
The Impact of Gender on Binge Drinking Behavior Among U.S. College Students Attending a Midwestern University: An Analysis of Two Gender Measures

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Abstract

Using a critical feminist framework, the authors examine the relationship between gender role orientation and binge drinking among college students. Two measures of gender identity are employed: The Bem Sex Role Inventory and the Personal Attributes Questionnaire. The authors test the hypothesis that traditional masculine gender role orientation is predictive of contemporary binge drinking behavior among college students. Gender role orientation, as measured by each scale (independently and combined), has a significant impact on drinking. Masculine gender identity is a significant predictor of binge drinking while controlling for respondent's sex. Binge drinking and its implications are discussed in the context of alcohol-related crime and victimization.

Keywords

gender, alcohol, crime, deviance, college students, binge drinking, BSRI, PAQ

A consistent correlate of both criminal offending and victimization is alcohol consumption. Regular and heavy drinking is substantially associated with greater risk for victimization (Felson & Burchfield, 2004) and heavy drinkers are more likely to engage in

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violent behaviors, both while under the influence and when sober (Felson, Teasdale, & Burchfield, 2008). The relationship between alcohol use and deviance is not limited to the adult population nor is drinking equally distributed among men and women. Beyond the illegality of juveniles using alcohol, research has clearly demonstrated a relationship between offending among youth, alcohol use, and gender (Bachman & Peralta, 2002; Newcomb & McGee, 1989; White, Hansell, & Brick, 1993; White, Tice, Loeber, & Stouthamer-Loeber, 2002). It is, therefore, important to continue examining patterns of alcohol use and abuse in that such behavior is associated with crime and victimization.

Similar to the persistent finding of sex differences in criminal offending and victimization, research on alcohol use and misuse has also consistently found sex differences with men drinking alcohol more frequently and consuming greater quantities in comparison to women (Wechsler, Dowdall, Maenner, Gledhill, & Lee, 1998). In spite of such studies, there is relatively little empirical attention given to the reasons *why* alcohol use varies by sex. An important limitation of previous work is that sex has been confounded with gender. This study provides a gender-specific examination of alcohol use by comparing how two different measures of gender identity (i.e., the Bem Sex Role Inventory and the Personal Attributes Scale) predict binge drinking behavior among male and female college students. The purpose of such an analysis is to shed light on the impact of gender and gender ideology, as opposed to sex on alcohol use among youth attending college.

Alcohol, Victimization, and Criminal Behavior

Classic works as well as more recent pieces in the area of alcohol use and crime have illuminated the nature of gender- and alcohol-related crime and victimization. For example, alcohol use is often implicated in experiences of rape (Martin & Hummer, 1989; Ullman et al., 1999). In a national sample of college women, it was found that binge drinking among women within the past year significantly increased their risk of either drug- or alcohol-facilitated rape or incapacitated rape. A total of 76% of drug- or alcohol-facilitated rapes and 72% of incapacitated rapes occurred when women were under the influence of alcohol (McCauley, Ruggiero, Resnick, Conoscenti, & Kilpatrick, 2009). In a similar study, Felson and Burchfield (2004) found that being under the influence increased the risk of physical or sexual assault for both men and women, but the odds of victimization while drinking were substantially greater for men.

Alcohol consumption is not just a risk for victimization but is also related to criminal offending. Scholars have demonstrated that crime is more likely to occur under the influence of alcohol and that heavy drinkers are at greater risk for offending. White et al. (2002) found that heavy drinking boys are more likely than light drinkers to get into fights, be involved in property crimes, and have trouble with the police. Another study (Felson, Teasdale, & Burchfield, 2008) found that juveniles classified as drinkers were more likely to be involved in violent offending behaviors, particularly fights, both when they were drunk and while sober. The relationship between drinking and crime persists even among more serious drug users. Strug et al. (1984) found that heroin users were more likely to commit crimes under the influence of alcohol than any other drug.

In interviews, users claimed that alcohol fueled courage and calmed nerves, thus acting as a facilitating factor for criminal acts.

While some comparisons have been made between “light” and “heavy drinkers,” many studies focus on “binge drinking” generally defined as having four (for women) or five (for men) alcoholic drinks in a single drinking occasion (Wechsler, Dowdall, Davenport, & Rimm, 1995). Petrie, Doran, Shakesaft, and Sanson-Fisher (2010) found that binge drinking was significantly related to higher incidents of assault, disorderly conduct, and malicious damage. Furthermore, binge drinking may also increase the risk of criminal involvement by changing the assessments of such behaviors. In a quasi-experimental study, students who drank heavily at parties reported an increase in favorable attitudes toward criminal behaviors and a decrease in the perception of risk associated with such acts (Lanza-Kaduce, Bishop, & Winner, 1997).

These studies establish a clear relationship between alcohol and criminal involvement as offenders and victims. They also indicate that there are important sex differences in these experiences. In an attempt to explain such sex differences, several studies have turned to gender identity and in particular masculinity (see, for example, Messerschmidt, 1993, 1997, 1999, 2000) to examine the relationship between sex and offending. While many of these works focus on violence as an expression of masculine identity, other types of behavior are also linked to gender. For example, Nofziger (2010) found that feminine gender identity serves as a deterrent for a range of deviant behavior among college students, including drug use, academic dishonesty, and property crimes, while masculinity had no effect. Capraro (2000) and Gough and Edwards (1998) both specifically examine and provide evidence in support of the link between gender and alcohol use, and Anderson, Daly, and Rapp (2009) recently found that alcohol use is linked to crime via gender identity. Collectively, these studies suggest that the pathways to alcohol use and crime are influenced by the complex processes of gender accomplishment.

