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Cheers to Equality! Both Hostile and Benevolent Sexism Predict Increases in College Women's Alcohol Consumption

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Abstract

Based on research suggesting that alcohol consumption can be used as a means of coping with negative affect (Cooper, Frone, Russell, & Mudar, 1995), the current study examines sexism as a factor in college women's alcohol consumption. Despite being more prevalent than hostile sexism, benevolent sexism is often viewed as less sexist (Oswald, Baalbaki, & Kirkman, 2018) and having a less aversive impact on women (Bosson, Pinel, & Vandello, 2010). To increase understanding of the negative effects of both hostile and benevolent sexism, the current study experimentally manipulated sexism during a lab session and measured 176 U.S. college women's actual alcohol consumption that evening. As predicted, college women who experienced either the hostile or the benevolent sexism condition reported consuming a greater number of alcoholic drinks, and those in the hostile sexism condition were more likely to meet the binge drinking threshold than participants in the control condition. This pattern suggests the importance of examining the unique effects of benevolent sexism in addition to hostile sexism because both may influence women's behavior even in important health domains. Given the many negative consequences associated with alcohol consumption, our results provide evidence for education on healthy coping mechanisms and interventions to reduce both hostile and benevolent sexism.

Keywords: sexism, hostile sexism, benevolent sexism, drinking behavior, binge drinking, social drinking, college students, college environment

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Alcohol Consumption

> Being a woman is a terribly difficult trade since it consists principally of dealings
> with men. --Joseph Conrad

In the classic film *National Lampoon's Animal House* (Simmons, Reitman, & Landis,

1978), the main characters throw a toga party at their fraternity in order to boost their spirits and

have a good time. The men turn to drinking as a means of forgetting their problems and cheering

themselves up. On the other hand, although women are invited to these parties, they seem to

have little purpose in the film other than through their relationships with men. However, this

portrayal of college women has changed over time. ABC Family's TV show *Greek* (Nugiel,

2007), explores the complicated social lives of both fraternity men and sorority women. In this

portrayal, both men and women turn to alcohol in times of distress as well as when they want to

have fun. Similar efforts need to be made in research to understand college student drinking

among both men and women. With the gender gap in college drinking decreasing (Johnston,

O'Malley, Bachman, Schulenberg, & Miech, 2016; Nolen-Hoeksema, 2004), it is time for

researchers to understand unique factors that may lead college women to increase their alcohol

consumption. The current study examines sexism as a potential factor in college women's

drinking given the prevalence of sexism in society (Klonoff & Landrin, 1995) and the link

between perceived discrimination and increased unhealthy behaviors (Pascoe & Smart Richman,

2009).

College Student Drinking

College student drinking in the United States is considered a significant public health

problem by the National Institute on Alcohol Abuse and Alcoholism (NIAAA) with almost 60%

of students reporting some alcohol consumption in the past month and almost two thirds of these

students reporting binge drinking (NIAAA, 2015a). Data collected through nationally

representative surveys also suggests that although men typically consume more alcohol than

women, gender differences in college students' drinking have decreased over time (Johnston et

al., 2016). This change suggests the importance of understanding why college women in

particular may be motivated to consume alcohol. This topic is especially important because the

NIAAA warns that the risk of developing alcohol-related problems is higher for women than for

men in part because women tend to weigh less than men and have less water in their bodies,

which causes women to reach a higher blood alcohol content than men when consuming the

same amount of alcohol (NIAAA, 2015b). In addition, research on first-year college students

suggests that although men are more likely to get in a physical fight, damage property, or drive

drunk, college women report more frequent instances of experiencing interpersonal negative

consequences such as having unplanned sex, being injured, or arguing with a friend (Dumas,

Wells, Tremblay, & Graham, 2013). Thus, even when engaging in the same behaviors as men,

the negative consequences of consuming alcohol (e.g., sexual assault) may be just as severe for

women as for men (Nolen-Hoeksema, 2004).

The motivational model of alcohol use suggests that people drink alcohol in order to

regulate both positive and negative emotions (Cooper, Frone, Russell, & Mudar, 1995). Within

this theory, drinking to enhance positive emotions is considered to be an appetitive process in

which alcohol is used to increase positive affective states and emotional experiences. On the

other hand, the theory also suggests that alcohol is used to cope with negative emotional

experiences. Drinking to cope is thus a reactive process in which alcohol is consumed in order to

escape, avoid, or otherwise regulate negative affective states. Importantly, research suggests that

drinking to cope is directly related to increased alcohol-related problems when controlling for

alcohol use in a way that drinking to enhance positive affect is not (Cooper, 1994; Cooper et al., 1995). The current research examines experiences of sexism as one potential factor that may lead to drinking to cope among college women.

