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Gender Differences in College Drinkers: The Role of Masculine Norms

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by

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Abstract

Drinking among college students has remained a prominent problem within the United States, with more than 50% of college students drinking alcohol, 30% considered binge drinkers, and 9% considered heavy drinkers (SAMHSA, 2018). Evidence also shows that males are more likely to partake in risky drinking behaviors (e.g., binge drinking or drinking to intoxication) and are at higher risk to be diagnosed with a alcohol use disorder when compared to women (Iwamoto et al. 2014; Grant et al., 2004). Recent findings suggest that adherence to particular masculine norms as a risk factor for problematic alcohol use among men (Mahalik, 2000; Lemle & Mishkind, 1989; Peralta, 2007; Iwamoto et al., 2011; Liu & Iwamoto, 2007; Locke & Mahalik, 2005; Radimer & Rowan-Kenyon, 2019), and that drinking in itself may be seen as masculine. The purpose of the present study was to investigate the ways gender threat and perceived loss of manhood, can influence drinking behavior. Using an online cue-reactivity task, the interaction of gender and gender threat in the prediction of alcohol motivation and expectancies was assessed in a college sample. Results indicated that while men were significantly more likely to approach alcohol when compared to women there was no effect of gender threat on alcohol motivations. Furthermore, women who were threatened were less likely to have positive expectancies towards alcohol when compared to women who were not threatened. Lastly, no interaction of gender and gender threat was found on measures of anxiety. Surprisingly, both men and women who were threatened responded similarly on all measures of anxiety except for one. These findings highlight the need for further studies to investigate the role of gender threat on alcohol motivation and expectancies within a male and female sample.

Chapter 1: Introduction

Despite negative consequences associated with the use, including damage to self, to others, and societal costs, alcohol continues to be the most misused substance on college campuses (Perkins, 2002). It is estimated that among college aged individuals approximately 55% consume alcohol, 35% are binge drinkers, and 9% are heavy drinkers (SAMHSA, 2018). Furthermore, male students are more likely than their female counterparts to be binge and heavy drinkers (SAMHSA, 2018). Not only do college men drink more, they are also more likely to engage in other health-compromising behaviors (e.g., drinking to intoxication) when compared to women (Iwamoto et al. 2014). Grant et al. (2004) found that men between the ages of 18 – 25 are twice as likely to suffer from alcohol use disorder (AUD) when compared to women. Interestingly however, the rates in current drinking between males and females are quite similar (60.8% vs. 58.2%) (SAMHSA, 2018). Together, these findings highlight the importance of investigating and elucidating the processes that underlie why men drink in more heavily and destructive ways when compared to women.

Gender differences in drinking has received considerable attention by researchers, often investigating an array of contributory factors including physiological, historical, psychological, and social influences. Beyond the difference in the ways in which men and women metabolize alcohol, research has begun to identify both psychological and social factors that may contribute to variability in drinking rates (Holmila & Raitasalo, 2005). For example, differences in motivations to use suggest that men when compared to women externalize their alcohol use (e.g., will drink in binge behavior, become funnier/wittier, and get closer with someone of the opposite

sex), whereas woman have a more internal mechanism towards drinking behavior (e.g., feel more optimistic about life and express their feelings better) (Holmila & Raitasalo, 2005). This external motivation likely increases awareness of one's outward appearance resulting in greater social influence on drinking behaviors. Therefore, investigating how gender norms, social status, and the construct of masculinity may elucidate why men drink more than women.

A growing area of research investigates whether masculine norms, and the adherence to these norms, could be a risk factor for more destructive drinking behaviors (Iwamoto et al., 2014; de Visser & Smith, 2007). It is posited that masculine norms within the U.S. often view drinking as a symbol of manliness or even an expectation of male behavior (Lemle & Mishkind, 1989; Mullen et al., 2007). Yet the construct of manhood has been shown to be tenuous in both evolutionary and social science literature, in which men can find themselves needing to constantly reaffirm to themselves and others that they are men. This precarious state of manhood and the constant threat of needing to reaffirm one's "manliness" may drive some men to prove themselves with sometimes harmful demonstrations of masculinity (i.e. drinking and aggression) (Vandello et al., 2008). Under the Precarious Manhood Theory manhood is viewed as less stable when compared to womanhood, since womanhood is based in biological changes and does not need reaffirmation (Vandello et al., 2008). This study seeks to replicate findings from previous studies investigating the precarious manhood theory in that men will respond differently to negative feedback when compared to women. Furthermore, expanding upon previous literature, the present study seeks to investigate the ways in which threatening one's gender identity may increase men's motivation to drink behavior when compared to women (i.e., craving, positive expectancies).