Sex and Gender Differences in Alcohol Use

Binge drinking occurs in a substantial portion of the U.S. college population (Wechsler, Dowdall, Davenport, & Rimm, 1995) and is a focal concern among researchers. Existing studies provide important information on rates of binge drinking, but large nationally representative studies of college students overlook important sociological principles associated with gender. Consequently, the premise that gender is separate and different from sex is often disregarded. These differences may be important for explaining why sex differences in binge drinking and alcohol use in general continue to occur. Examining the sociostructural mechanisms behind these differences can yield insight into not only the patterning of alcohol use by sex but also into the significance of gender in shaping substance abuse behavior in general.

Although recent research is providing support for diminishing sex differences in a range of alcohol use and abuse measures (Keys, Grant, & Hasin, 2008), it is clear that a sex gap remains (Christie-Mizell & Peralta, 2009). Men continue to initiate alcohol and other substance use at a much earlier age than women in the United States and other nations such as Mexico (Kulis, Marsiglia, Lingard, Nieri, & Nagoshi, 2008; Wagner,

Velasco-Mondragon, Herrera-Vazquez, Burges, & Lazcano-Ponce, 2005) suggesting the importance of sex in decisions to use or not use alcohol. Amaro, Blake, Schwartz, and Flinchbaugh (2001) published a thorough review of the literature on gender and substance abuse and strongly recommended more research that addresses “the role that gender has as a major defining social factor in shaping risk” (p. 281). While past research has shown significant differences by sex, further research is needed to illuminate the nuanced impact of gender identity on the epidemiological distribution of drinking and, correspondingly, other forms of crime. Thus, we stand to gain from an in-depth understanding of the way in which binge drinking might be implicated in creating and or reinforcing normative gender frameworks and relationships.

The few existing studies using gender-specific measures suggest that while physical sex differences do not lead to much difference in the likelihood of having engaged in drinking behaviors, there are substantial differences in alcohol use when gender identity is taken into account (Huselid & Cooper, 1992; Robbins, 1981). For example, Huselid and Cooper found that gender ideology measures derived from the Personal Attributes Questionnaire (PAQ) were important in accounting for sex differences in alcohol use among adolescents.

Relatively little survey research on alcohol use among college students has focused on how the expression of gender (as measured by observations of the “doing” of gender and/or ascertaining attitudes about gender and gender-appropriate roles) influence alcohol use (West and Zimmerman, 1987). Gender identity is generally thought of as the degree to which an individual internalizes and acts out characteristics that are socially defined as appropriate to their sex or “how individuals relate to masculine and feminine qualities” (Horwitz & White, 1987, p. 159). In U.S. society, feminine gender characteristics have traditionally focused on relationships and connections with others (Gilligan, 1982), as well as gentleness, affection, passivity, and dependence (Bem, 1974; Broverman, Broverman, Clarkson, Rosenkrantz, & Vogel, 1970; Naffin, 1985). In contrast, masculinity depends on the ability to be tough, forceful, independent, assertive, and ambitious (Bem, 1974; Broverman et al., 1970; Cook, 1985; Mannarino & Marsh, 1978).

According to West and Zimmerman (1987), gender is not only a static internal trait but is created or consciously “done” within specific contexts and situations. One context that is an active site for gender performance is the college campus. Qualitative research on college students suggests that drinking behavior and alcohol-related outcomes symbolize differences in gender practices and make differences between men and women more conspicuous (Peralta, 2007). It is perhaps in this sociological context that men become an at-risk group for alcohol-related problems and high-risk drinking. What has not been fully investigated is whether college student’s orientation toward either masculinity or femininity is quantitatively predictive of alcohol use behavior.

The Embodiment of Masculinity via Drink

The expression of gender is enacted and reproduced not only through social interaction, (e.g., engagement in school activities, hobbies) but also through the embodiment of

gender (e.g., physical violence, dieting, and weightlifting). Social expectations of masculinity in U.S. society include a number of behaviors that rely on the physical body (Kimmel, 1987). For example, professional athletes use their bodies in ways that symbolize masculine superiority in strength and power that ironically can cause substantial physical damage (Connell & Messerschmidt, 2005; Messner, 1989). Masculinity is also often associated with risk-taking behaviors that place the physical body at risk for harm and can subsequently result in a weakened body. One area of embodied risk behavior used to display masculinity is heavy alcohol use. Men have been found to use alcohol to demonstrate their stamina, self-control, nonconformity, and willingness to take risks, thereby embodying masculinity through risky drinking behaviors (Peralta, 2007). The pattern of demonstrating masculinity through substance use and risk taking has been observed among adolescents in the United States and other developed nations (Bauman & Phongsaven, 1999; Kulis et al., 2008; Ricciardelli, Connor, Williams, & Young, 2001).

Although there are numerous studies that link masculinity with alcohol use and abuse (e.g., Boswell & Spade, 1996; Capraro, 2000; Cohen & Lederman, 1995; Kulis et al., 2008; Lara-Cantu, 1990; Schacht, 1996), research on college students' drinking have not emphasized the role of gender and the expression of gender save for a few exceptions (e.g., Wilsnack & Wilsnack, 1997). Researchers are, however, returning to investigations on how alcohol use might be related to the expression of masculinity among college students, (Locke & Mahalik, 2005; Wilson, Pritchard, & Schaffer, 2004; Young, Morales, McCabe, Boyd, & D'Arcy, 2005). College women, for example, who engage in binge drinking behavior, have been described as "doing" a form of masculinity (Young et al., 2005). Others suggest that female binge drinkers are responding to sexism through claiming a type of status or power though this particular form of risk behavior. These women are thus expressing an alternative gender than traditional femininity expectations dictated by society that generally call for abstinence or lower levels of alcohol use compared to what is normatively accepted or expected of men (Vickers et al., 2004; Wilsnack & Wilsnack, 1997). The influence on how gender, as identity, influences drinking behavior is of particular relevance to the present research. This orientation provides a starting point for examining the relationship between sex, gender ideology, and binge drinking behaviors among men and women.

