteers and colleagues on service sites in State College and the surrounding areas
- Adapted to COVID-19 pandemic by transitioning in-person service events to alternative remote opportunities to engage in safe service

THON

The Pennsylvania State University, PA

Dancer Relations Committee Member, Administrative Assistant Sept. 2019 – February 2020

- Managed Microsoft Teams wrote meeting minutes and organized inter-committee events
- Held role as assistant to the Captain of the committee
- Served as the primary liaison to student volunteers selected to dance in Penn State's 46-hour long, no sitting dance marathon known as THON
- Ensured the safety and well-being of the dancers throughout THON weekend
- Received year-long training on providing emotional and physical support to dancers

**Gamma Sigma Sigma National Service Sorority, Inc.
The Pennsylvania State University, PA**

Service Vice President

August 2019 – December 2019

- Coordinated and executed over 70 service events (i.e., cleaning kennels at Nittany Greyhounds, hosting bingo at The Adult Active Center, creating The Jared Box events)
- Created, customized and managed Microsoft Excel spreadsheets for service events
- Successfully provided opportunities to 50+ service members to earn at least 30 hours of service per member

**Double H Ranch
Lake Luzerne, NY**

Summer camp Counselor

June 2019 – August 2019

- Supervised groups of 10 campers with chronic illnesses and conditions (e.g., muscular dystrophy, hemophilia, etc.) from ages of 6 years old to 16 years old
- Practiced having safe fun during activities throughout the week, such as the following: zip-lining, swimming and archery practices
- Worked with my 9 co-counselors in my cabin to ensure the safety and happiness of each and every individual camper during each session

**The Biological Sciences Society
Biology Department, The Pennsylvania State University, PA**

President, Founder

May 2019 – current

- Establish academic, professional and social opportunities for over 130 undergraduate STEM majors in the Penn State scientific community
- Develop cadaver lab sessions, peer mentoring programs with high school students and free tutoring sessions in State College Area School District
- Coordinate interview skill sessions resume building workshops and graduate school presentations

**American Red Cross
The Pennsylvania State University, PA**

Onsite Student Coordinator, Volunteer

February 2019 – current

- Collaborate with American Red Cross Account Manager for Penn State University to improve turnout and ultimately increase blood donation collection
- Oversee volunteers at blood drives to ensure efficiency and safety
- Recruit blood donors, spread awareness of events, and educate prospective donors

Penn State Fresh START
The Pennsylvania State University, PA

Team Leader

February 2019 – August 2019

- Oversaw a group of 20+ volunteers during Fresh START Day of Service with co-leader
- Created interactive activities (i.e. ice breakers) for volunteers, who were incoming first-year, international and transfer students, to facilitate communication
- Led group of students during service event, which was packaging dozens of meals for Rise Against Hunger

Gamma Sigma Sigma National Service Sorority, Inc.
The Pennsylvania State University, PA

Blood Drive Chair

January 2019 – May 2019

- Recruited Gamma Sigma Sigma (GSS) members to donate blood at two university sponsored blood drives
- Created and presented Microsoft PowerPoints to general body on a weekly basis to increase awareness of blood shortages and ultimately recruit donors
- Collected and distributed food donations for donors at blood drive
- Coordinated volunteer sign-ups for members to volunteer at blood drives

Gamma Sigma Sigma National Service Sorority, Inc.
The Pennsylvania State University, PA

Member in Training Secretary

September 2018 – December 2018

- Produced accurate files, updated spreadsheets and crafted presentations to support executives and boost team efficiency of the entering Fall 2018 recruitment class
- Responded to emails and other correspondence to facilitate communication (i.e., weekly email updates)
- Collaborated with other executive members to coordinate events in the best interest of the Fall 2018 recruitment class

THON

The Pennsylvania State University, PA

Dancer Relations Committee Member, EMS Liaison

September 2018 – February 2019

- Served as the primary liaison to student volunteers selected to dance in Penn State's 46-hour long, no sitting dance marathon known as THON
- Ensured the safety and well-being of the dancers throughout THON weekend
- Received year-long training on providing emotional and physical support to dancers
- Attended EMS workshops to educate fellow committee members on proper EMS procedures during THON weekend

