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## Profiles of African American College Students' Alcohol Use and Sexual Behaviors: Associations With Stress, Racial Discrimination, and Social Support

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### Abstract

Though studies show that alcohol use and sexual activity increase during emerging adulthood, few studies examine within-ethnic group differences, particularly among African American college students. This investigation utilized a latent class analytic methodology to identify risk behavior profiles of alcohol use (frequency and amount of alcohol consumed), sexual activity (number of intimate partners), and co-occurring risk behaviors (drinking before sexual intercourse) among 228 African American college students. This investigation also examined whether identified risk behavior profiles were associated with stress (interpersonal, intrapersonal, academic, and environmental), experiences of racial discrimination, and social support (from family, friends, and the college community). Results identified five distinct profiles within this sample: (a) High Sexual Risk—above-average sexual activity; (b) Abstainers—below-average alcohol use and sexual activity; (c) Low Risk—average alcohol use and sexual activity; (d) Alcohol Risk—above-average alcohol use and below-average sexual activity; and (e) Co-Occurring Risk—above-average alcohol use and sexual activity. Identified profiles differed across interpersonal and environmental stress, and self-reported frequency of experiences with racial discrimination. Implications for prevention programs and interventions aimed at reducing alcohol and sexual activity for African American college students are discussed.

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Problematic alcohol use and risky sexual behavior are major public health concerns for college-aged youth, an age cohort frequently referred to as emerging adults (Choi, Meininger, & Roberts, 2006; Fromme, Corbin, & Kruse, 2008). Emerging adulthood, which represents the transitional period between adolescence and adulthood, is a critical time period to intervene and address these behaviors. According to the developmental-contextual perspective (Elder, 1998; Schoon, Sacker, & Bartley, 2003), problematic drinking and risky sexual behaviors during the college years are often maladaptive coping responses to contextual and role changes, as emerging adults experience frequent stressors in the form of increasing academic responsibilities (e.g., deciding on a major), joining new social groups (e.g., pledging a fraternity or sorority), managing their time and care (e.g., scheduling and attending doctor's appointments), and self-reliance in coping with day-to-day stressors (e.g., having car problems) (Kogan et al., 2010; Sandfort, Orr, Hirsch, & Santelli, 2007). Problem drinking behaviors peak during emerging adulthood (Schulenberg & Maggs, 2002) and, for many, continue into adulthood (Chen & Jacobson, 2012). According to data from *Monitoring the Future: National Survey Results on Drug Use, 1975–2010* (Johnston, O'Malley, & Bachman, & Schulenberg, 2011), 71% of 12th graders report recent alcohol use and 37% report engagement in binge-drinking behaviors. These numbers increase significantly for college students and other young adults, with between 82% and 88% reporting current alcohol use, respectively. Similar to their younger peers, 37% of college students and 36% of young adults (aged 19 to 28 years old) reported at least one episode of recent binge drinking. In reference to sexual activity, studies show that, while upward of 50% of freshmen in college have never had sex (Siegel et al., 1999), the majority who have not had sex by freshman year are likely to have sexual intercourse for the first time during college, reaching about 86% of students by senior year (Cooper, 2002; Siegel et al., 1999). Further, studies show that, perhaps due to lowered inhibitions, impaired decision making, cognitive impairment (i.e., alcohol myopia), or beliefs that alcohol can enhance sexual experiences, youth who drink alcohol tend to report co-occurring sexual risk behaviors, more lifetime sexual partners, and improper use of contraception (Abma, Martinez, & Copen, 2010; Cho & Span, 2010).

Previous research has suggested that the relationship between substance use, including alcohol use, and risky sexual behavior may differ by ethnicity (for review, see Ritchwood, Ford, DeCoster, Sutton, & Lochman, 2015). Such differences, however, appear to be driven by sociostructural and economic factors (e.g., Adimora & Schoenbach, 2005). Data from the 2006–2008 National Survey of Family Growth, for instance, showed no significant differences between African Americans and White Americans on contraception use (Chandra, Mosher, Copen, & Sionean, 2011). This survey, however, did not specifically examine heterogeneity among African American emerging adults in college, which is a critical omission given the fact that African American youth face disproportionate consequences of problem drinking and risky sexual behaviors (e.g., drunk-driving accidents, legal system involvement, sexually transmitted infections [STIs], unintended pregnancies) when compared to their peers of other ethnicities (Godette, 2009; Jackson, Hodge, & Vaughn, 2010).

Empirical and theoretical literature suggests that both context and cultural experiences influence the behavioral development of African American youth (Arthur, Hawkins, Pollard,

Catalano, & Baglioni, 2002; McLanahan, 1999). The integrative model of developmental competencies (Garcia Coll et al., 1996; Spencer & Dupree, 1996) posits that, in addition to shared experiences across ethnicities, factors that are culturally and racially specific, such as experiences with racial discrimination, are important factors that contribute to youth outcomes. As noted, emerging adults transitioning to college face increased intrapersonal, interpersonal, academic, and environmental stressors, which may leave them susceptible to maladaptive coping, resulting in alcohol use and risky sexual activity (Ross, Neibling, & Heckert, 1999; Unger, Hamilton, & Sussman, 2004). In addition to these stressors, up to 60% of African American emerging adults in college report experiencing racial discrimination (Hoggard, Byrd, & Sellers, 2012). Experiences with discrimination have long been associated with increased anger, distress, frustration, anxiety, adverse mental and physical health outcomes, and increased engagement in risk behaviors (Brody, Chen, Kogan, Smith, & Brown, 2010; Williams, Neighbors, & Jackson, 2003; Wong, Eccles, & Sameroff, 2003).

When considering the context of the college environment as well as cultural experiences that impact minority undergraduates, the developmental contextual perspective and the integrative model of developmental competencies would suggest that exploring both general and cultural stressors, such as specific experiences with racial discrimination, is critical to our understanding of risky drinking and sexual behaviors of African American students who attend predominantly White institutions. The models also posit that researchers should attempt to explicate the potentially varying effects of risk and protective factors (e.g., social support) on experiences of psychological distress (Constantine, Wilton, & Caldwell, 2003), engagement in negative behaviors (Plybon, Edwards, Butler, Belgrave, & Allison, 2003), and poor progress and development (Bean, Bush, McKenry, & Wilson, 2003). For example, studies suggest that the financial burden placed on some low-income African American youth during their transition to college may complicate relationships that are typical sources of social support (Kogan et al., 2010; Miller-Cribbs & Farber, 2008; Sandfort et al., 2007). Thus, it is necessary to gain an understanding of whether specific social support networks are associated with risk behavior engagement for this group of emerging adults.

Previous studies on this topic have overwhelmingly utilized variable-centered approaches that simply describe the average behavior of a sample group through forcing constructs into predetermined categories. Such approaches fail to adequately describe the behavioral patterns of higher- or lower-risk individuals (Hill, White, Chung, Hawkins, & Catalano, 2000) and do not account for within-group differences (Komro, Tobler, Maldonado-Molina, & Perry, 2010). As such, variable-centered approaches are limited in their ability to contribute to a full understanding of the co-occurring nature of alcohol use and risky sex for this population (Stueve & O'Donnell, 2005; Weden & Zabin, 2005). Thus, there is a need for research utilizing a profile-oriented approach to explore within-group differences that exist in these behaviors which often co-occur (Jung & Wickrama, 2008; Weaver & Kim, 2008). The current study bridges tenets of the developmental-contextual perspective and the integrative model of developmental competencies through the examination of the influence of context (e.g., academic stress) and culture (e.g., experiences with discrimination) on within-group variation in African American emerging adults' risk behaviors in college. Specifically, we utilized a profile-oriented approach to identify patterns in alcohol use,

sexual activity, and co-occurring risk behaviors among a college student sample of 228 African American emerging adults in college. In addition, this investigation examined whether stress, experiences with discrimination, and social support were associated with the identified risk behavior profiles.