Assessments of Gender

Just as there are multiple ways of expressing gender, there are also a number ways of measuring gender. Some scholars suggest that gender identity is in constant flux and only accomplished in interactions with others (West & Zimmerman, 1987). While context may influence the specific means of gendered expression, other researchers propose that gender identity is a component of personality that is developed through gendered socialization practices. Some of the early work on gender identity was developed by Bem (1974) who argued that individuals possess both feminine and masculine characteristics simultaneously. Gender identity is thought to be a combination of these

characteristics that remains fairly stable across situations (Bem, 1974). Based on this perspective, the Bem Sex Role Inventory (BSRI) was developed to assess gender identity by measuring how strongly individuals self-identify with masculine and feminine characteristics perceived to be associated with men and women (i.e., sex). The goal of the BSRI is to assess gender characteristics (i.e., having self-described traits of masculinity and femininity that conform to a specific gender identity) and to discern whether gender identity is likely to influence actions on the basis of gender (Bem, 1993). If this is true, then it provides evidence that gender—at least in part—is associated with social and behavioral actions of individuals (Bem, 1993).

Another scale that has been developed to measure gendered identity among individuals is the Personal Attributes Questionnaire (PAQ). This scale measures gendered expressivity and instrumentality on a 5-point Likert-type scale (Spence, Helmreich, & Stapp, 1973). The two traits examined are “masculine” and “feminine” traits. Each trait has an “extreme” response that indicates a “total” identity for that trait (i.e., completely feminine, completely masculine). These two scales are similar in that they both attempt to measure gendered traits and have been used in studies to examine a range of outcomes, including religious preferences and attendance (Francis & Wilcox, 1998), spousal interactions (Miller, Caughlin, & Huston, 2003), and the construction of offenders and victims in media (Eschholz & Bufkin, 2001). However, the BSRI is dependent on the self-assessment of the individual while the PAQ is more dependent on the researcher to calculate gender role orientation totals for each respondent. While most studies use only one of these measures, the use of both scales has been recommended due to their similarity. Using both also provides an assessment of the internal validity of gender for participants (Choi, 2004).

Study Aims and Hypotheses

Influenced by Huselid and Cooper (1992), this study seeks to further the understanding of how the social process of gender and gender ideology in particular might influence contemporary alcohol use among college students at a Midwest university. We continue the argument that gender identity is a more important factor than biological sex in drinking behavior differences found between men and women. To expand upon research on the social processes of gender in relation to alcohol use practices (see Amaro et al., 2001), we examine how masculine and feminine traits can be used to understand how gendered ideologies might predict drinking behavior. Specifically, we explore whether identification with masculine traits is associated with binge drinking among college students. Unlike past research that has only focused on one measure of gender identity to predict drinking (Huselid & Cooper, 1992), we examine the impact of two indicators of gender identity, the PAQ (Spence et al., 1973) and the BSRI (Bem, 1974), (see the appendixes to view each scale). Using two measures allows for comparisons of each measure’s ability to predict alcohol behavior. We go one step further by merging the PAQ and the BSRI into one scale. By combining these

two measures, we are able to analyze the relationship between gender and alcohol use in a more comprehensive manner.

Using data from a study of college student substance use and abuse, we explore the relationship between an individual's orientation toward gender and binge drinking. According to the Substance Abuse and Mental Health Services Administration, and the Monitoring the Future survey, each indicate that drinking quantity and frequency rates peak between the ages of 18 and 25 years (O'Malley & Johnston, 2002). Whereas illicit drug use is higher among noncollege students, alcohol use/abuse is higher among college students than among their noncollege peers, which suggests normative patterns based on both age and the social status of being a college student (Dowdall & Wechsler, 2002; O'Malley & Johnston., 2002). Our concentration on college students is important given that they are an at-risk population for binge drinking and that the problems associated with this behavior affect drinking and nondrinking students alike (e.g., alcohol-related fights, interrupted sleep due to loud parties, vandalized public space).

Specifically, we hypothesize that

Hypothesis 1: Men (i.e., male sex) will report a significantly higher rate of alcohol misuse, including binge drinking, compared to women (i.e., female sex) due to the social norm of heavy drinking for young men;

Hypothesis 2a and Hypothesis 2b: Male and female students exhibiting masculine traits (as opposed to feminine traits), as measured by the BSRI (Hypothesis 2a) and the PAQ (Hypothesis 2b), will predict binge drinking;

Hypothesis 3: Using the combined scale will further establish that masculinity traits, regardless of sex, will be significantly associated with binge drinking behavior. If the extent to which men or women who report masculine traits is associated with heavy alcohol use, the fluidity of gender will be implicated as an important factor in both men and women's drinking.

Method

This article is derived from a larger study whose purpose was to collect epidemiological data on drinking and to assess whether and how gender was associated with drinking. IRB approval was granted for this study. The data for this study stem from a self-administered questionnaire distributed to undergraduate students at a midsize Midwestern urban university in the fall of 2007. Past research has shown that obtaining information on drinking behavior through self-reporting questionnaires is both reliable and valid (Harrison, 1997; Johnston & O'Malley, 1997). Students in sociology courses in the College of Arts and Sciences aged 18 and older were invited to participate in the study. Students learned of the study via in-class announcements. Immediately following the announcement, students were given time to voluntarily complete the survey upon reading informed-consent materials and agreeing to participate.

Trained graduate students announced and administered the surveys. Students filled out pen-and-paper surveys (self-report) during class time in their respective classrooms. Participation was voluntary; students were not offered compensation for their participation. The vast majority of students asked to take part in the survey did so; however, we do not have a precise count of refusals because names were not collected in adherence to confidentiality protocols. Of those who did not participate, being under 18 years old or having already taken the survey in a different class were the reasons communicated to the surveyors. Surveys took approximately 30 min to complete. A fictitious drug was incorporated into the drug use section in order to discard responses from students who may not have been forthright in their responses (Poulin, MacNeil, & Mitic, 1993; Winters et al., 1991). No student indicated use of the fictitious drug which suggests that it is unlikely students filled out the survey haphazardly or over-reported substance use.