Ambivalent Sexism

With the development of the Schedule of Sexist Events (SSE; Klonoff & Landrin, 1995), came data suggesting that 99% of women report having experienced a sexist event at least once and that 97% of women report having experienced a sexist event within the last year alone. Further diary studies suggest that women experience one or two sexist events each week (Swim, Hyers, Cohen, & Ferguson, 2001). However, not all sexist events are equal. In Glick and Fiske's (1996) ambivalent sexism theory, hostile sexism refers to overtly negative and prejudiced attitudes toward women (e.g., believing that women are incompetent at tasks traditionally associated with men) whereas benevolent sexism refers to stereotypical views of women that may seem positive in valence and yet have a tendency to reaffirm masculine dominance (e.g., believing that women need to be protected by men and that men should provide financially for women).

A recent study suggests that college women experience more events indicative of benevolent sexism than events indicative of hostile sexism (Oswald, Baalbaki, & Kirkman, 2018). However, college women view hostile sexist events as more sexist than benevolent sexist events (Oswald et al., 2018), and people generally expect less negative consequences of benevolent sexism (Bosson, Pinel, & Vandello, 2010). Specifically, although forecasters (i.e., those predicting future affective responses) view hostility as more negative than benevolence, reports from participants who actually experienced sexism suggest that women may have similar affective responses to both types of sexism (e.g., anger and depression). Thus, benevolent

sexism may be viewed as less harmful than hostile sexism despite having similar effects on women. It is therefore important to understand more fully the negative consequences that women may face from experiencing benevolent sexism. The current study examines whether hostile and benevolent sexism independently predict college women's alcohol consumption, an important health behavior.

Despite some research suggesting that women may experience similar levels of anger and depression in reaction to experiencing hostile and benevolent sexism (Bosson et al., 2010), other research suggests that these two forms of sexism can have differential effects on targets (Barreto, Ellemers, Piebinga, & Moya, 2010; Dardenne et al., 2013; Dumont, Sarlet, & Dardenne, 2010; Lemonaki, Manstead, & Maio, 2015). For example, some research suggests that experiencing hostile sexism increases feelings of anger and frustration more than experiences of benevolent sexism (Lemonaki et al., 2015). Other research suggests that exposure to benevolent sexism leads women to describe themselves as more relational and less task-oriented (Barreto et al., 2010), to view themselves as incompetent (Dumont et al., 2010), and to exhibit impaired cognitive performance (Dardenne et al., 2013). Thus, not only is benevolent sexism a problem (despite women expecting to be less affected by benevolent sexism; Bosson et al., 2010), it is not yet clear how each of these forms of sexism may differentially influence coping behaviors. The current study adds to this literature by experimentally manipulating hostile and benevolent sexism and testing their effects on college women's alcohol consumption to determine whether each of these forms of sexism influences this important health behavior.

Discrimination and Alcohol Consumption

Supporting theory suggesting that alcohol consumption is used to cope with negative affect (Cooper et al., 1995), research suggests that perceived discrimination is related to poorer

physical and mental health due to stress responses and health behaviors in which individuals engage following discriminatory experiences (Pascoe & Smart Richman, 2009). In community samples, this link between discrimination and alcohol consumption has been found across different ethnicities (Chae et al., 2008; Hunte & Barry, 2012; Kim & Spencer, 2011; Otiniano Verissimo, Gee, Ford, & Iguchi, 2014). Among college students as well, research suggests that perceived mistreatment may be related to greater alcohol consumption (DeHart, Peterson, Richeson, & Hamilton, 2014). However little research has studied the effects of sexism on alcohol consumption.

One study that examined the effects of sexism on alcohol consumption among college women concluded that experiencing sexism was related to psychological distress and that college women drank excessively to cope with this distress (Zucker & Landry, 2007). Specifically, this study assessed how frequently women had experienced sexism experiences within the past year, their current feelings of psychological distress, and the number of times they had engaged in binge drinking within the previous 2 weeks. This study provided important evidence of the relation between sexist experiences and alcohol consumption among college women who may use alcohol as a coping mechanism.

However, no known previous research has looked at the independent effects of hostile and benevolent sexism on alcohol consumption. Furthermore, previous research examining the effects of discrimination on alcohol consumption has relied on correlational data, which makes it impossible to draw causal conclusions. The current study fills this gap in the literature by experimentally manipulating hostile and benevolent sexism and draws on a novel mixed methods design to examine the causal effects of this sexism manipulation on college women's actual reported alcohol consumption in a natural setting (see Hamilton & DeHart, 2017). We also test

whether the sexism manipulation impacts intentions to drink to see whether, during the lab session, participants who have been exposed to sexism report a conscious desire to consume alcohol that evening.