Gender Role Norms Model and Drinking Behavior

Gender role norms are rules and standards that guide and constrain masculine and feminine behavior. As a result of these norms, individuals learn what is expected of them in their social interactions and how to live their gendered lives (Mahalik et al., 2003). According to the Gender Role Norms model (Mahalik, 2000), gender role expectations and how these expectations are communicated are influenced by a multitude of factors. First, sociocultural influences by the dominant or powerful groups in a society shape the gender role expectations and standards. Second, these gender role norms are expressed/communicated through descriptive, injunctive, and cohesive norms. Third, group and individual factors influence acceptance of these norms (i.e. sexual orientation, economic status). Fourth, a combination of these factors mentioned above, influence the decision to conform or not to these ideologies of masculinity. Within the U.S. Mahalik et al., 2003, found that there were 11 salient masculine norms: emotional control, risk taking, winning, self-reliance, playboy, pursuit of status, violence, dominance, primacy of work, power over women, and heterosexual presentation.

Growing literature has found that adherence to masculine norms has been associated with problematic alcohol use. For example, Lemle and Mishkind (1989) found that social drinking is often viewed as a symbol of manliness and that the ability to tolerate and consume large amounts of alcohol would affirm this perception. Peralta (2007) also found that alcohol use was a mechanism in which men could avoid stigmatization and conform to specific gender norms. Specific studies have also shown that distinct masculine norms have been positively associated with heavy alcohol use and alcohol-related problems (Iwamoto et al. 2011; Liu & Iwamoto, 2007; Locke & Mahalik, 2005). In a large study looking at roughly 1,400 undergraduate males, it was found that the masculine norms of risk taking, heterosexual presentation, power over

women, or playboy were significant predictors of alcohol consumption (Radimer & Rowan-Kenyon, 2019).

Within the Radimer and Rowan-Kenyon study, it was interesting to find that men used alcohol as a way to show dominance over women and eschew feministic ideologies and traits. Vandello and Bosson (2013), mention this as an avoidance of femininity, in which men define their manhood by opposing activities that may be seen as feminine for fear of their masculinity being questioned. Indeed, Bosson et al. (2005) found that men feared being misclassified as homosexual, and had higher levels of self-consciousness discomfort, than women, when imagining to perform tasks associated with the opposite sex. Furthermore, research by Rudman and Fairchild (2004) found that if men act in a way that is considered atypical from their gender ideologies, they are likely to receive backlash, and will conform to gender norms as a means to mitigate this response.

Research has continued to examine the ways in which alcohol use is linked to masculine ideologies. However, findings have also begun to show that manhood is not a stable trait and may need continuous reapproval by peers in the form of active displays of masculine behaviors. Even though the research above has discussed how alcohol is seen as masculine, little research has been conducted on how alcohol may be a mechanism as a means for men to regain their manhood if it is threatened. Further research is needed to help understand the possible causal relationship between gender threat and alcohol consumption.

Social Status and Precarious Manhood Hypothesis

Insight into the ways in how societies come to the conclusions of what is considered gender specific and help identify specific driving forces that may explain behaviors of particular sexes, can be drawn from both the evolutionary and social psychology literatures. Within the

evolutionary field, it is posited that specific gendered behavior can be traced to primary sex differences (e.g., men being larger than women so men took on the role of protector/fighter) (Eagly & Wood, 1999). Furthermore, it is theorized that these primary sexual differences espouse psychological differences between men and women and engender specific social roles that fill those sexual differences. For example, since men competed with other men for sexual access to women, men evolved with dispositions that favor violence, competition, and risk taking (Eagly & Wood, 1999). Evolutionary psychologists claim that many of the specific gendered behavior can be surmised by looking at Darwin's (1871) theory of mate selection: that finding a mate gives rise to competition between men and produces sexual selection pressures to satisfy these criteria.

In contrast to evolutionary perspectives, social psychologists theorize that many of the social roles and specific gendered behaviors are a culmination of individual, situational, and cultural conditions (Eagly & Wood, 1999; Deaux & LaFrance, 1998). Social Role Theory (SRT; Eagly 1987) posits that behaviors are driven by the roles that men and women play in society. SRT acknowledges the influences that biological factors may play in behaviors but specifically states that role norms are functionally more influential than biological sex (Range & Jenkins, 2010). Furthermore Eagly (1987) espoused that gender roles are culturally shared expectations and dictates what is considered appropriate qualities and behaviors by their identified gender. Adherence to specific descriptive and injunctive gender norms as a means to maintain social status amongst peers has been shown to increase the risk of drinking behavior and drinking related consequences (Borsari & Carey, 2001). Peers, through their own actions, may provide information about what is considered appropriate in a given social context, and therefore what behaviors are likely to lead to social acceptance and reinforcement (Borsari & Carey, 2001).