Sample

In total, 422 students completed the questionnaire. The overall sample was consistent with the demographics of the student body in which the study took place. Approximately 77% of respondents ($n = 324$) reported that they were White, 17% ($n = 70$) of respondents indicated that they were Black/African American, 2% ($n = 10$) were Asian/Pacific Islander, 3% ($n = 11$) indicated "Other," and 1% ($n = 5$) were Hispanic. Furthermore, 13% of African Americans were enrolled as undergraduates at this university in the fall of 2007 compared to 17% of African Americans surveyed. The mean age of respondents was between 19 and 20 years (age is a continuous variable; 18-25 years old and older). Given the mean age of the sample, it is important to note that a significant portion of the sample was in fact engaging in illegal underage alcohol consumption. As much as 62% ($n = 259$) of the sample reported female status. Therefore, our sample is somewhat skewed toward women and also toward slightly younger students (women outnumbered men by 8%, and the average age of students was 23 years at the time of the study at this particular university) and African Americans. This age difference may be due to the nature of the classes surveyed in the College of Arts and Sciences. A majority of the classes surveyed were large introduction to sociology classes that were more likely to be composed of freshmen. The rates of Greek membership and marriage were relatively low but were consistent with the Greek participation rate on campus. Only 6% ($n = 26$) of respondents reported Greek membership, and only 3% ($n = 14$) of respondents were married. Another 58% lived alone or with a roommate; the balance reported living with their family. As for employment status, 69% reported being employed at the time of the survey. Table 1 illustrates the overall demographic characteristics for the sample.

Measures

Dependent variable: alcohol consumption. We rely on an alcohol use questionnaire commonly used with college populations for comparative purposes—the College Alcohol

Table 1. Descriptive Statistics for All Analysis Variables

	Full sample			Women		Men	
	M	SD	Range	M	SD	M	SD
	Drinking measures						
Wechsler's binge drinking scale (0 = abstinence, 1 = occasional binge, 2 = frequent binge)	0.67	0.80	0-2	0.56	0.72	0.85	0.89***
Control variables							
Race (White = 0, nonwhite = 1)	0.23	0.42	0-1	0.22	0.42	0.23	0.42
Age (18 = 18, 19 = 19, 25 and older = 25)	19.88	2.10	18-25	19.75	2.14	20.11	2.03
Marital status (0 = single, 1 = married)	0.06	—	0-1	0.07	—	0.06	—
Grade point average (0 = D and below, 3 = A)	2.15	0.65	0-3	2.17	0.67	2.14	0.61
Living arrangement (0 = roommate or alone, 1 = with family members)	0.42	—	0-1	0.42	—	0.42	—
Employment (0 = not employed, 1 = employed)	0.69	—	0-1	0.71	—	0.65	—
Credit hours (0 = 5 or less, 5 = 16 or more)	3.83	1.12	0-5	3.83	1.16	3.83	1.05
Parent income (0 = less than US\$15,000, 3 = US\$75,000 or more)	1.93	1.09	0-3	1.81	1.11	2.09	1.03*
Personal income (0 = >US\$15,000); options below US\$12,000 were not offered	0.25	—	0-1	0.24	—	0.27	—
Male (coded 1)	0.38	—	0-1	—	—	—	—
Independent variables							
BSRI Scale							
BSRI masculinity ($\alpha = .85$)	4.80	0.68	2-6.65	4.68	0.64	5.01	0.69***
BSRI femininity ($\alpha = .82$)	5.02	0.66	2-6.35	5.16	0.60	4.77	0.69***
PAQ Scale							
Instrumentality (masculinity; $\alpha = .60$)	2.76	0.64	0.50-4	2.67	0.61	2.92	0.65***
Expressivity (femininity; $\alpha = .78$)	3.17	0.61	0.38-4	3.26	0.57	3.04	0.64***
BSRI & PAQ combined for factor analysis							
Masculinity ($\alpha = .85$)	2.61	0.55	0.56-4	2.47	0.49	2.85	0.56***
Femininity ($\alpha = .89$)	3.14	0.48	1.21-4	3.21	0.45	3.02	0.51*

Note: N = 422. * $p < .05$; ** $p < .01$; *** $p < .001$.

Survey (Wechsler & Nelson, 2001). We also used the standard definition of binge drinking, commonly used by alcohol researchers, which is 4 or more drinks for women and 5 or more drinks for men in a single episode over the past 2 weeks (Wechsler et al., 2004; Wechsler & Wuethrich, 2002). This same measurement is used in numerous other national studies such as Monitoring the Future, National College Health Behavior Survey, and the National Household Survey of Drug Abuse. This 5- and 4-drink measure was first developed because previous research found that 5 drinks imbibed in a row for men and 4 for women has been associated with a significant increase in risk for alcohol-related problems (Wechsler & Nelson, 2001). The standard definition of a single drink ("one 12-oz beer or wine cooler, one mixed drink/wine glass 6-8oz, or one shot of liquor 1.3oz") was provided for respondents in the questionnaire for precision and comparison purposes.

Our dependent variable, binge drinking, was structured according to Dowdall & Wechsler (2002) classification scale. Three main categories were developed and are presented as separate conditions: (1) nonbingers and abstainers (students who did not report any binge drinking in the last 2 weeks; $n = 225$, 54%), (2) occasional binge drinkers (students who reported binge drinking 1 to 2 times in the last 2 weeks; $n = 105$, 25%), and (3) frequent binge drinkers (those who have binged on 3 or more occasions in the past 2 weeks; $n = 87$, 21%).