The primary aims of this study were threefold: (a) to utilize latent class analysis to identify risk behavior profiles of alcohol use (drinking frequency, binge drinking), risky sex (number of sexual partners), and co-occurrence of alcohol use and sexual activity among African American emerging adults; (b) to examine the ways in which identified risk behavior profiles are associated with risk and resilience factors, including general (e.g., student stress) and culturally specific stress (experiences with racial discrimination) and support (from one's family, friends, and college community) among this sample of emerging adults in college; and (c) to examine how identified profiles of African American emerging adults' risk behaviors are associated with demographic variables (age, gender, socioeconomic status [SES]).

## METHOD

### Participants

Participants were 228 African American students attending a large, predominantly White university in the Southeastern United States. Included in the sample were biracial students who self-identified as mixed with African American and another race (e.g., "Black/White," "Black and Hispanic," or "Afro Latina"; see Dennhardt & Murphy, 2011). The current study attempted to target a sample of 200 African American students due to statistical recommendations that suggest 50 observations per variable as optimal for adequate power (Muthén & Muthén, 2002). Participants in the current study were between 18 and 25 years old, with a mean age of 20.53 years ( $SD = 1.87$ ). Approximately 74.1% of the sample was female. Regarding class standing, 24% of the sample were freshmen, 18% were sophomores, 22% were juniors, and 35% were seniors. The majority of students (62%) reported having parents with at least some college education. See Table 1 for participant characteristics.

### Procedure

The described study uses data from the Activities and Behaviors in College (ABC) Study. Human subject approval was granted from the university's institutional review board (IRB). Methods of recruiting for this investigation included making the questionnaire available through the psychology participant pool at the university. Participants recruited through this method received the standard allotted extra credit in their psychology course for participation, and they received no other incentives. Other studies were recruited using the following recruitment strategies: advertising on e-mailing lists, posting fliers, sampling African American organizations (e.g., fraternities and sororities), and snowball/network sampling methods targeting African American students. Students not receiving extra credit were given the choice between being entered in a raffle to win one of seven \$100 gift cards or instantly receiving a \$10 gift card at survey completion. After students provided informed voluntary consent, administration of surveys occurred online using a Web-based survey

program. Thus, they were completed at a time and place convenient for students. The average survey completion time for this investigation ranged from 15 to 20 minutes.

Due to our use of various incentive methods, certain precautions were taken in an attempt to minimize or prevent duplicate enrollments. Because participants had the option of various incentive methods (e.g., receiving class credits, financial incentives), we attempted to both negate and detect multiple submissions by the same participant (Birnbaum, 2004; Chiasson et al., 2006; Kraut et al., 2004). Seen first, and even before the consent form of the survey, students were presented with a warning informing them that they should only complete the survey once, and that they would not receive credit/compensation twice if they took the survey during a previous semester or for a different incentive (e.g., extra credit, gift card, raffle). Also, the current study utilized Internet protocol (IP) address tracking through SurveyMonkey software to detect and delete multiple survey responses from the same computer or cell phone.

## Measures

**Alcohol Use**—Two items from the Youth Risk Behavior Survey (YRBS; National Center for Chronic Disease Prevention and Health Promotion, 2008) were used to assess aspects of youth alcohol use, specifically, alcohol consumption and binge drinking. Alcohol consumption was measured using two items: “On how many days did you have at least one drink of alcohol during the past 3 months?” and “On how many days did you have 5 or more (if male) or 4 or more (if female) drinks of alcohol in a row, that is, within a couple of hours during the past 3 months?” Responses were on a 6-point Likert scale assessing drinking behaviors from *0 days*, *1 or 2 days a week*, to *Every day or almost every day*. Information about the standards and size of a standard drink was provided and stated the following:

The next few questions ask about drinking alcohol. This includes drinking beer, wine, wine coolers, and liquor such as rum, gin, vodka, or whiskey. For these questions, drinking alcohol does not include drinking a few sips of wine for religious purposes. One drink of alcohol is defined as a 12 oz. can or bottle of beer or wine cooler, a 4 oz. glass of wine, or a shot of liquor straight or in a mixed drink.

Reliability estimates for these two items ( $\alpha = .801$ ) indicated good internal consistency for participants in the current study.

**Number of Sexual Partners**—Youth sexual behavior was measured using one item from the Youth Risk Behavior Survey (Kann et al., 2014) that was intended to capture students’ number of sexual partners: “During your life, with how many people have you had sexual intercourse?”

**Co-Occurring Risk Behaviors**—The co-occurrence of sexual behavior and alcohol use (i.e., sexual activity while under the influence of alcohol) was assessed through use of the YRBS question, “When thinking about how often you drink alcohol before having sexual intercourse, does this happen: never, seldom, sometimes, most times, always?” (Kann et al., 2014). Responses were recorded on a 5-point Likert scale wherein higher response scores indicated more instances of drinking before sex, or greater co-occurring risk behaviors.

**Stress**—The Student Stress Survey (SSS) is a 41-item scale developed with college students described as varying “in year in school, age, gender, and major” used to assess the major sources of stress that students experience (Ross et al., 1999, p. 214). The SSS addresses each of the four dimensions of stress that the literature has shown affect college students: interpersonal, intrapersonal, academic, and environmental sources of stress. Although not previously studied specifically with African American samples, current reliability analyses indicated internal consistency coefficients that were between .70 and .80. Six items were used to assess interpersonal sources of stress ( $\alpha = .76$ ), including “roommate conflict” and “new boyfriend/girlfriend.” Intrapersonal sources of stress were assessed through 16 items (e.g., decline in personal health) with an adequate reliability ( $\alpha = .79$ ) for the current investigation. The academic dimension of stress included eight items which assessed school-related difficulties (e.g., transferring schools; reliability reported at .70). We assessed environmental stressors using 11 items ( $\alpha = .81$ ). Prompts included “messy living conditions” and “car trouble.” Here, students were told to rate each stressful event on a 4-point Likert scale and to choose from 0 (*Not a problem at all*) to 3 (*Very much a problem*) in response to the prompt “In the last 6 months, how much of a problem have the following been to you?”

**Racial Discrimination**—The daily life experiences scale (DLE-R) is an 18-item subscale of the Racism and Life Experiences Scales (RaLES; Harrell, 2000) that assesses the frequency of everyday experiences with racial discrimination. The DLE-R has undergone previous psychometric validation with African American participants, showing excellent reliability with reported reliability coefficients between .94 and .96 (Hoggard et al., 2012; Matthews, Hammond, Nuru-Jeter, Cole-Lewis, & Melvin, 2013). Participants were asked to read each of the items on the scale and “determine how often you have experienced each event because of your race or racism in the past year” on items which included “being accused of something or treated suspiciously” and “being observed or followed in public places,” for example. Using a Likert scale ranging from 0 (*Never*) to 5 (*Once a week or more*), reliability for the 18 items in this scale was found to be excellent ( $\alpha = .95$ ) for the current study.

**Social Support**—The Multidimensional Scale of Perceived Social Support (MPSS; Zimet, Dahlem, Zimet, & Farley, 1988) was used to measure the relative importance of social support in participants’ lives. The MPSS contains three subscales that were modified to assess support from families (e.g., “My mother really tries to help me”; nine items;  $\alpha = .85$ ) and friends (e.g., “I can count on my friends when things go wrong”; six items;  $\alpha = .94$ ). The significant others subscale of the MPSS explores aspects of social support that may be culturally or developmentally unique to various individuals (Canty-Mitchell & Zimet, 2000). For the purpose of the current study, the “influential adults outside of one’s family” scale was modified to reflect participants’ sense of support from their college community through eight prompts (e.g., “I feel like a member of my college community”;  $\alpha = .94$ ). Past studies have found this scale to be a reliable measure for use with African American youth (although not college students), with internal reliability coefficients between .89 and .91 (Canty-Mitchell & Zimet, 2000). Responses were based on a 7-point Likert scale response ranging from 1 (*Very strongly agree*) to 7 (*Very strongly disagree*). Each subscale was



scored by totaling the items within the scale, and higher scores were indicative of higher levels of perceived social support in each domain.