The Present Study

Previous research using correlational methods suggests that experiencing sexism in general is related to increased alcohol consumption among college women (Zucker & Landry, 2007). Therefore, we predicted that college women in the hostile and benevolent sexism conditions would both report consuming more drinks that night than college women in the control condition and greater likelihood of engaging in binge drinking. Effects on drinking expectations will also be tested to determine whether drinking behavior is intentional or unintentional. These hypotheses were pre-registered on the Open Science Framework.

In addition, we predicted that the effects of hostile sexism on alcohol consumption would be mediated by both anger and belongingness need threat, that the effects of benevolent sexism on alcohol consumption would be mediated by belongingness need threat (but not anger), that stigma consciousness (i.e., participants' expectations about their likelihood of being viewed as stereotypically female; Pinel, 1999) would exacerbate the effects of sexism, and that collective self-esteem (i.e., participants' evaluations of women; Luhtanen & Crocker, 1992) would buffer women against the effects of sexism. These mediation and moderated mediation hypotheses were not supported. (These results can be found in the online supplement for this article.)

Method

Power Analysis

To estimate the appropriate sample size for the current study, we used the software program G*Power (Faul, Erdfelder, Buchner, & Lang, 2009) to conduct a power analysis. Our

goal was to obtain .80 power to detect a 50% change in the base rate of alcohol consumption using a Poisson analysis with binomial X distribution and .33 parameter at the standard .05 alpha error probability. This analysis suggested a total sample size of 137 would be sufficient.

Participants

Participants included 199 female undergraduate students from a private U.S. Midwestern university, recruited through the psychology department participant pool ($n = 187$) and on-campus advertisements ($n = 12$) during the fall semester. All participants indicated that they had consumed alcohol in the past 2 weeks in order to be eligible for the study. The final sample excluded 23 (12%) participants who failed the manipulation checks; four wrote about hostile sexism in the benevolent sexism condition (6% of those in this condition; e.g., "men want to be in control of women, emotionally especially…men think they are entitled to women's beliefs, bodies, actions, etc."), four wrote about benevolent sexism in the hostile sexism condition (6% of those in this condition; e.g., "People associate women with weakness, submissiveness, vulnerability"), 15 wrote about sexism in the control condition (23% of those in this condition; e.g., "Most people tend to think that men think they are better than women and have a lot of sexist thoughts about women"). Participants were more likely to be excluded from analyses if they were assigned to the control condition, $\chi^2(2) = 12.06$, $p = .002$. Participants were also more likely to be excluded from analyses if they had completed the lab session on a Saturday, $\chi^2(1) = 6.60$, $p = .01$, and if they were White (versus racial minority students), $\chi^2(1) = 7.06$, $p = .01$. However, participants who were excluded from analyses did not differ from those who were included in Greek house membership, $\chi^2(1) = 0.94$, $p = .33$, or housing environment, $\chi^2(1) = 0.01$, $p = .94$. Participants who were excluded from analyses also did not differ from those who were included in age, $t(197) = 1.60$, $p = .11$.

The 176 women included in analyses ranged in age from 18 to 29 ($M = 19.22$, $SD = $ 1.42), and they were mostly White ($n= 105$, 60%), freshmen ($n = 88$, 50%), and non-Greek affiliates ($n = 147$, 84%). A majority of participants lived in a dormitory on campus with roommates (69%). Of these participants, 152 (86%) began the follow-up survey including the primary dependent variable (alcohol consumption) and were included in analyses predicting this variable. Participants who did not begin the follow-up survey did not differ from those who did so in the experimental condition, $\chi^2(2) = 0.67$, $p = .72$, by ethnicity, $\chi^2(1) = 0.02$, $p = .90$, by Greek house membership, $\chi^2(1) = 0.07$, $p = .79$, by housing environment, $\chi^2(1) = 0.05$, $p = .83$, or by day of week when they completed the lab session, $\chi^2(1) = 0.97$, $p = .33$. Participants who did not begin the follow-up survey also did not differ from those who did so in age, $t(174) = -1.309$, $p = .20$.

Procedure

Procedures were reviewed and approved by the institutional review board at a private U.S. Midwestern University for compliance with standards for the ethical treatment of human participants prior to data collection. Based on the design used by Hamilton and DeHart (2017), the present study consisted of two parts. Participants first completed an experimental lab session in which participants were exposed to the sexism manipulation. They were then allowed to leave the lab and continue the rest of their day. The next day, participants completed a follow-up survey online in which they reported on their alcohol consumption on the evening of their lab session.

The experimental portion of this study (Time 1 assessment) took place while classes were in session on a Friday or Saturday because research has shown that college students consume more alcohol on weekend days versus weekdays (Maggs, Williams, & Lee, 2011). Upon arrival

in the research lab, participants were asked to complete a computer-based survey including

demographic questions, a sexism manipulation and manipulation check, and a measure of

drinking expectations for that night. The follow-up survey (Time 2) was emailed to participants

the following day at noon and participants were given until 9PM to complete the survey. This

survey measured alcohol consumption the previous night. A reminder email was sent at 5PM to

participants who had not yet completed the survey. Debriefing information was sent to all

participants, regardless of whether or not they had completed the follow-up survey, the following

morning at 8AM.