Independent variables: BSRI and PAQ. The BSRI and PAQ scales of femininity and masculinity were developed using factor analysis and were consistent with the scales used in past research (see Huselid & Cooper, 1992). In order to ensure internal consistency, Cronbach's alpha calculations were conducted on the factor results and were at satisfactory levels, at .70 or above, for each scale. Consistent with previous research and these results, we believe that a unidimensional latent construct is present and reliable. The alpha levels for the BSRI, the PAQ, and the combined scale are discussed below and are present in Table 1.

For this study, the full version or "long form" of the BSRI was used that consisted of 20 feminine and 20 masculine items as part of our assessment of gender instead of the more common short forms that have been utilized elsewhere (Bem, 1981; Campbell, Gillaspay, & Thompson, 1997). Respondents were asked to report how much they identified with each gendered characteristic. Masculinity ($\alpha = .82$) and femininity ($\alpha = .85$) classifications were then created based on participant's self-assessments.

Over the past 30 years, the BSRI has stood up to various criticisms (Ballard-Reisch & Ekon, 1992) and yet continues to be employed in a variety of fields. Several modifications to the BSRI have developed to reflect changes in socially desirable traits and how individuals' gender identity is scored. While the original BSRI used one score to reflect gender identity, most studies have found that it is more valid to include two dimensions of gender, one for masculinity and one for femininity (Ballard-Reisch & Ekon, 1992; Costos, 1990; Lara-Cantu, 1990; Spence, 1993; Wong, McCreary, & Duffy, 1990).

Our second measure of gender identity, the PAQ, is a scale of contradictorily positioned gendered traits examining whether and where an individual orients his or her gendered identity. From a 24-item questionnaire, two 8-item scales were derived that

match what others have done in the past (see Huselid & Cooper, 1992): (1) Instrumentality (masculinity, characterized by traits such as “self-confidence”; $\alpha = .60$), and (2) expressivity (femininity, incorporates attributes such as “concern for others”; $\alpha = .78$).

The masculine traits represent self-assertive and instrumental personality social characteristics while female traits represent interpersonal expressive traits (Spence et al., 1973). These items follow the same logic as the BSRI in assuming that individuals have both masculine and feminine traits but accounts for them in a different way. By having individuals rate themselves on a self-assessed gradient of different gender roles, researchers can locate the areas in which gendered identity is the strongest and how individuals identify with gender roles. One of the main criticisms leveled against the PAQ is that the BSRI is a generally more reliable measure of gender role orientations because the PAQ requires more effort to score and requires more data manipulation (Choi, 2004). Despite these criticisms, however, the PAQ scale remains a useful tool for assessing an individual’s gender role identity.

For this study, the individual BSRI and PAQ measures are used to predict drinking behaviors, and, as a last step, a combined gender identity measure is utilized. The combined gender measure was developed from all of the items in the BSRI and PAQ using factor analysis in SAS 9.0. Variables from the BSRI were recoded to have the same ranges as measurements from the PAQ. At first, a simple structure was not present in the rotated factor pattern. Therefore, several cross-loading variables were removed from analysis (14 were removed from the BSRI and 6 from the PAQ). This resulted in a 2-factor solution. Factor 1 consisted of 18 traditional femininity measurements from the BSRI and the PAQ, and one measurement of masculinity from the BSRI scale (i.e., “ambitious”). Factor 2 consisted of 16 traditional measurements of masculinity from both the BSRI and PAQ scales. Cronbach’s alpha was conducted for items that loaded on each component resulting in two final measures; masculinity ($\alpha = .85$) and femininity ($\alpha = .89$).

Data Analysis

Data were entered into a data file using a double-entry technique and analyzed using SAS. Our main analytic technique was the use of multinomial logistic regression models to analyze the relationship between binge drinking and the two gender measures (BSRI and PAQ) among undergraduate students. Race, gender, year in school, living arrangement, employment, grade point average, number of credit hours, age, marital status, parental income, and personal income were controlled for.

Results

Univariate and bivariate statistics by sex were conducted to assess the demographic characteristics of our respondents. Table 1 above reveals the mean and standard deviations for our variables of interest. Using Wechsler’s binge drinking scale measures, 0 (abstinence) through 2 (frequent binge drinking), students scored a mean of .67. The full sample scored slightly higher on the BSRI femininity scale (5.02) compared to the

BSRI masculinity scale (4.8). The same was true for the PAQ scale (3.17 vs. 2.76). The prevalence rate of binge drinking among our respondents was comparable to national levels. As much as 25% ($n = 105$) and 21% ($n = 87$) of the respondents engaged in occasional and frequent binge drinking, respectively. Another 54% ($n = 225$) did not report binge drinking. Among men, 20% ($n = 31$) were categorized as occasional binge drinkers, 33% ($n = 52$) were classified as frequent binge drinkers, and 48% ($n = 75$) reported no binge drinking and/or abstained from alcohol. Among women, 29% ($n = 74$) were classified as occasional binge drinkers, 14% ($n = 35$) were frequent binge drinkers and 58% ($n = 148$) did not binge drink and or abstained from alcohol. These results demonstrate that men were significantly more likely to experience binge drinking behavior, thus supporting Hypothesis 1 as well as previous research on sex differences in binge drinking where men are more likely to binge drink than women.

To establish the independent results of each measurement, we conducted separate multinomial regression models for both the PAQ and the BSRI (see Table 2 below). Model 2 demonstrates that higher levels of masculinity, according to the BSRI, predict frequent binge drinking with only a modest effect on occasional binge drinking. However, the BSRI in comparison to the PAQ does not present any significant findings for femininity and binge drinking at any level. Likewise, Table 2 (Model 3) demonstrates that more masculinity and less femininity is predictive of frequent binge drinking but not occasional binge drinking based on PAQ estimations. These findings thus provide partial support for Hypothesis 2a and Hypothesis 2b.