**Demographic Variables**—The current study explores the relationship between identified risk behavior profiles and demographic variables including SES, age, and gender, as research indicates they are associated with risk behavior engagement (e.g., Pergamit, Huang, & Lane, 2001). For the current study, age was represented numerically: females = 0, and males = 1; and SES was measured by parents' education level (0 = *Other, unknown, none*, 1 = *High school equivalency (e.g., GED)*, 2 = *High school diploma*, 3 = *Vocational tech diploma*, 4 = *Associate's degree*, 5 = *RN degree*, 6 = *Bachelor's degree*, 7 = *Master's degree*, 8 = *MD, PhD, Law, Dental*).

### Statistical Analysis

This investigation utilized a latent class analytic framework. To identify the best-fitting cluster solution, several steps were taken. First, based on previous studies (e.g., Nylund, Asparouhov, & Muthén, 2007), Akaike information criterion (AIC; Akaike, 1974) and Bayesian information criterion (BIC; Schwarz, 1978) were used to determine the optimal number of classes. Statisticians suggest that AIC and BIC scores be interpreted in comparison to each other, and that lower scores (e.g., closer to 0) are indicative of a better-fitting model (Nylund et al., 2007). Entropy values also were used as an indicator of which cluster solution was most accurate at classifying risk behaviors. Values closer to or exactly 1.0 indicate a better classification. Further, because AIC, BIC, and entropy should be examined in conjunction with other model-fit indices, a Lo-Mendell-Rubin adjusted likelihood ratio test (LMRT; Lo, Mendell, & Rubin, 2001; Nylund et al., 2007) and bootstrapped likelihood ratio test (BLRT; Arminger, Stein, & Wittenberg, 1999; McLachlan & Peel, 2000) also were used to identify the best-fitting model. The  $p$  values generated for the LMRT and BLRT compare nested latent class models wherein cluster solutions with a  $p$  value less than .05 indicate that a particular solution,  $k$ , is a better fit than the next lowest cluster,  $k - 1$  (e.g., five-cluster solution is a better fit than the four-cluster solution) while cluster solutions with a  $p$  value that is greater than .05 suggest that the higher cluster solution is not a better fit than the lower cluster solution (McLachlan & Peel, 2000; Nylund et al., 2007).

In addition to these fit indices, each cluster solution was evaluated on its interpretability, according to past research (e.g., Merz & Roesch, 2011), which suggests using this technique to determine whether the profiles were generated as an artifact of a nonnormal distribution or if they in fact represented different classes of individuals (Muthén & Muthén, 2007). Further, small classes (those containing far less than 5% of the 2,285 participants sampled;  $N = 11$ ) are generally considered forced classes and associated with cluster solutions with too many classes (Hipp & Bauer, 2006; Merz & Roesch, 2011). Thus, class sizes were also considered when determining the best-fitting cluster solution.

Last, a one-way analysis of variance (ANOVA) with post hoc comparisons and chi-square analysis was utilized to test for mean differences in the demographic variables of interest, and a one-way ANOVA with post hoc comparisons between identified profiles was

conducted to test for mean differences in indicators of contextual stress, reported frequency of racial discrimination, and social support across risk behavior profile class membership.

## RESULTS

### Latent Class Analysis: Risk Behavior Profiles

Latent class solutions containing two through eight classes were fit to the data. Model fit indices for each latent class solution of risk behavior profiles can be seen in Table 2. Results of the latent class analysis indicated that a five-class solution fit the data most optimally (AIC = 3085.284; BIC = 3181.183; Entropy = .922; LMRT = 62.541,  $p = .0404$ ; BLRT = -1547.065,  $p = .0000$ ). Specifically, based on the LMRT value ( $p = .0000$ ), the two-class solution was deemed a better fit than the one-class solution, and the three-class solution was a better fit than the two-class solution ( $p = .0002$ ). Further, although the LMRT values did not indicate that the four-class solution was a better fit than the three-class solution ( $p = .2743$ ), the five-class solution was found to be a significantly better fit than the four-class solution ( $p = .0404$ ). However, the LMRT values did not indicate that the six-class solution was a better fit than the five-class solution ( $p = .5236$ ) or that the seven-class ( $p = .1585$ ) or eight-class ( $p = .6655$ ) solutions were better-fitting models than their next lower class solutions.

The six-, seven-, and eight-class solutions had lower AIC and BIC values, and the seven- and eight-class solutions had higher entropy values than the five-class solution; however, their nonsignificant LMRT values indicated that the five-class solution was the best-fitting model. Further, exploration of class size revealed that the six-, seven-, and eight-class solutions each yielded two class sizes with fewer than 5% ( $N = 11$ ) of the 228 participants in the current study. In addition, the six-class solution ( $N = 9$ ;  $N = 10$ ), the seven-class solution ( $N = 7$ ;  $N = 10$ ), and the eight-class solution ( $N = 4$ ;  $N = 6$ ) contained two classes and the three-class solution had one class ( $N = 8$ ) that was too small to be of substantive value. Thus, the five-class model was solidified as the final cluster solution, and five distinct classes were identified.

The overall sample means and standardized means were used to interpret the pattern of each identified risk behavior profile. A depiction of the identified profiles using standardized means of the study variables (used for more clear interpretation of class means in comparison to the overall sample mean) is presented in Figure 1. The five identified classes were (a) *High Sexual Risk* ( $N = 11$ , 4.82%); (b) *Abstainers* ( $N = 102$ , 44.74%); (c) *Low Risk* ( $N = 72$ , 31.58%); (d) *Alcohol Risk* ( $N = 34$ , 14.91%); and (e) *Co-Occurring Risk* ( $N = 9$ , 3.95%).

Classes were described according to patterns seen in risk behavior engagement (i.e., consuming alcohol, binge drinking, number of sexual partners, and drinking before having sexual intercourse). Class 1 was identified as the *High Sex Risk* profile due to students in this group reporting greater than average number of sexual partners, and lower than average alcohol consumption frequency and rates, as well as low levels of reported drinking before sexual activity. The second class reflected participants who reported lower than average rates of drinking, amounts of alcohol consumed, number of sexual partners, and co-occurring risk



behaviors. As such, Class 2 was identified as the *Abstainers* profile. Students in Class 3 were identified as a part of the *Low Risk* profile due to all risk behavior indicators being reported at levels that were close to the overall sample mean. The *Alcohol Risk* profile (Class 4) was classified as such due to their frequency of drinking and rates of binge drinking being higher than average, while their lifetime sexual partners remained lower than average, and the likelihood of them drinking before having sex remained closer to average. Class 5 was identified as the *Co-Occurring Risk* profile due to elevated frequency of reported alcohol consumption, increased rates of binge drinking, and number of sexual partners that were above the overall sample average, and the highest rates of co-occurring alcohol use and sexual activity when compared to other classes.

### Demographic Variations Among Identified Profiles

As shown in Table 3, a significant mean difference was found for age ( $F_{4, 223} = 3.252, p = .013$ ), but not for SES ( $F_{4, 223} = 1.215, p = .305$ ) or gender ( $X^2_{4, 223} = 1.686, p = .154$ ). Specific to age, students in Class 1 (*High Sex Risk*;  $M = 21.91$ ) were significantly older than students in Class 2 (*Abstainers*;  $p = .042$ ;  $M = 20.27$ ), and students in Class 4 (*Alcohol Risk*;  $p = .041$ ;  $M = 20.12$ ). However, there was no significant mean difference in the age of students in Class 1 (*High Sex Risk*) and students in Classes 3 (*Low Risk*,  $p = .315$ ;  $M = 20.78$ ) or 5 (*Co-Occurring Risk*,  $p = .956$ ;  $M = 21.33$ ). There were no other significant mean differences in ages between Classes 2 (*Abstainers*), 3 (*Low Risk*), 4 (*Alcohol Risk*), and 5 (*Co-Occurring Risk*) when compared to one another.