Furthermore, modeling after one's peers about what is considered appropriate behavior allows individuals to understand their place in the social hierarchy or how they need to act to get approval from others (Ham & Hope, 2003).

Interestingly, within both males and females, adherence to more masculine norms predicted an increase in drinking behavior, but it was also seen as a protective factor for women in terms of social consequences (e.g., less likely to have problems at work/school, problems with dating, having sexual regret, or having problems with friends) (Clinkinbeard & Barnum, 2017). Peralta (2007) states that males may use drinking as a means to show their masculinity and heterosexuality among other men whereas women may use drinking as a way to eschew negative connotations of femininity (e.g., being wimpy, girly, weak) and "drink like the guys". This highlights the importance of how drinking may be seen as confirming masculinity and how both males and females may use alcohol as a way to maintain social status among each other (Clinkinbeard & Barnum, 2017; Peralta, 2007; Young et al. 2005). Also, being aware of the influence of these injunctive norms by peers (e.g. perceptions of others' approval of drinking) may help explain differences in drinking between men and women and how alcohol can be used to maintain social status among peers. Indeed, men who are seen as more dominate in the social hierarchy respond to social stress more intensely (e.g. higher cortisol levels) than males who are seen as more subordinate (Hellhammer et al. 1997), suggesting that more dominate men are more aware of their placement within the social hierarchy and potential threats that may change their perceived status.

Both of these theoretical frameworks highlight the importance of considering distal (e.g. evolutionary) and proximal (e.g. biological, social) forces that shape engendered behavior. The pairing of these two theories can be evidenced in Vandello et al.'s (2008) theory of Precarious

Manhood, which underscores that manhood in itself is not inherently less stable than womanhood, but inhabitants of many cultures perceive it as such. According to Vandello et al. (2008), manhood, when compared to womanhood, is in a constant state of flux, and can be easily lost. It is posited that womanhood is gained through a series of physical and biological processes that confirms its statehood, whereas manhood requires social proof. According to the precarious manhood hypothesis it states that "manhood, relative to womanhood, is widely conceptualized as a social status that is hard to earn and easy to lose and that requires continual validation in the form of public action" (Bosson, Vandello, & Buckner, 2018, p. 139). This constitutes the three basic tenets within the hypothesis: manhood is widely viewed as an elusive achieved status, that must be earned; once manhood has been achieved it can be lost or taken away; and manhood is confirmed primarily by others and requires public demonstration of proof. Due to this precariousness of manhood, it is posited that men find themselves in a state of anxiety and stress in regard to maintaining their gender status (Vandello & Bosson, 2013). For example, a series of studies by Vandello and Bosson (2008) have given evidence that these tenants are in fact measurable in a lab setting and allow for the study of applying the precarious manhood hypothesis in a multitude of ways. It not only allows for the examination of anxiety that men may be feeling when they are emasculated, but it also allows for consideration in how men may try and regain the manhood that is considered lost.

Aggressive actions and risk taking behaviors are posited as one means by which men may try to regain their manhood following a gender threat (Vandello & Bosson, 2013). For example, Bosson and colleagues (2009) found that men who went through a gender-threatening task of braiding hair, were twice as likely than men who did not go through the threat task to choose a masculine punching task over a gender-neutral puzzle. In a follow up to this study it was found

that men in the threatening task, who chose to hit the bag, hit it at a greater force than men who were not threatened. In terms of risk taking, Weaver et al. (2013) found that men who participated in a gender threat task, were more likely to take greater financial risks and to favor immediate fiscal rewards, suggesting that risk-taking helps to reestablish their manhood status.

Vandello and Bosson (2013) posit that ideal markers of manhood should be verifiable behaviors that are hard to fake and involve some level of risk taking to prove the genuineness of this masculine behavior. This may explain why individuals will choose physical aggression and risky betting strategies since these actions are not easily faked, the risks are higher, and the actions are public. However, physical aggression and betting in risky gambling situations may not always be appropriate or achievable acts and research conducted by Iwamoto et al. (2011) found that those who prescribe to aggressive and risk-taking norms are more likely to engage in problematic drinking which may be seen as more appropriate. Drinking alcohol, which can be both risky and is hard to fake, is viewed as an appropriate social activity and may be an avenue that men are motivated to choose to regain their manhood status.