To further examine directional hypotheses on how gender influences binge drinking among college students, we employed our combined measure of gender ideology to assess the magnitude of influence gender had on binge drinking. Two multinomial regression models were estimated, the first of which excluded the combined gender measure. In Table 3, we present the results for the relationship between BSRI and PAQ combined scores and binge drinking behavior. Model 1, the baseline model, demonstrated being White and living alone or with a roommate significantly predicted frequent and occasional binge drinking. Likewise being male, older in age, and having more personal income significantly results in more frequent binge drinking, but these variables did not predict occasional binge drinking.

Identical analytic procedures were conducted and our main independent variables, femininity (Factor 1) and masculinity (Factor 2) (see Table 3), in our final analytical step. Similar to Model 1, being White, living alone, or living with a roommate significantly predicted frequent and occasional binge drinking while older age predicted frequent binge drinking but not occasional binge drinking. Those respondents that had more personal income reported significantly more frequent binge drinking in comparison to those who had lower income. Higher scores on the masculinity scale significantly predicted both frequent and occasional binge drinking as hypothesized (Hypothesis 3). Additionally, lower scores on femininity significantly predicted frequent binge drinking but not occasional binge drinking. The overall results demonstrate that masculinity is significantly related to binge drinking net of the respondent's sex and other control variables.

Table 2. Multinomial Logistic Regression (ML): Occasional and Frequent Binge Drinking Regressed on Control Variables, the BSR1 and the PAQ

	Model 1				Model 2				Model 3			
	Occasional		Frequent		Occasional		Frequent		Occasional		Frequent	
	B	OR	B	OR	B	OR	B	OR	B	OR	B	OR
Control variables												
Race (nonwhite = 1)	-0.61	0.54 [†]	-1.14	0.32*	-0.53	0.59	-1.32	0.27***	-0.82	0.44*	-1.35	0.26***
Male	-0.14	0.87	1.04	2.82***	-0.33	0.72	0.58	1.78	-0.50	0.61	0.42	1.52
Live with spouse, parent, or other relative	-0.57	0.56 [†]	-1.31	0.27***	-0.69	0.50 [†]	-1.22	0.33***	-0.49	0.61	-1.49	0.23***
Part-time/full-time employment	0.13	1.14	-0.49	0.61	0.17	1.18	-0.38	0.69	0.18	1.20	-0.38	0.69
Grade point average	-0.20	0.82	-0.39	0.68	-0.07	0.94	-0.27	0.77	-0.09	0.91	-0.34	0.71
Number of credit hours	-0.11	0.89	0.19	1.21	-0.21	0.81	0.19	1.21	-0.19	0.82	0.32	1.38
Age	-0.06	0.94	0.20	1.23*	-0.07	0.93	0.18	1.19 [†]	-0.05	0.95	0.26	1.30
Married or cohabitating	-0.98	0.38	-14.12	0.00	-0.93	0.40	-14.75	0.00	-1.50	0.22	-14.7	0.00
Parent's income	0.02	1.02	0.25	1.29	0.04	1.04	0.28	1.32	-0.01	0.99	0.34	1.40 [†]
Personal income	0.19	0.83	0.93	2.53	-0.54	0.58	0.80	2.22	-0.66	0.52	1.02	2.77*
BSR1												
Express (femininity)					-0.36	0.70	-0.52	.060				
Instrumentality (masculinity)					0.63	1.88*	1.76	5.80***				
BAQ												
Expressivity (femininity)									-0.37	0.69	-0.95	0.39***
Instrumentality (masculinity)									0.04	1.04	0.86	2.37***
N											317	317
Adjusted R ²											0.24	0.34

Note: N = 422. The reference group is nonbinge drinkers/abstainers.
[†]p < .10. *p < 0.5. **p < 0.1. ***p < .001.

Table 3. Multinomial Logistic Regression (ML): Occasional and Frequent Binge Drinking Regressed on Control Variables and a Combined BSRI and PAQ Scale

	Model 1						Model 2					
	Occasional			Frequent			Occasional			Frequent		
	B	OR		B	OR		B	OR		B	OR	
Control variables												
Race (nonwhite = 1)	-0.61	0.54*		-1.14	0.32***		-0.90	0.41***		-1.70	0.18***	
Male	-0.14	0.87		1.04	2.82***		-0.66	0.52*		0.17	1.19	
Living with spouse, parent other relative	-0.57	0.56*		-1.31	0.27***		-0.61	0.54*		-1.48	0.23***	
Part-time/full-time employment	0.13	1.14		-0.49	0.61		0.30	1.34		0.29	0.75	
Grade point average	-0.20	0.82		-0.39	0.68		-0.06	0.95		-0.29	0.75	
Number of credit hours	-0.11	0.89		0.19	1.21		-0.27	0.76*		0.27	1.32	
Age	-0.06	0.94		0.20	1.23***		-0.05	0.95		0.25	1.28**	
Married or cohabitating	-0.98	0.38		-14.12	0		-1.46	0.23		-15.29	0.00	
Parent's income	0.02	1.02		0.25	1.29		0.00	1.00		0.31	1.36*	
Personal income	-0.19	0.83		0.93	2.53		-1.00	0.37***		0.82	1.27*	
BSRI & PAQ Scales combined												
Expressivity (femininity)							-0.27	0.76		-0.61	0.54***	
Instrumentality (masculinity)							0.39	1.48*		1.19	3.30***	
N											302	
Adjusted R ²											0.24	

Note: N = 422. The reference group is nonbinge drinkers and abstainers.
 * $p < .10$. ** $p < 0.5$. *** $p < 0.1$. **** $p < .001$.