### Variation in Stress Among Risk Behavior Profiles

Overall, findings revealed significant mean differences in profile membership based on participants' reported levels of interpersonal stress ( $F_{4, 223} = 3.855, p = .005$ ) and environmental stress ( $F_{4, 223} = 2.849, p = .025$ ) but not for intra-personal stress ( $F_{4, 223} = 1.758, p = .138$ ) or academic stress ( $F_{4, 223} = 1.401, p = .234$ ).

For interpersonal stress, mean differences were found between Class 2 (*Abstainers*;  $M = .41$ ) and Classes 4 (*Alcohol Risk*;  $M = .67$ ) and 5 (*Co-Occurring Risk*;  $M = .85$ ). Specifically, students who were *Abstainers* from alcohol, sex, and engaging in intercourse while under the influence reported significantly fewer interpersonal stressors than students in the *Alcohol Risk* profile ( $p = .035$ ). Further, the *Abstainers* also reported significantly fewer interpersonal stressors than students who were classified as belonging to the *Co-Occurring Risk* profile ( $p = .045$ ). Interpersonal stress was not significantly or marginally related to membership in any of the other classes.

Environmental stress was associated with students' membership in Class 4 (*Alcohol Risk*) compared to some of the other profiles. Here, students reporting more environmental stressors were marginally more likely to be in the *Alcohol Risk* class (Class 4,  $M = .69$ ) than they were to be in the *Abstainers* class (Class 2,  $p = .056, M = .45$ ). Similarly, students with more environmental stressors were significantly more likely to be in the *Alcohol Risk* (Class 4) profile than they were to be in the *Low Risk* profile (Class 3,  $p = .011, M = .39$ ). Students in the *Alcohol Risk* class (Class 4) did not report marginally or significantly higher levels of environmental stress than students in the *High Sex Risk* class (Class 1,  $p = .352, M = .41$ ) or

students in the *Co-Occurring Risk* class (Class 5,  $p = .884$ ,  $M = .54$ ). There were no other significant mean differences found between classes in relation to the environmental stressors reported by participants in the current study.

As depicted in Table 3, no significant mean difference was found between any of the classes based on the intra-personal stressors reported by the African American college students in the current study. Similarly, a significant mean difference for class membership also was not found in relation to the academic stress reported by students. Namely, students with greater reported amounts of intrapersonal and academic stressors were no more or less likely to be in Class 1 (*High Sex Risk*), Class 2 (*Abstainers*), Class 3 (*Low Risk*), Class 4 (*Alcohol Risk*), or Class 5 (*Co-Occurring Risk*) when compared to one another.

### Variation in Racial Discrimination Among Risk Behavior Profiles

Analyses revealed significant mean differences in risk behavior profile membership based on participants experiencing racism ( $F_{4, 223} = 2.722$ ,  $p = .030$ ). Specifically, students who were in the *Alcohol Risk* class (Class 4;  $M = 1.54$ ) were significantly more likely ( $p = .042$ ) to report more frequent experiences with racial discrimination than students who were *Abstainers* from drinking and sexual activity (Class 2;  $M = .97$ ). In reference to whether students were of *High Sex Risk* (Class 1;  $M = 1.63$ ), *Low Risk* (Class 3;  $M = 1.11$ ), or *Co-Occurring Risk* (Class 5;  $M = 1.31$ ), results indicated no other significant mean differences in students' reported experiences with racism.

### Variation in Social Support Among Risk Behavior Profiles

Findings revealed no significant mean differences in profile membership based on the social support received by participants from their family ( $F_{4, 223} = .303$ ,  $p = .876$ ), friends ( $F_{4, 223} = .384$ ,  $p = .820$ ), or community ( $F_{4, 223} = .458$ ,  $p = .766$ ; see Table 3).

There were no significant mean differences between the classes in relation to the reported social support that students in the current study received from their families. Namely, students in Class 1 (*High Sex Risk*;  $M = 3.93$ ) reported no significantly greater or fewer levels of social support from their families than students in all the other classes; students in Class 2 (*Abstainers*;  $M = 4.04$ ) reported similar levels of social support from families; students who were *Low Risk* (Class 3;  $M = 3.92$ ) did not report significantly different levels of family support; and neither did students in Classes 4 (*Alcohol Risk*;  $M = 3.91$ ) or 5 (*Co-Occurring Risk*;  $M = 4.02$ ).

Similar findings were seen when analyzing data for mean differences in social support from friends across class membership. Namely, students who were of *High Sex Risk* (Class 1;  $M = 3.86$ ) reported statistically similar levels of college community support as students who were *Abstainers* from drinking alcohol and engaging in risky sex (Class 2;  $M = 3.63$ ), students who were deemed to be of *Low Risk* (Class 3;  $M = 3.65$ ), students who predominantly displayed *Alcohol Risk* (Class 4;  $M = 3.59$ ), and students who displayed *Co-Occurring Risk* behavior patterns (Class 5;  $M = 3.84$ ). The same findings held true when all of these risk behavior classes were compared to one another in relation to the amount of college community support reported by African American students at this large Southeastern university.

Last, there were no significant mean differences in the social support that students in the current study reported receiving from their college community across the five identified risk behavior classes. Please see Table 3 for significance values found when assessing for mean differences in college community support perceived for students who were in Class 1 (*High Sex Risk*;  $M = 4.06$ ), Class 2 (*Abstainers*;  $M = 3.69$ ), Class 3 (*Low Risk*;  $M = 3.67$ ), Class 4 (*Alcohol Risk*;  $M = 3.60$ ), and Class 5 (*Co-Occurring Risk*;  $M = 3.76$ ) when compared to one another.

## DISCUSSION

The current study utilized a profile-oriented approach to identify alcohol and sexual risk behavior profiles among African American college students and determine whether stress, racial discrimination, and sources of social support influenced profile membership. There were several key findings from this study. First, it is notable that, although much of the literature would suggest that African American youth engage in more sexual risk behaviors than their other ethnic peers (Chapin, 2001; Faryna & Morales, 2000), our results suggest that those who abstained from alcohol, sex, and cooccurring risk behavior composed the majority (approximately 44.74%) of our sample. Second, we identified five distinct risk behavior profiles (i.e., *High Sexual Risk*, *Abstainers*, *Low Risk*, *Alcohol Risk*, and *Co-Occurring Risk*). Third, we explored demographic variation in risk behavior profiles and demonstrated significant mean differences across class membership for age (wherein students of *High Sex Risk* were older than *Abstainers* and those who were of heightened *Alcohol Risk*) but not for SES or gender. Finally, findings indicated that profile membership varied by type of stressor but not social support. To our knowledge, this is the first known study to utilize a latent class analysis to identify risk behavior profiles among African American college students (Godette, 2009; Goldstein et al., 2009). Further, as we are ultimately concerned with prevention and treatment efforts that reduce the occurrence and negative impact of alcohol use and risky sex, we related risk behavior profiles with stress, experiences with racial discrimination, and social support.