**PSU Remote Area Medical Corps
State College, PA**

General Member, Public Relations Member September 2018 - current

- Volunteers at free, public healthcare clinics in underserved and uninsured communities with the PSU student branch of Remote Area Medical (RAM)
- Member of the Public Relations team to organize Pennsylvania's first ever RAM clinic
- Clinics attended: Gloucester, Virginia (November 2018) & Ashtabula, Ohio (April 2019)

Camp Discovery

Camp Victory, Millville, PA

Summer Camp Counselor August 2018 – August 2019

- Supervised groups of 10 children aged 8 to 12 years old with rare skin conditions (i.e., epidermolysis bullosa, alopecia, psoriasis) to ensure health, happiness and safety while at Camp Discovery
- Engaged in safe and inclusive activities with them throughout week, such as: rock climbing, fishing, zip lining, etc.
- Accompanied campers to meals, medical unit and all other activities offered at camp

Penn State Lions Scouts

The Pennsylvania State University, PA

Campus Tour Guide, Constitution Member (Fall 2018) September 2017 - current

- Conducted 50+ on-campus, 90-minute tours to prospective and accepted students in hopes of encouraging audience members to attend Penn State
- Showcases highlights of Penn State (i.e., Millennium Sciences Complex, The Berkey Creamery and Pattee & Paterno Library) by giving insights as a current student
- Trained for a semester on the basic knowledge of the university such as various on-campus buildings, historical references and exclusive opportunities offered at Penn State

Miscellaneous Volunteer Experiences

- **Special Olympics Champion School, The Pennsylvania State University, PA**
 - Spring 2020 – present
- **Centre County PAWS, State College, PA**
 - Fall 2018 – Spring 2020
- **Chemo treatment bay, Geisinger Medical Center, Danville, PA**
 - May 2019 – August 2019
- **Active Adult Center, State College, PA**
 - January 2019 – January 2020

SHADOWING EXPERIENCES

Anesthesiology, Abdel Ragab, MD
Geisinger Medical Center, Danville, PA

November 2019

- Observed an appendectomy
- Observed knee replacement
- Observed breast biopsy
- Observed hernia repair

Pediatrics, Sarah Marks, MD
Janet Weis Children's Hospital, Danville, PA

October 2019

- Observed shaken baby syndrome with additional neurological conditions and rigidity
- Observed patient with chronic epilepsy
- Observed patient with adenovirus
- Observed patient with rhinovirus
- Observed patient with cochlear implant

Interventional Radiology, Luis Nadal, MD
Geisinger Medical Center, Danville, PA

May 2019

- Observed a therasphere on the liver to treat a hepatic tumor
- Observed a gastrojejunostomy tube replacement
- Observed an inferior vena cava filter removal
- Observed a PICC line placement

General Internal Medicine, Mark Lentz, MD
Geisinger Medical Center, Danville, PA

March 2019

- Observed general check-up appointments
- Observed patient experiencing throat narrowing
- Observed patient experiencing alcoholism
- Observed patient experiencing diabetes and hypertension

Dermatopathology, Wells Chandler, MD
Geisinger Medical Center, Danville, PA

June 2018

- Microscopically observed and identified mostly melanoma samples
- Observed fetal autopsy
- Sat in on pathology book club and conference meetings

AWARDS / ACHIEVEMENTS

- **Dean's List:** Fall 2017, Spring 2018, Fall 2018, Fall 2019, Spring 2020, Fall 2020
- **Invited and accepted to Mortar Board Honors Society:** August 2020 – current
 - Mortar Board is a national honor society that recognizes college seniors for their achievements in scholarship, leadership and service, provides opportunities for continued leadership development, promotes service to colleges and universities and encourages lifelong contributions to the global community.
- **2021 Biobehavioral Health Research Forum:** 1st place