Discussion

Our results indicate that, regardless of sex, a masculine gender identity is predictive of binge-level alcohol use; feminine gender identity derived from the PAQ predicts binge drinking in the negative direction while femininity as measured by the BSRI is not significantly associated with binge drinking. We conclude that gender identity plays a role in alcohol use behaviors: Students may be relying on alcohol use as a form of conspicuous gender expression. Males, who are socialized to be masculine, may rely on heavy alcohol use to coincide with other forms of male-associated behaviors (e.g. sport, risk-taking). Women, who are socialized to be feminine, on the other hand, may not engage in heavy drinking practices because this is not a part of normative femininity expression rituals and because heavy drinking is more likely to be socially admonished among women (Lo, 1995; Peralta, 2007).

In demonstrating that both masculine and feminine gender identity characteristics are active in reducing or promoting binge drinking behaviors, we perhaps generate more questions than answers in terms of how gendered identity influences binge drinking behaviors. Why, for example, is feminine gender identity not significantly associated with reduced binge drinking behaviors according to the BSRI, while expressivity (femininity) traits as measured by the PAQ do influence drinking? We speculate that differences in self-reporting on socially desirable characteristics may be evident in how participants respond to the BSRI versus the PAQ and or alcohol use survey questions. Another possibility that may account for the shifts in significance between masculinity and femininity may lie in what the scales were designed to measure. For instance, as we pointed out previously, the BSRI is a measure of gender identity while the PAQ was designed to capture instrumental and expressive traits. While both measures are concerned primarily with a gendered identity, the ways in which each measures this identity are different and could account for the differences that we have noted between the measures. Alternatively, perhaps these findings provide a call to revise and update the PAQ. Perhaps “expressivity” is not a particularly feminine trait among contemporary youth.

Given our findings, the inclusion of multiple measures of gender in future research may offer a more comprehensive estimation of how gender identities and gendered traits influence behavior. Indeed, previous research suggests that the alcohol-related crime nexus is also influenced by sociological tenets of gender (Messerschmidt, 1993). By finding significant shifts between masculinity and femininity, we have offered some support toward the claim that multiple measures of gender identity can capture effects on a given phenomena more effectively than a single measure can.

This study contributes to the literature on alcohol and gender in three important ways. Relatively little research has utilized either the BSRI or the PAQ in the study of binge drinking behavior among college students. This is in spite of the fact that each gender scale has been applied to college students as predictors of other forms of risk behavior. Aside from Huselid and Cooper’s (1992) work, studies using the PAQ, for

instance, have mainly assessed how young adults with certain gendered characteristics engage in other health-risk behaviors (Shifren, Furnham, & Bauserman, 2003; Snell, Belk, & Hawkins, 1987). While such studies did involve some measure of drinking as a risk behavior, they did not focus on binge drinking specifically. Similarly, the BSRI has only been used in one study to examine different types of dependency, including alcohol dependency among college students (Bornstein, Bowers, & Bonner, 1996). This study applies two measures of gender identity to the problem of binge drinking among college students in order to further assess which individual gendered qualities might lead to binge drinking behaviors in a Midwest university setting.

A second contribution we make is by comparing these two measures of gender in their ability to predict binge drinking. While prior research found important interactions between sex and gender identity to predict drinking behaviors using the PAQ (Huselid & Cooper, 1992), our use of the BSRI as well as the PAQ allows us to capture the changing definitions of gender roles that are not always apparent in the PAQ. In particular, using dual assessments of gender allowed us to determine whether these two indicators of gender identity similarly correspond to particular forms of drinking behavior.

Finally, our merging of the PAQ and BSRI provide for a more holistic assessment of gender by drawing on the different dimensions of gender tapped by the PAQ and the BSRI. Establishing a significant relationship between such a comprehensive measure of gender and binge drinking can provide additional and perhaps more robust empirical support for the impact of gender on a risky form of substance abuse commonly associated with violence and victimization (i.e., alcohol use).

This study is not without limitations. First, the data analyzed here are not based on a representative sample; the data come from a convenience sample of students at a single medium-sized Midwestern university. Also, the sample is slightly skewed toward females, younger students (i.e., freshmen) and African Americans. Thus, generalization of our findings is quite limited. However, our main intent is to further theoretical consideration of the impact of gender (as opposed to sex) on alcohol use. Next, women may be underreporting alcohol use behavior in accordance to the double standard in drinking alluded to above. Additionally, the gender scales we utilized may be dated in that they were developed in the 1970s. Contemporary gender expression and gender-based rituals may have shifted rendering prominent gender measures (including the ones used in the present study) inadequate. However, it is important to reiterate that others have continued to use these scales and have reported results suggesting that these scales continue to be useful for measuring gender. Finally, we were not able to report a precise response rate due to the sampling strategy we adopted. Despite these limitations, using two gender measures and securing data from a contemporary Midwest sample of college students adds to the literature. While our sample is disproportionately young they are also largely unmarried and many are likely not yet parents. This may be important because we know that an important symbolic

aspect of gendered identity is centered on marriage, parenthood, and employment. Lacking these characteristics (e.g., motherhood, fatherhood, wife/husband status) may prompt students to rely on other available behaviors, relationships, and rituals (i.e., binge drinking) to accomplish gender.

Future research should focus on ensuring that gender scales are included in research designs and that they measure what they intend to measure (traits or identity). Unless sex, as a biological phenomenon, is the variable of interest, sex should not be used as a proxy for gender in behavioral or social research. Qualitative research is recommended to develop data-grounded and theory-driven measures of gender that pertain to substance use and abuse. In sum, we need to better understand the characteristics associated with feminine and masculine traits that protect against or facilitate risky drinking practices. Such an understanding may shed light not only on drinking itself but on other forms of criminal offending or victimization. Further research into these questions is likely to result in the design and implementation of multiple programs or policies to address alcohol prevention and treatment by gender, in addition to sex, and enhance overall research on substance abuse and the associated crime and victimization that all too often co-occur with drug and especially alcohol abuse.