We identified five distinct alcohol and sexual risk profiles within this sample that were supported by the larger literature. The current study is the first to explore alcohol use, sexual activity, and the co-occurrence of these behaviors among African American college students. For example, students in the *Low Risk* profile were similar to a recent profile analytic study with a small percentage of African American participants (6.7%) that identified patterns of risk behaviors and included a group of individuals who participate in risk behaviors but regulate the frequency of engagement (Mallett, Marzell, Scaglione, Hultgren, & Turrisi, 2013). These findings support the connection between drinking behaviors and sexual activity; they also support the exploration of these behaviors in concert, as done in the current study. Consistent with numerous previous findings among the general adult population, our results revealed profiles that were composed of individuals who were at heightened alcohol risk and of co-occurring risk. For example, a recent study examining drinking patterns and sexual risk behaviors of 18- to 35-year-olds (of which 31% were college students and 7.9% were African American) found that frequent heavy drinkers had the greatest number of sexual partners and were the most likely to drink alcohol before having sex (Stappenbeck et al., 2013). Overall, results of the current latent class analysis

suggest there is indeed significant variation in the risk behavior engagement of African American college students. Furthermore, these findings indicate that these distinct profiles may have important implications for intervention efforts among African American emerging adults in university settings through identifying malleable factors that are related to profile membership of higher risk.

Regarding contextual stress, the current investigation suggested that identified risk behavior profiles differed across interpersonal and environmental stress. Specifically, we found that *Abstainers* tended to report fewer interpersonal stressors than the *Alcohol Risk* and *Co-Occurring Risk* groups. It is possible that youth in the higher risk groups use alcohol and/or sex to cope with challenges resulting from interpersonal stress (Williams, Newby, & Kanitz, 1993). We also found that students in the *Alcohol Risk* group were slightly more likely than students in the *Abstainers* and *Low Risk* groups to report environmental stressors. Considering that most college students are often living away from home for the first time, increased environmental stressors may lead to greater alcohol use (Brody et al., 2010; Wills, Sandy, Yaeger, Cleary, & Shinar, 2001). Thus, the finding that students who were of higher *Alcohol Risk* reported significantly more problems due to environmental stressors than students who were *Abstainers* or those who reported *Low Risk* behaviors was not surprising.

Concerning experiences with racial discrimination, we found that students in the *Alcohol Risk* profile reported more frequent experiences with racial discrimination than students who were *Abstainers* from alcohol, sex, and cooccurring risk behaviors. This is in line with multiple studies that show relationships between experiences with racism and discrimination and alcohol use among African Americans (Borrell et al., 2007; Gibbons et al., 2007; Landrine, Klonoff, Corral, Fernandez, & Roesch, 2006; Neblett, Terzian, & Harriott, 2010). These findings also support theoretical suggestions (i.e., stress-coping theory) that drinking is related to racially stressful experiences due to attempts to “deal with” emotionally distressing experiences that leave students with perceptions of limited control and efficacy (Brody et al., 2010; Fergus & Zimmerman, 2005).

The current study was not without limitations. Our risk profiles were composed of relatively few risk behaviors due to power recommendations concerning our relatively small sample size. Inclusion of a wider range of indicators of risky drinking and sexual behavior could provide a more comprehensive depiction of patterns that exist for African American emerging adults in college. For example, although number of sexual partners has consistently been used as a marker of risky sex, researchers typically also explore additional proxies of sexual risk behavior (e.g., condom use, contraceptive use, casual partners, age at first sexual intercourse, intoxication at last sexual intercourse) in similar studies (Bachanas et al., 2002; Eisenberg, Neumark-Sztainer, & Lust, 2005; Hurd & Zimmerman, 2010; Laska, Pasch, Lust, Story, & Ehlinger, 2009; Roberts et al., 2012). A larger sample size could facilitate the exploration of a more comprehensive range of risk behaviors in future studies utilizing a latent class analytic approach. Further, the measures used in the current study were not developed for African Americans, despite their acceptable levels of reliability with college-aged students. More sensitive measures are needed to further advance the knowledge on these topics. Future studies should refine the measurement tools used to assess specific risk-related variables that are unique to African American emerging adults in college.

Further, our sample of African American undergraduates attending a large, predominantly White university in the Southeastern region of the United States may not be generalizable to all African American undergraduate students. Follow-up investigations are needed to examine African American undergraduates in various college settings as well as those who are not enrolled in college.

Despite these limitations, this study had several strengths that make it both progressive and compelling. First, this study focused on risk behavior engagement of African American college students. Much of the previous research on this topic has sampled predominantly White, adult populations; the current study focused on African American emerging adults in college, a group that is of particular risk for engaging in risk behaviors and suffering disproportionate consequences during this developmental stage. Second, this study identified specific profiles that had not been verified within the target population. Further, as opposed to previous studies concerned with already-established consequences of risk behaviors, we took an approach which highlights malleable targets that are associated with the identified risk behavior profiles. As such, implications exist, in that prevention researchers might seek to change these factors (one's responses to experiences with discrimination, for example) to reduce alcohol use, sexual activity, or co-occurring risk behaviors and ultimately human immunodeficiency virus (HIV) and pregnancy risk, drinking and driving accidents, rape occurrences, and legal system involvement, among other serious consequences of engagement in risk behaviors.

The current investigation extends the literature on this topic in several ways. First, this study provides initial support for the existence of patterns in the ways in which African American emerging adults in college engage in alcohol use, sexual activity, and co-occurring drinking and sexual risk behaviors. Although past studies have demonstrated the impact of demographic factors on risk behavior engagement (e.g., Nicolai, Moshagen, & Demmel, 2012), the current investigation is the first known study to do so within a group of African American emerging adults in college. Our findings pertaining to student demographics have implications for prevention efforts as students of *Alcohol Risk* were younger than students of *High Sex Risk*. Specifically, programs might structure their components to emphasize alcohol risk for freshman students who are typically younger and recently transitioning to the college environment. Third, the current study suggests that emerging adults may engage in alcohol use and risky sexual activity as maladaptive reactions to occurrences such as negative interpersonal interactions, environmental stressors, and racially charged discriminatory experiences. Although an important long-term solution is to eradicate discrimination and inequities as well as subsequent impacts, preparing African American youth for environmental stressors and experiences with racial discrimination might be a beneficial next step for prevention scientists. For example, through employing intervention strategies that seek to improve cognitive and behavioral coping and include components that prepare youth for experiences with discrimination through utilizing racial socialization messages, boosting racial identity, and teaching students positive ways to cope with racially charged situations (e.g., engaging the offending person, asserting oneself, seeking support, or using direct problem-solving strategies; Scott, 2003), future risk behavior prevention programs may begin to become truly comprehensive. Our findings suggest that, through equipping African American emerging adults in college with the tools necessary to cope

with the stressors that they face, prevention programs will succeed in reducing the negative consequences of drinking, sexual activity, and co-occurring risk behaviors.