Motivation and Expectancies of Alcohol to Regain Manhood

The motivational model by Cox and Klinger (1988) posits that individuals choose to drink or not drink based on the anticipated affective changes that alcohol will cause. These decisions are a combination of weighing out positive or negative outcomes that may come with drinking behavior. Many researchers have found that college students will hold positive anticipations that alcohol will make them more social and assertive, particularly among male students (Martin & Hoffman, 1993; O'Hare, 1990; Lewis & O'Neill, 2000; Thombs 1993). In the instance of manhood and drinking, the incentive to drink to regain lost gender and social status may outweigh the negative consequences of drinking (i.e. hangovers or missing work) or turn

negative consequences of drinking into positive experiences (e.g., being able to tell drunken stories to friends). As previous literature has suggested, alcohol is a tool that men can use to not only confirm ones manhood, but also a catalyst for regaining it. Pairing the positive outcomes of maintaining or regaining manhood, with alcohol use, can create expectancies towards alcohol use, increasing the likelihood of drinking behaviors in the future.

Alcohol expectancies, or the anticipated effects of alcohol on cognitive, behavioral, and affective states (Jones et al., 2001; Iwamoto et al., 2014; Goldman, 1994), represent an important motivational pathway to the decision to drink. In fact, positive alcohol expectancies (e.g., feel courageous, calm, sociable, better lover) have been shown to predict drinking behaviors (Brown, 1985; Martin & Hoffman, 1993; Reis & Riley, 2000), drinking problems (Christiansen, Goldman, & Inn, 1982; Pedersen, Myers, Browne, & Norman, 2015), as well as the perception of positive social experiences in college students (Darkes & Goldman, 1998; Benitez & Goldman, 2019). These expectancies of alcohol also map on to many of the masculine norms that were posited by Mahalik et al. (2003). For example, drinking to excess will make men feel like they are taking more risks, be seen as more dominant or aggressive, and show evidence of heterosexuality to others (Peralta, 2007; Vaughan et al., 2014, Iwamoto et al., 2014). Therefore, strengthening the learned associations between alcohol and regaining social and manhood status.

Interestingly, one of the most studied motivational pathways for alcohol use with potential relevance to the current study involves the role of alcohol in "reducing tension and stress." Vandello and Bosson (2013) posit that the tenuous state of manhood cause men to be in a consistent state of anxiety and stress. In a study conducted by Vandello and colleagues (2008), men who were emasculated via agender threatening feedback exhibited greater anxiety as measured by a free associate task (i.e., responded with more anxiety related words) when

compared to men not threatened and women who were threatened. Empirical evidence also suggests that alcohol consumption may be more negatively reinforcing for men in stressful situations than for women, indicating a unique coping mechanism (Cooper et al., 1992).

Recently, the precarious manhood hypothesis has been applied to the study of alcohol use behaviors by Fugitt and Ham (2018). In this seminal work, they found that men who went through a gender threat task drank significantly more alcohol than men not threatened. Furthermore, this same study either undermined masculine alcohol norms (e.g., told participants that women drink as much as men, that alcohol us is no longer being a "guy thing") or maintained such norms (e.g., talked to participants about their academic goals and did not expose them to any messages that undermined male norms). Results indicated that those who received feedback that rejected masculine norms drank less alcohol than the confirmed group. The results of this study suggest that men may use alcohol as a means to regain or reinstate their social status or manhood, particularly when alcohol is viewed as a masculine behavior. However, a limitation to this study is that it only included men in the analyses and so a question remains: is alcohol a specific way in which men may try to regain manhood and does this look differently when compared to women. Further research is needed to investigate how gender threat influences drinking motives between men and women.

Proposed Study

Although association between masculine norms and drinking is well established, few studies have looked at the relationship between gender threat on drinking motives. One such mechanism may be alcohol's role in establishing social status or restoring the precarious nature of manhood. Several studies have now examined the ways in which men tried to regain manhood once emasculated, often through the use of socially inappropriate means (e.g., displays of

aggression). However, to date, no study has looked at gender threat within both males and females, and how this negative feedback may drive drinking motivation (i.e., cravings). Furthermore, no study has looked at the associations of alcohol expectancies (i.e., anticipated effects) once gender has been threatened to investigate how both men and women view alcohol. Understanding the relationship between gender threat and alcohol expectancies allows for the investigation of if alcohol is seen as restorative between men and women. Using experimental methods, the current study investigated the role that gender threat had on drinking desires and motives, as well as investigated the tenants of the precarious manhood hypothesis.

Aims and Hypotheses

Aim 1: **Testing the Precarious Manhood Theory: to extend and confirm that manhood is less stable than womanhood when gender is threatened.**

Hypothesis 1: Men would report significantly higher anxiety than women when threatened.