Because many college students are below the legal drinking age, we obtained a

Certificate of Confidentiality from the National Institutes of Health to protect all participants.

Participants from the participant pool were compensated for their participation with 2 hours of

course credit for completion of the lab session and an additional credit hour for completion of the

follow-up survey. Participants who were not part of the participant pool were compensated for

their participation with $10 for completion of the lab session and an additional $5 for completion

of the follow-up survey. Additionally, in order to increase compliance, participants who

completed the follow-up survey on time were entered into a raffle for a chance to win a $50

prize.

Time 1 Measures

Sexism exposure manipulation. Participants were told that the researchers were

interested in students' interest in newspapers articles that describe the results of psychological

research. They were then randomly assigned to read one of three bogus news articles (Lemonaki

et al., 2015). (The full text of these articles can be found in this article's online supplement.) All

three articles started out the same with a question about whether or not men and women are the

same and indicated that the rest of the article was presenting data from a national survey. In the

hostile sexism condition, the results of the survey indicated that people tend to believe several of

the hostile sexism items from the ambivalent sexism inventory (e.g., "Under the pretense of

striving for equality, women try to gain special favors at the expense of men"; "Women tend to

interpret everything as being sexist, to exaggerate problems they might encounter at work";

"[Women] tend to use men in accordance with their own desires and to ignore their needs and

feelings"; Glick & Fiske, 1996). In the benevolent sexism condition, the survey results instead

supported beliefs in benevolent sexism items from the ambivalent sexism inventory (e.g.,

"Women are very sensitive and delicate…that men feel responsible for their protection";

"Women are unique, with an exceptional sense of morality and empathy for those in need"; "A

man should strive to provide financial support for his beloved woman"). Finally, the control

condition supported neutral views about men and women's similarities and differences (e.g.,

"Men and women value friendship and…both sexes consider honesty and respect as the most

important ingredients for a successful relationship"; "In their free time, both men and women

enjoy reading a good novel and watching a film on TV"; "While men prefer eating meat and

chocolate, women love pasta and strawberries"). All participants spent 2 minutes reading the

article.

      Manipulation checks. First, participants were asked to spend 2 minutes responding to

each of four open-ended questions about what they read in the article. They were asked

specifically to indicate their overall impression of the article, the purpose of the article, two

beliefs stated in the article about men, and two beliefs stated in the article about women.

Responses were coded for relevance to hostile and benevolent sexism. Participants in the hostile

sexism condition who did not mention sexism or who wrote about benevolent sexism were

excluded. Participants in the benevolent sexism condition who did not mention sexism or who wrote about hostile sexism were excluded. Finally, participants in the control condition who wrote about sexism were excluded. Second, participants were asked to rate the article on five dimensions (i.e., intuitiveness, reasonableness, believability, persuasiveness, and significance) on a 9-point scale from 1 (*not at all*) to 9 (*extremely*) (Murray & Holmes, 1993). These items were combined to form a measure of article credibility (α = .84).

Expectations regarding alcohol consumption that night. One item assessed participants' expectations about whether or not they would consume alcohol ("How likely is it that you will drink alcohol tonight?") on a 7-point scale from 1 (*extremely unlikely*) to 7 (*extremely likely*); Armitage, Norman, Alganem, & Conner, 2015).

Time 2 Measures (Assessed the Next Day)

Alcohol consumption. The previous night's alcohol consumption was assessed by having participants report the number of standard alcoholic drinks they had consumed over the course of the previous evening. Participants were instructed that one standard alcoholic drink is equal to one 12-oz. beer (usually about 5% alcohol content), one 8-oz. glass of malt liquor (usually about 7% alcohol content), one 5-oz. glass of wine (usually about 12% alcohol content), or 1.5-oz. of liquor either straight or in a mixed drink (usually about 40% alcohol content), and they were given a visual aid illustrating these drink sizes (NIAAA, n.d.). College students have been shown to provide reasonably accurate self-reports of their alcohol use as compared to friends' reports of their alcohol use (Hagman, Cohn, Noel, & Clifford, 2010), and providing participants with information on what constitutes a standard drink has been shown to lessen the chances of underreporting (Bergen-Cico & Kilmer, 2010). From these data, we were also able to determine whether participants met the criteria for women's binge drinking, defined by the

Harvard School of Public Health College Alcohol Study (CAS) as consuming four or more

drinks in a row (Wechsler & Nelson, 2001).