## References

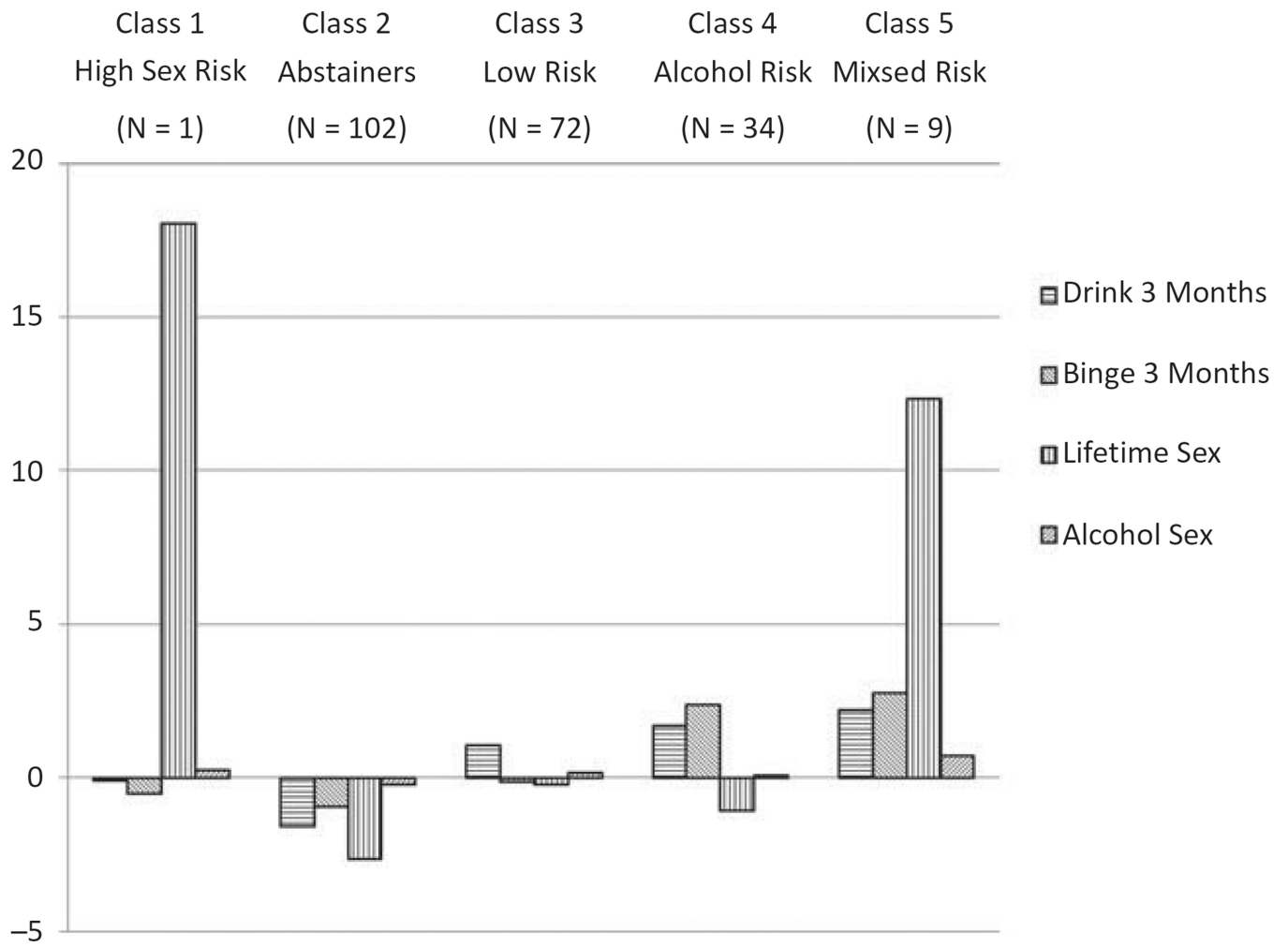
- Abma JC, Martinez GM, Copen CE. Teenagers in the United States: Sexual activity, contraceptive use, and childbearing, National Survey of Family Growth 2006–2008. *Vital and Health Statistics. Series 23, Data from the National Survey of Family Growth.* 2010; 30:1–47.
- Adimora AA, Schoenbach VJ. Social context, sexual networks, and racial disparities in rates of sexually transmitted infections. *Journal of Infectious Diseases.* 2005; 191:115–122.
- Akaike H. A new look at the statistical model identification. *IEEE Transactions on Automatic Control.* 1974; 19:716–723.
- Arminger G, Stein P, Wittenberg J. Mixtures of conditional mean- and covariance-structure models. *Psychometrika.* 1999; 64:475–494.
- Arthur MW, Hawkins J, Pollard JA, Catalano RF, Baglioni AR. Measuring risk and protective factors for substance use, delinquency, and other adolescent problem behaviors: The Communities That Care Youth Survey. *Evaluation Review.* 2002; 26:575–601. [PubMed: 12465571]
- Bachanas PJ, Morris MK, Lewis-Gess JK, Sarett-Cuasay EJ, Sirl K, Ries JK, Sawyer MK. Predictors of risky sexual behavior in African American adolescent girls: Implications for prevention interventions. *Journal of Pediatric Psychology.* 2002; 27:519–530. [PubMed: 12177252]
- Bean R, Bush K, McKenry P, Wilson S. The impact of parental support, behavioral control, and psychological control on the academic achievement and self-esteem of African American and European American adolescents. *Journal of Adolescent Research.* 2003; 18:523–541.
- Birnbaum MH. Human research and data collection via the Internet. *Annual Review of Psychology.* 2004; 55:803–832.
- Borrell L, Jacobs D, Williams D, Pletcher M, Houston T, Kiefe C. Self-reported racial discrimination and substance use in the Coronary Artery Risk Development in Adults Study. *American Journal of Epidemiology.* 2007; 166:1068–1079. [PubMed: 17698506]
- Brody GH, Chen Y, Kogan SM, Smith K, Brown AC. Buffering effects of a family-based intervention for African American emerging adults. *Journal of Marriage and Family.* 2010; 72:1426–1435. [PubMed: 20976130]
- Canty-Mitchell J, Zimet GD. Psychometric properties of the multidimensional scale of perceived social support in urban adolescents. *American Journal of Community Psychology.* 2000; 28:391–400. [PubMed: 10945123]
- Chandra, A., Mosher, WD., Copen, C., Sionean, C. National Health Statistics Reports (No. 36). Hyattsville, MD: National Center for Health Statistics; 2011. Sexual behavior, sexual attraction, and sexual identity in the United States: Data from the 2006–2008 National Survey of Family Growth.
- Chapin J. It won't happen to me: The role of optimistic bias in African American teens' risky sexual practices. *Howard Journal of Communications.* 2001; 12:49–59.
- Chen P, Jacobson KC. Developmental trajectories of substance use from early adolescence to young adulthood: Gender and racial/ethnic differences. *Journal of Adolescent Health.* 2012; 50:154–163. [PubMed: 22265111]
- Chiasson MA, Parsons JT, Tesoriero JM, Carballo-Dieguez A, Hirshfield S, Remien RH. HIV behavioral research online. *Journal of Urban Health.* 2006; 83:73–85. [PubMed: 16736356]
- Cho Y-H, Span SA. The effect of alcohol on sexual risk-taking among young men and women. *Addictive Behaviors.* 2010; 35:779–785. [PubMed: 20399023]
- Choi H, Meininger J, Roberts R. Ethnic differences in adolescents' mental distress, social stress, and resources. *Adolescence.* 2006; 41:263–283. [PubMed: 16981616]
- Constantine MG, Wilton L, Caldwell LD. The role of social support in moderating the relationship between psychological distress and willingness to seek psychological help among Black and Latino college students. *Journal of College Counseling.* 2003; 6:155–165.