Much of the research enterprise and policy efforts have been male centered. In addressing this issue, Amaro et al. (2001) offer a theoretical blueprint for how to incorporate gender into substance abuse prevention for girls. Perhaps it is because men are at greater risk for alcohol-related problems (both perpetrating and experiencing) that research on alcohol has taken men and masculinity for granted, as “natural,” and not understood to be inextricably part of the problem. We suggest that it is prudent to examine the social nature of gender, how it is expressed, and what alcohol might have to do with the expression of gender (and masculinity in particular) in problematic alcohol use. That is to say, men have been the target and focus of research, prevention, and intervention without considering the gendered underpinnings of alcohol use and alcohol-related problems despite the important findings stemming from earlier works (Huselid & Cooper, 1992).

Moreover, gender-blind approaches tacitly assume that past research findings, and hence policy implications, will always be appropriate for women. A serious consideration of gender holds promise for improving gender-blind prevention and intervention outcomes that have been found to have mixed results at best (Amaro et al., 2001; Wechsler & Wuethrich, 2002). We suggest college administrators and health care workers consider that the problem of “college drinking” ignores the longstanding gender disparities in the behavior and the implications for this behavior. The problematic aspects of hegemonic masculinity need to be addressed in prevention and treatment efforts. Female-centered/gender-incorporating treatment models such as “Seeking Safety” (Najavits & Leise, 1996) are encouraging exceptions but are targeted to women with severe trauma and substance abuse histories. Women who are low-risk alcohol

users could benefit from alcohol education classes or restorative justice programs that are informed by gender-centered, evidence-based literature.

In conclusion, research on alcohol use needs to continue to move beyond basic demographic descriptions of drinking differences. Taking femininity and masculinity for granted has limited our ability to understand how and why alcohol is used or not used by male and females. A sociological analysis into the empirical question of whether gender versus sex matters for binge drinking moves us from simple descriptive statistics on sex differences into a more nuanced understanding of the gendered significance of alcohol use. From such a vantage point, we stand to gain a better understanding of the gendered causes or sources of problem drinking among women and men alike. Having a better understanding of binge drinking (particularly among this population—college students) is important, given college students' increased risk for binge drinking and binge drinking's corollaries that include crime and victimization.

Appendix A: BSRI (Bem Sex Role Inventory)

BSRI

Rate yourself on each item, on a scale from 0 (*never or almost never true*) to 7 (*almost always true*)

1. Self-reliant	21. Analytical	41. Solemn
2. Yielding	22. Sympathetic	42. Willing to take a stand
3. Helpful	23. Jealous	43. Tender
4. Defends own beliefs	24. Leadership ability	44. Friendly
5. Cheerful	25. Sensitive to other's needs	45. Aggressive
6. Moody	26. Truthful	46. Gullible
7. Independent	27. Willing to take risks	47. Inefficient
8. Shy	28. Understanding	48. Acts as a leader
9. Conscientious	29. Secretive	49. Childlike
10. Athletic	30. Makes decisions easily	50. Adaptable
11. Affectionate	31. Compassionate	51. Individualistic
12. Theatrical	32. Sincere	52. Does not use harsh language
13. Assertive	33. Self-sufficient	53. Unsystematic
14. Flatterable	34. Eager to soothe hurt feelings	54. Competitive
15. Happy	35. Conceited	55. Loves children
16. Strong personality	36. Dominant	56. Tactful
17. Unpredictable	37. Soft spoken	57. Ambitious
18. Forceful	38. Likable	58. Gentle
19. Feminine	39. Masculine	59. Conventional
20. Reliable	40. Warm	60. Loyal

Appendix B: PAQ (Personal Attributes Questionnaire)

PAQ

The items below inquire about what kind of person that you think you are. Each item consists of a PAIR of characteristics, with the numbers 0 to 7 in between. Each pair describes contradictory characteristics; that is, you cannot be both at the same time. The numbers form a scale from one extreme to another. You are to choose a number that describes where you fall on the scale.

1. Not at all aggressive	0 2 3 4 5 6 7	Very aggressive
2. Not at all independent	0 2 3 4 5 6 7	Very independent
3. Not at all emotional	0 2 3 4 5 6 7	Very emotional
4. Very submissive	0 2 3 4 5 6 7	Very dominant
5. Not at all excitable in a major crisis	0 2 3 4 5 6 7	Very excitable in a major crisis
6. Very passive	0 2 3 4 5 6 7	Very active
7. Not at all able to devote self completely to others	0 2 3 4 5 6 7	Able to devote self completely to others
8. Very rough	0 2 3 4 5 6 7	Very gentle
9. Not at all helpful to others	0 2 3 4 5 6 7	Very helpful to others
10. Not at all competitive	0 2 3 4 5 6 7	Very competitive
11. Very home oriented	0 2 3 4 5 6 7	Very worldly
12. Not at all kind	0 2 3 4 5 6 7	Very kind
13. Indifferent to others' approval	0 2 3 4 5 6 7	Highly needful of others approval
14. Feelings not easily hurt	0 2 3 4 5 6 7	Feelings easily hurt
15. Not at all aware of the feelings of others	0 2 3 4 5 6 7	Very aware of feelings of others
16. Can make decisions easily	0 2 3 4 5 6 7	Has difficulty making decisions
17. Gives up very easily	0 2 3 4 5 6 7	Never gives up easily
18. Never cries	0 2 3 4 5 6 7	Cries very easily
19. Not at all self-confident	0 2 3 4 5 6 7	Very self-confident
20. Feels very inferior	0 2 3 4 5 6 7	Feels very superior
21. Not at all understanding of others	0 2 3 4 5 6 7	Very understanding of others
22. Very cold in relations with others	0 2 3 4 5 6 7	Not very cold in relations with others
23. Very little need for security	0 2 3 4 5 6 7	Very strong need for security
24. Goes to pieces under pressure	0 2 3 4 5 6 7	Stands up well under pressure

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