Reasons preventing alcohol consumption. Participants were asked to report whether

anything prevented them from consuming alcohol or moderated their alcohol consumption by

selecting as many options as applied from a checklist including health issues, academic

obligations, athletic obligations, extracurricular obligations, religious obligations, employment

obligations, plans with friends, family obligations, inability to obtain alcohol, and other. Results

were coded to indicate whether or not students had any reason that prevented them from

consuming as much alcohol as they otherwise would have (0 = no, 1 = yes).

Results

Manipulation Check and Drinks Consumed

To ensure that participants in the hostile sexism, benevolent sexism, and control

conditions found the article to be equally credible, we conducted a one-way analysis of variance

(ANOVA) predicting article credibility from sexism condition (0 = control condition, 1 =

benevolent sexism condition, 2 = hostile sexism condition). This analysis showed a significant

main effect of condition on article credibility, $F(2, 173) = 6.63$, $p = .002$, $\eta_p^2 = .07$. This

suggests that the credibility of the article varied across the three conditions. The first linear

contrast suggests that participants' views of the experimental article as credible were equal in the

control ($M = 4.21$, $SD = 1.43$) condition compared with the combined hostile ($M = 3.49$, $SD =$

1.38) and benevolent ($M = 4.45$, $SD = 1.74$) sexism conditions, $F(1, 173) = 0.90$, $p = .35$, $\eta_p^2 =$

.01. The second linear contrast suggests that participants viewed the hostile sexism ($M = 3.49$,

$SD = 1.38$) article as less credible than the benevolent sexism ($M = 4.45$, $SD = 1.74$) article, $F(1,$

$173) = 12.22$, $p < .001$, $\eta_p^2 = .07$. This suggests that the hostile sexism article was seen as less

credible than the control and benevolent sexism articles. Article credibility is therefore included

as a control variable in all future analyses. The number of drinks consumed ranged from 0 to 10

($M = 1.20$, $SD = 2.06$) with 51 participants (34% of those reporting their alcohol consumption)

indicating that they consumed at least one drink.

Hypothesis Testing

   Alcohol consumption. Because the number of drinks consumed is a count variable, we

conducted standard Poisson regression analysis (see Coxe, West, & Aiken, 2009) to test whether

experimental condition impacted that night's alcohol consumption. We created dummy variables

comparing hostile and benevolent sexism to the control condition and controlled for article

credibility, day of lab session (0 = Friday, 1 = Saturday), age, ethnicity (0 = racial minority

women, 1 = White), Greek house membership (0 = Non-member, 1 = Greek house member),

housing environment (0 = Living with roommates or alone, 1 = Living with family), and whether

students were unable to drink for any reason (0 = Yes, 1 = No).

   In line with hypotheses, this analysis revealed a significant positive effect of hostile

sexism condition on number of drinks consumed as well as a significant positive effect of

benevolent sexism condition on number of drinks consumed (see Table 1). This analysis

indicates that participants in the hostile sexism condition reported consuming more alcohol that

evening than those in the control condition. Specifically, a participant in the hostile sexism

condition reported consuming an average of 1.97 times as many drinks as a participant in the

control condition. In addition, participants in the benevolent sexism condition reported

consuming more alcohol that evening than those in the control condition. Specifically, a

participant in the benevolent sexism condition reported consuming an average of 1.64 times as

many drinks as a participant in the control condition. A comparison of the hostile sexism

condition to the benevolent sexism condition suggests that there was no significant difference in the number of drinks consumed by participants exposed to the hostile sexism article compared to those exposed to the benevolent sexism article, $B = 0.34$, $SE = 0.20$, $Exp(B) = 1.40$, 95% CI [0.95, 2.07], $\chi^2(1) = 2.90$, $p = .088$.

Binge drinking. Next, we examined whether the sexism manipulation predicted binge drinking that night using a logistic regression analysis. Binge drinking behavior (0 = no, 1 = yes) was predicted from manipulated sexism condition (indicator coding was used with the control condition as the reference) with the same variables controlled for as in the previous analysis. The logistic regression model was statistically significant, $\chi^2(9) = 41.78$, $p < .001$. The model explained 43% (Nagelkerke R^2) of the variance in binge drinking behavior and correctly classified 87.5% of cases. Participants in the hostile sexism condition were 7.75 times more likely to report binge drinking compared to participants in the control condition (see Table 2). Although not significant, participants in the benevolent sexism condition were 5.54 times more likely to report binge drinking compared to participants in the control condition. A comparison of the hostile sexism condition to the benevolent sexism condition suggests that there was no significant difference in the likelihood of binge drinking by participants exposed to the hostile sexism article compared to those exposed to the benevolent sexism article, $b = 0.53$, $SE = 0.72$, $Exp(B) = 1.70$, 95% CI [0.42, 6.92], $\chi^2(1) = 0.56$, $p = .456$.