- Cooper ML. Alcohol use and risky sexual behavior among college students and youth: Evaluating the evidence. *Journal of Studies on Alcohol*. 2002; (Supplement)(14):101–117. [PubMed: 12022716]
- Dennhardt AA, Murphy JG. Associations between depression, distress tolerance, delay discounting, and alcohol-related problems in European American and African American college students. *Psychology of Addictive Behaviors*. 2011; 25:595–604. [PubMed: 21988480]
- Eisenberg ME, Neumark-Sztainer D, Lust KD. Weight-related issues and high-risk sexual behaviors among college students. *Journal of American College Health*. 2005; 54:95–101. [PubMed: 16255321]
- Elder, GH. The life course and human development. In: Damon, W., Lerner, RM., editors. *Handbook of child psychology, Vol. 1: Theoretical models of human development*. New York, NY: John Wiley; 1998. p. 939-991.
- Faryna E, Morales E. Self-efficacy and HIV-related risk behaviors among multiethnic adolescents. *Cultural Diversity and Ethnic Minority Psychology*. 2000; 6:42–56. [PubMed: 10975166]
- Fergus S, Zimmerman MA. Adolescent resilience: A framework for understanding healthy development in the face of risk. *Annual Review of Public Health*. 2005; 26:399–419.
- Fromme K, Corbin WR, Kruse MI. Behavioral risks during the transition from high school to college. *Developmental Psychology*. 2008; 44:1497–1504. [PubMed: 18793080]
- Garcia Coll C, Lamberty G, Jenkins R, McAdoo HP, Crnic K, Wasik BH, Vasquez Garcia H. An integrative model for the study of developmental competencies in minority children. *Child Development*. 1996; 67:1891–1914. [PubMed: 9022222]
- Gibbons FX, Yeh H, Gerrard M, Cleveland MJ, Cutrona C, Simons RL, Brody GH. Early experience with discrimination and conduct disorder as predictors of subsequent drug use: A critical period analysis. *Drug and Alcohol Dependence*. 2007; 88:27–37.
- Godette, DC. Alcohol use and consequences for Blacks. In: Taylor, SE., Treadwell, HM., editors. *Health issues in the Black community*. 3rd. San Francisco, CA: Jossey-Bass; 2009. p. 417-430.
- Goldstein NE, Arnold DH, Weil J, Mesiarik CM, Peuschold D, Grisso T, Osman D. Comorbid symptom patterns in female juvenile offenders. *International Journal of Law and Psychiatry*. 2009; 26:565–582.
- Harrell SP. A multidimensional conceptualization of racism-related stress: Implications for the well-being of people of color. *American Journal of Orthopsychiatry*. 2000; 70:42–57. [PubMed: 10702849]
- Hill KG, White HR, Chung I-J, Hawkins JD, Catalano RF. Early adult outcomes of adolescent binge drinking: Person- and variable-centered analyses of binge drinking trajectories. *Alcoholism: Clinical and Experimental Research*. 2000; 24:892–901.
- Hipp JR, Bauer DJ. Local solutions in the estimation of growth mixture models. *Psychological Methods*. 2006; 11:36–53. [PubMed: 16594766]
- Hoggard LS, Byrd CM, Sellers RM. Comparison of African American college students' coping with racially and nonracially stressful events. *Cultural Diversity and Ethnic Minority Psychology*. 2012; 18:329–339. [PubMed: 22866688]
- Hurd N, Zimmerman M. Natural mentors, mental health, and risk behaviors: A longitudinal analysis of African American adolescents transitioning into adulthood. *American Journal of Community Psychology*. 2010; 46:36–48. [PubMed: 20532613]
- Jackson KF, Hodge DR, Vaughn MG. A meta-analysis of culturally sensitive interventions designed to reduce high-risk behaviors among African American youth. *Journal of Social Service Research*. 2010; 36:163–173.
- Johnston, LD., O'malley, PM., Bachman, JG., Schulenberg, JE. *Monitoring the future: National survey results on drug use, 1975–2010. Volume I: Secondary school students*. Ann Arbor: Institute for Social Research, the University of Michigan; 2011.
- Jung T, Wickrama K. An introduction to latent class growth analysis and growth mixture modeling. *Social and Personality Psychology Compass*. 2008; 2:302–317.
- Kann L, Kinchen S, Shanklin SL, Flint KH, Kawkins J, Harris WA, Whittle L. Youth risk behavior surveillance—United States, 2013. *MMWR Surveillance Summaries*. 2014; 63:1–168.

- Kogan SM, Brody GH, Chen Y, Grange CM, Slater LM, DiClemente RJ. Risk and protective factors for unprotected intercourse among rural African American young adults. *Public Health Reports*. 2010; 125:709–717. [PubMed: 20873287]
- Komro KA, Tobler AL, Maldonado-Molina MM, Perry CL. Effects of alcohol use initiation patterns on high-risk behaviors among urban, low-income, young adolescents. *Prevention Science*. 2010; 11:14–23. [PubMed: 19639410]
- Kraut R, Olson J, Banaji M, Bruckman A, Cohen J, Couper M. Psychological research online: Report of Board of Scientific Affairs' Advisory Group on the conduct of research on the Internet. *American Psychologist*. 2004; 59:105–117. [PubMed: 14992637]
- Landrine H, Klonoff EA, Corral I, Fernandez S, Roesch S. Conceptualizing and measuring ethnic discrimination in health research. *Journal of Behavioral Medicine*. 2006; 29:79–94. [PubMed: 16470345]
- Laska MN, Pasch KE, Lust K, Story M, Ehlinger E. Latent class analysis of lifestyle characteristics and health risk behaviors among college youth. *Prevention Science*. 2009; 10:376–386. [PubMed: 19499339]
- Lo Y, Mendell NR, Rubin DB. Testing the number of components in a normal mixture. *Biometrika*. 2001; 88:767–778.
- Mallett KA, Marzell M, Scaglione N, Hultgren B, Turrisi R. Are all alcohol and energy drink users the same? Examining individual variation in relation to alcohol mixed with energy drink use, risky drinking, and consequences. *Psychology of Addictive Behaviors*. 2013; 28:97–104. [PubMed: 23528198]
- Matthews DD, Hammond W, Nuru-Jeter A, Cole-Lewis Y, Melvin T. Racial discrimination and depressive symptoms among African-American men: The mediating and moderating roles of masculine self-reliance and John Henryism. *Psychology of Men and Masculinity*. 2013; 14:35–46.
- McLachlan, G., Peel, D. *Finite mixture models*. New York, NY: Wiley; 2000.
- McLanahan, S. Father absence and the welfare of children. In: Hetherington, EM., editor. *Coping with divorce, single parenting, and remarriage*. Mahwah, NJ: Erlbaum; 1999. p. 117-146.
- Merz EL, Roesch SC. A latent profile analysis of the five factor model of personality: Modeling trait interactions. *Personality and Individual Differences*. 2011; 51:915–919. [PubMed: 21984857]
- Miller-Cribbs JE, Farber NB. Kin networks and poverty among African Americans: Past and present. *Social Work*. 2008; 53:43–51. [PubMed: 18610820]
- Muthén L, Muthén B. How to use a Monte Carlo study to decide on sample size and determine power. *Structural Equation Modeling*. 2002; 4:599–620.
- Muthén, L., Muthén, B. *Mplus 5*. Los Angeles, CA: Muthén & Muthén; 2007.
- National Center for Chronic Disease Prevention and Health Promotion. Youth Risk Behavior Surveillance System (YRBSS) youth online: Comprehensive results. 2008. Retrieved from <http://apps.nccd.cdc.gov/yrbss/>
- Neblett EW Jr, Terzian M, Harriott V. From racial discrimination to substance use: The buffering effects of racial socialization. *Child Development Perspectives*. 2010; 4:131–137. [PubMed: 23750178]
- Nicolai J, Moshagen M, Demmel R. Patterns of alcohol expectancies and alcohol use across age and gender. *Drug and Alcohol Dependence*. 2012; 126:347–353. [PubMed: 22748519]
- Nylund KL, Asparouhov T, Muthén BO. Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural Equation Modeling*. 2007; 14:535–569.
- Pergamit, MR., Huang, L., Lane, J. The long-term impact of adolescent risky behaviors and family environment: Report submitted to Office of the Assistant Secretary for Planning and Evaluation. Washington, DC: U.S. Department of Health and Human Services; 2001.
- Plybon LE, Edwards L, Butler D, Belgrave FZ, Allison F. Examining the link between neighborhood cohesion and school outcomes: The role of support coping among African American adolescent girls. *Journal of Black Psychology*. 2003; 29:393–407.
- Ritchwood TD, Ford H, DeCoster J, Sutton M, Lochman J. Risky sexual behavior and substance use among adolescents: A meta-analysis. *Children and Youth Services Review*. 2015; 52:74–88. [PubMed: 25825550]

- Roberts ME, Gibbons FX, Gerrard M, Weng CY, Murry VM, Simons LG, Lorenz FO. From racial discrimination to risky sex: Prospective relations involving peers and parents. *Developmental Psychology*. 2012; 48:89–102. [PubMed: 21942666]
- Ross SE, Neibling BC, Heckert TM. Sources of stress among college students. *College Student Journal*. 1999; 33:312–317.
- Sandfort TG, Orr M, Hirsch JS, Santelli J. Long-term health correlates of timing of sexual debut: Results from a national U.S. study. *American Journal of Public Health*. 2007; 98:155–161. [PubMed: 18048793]
- Schoon I, Sacker A, Bartley M. Socio-economic adversity and psychosocial adjustment: A developmental-contextual perspective. *Social Science and Medicine*. 2003; 57:1001–1015. [PubMed: 12878101]
- Schulenberg JE, Maggs JL. A developmental perspective on alcohol use and heavy drinking during adolescence and the transition to young adulthood. *Journal of Studies on Alcohol*. 2002; 14:54–70.
- Schwarz G. Estimating the dimension of a model. *Annals of Statistics*. 1978; 6:461–464.
- Scott LD. The relation of racial identity and racial socialization to coping with discrimination among African American adolescents. *Journal of Black Studies*. 2003; 33:520–538.
- Siegel DM, Klein DI, Roghmann KJ. Sexual behavior, contraception, and risk among college students. *Journal of Adolescent Health*. 1999; 25(5):336–343. [PubMed: 10551664]
- Spencer, MB., Dupree, D. African-American youths' ecocultural challenges and psychosocial opportunities: An alternative analysis of problem behavior outcomes. In: Cicchetti, D., Toth, SL., editors. *Adolescence: Opportunities and challenges*. Rochester, NY: University of Rochester Press; 1996. p. 259-282.
- Stappenbeck CA, Norris J, Kiekel PA, Morrison DM, George WH, Davis K, Abdallah D. Patterns of alcohol use and expectancies predict sexual risk taking among non-problem drinking women. *Journal of Studies on Alcohol and Drugs*. 2013; 74:223–232. [PubMed: 23384370]
- Stueve A, O'Donnell L. Early alcohol initiation and subsequent sexual and alcohol risk behaviors among urban youths. *American Journal of Public Health*. 2005; 95:887–893. [PubMed: 15855470]
- Unger JB, Hamilton JE, Sussman S. A family member's job loss as a risk factor for smoking among adolescents. *Health Psychology*. 2004; 23:308–313. [PubMed: 15099172]
- Weaver SR, Kim SY. A person-centered approach to studying the linkages among parent-child differences in cultural orientation, supportive parenting, and adolescent depressive symptoms in Chinese American families. *Journal of Youth and Adolescence*. 2008; 37:36–49. [PubMed: 20725611]
- Weden M, Zabin L. Gender and ethnic differences in the cooccurrence of adolescent risk behaviors. *Ethnicity and Health*. 2005; 10:213–234. [PubMed: 16087454]
- Williams DR, Neighbors HW, Jackson JS. Racial/ethnic discrimination and health: Findings from community studies. *American Journal of Public Health*. 2003; 93:200–208. [PubMed: 12554570]
- Williams JE, Newby RG, Kanitz HE. Assessing the need for alcohol abuse programs for African American college students. *Journal of Multicultural Counseling and Development*. 1993; 21:155–167.
- Wills TA, Sandy JM, Yaeger AM, Cleary SD, Shinar O. Coping dimensions, life stress, and adolescent substance use: A latent growth analysis. *Journal of Abnormal Psychology*. 2001; 110:309–323. [PubMed: 11358025]
- Wong CA, Eccles JS, Sameroff A. The influence of ethnic discrimination and ethnic identification on African American adolescents' school and socioemotional adjustment. *Journal of Personality*. 2003; 71:1197–1232. [PubMed: 14633063]
- Zimet GD, Dahlem NW, Zimet SG, Farley GK. The Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment*. 1988; 52:30–41.



**Figure 1.**  
Five -class solution of risk behavior profile using standardized means.

**Table 1**

## Participant Characteristics

Characteristics	N	%
Age		
18	32	14.0
19	48	21.1
20	41	18.0
21	43	18.9
22	29	12.7
23	16	7.0
24	11	4.8
25	8	3.5
Sex		
Female	169	74.1
Male	59	25.9
Class		
Freshman	56	24.56
Sophomore	43	18.86
Junior	49	21.49
Senior	80	35.09
SES (parents' education level)		
None, unknown, other	5	2.20
High school equivalency (e.g., GED)	16	7.00
High school diploma	24	10.50
Vocational tech diploma	41	18.00
Associate's degree	50	21.90
RN degree	44	19.30
Bachelor's degree	24	10.53
Master's degree	16	7.02
MD, PhD, law, dental	8	3.50

Table 2

Model Fit Indices for Two- to Eight-Class Solutions of Risk Behavior Profiles

Model	AIC	BIC	Entropy	LMRT	BLRT
2 Class	3316.665	3361.189	.926	-221.654, $p = .0000$	-1760.245, $p = .0000$
3 Class	3194.025	3255.674	.908	127.924, $p = .0002$	-1645.333, $p = .0000$
4 Class	3140.131	3218.905	.916	61.622, $p = .2743$	-1579.012, $p = .0000$
<b>5 Class</b>	<b>3085.284</b>	<b>3181.183</b>	<b>.922</b>	<b>62.541</b> , $p = .0404$	<b>-1547.065</b> , $p = .0000$
6 Class	3056.498	3169.521	.913	37.407, $p = .5236$	-1514.642, $p = .0000$
7 Class	2992.833	3122.981	.951	-404.480, $p = .1585$	-1252.449, $p = 1.0000$
8 Class	2483.350	2630.623	.965	39.127, $p = .6651$	-1218.566, $p = .0000$

Note. Bold indicates best-fitting model. AIC = Akaike information criterion; BIC = Bayesian information criterion; LMRT = Lo-Mendell-Rubin test; BLRT = bootstrap likelihood ratio test.



ANOVA Results: Demographic Variation, Stress, and Social Support Mean Differences (Standard Deviation) by Risk Behavior Classes

Table 3

	Class 1	Class 2	Class 3	Class 4	Class 5
	High Sex Risk	Abstainers	Low Risk	Alcohol Risk	Co-Occurring Risk
<i>Demographic variables</i>					
Age	21.91 (2.12) <sup>ab</sup>	20.27 (1.83) <sup>a</sup>	20.78 (1.87)	20.12 (1.55) <sup>b</sup>	21.33 (2.21)
Gender	1.55 (.52) <sub>1</sub>	1.21 (.41) <sub>1</sub>	1.62 (.44)	1.29 (.46)	1.33 (.50)
Socioeconomic status	4.09 (1.83)	3.81 (1.63)	3.79 (1.78)	4.43 (1.56)	4.44 (1.74)
<i>Contextual stress</i>					
Interpersonal stress	.64 (.80)	.41 (.41) <sup>cd</sup>	.46 (.41)	.67 (.55) <sup>c</sup>	.85 (.36) <sup>d</sup>
Intrapersonal stress	.49 (.55)	.49 (.33)	.16 (.33)	.64 (.45)	.66 (.39)
Academic stress	.72 (.61)	.52 (.46)	.57 (.41)	.68 (.55)	.39 (.38)
Environmental stress	.41 (.65)	.45 (.45) <sub>2</sub>	.39 (.34) <sup>e</sup>	.69 (.61) <sup>e</sup> <sub>2</sub>	.54 (.22)
<i>Experiences with racism</i>					
Racism frequency	1.63 (1.23)	.97 (.82) <sup>f</sup>	1.11 (1.06)	1.54 (1.34) <sup>f</sup>	1.31 (.92)
<i>Social support</i>					
Family support	3.93 (.96)	4.04 (.80)	3.92 (.87)	3.91 (.90)	4.02 (.35)
Friends support	3.86 (.70)	3.63 (.73)	3.65 (.81)	3.59 (.99)	3.84 (.43)
Community support	4.06 (1.01)	3.69 (.92)	3.67 (1.03)	3.60 (1.08)	3.76 (1.35)

Note. Means sharing a common superscript (a,b,c,d,e,f) are significantly different ( $p < .05$ ). Means sharing a common subscript (1,2) are marginally different ( $p < .10$ ).