Drinking expectations. Finally, we conducted a standard regression analysis to test whether experimental condition impacts that night's drinking expectations rather than reported drinking behavior. We controlled for demographic information and article credibility. The model did not explain a significant amount of the variance in drinking expectations, $F(8, 175) = 1.53$, $p = .149$, $R^2 = .07$. This analysis revealed no significant effect of either hostile sexism

condition or benevolent sexism condition on drinking expectations (see Table 3). These non-findings suggest that, unlike reported alcohol consumption, drinking expectations did not differ between experimental conditions. Therefore, although exposure to hostile and benevolent sexism predicted greater reported alcohol consumption that night, it did not influence intentions to consume alcohol later that night as reported during the lab session. Thus, changes in reported alcohol consumption are likely due to unintentional alcohol consumption rather than intentional use of alcohol as a coping mechanism.

Discussion

In line with hypotheses, both the hostile sexism condition and the benevolent sexism condition were found to causally predict greater reported alcohol consumption that night. In addition, hostile sexism predicted greater likelihood of engaging in binge drinking that evening. In contrast, neither form of sexism predicted drinking expectations. This last finding suggests that college women exposed to a sexism manipulation did not report a conscious desire to drink during the lab session. We suggest that students did not intentionally seek out alcohol as a means of coping with the negative affect associated with experiencing sexism. Instead, their alcohol consumption seems to be influenced via indirect or unconscious mechanisms that led students to consume greater amounts when presented with the opportunity to do so, despite not intentionally seeking out alcohol as a coping mechanism. However, it is possible that, as students processed the sexism manipulation further, these conscious intentions may have changed after leaving the lab.

Although previous research has suggested a relation between sexism and alcohol consumption (Zucker & Landry, 2007), the current study is the first to our knowledge to examine the independent effects of exposure to hostile and benevolent sexism. More importantly, the

current study addresses a major gap in the literature by employing an experimental manipulation

of sexism exposure rather than relying on correlational data. This approach aids in establishing a

causal connection between the experience of hostile or benevolent sexism on college women's

alcohol consumption. Furthermore, the findings that a simple manipulation involving reading

information in a lab affects students' reports of the amount of alcohol they consumed that

evening points to the importance of examining these effects and establishes the usefulness of this

two-step procedure. Findings from previous work and ours using this procedure (Hamilton &

DeHart, 2017) suggest that, despite their lack of effect on drinking expectations, short lab

manipulations can have effects on important health behaviors carried out by students that

evening.

Limitations and Future Research Directions

Despite these intriguing results, the current study does have some limitations. First, only

34% of participants in the current study who reported their alcohol consumption consumed any

amount of alcohol. This is lower than in previous research using the same methodology (see

Hamilton & DeHart, 2017). The lower power of our study may have contributed to the lack of

support for the additional hypotheses and the non-significance in analyses comparing the

likelihood of binge drinking in the benevolent sexism versus control conditions. In addition, our

measure of binge drinking assumes that reported alcohol consumption occurred during one

drinking session, thus meeting the binge drinking definition used by the Harvard CAS (Wechsler

& Nelson, 2001). However, it is possible that consumption was spread over a long period of

time or that participants consumed alcohol during separate drinking sessions in the same

evening. Because we did not ask about the timeframe of alcohol consumption, this possibility

cannot be ruled out.

Another limitation is that there were some problems with the sexism manipulation. First, participants indicated that the hostile sexism article was less credible than the control article. However, we controlled for article credibility in our analyses. We also tested analyses excluding participants who indicated that the article was not at all credible (i.e., those scoring less than a 2 on the composite article credibility measure). Excluding these participants did not change the pattern of results. Additionally, a larger proportion of participants from the control condition, compared to the sexism conditions were excluded from analyses for failure to correctly identify information presented in the article. It seems that many students viewed the article as sexist and applied sexist schemas to help them recall the information presented in the article. For example, although the article states that men like cooking whereas women like playing sports, many participants in this condition reported the opposite of these results when asked about men and women. Including all participants from the control condition does not change the current results. However, future researchers may want to use a different control article that does not allow for this biased interpretation by participants or employ a different sexism manipulation. One possible alternative would be to have participants read and evaluate hostile or benevolent sexism items (Fitz & Zucker, 2014). In addition, future research should consider the use of daily diary methodologies that would allow researchers to examine how daily experiences of hostile and benevolent sexism influence alcohol consumption (see DeHart et al., 2014.

Finally, further research is needed to identify the mechanisms by which hostile and benevolent sexism influence college women's alcohol consumption. Although previous research has indicated that psychological distress mediates the effects of general sexism on alcohol consumption (Zucker & Landry, 2007), it may be that hostile and benevolent sexism each influence drinking via different pathways. It would be interesting to consider the effects of

participants' endorsement of hostile and benevolent sexism in addition to their experiences with

each form of sexism. Whereas previous research has explored both personal endorsement and

exposure, the current research tested only exposure to sexism. It may be that personal

endorsement of sexism is an important factor in college women's alcohol consumption or that

sexist beliefs moderate the effects of sexist experiences. It is also possible that women's

increased alcohol consumption in the current study is in part reactive. That is, women may

increase their alcohol consumption not only to cope with negative affect but also to act in a

manner that contradicts expectations about their gender (see Nolen-Hoeksema, 2004). Further

research into students' drinking motives and expectations is needed to understand this potential

mechanism.

Practice Implications

As the gender gap in alcohol consumption narrows (Johnston et al., 2016), the importance

of understanding factors that may increase alcohol consumption among college women has

increased. Although reductions in this gap may indicate a positive move toward greater equity in

social roles, women still face a greater potential for experiencing negative consequences due to

their alcohol consumption (Nolen-Hoeksema, 2004). The current study suggests that coping

with sexism may be one factor that influences college women's alcohol consumption, increasing

their chances of experiencing negative consequences (see Cooper, 1994; Cooper et al., 1995).

By increasing understanding of this influence on women's health behavior and exposing the

harmful influence of both hostile and benevolent sexism, the present paper provides evidence for

the need to both provide information on healthy coping mechanisms and reduce both hostile and

benevolent sexism in society (despite common views of benevolent sexism as less negative than

hostile sexism; Bosson et al., 2010). In addition, we hope that understanding the influence of

hostile and benevolent sexism on college women's alcohol consumption may help counselors and administrators address the issue of unhealthy alcohol consumption and provide support for college women as they cope with sexism and other stressors.

Conclusion

Unfortunately, sexism continues to exist in today's society and, as the quote at the beginning of our paper suggests, women face the difficulties of dealing with sexism in their day-to-day lives. The current study provides an initial experimental test of the relation between exposure to sexism and college women's alcohol consumption and suggests that both hostile and benevolent sexism may increase college women's alcohol consumption. Our findings refute conceptions of benevolent sexism as less negative (Bosson et al., 2010) and suggests the importance of education and intervention to reduce the prevalence of both hostile and benevolent sexism. Given the many negative consequences associated with alcohol consumption, particularly when individuals engage in binge drinking, additional research into these effects is warranted.

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Table 1

Evening Alcohol Consumption as a Function of Sexism Manipulation Condition

Predictors	B	SE	Exp(B)	Exp(B) 95% CI	$\chi^2(1)$	p
Constant	-0.06	0.23	0.94	[0.60, 1.48]	0.07	.798
Control Variables						
Article Credibility	0.16	0.05	1.17	[1.05, 1.30]	8.29	.004
Day of Lab Session	-0.03	0.30	0.97	[0.54, 1.75]	0.01	.923
Age	0.18	0.05	1.19	[1.09, 1.30]	15.19	<.001
Ethnicity	0.29	0.23	1.33	[0.92, 1.93]	2.36	.125
Greek House Membership	0.43	0.18	1.53	[1.09, 2.17]	5.88	.015
Housing Environment	-1.12	0.40	0.33	[0.15, 0.72]	7.81	.005
Drinking Limited	-1.24	0.18	0.29	[0.21, 0.41]	49.68	<.001
Manipulated Conditions						
Hostile Sexism	0.68	0.23	1.97	[1.26, 3.07]	8.96	.003
Benevolent Sexism	0.49	0.22	1.64	[1.07, 2.51]	5.09	.024

Note: Each manipulated condition is tested against the control group.

Table 2

Model Coefficients from Logistic Regression Analysis Predicting Binge Drinking from Sexism Manipulation Condition

Predictors	*b*	*SE*	Odds Ratio	*Exp(B)* 95% CI	Wald χ^2	*p*
Constant	-3.72	1.03	0.02		13.04	<.001
Control Variables						
Article Credibility	0.30	0.20	1.35	[0.92, 1.98]	2.31	.129
Day of Lab Session	0.25	1.13	1.28	[0.14, 11.60]	0.05	.827
Age	0.40	0.21	1.50	[1.00, 2.25]	3.75	.053
Ethnicity	1.36	0.77	3.15	[0.87, 17.47]	3.15	.076
Greek House Membership	1.02		2.77	[0.79, 9.68]	2.53	.112
Housing Environment	-20.02	7444.74	0.00		0.00	.998
Drinking Limited	-2.22	0.69	1.28	[0.03, 0.42]	10.29	.001
Manipulated Conditions						
Hostile Sexism	2.05	0.94	7.75	[1.15, 52.23]	4.43	.035
Benevolent Sexism	1.71	0.94	5.54	[0.88, 34.68]	3.34	.068

Note: Each manipulated condition is tested against the control group.

Table 3

Sexism Manipulation Condition Predicting Drinking Expectations

Predictors	*B*	*SE*	95% CI	*β*	*t*	*p*	η_p^2
Constant	3.38	0.40	[2.60, 4.17]		8.50	<.001	
Control Variables							
Article Credibility	0.22	0.11	[-0.01, 0.44]	0.16	1.92	.057	.02
Day of Lab Session	-0.43	0.71	[-1.83, 0.98]	-0.05	-0.60	.552	.002
Age	0.11	0.13	[-0.14, 0.36]	0.07	0.83	.406	.004
Ethnicity	0.43	0.36	[-0.28, 1.15]	0.09	1.19	.235	.01
Greek House Membership	0.08	0.50	[-0.90, 1.06]	0.01	0.16	.875	.0001
Housing Environment	-1.04	0.54	[-2.10, 0.03]	-0.15	-1.92	.056	.02
Manipulated Conditions							
Hostile Sexism	0.49	0.44	[-0.37, 1.35]	0.11	1.13	.262	.01
Benevolent Sexism	0.50	0.43	[-0.35, 1.34]	0.11	1.16	.248	.01

Note: Each manipulated condition is tested against the control group.

Method

Time 1 Measures

Stigma consciousness. Participants completed the 10-item stigma consciousness questionnaire for women (Pinel, 1999). This measure assesses individual differences in women's expectations regarding whether or not they are likely to experience sexism by asking participants to rate the extent to which they agree with statements such as "Stereotypes about women have not affected me personally" and "Most men have a problem viewing women as equals" on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). Negative items were reverse scored before averaging items together so that higher values represent greater stigma consciousness (α = .74).

Collective self-esteem. Participants completed the 16-item Collective Self-Esteem Scale (CSES; Luhtanen & Crocker, 1992) adapted to measure collective self-esteem based on female identity. This measure assesses participant's collective self-esteem based on their female identity by asking participants to rate the extent to which they agree with statements such as "I feel good about being female" and "Being female is unimportant to my sense of what kind of person I am" on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). Negative items were reverse scored before averaging items together so that higher values represent more positive private regard (α = .73).

Anger. Based on the measure of anger used by Barreto and Ellemers (2005), participants were asked to indicate the extent to which they were currently experiencing five negative

emotions (e.g., angry, indignant, irritated, disappointed, frustrated) on a 7-point scale (1 = *not at all*, 7 = *extremely*). These five items were averaged together to form a composite anger score (α = .91).

Belongingness need threat. Belongingness needs were measured using the belongingness subscale of the Need Threat Scale (van Beest & Williams, 2006). Participants were asked to indicate the extent to which they agreed with five statements (e.g., "Right now, I feel as one with others", "Right now, I feel like an outsider") on a 7-point scale (1 = *do not agree*, 7 = *agree*). Positive items were reverse scored before averaging items together so that higher values represent greater belongingness need threat (α = .90).

Results

Additional Analyses of Alcohol Consumption

Testing mediation. To test whether anger or belongingness need threat moderate the effects of hostile and benevolent sexism on alcohol consumption, we used Model 4 in the SPSS PROCESS macro (Hayes, 2018), which allows for multicategorical predictor variables (i.e., three sexism conditions), to predict alcohol consumption as a function of sexism condition mediated by anger and belongingness need threat. This creates two dummy variables using the control condition as the comparison group. The first dummy variable compares the hostile sexism condition to the control condition while the second dummy variable compares the benevolent sexism condition to the control condition. We included demographic information, lab session day, article credibility, and reasons not to drink as control variables. In addition, we report results from the heteroscedasticity-consistent standard error estimator to reduce bias due to the count nature of my outcome variable (number of drinks is a count variable).

In line with hypotheses analyses revealed that hostile sexism (compared to the control condition) significantly positively predicted anger. However, neither anger nor belongingness need threat significantly predicted alcohol consumption (see Table 1). In addition, analyses revealed no significant relative direct or indirect effects (see Table 2).

Testing moderated mediation. We next conducted moderated mediation analyses using Model 10 of the PROCESS macro (Hayes, 2018). Using the same two dummy variables created for testing mediation effects, in which each of the two sexism conditions is compared to the control condition, we test a moderated mediation model in which experimental condition and identity threat appraisal interact to predict anger, belongingness need threat, and alcohol consumption.

Analyses testing effects of sexism condition on alcohol consumption revealed no significant interactions between sexism condition and either collective self-esteem or belongingness need threat (see Table 3). This suggests that, contrary to hypotheses, neither stigma consciousness nor collective self-esteem moderates the effects of sexism condition on evening alcohol consumption. In addition, analyses revealed no significant indices of moderated mediation (see Table 4).