Aim 2**: Extension of the Precarious Manhood Theory: to investigate the effects of gender threat on drinking motivation.**

Hypothesis 2a: Men who are emasculated would show more approach inclinations towards alcohol than women who are threatened and men/women who are not threatened.

Hypothesis 2b: Men who are emasculated would show greater positive expectancies towards alcohol than women who are threatened and men/women who are not threatened.

Aim 3: **Extension of the Precarious Manhood Theory: to investigate the different responses of gender threat between men and women.**

Hypothesis 3: Men who are emasculated would show more positive and restorative (i.e., stronger, manlier, braver) free associations towards drinking than women who are threatened and men/women who are not threatened.

***Secondary Aim*: Investigate individual difference factors in adherence to masculine norms and those effects on drinking behavior.**

Hypothesis 4: That men and women who adhere to more normative masculine roles would report higher levels of anxiety and approach inclinations than men and women who do not, when their gender is threatened.

Power Analysis. A power analysis for the primary aims was conducted using G*Power 3.1. Based on the previous study examining the effect of emasculation on drinking behaviors (e.g., Fugitt & Ham, 2018), we expected a large effect. As such 52 participants would be required to detect a significant large effect across two groups at an alpha level of .05 with .80 power. For aim 2, testing the gender threat task (Gender Threat versus No Threat) X Gender (Male versus Female), it was found that 90 participants were needed to find a small interaction effect across 2 groups, at an alpha level of .05 with .80 power. To find a medium interaction effect within study aim 2, 34 participants were needed at an alpha of .05 with .80 power. It was proposed that 60 participants be used within aim 2 of this study. Thus, the proposed N=120 (40 participants per condition; 80 in each analysis) was deemed sufficient to detect a significant small-medium effect.

Chapter 2: Method

Participants

Undergraduate students (n=120) enrolled at the University of South Florida were recruited from the psychology research pool (SONA Systems). Inclusion criteria were a) identified as heterosexual, b) were 18 years old or older, c) had at least one drink in the past 30 days, d) English speaking, and e) were current undergraduates at USF. All participants were asked to meet online via Microsoft Teams due to Covid-19 with their cameras turned on. One participant was dropped from the analyses due to incomplete data, making the total enrollment in the study 119.

Participants were 50.4% female with a mean age of 20.7 years (SD = 4.55), 72.3% were White, 3.4% were Black/African American, 3.4% were Asian or Asian/American, .8% were Native Hawaiian/Pacific Islander, and 15.2% selected other or more than one race. The majority of participants were single (72.3%), of Freshman or Sophomore college standing (62.2%), and living in student housing (55.5%). Most participants were either unemployed or a full-time student (53.8%) and had a Household Income of $0-$20,000 (85.7%). In terms of drinking behaviors, most participants drank mixed drinks (47.9%), 2 - 3 times a month (36.1%), drank 2 – 3 drinks per drinking occasion (53.8%), and reported being drunk less than once a month or never (41.2%) (see Table 7 and Table 8 for summary of participant demographics and drinking behaviors).

Measures

Demographics. Demographic information including gender, age, race, ethnicity, employment status, income, education/year in school, residential status, and affiliation with a fraternity or sorority was collected using a self-report questionnaire.

DHQ. The Drinking History Questionnaire is a 10-item self-report measure that assesses an individual's quantity and frequency of current and past alcohol use and their subjective experiences and beliefs related to their own use. This questionnaire was used to categorize general drinking behavior.

CMNI-46. The Conformity to Masculine Norms Inventory – 46 item (Parent & Moradi, 2009) is a brief version of the original CMNI which consisted of 94 items. The CMNI-46 is comprised of nine subscales: Emotional Control, Winning, Playboy, Violence, Self-Reliance, Risk-Taking, Power Over Women, Primacy of work, and Heterosexual Self-Presentation. Items are scored on a 4-point Likert scale ranging from 1 (strongly disagree, to 4 (strongly agree), with higher scores indicating greater conformity to masculine norms.

MCSDS. The Marlowe–Crowne Social Desirability Scale (MCSDS; Crowne & Marlowe, 1960) is a 33 true false self-report measure, which assesses the tendency to provide socially desirable responses. The MCSDS was used to characterize participant motivation to receive positive feedback on masculinity scores and drinking behavior.

B-FNES. Brief Fear of Negative Evaluation Scale (B-FNES; Leary, 1983) is a 12 item self-report scale used to measure social anxiety on a 5-point Likert scale ranging from 1 (not at all characteristic of me) to 5 (extremely characteristic of me). The B-FNES was used to help characterize participants likelihood to respond to negative feedback (gender threat).

PDS. The Public Discomfort Scale was created to assess how comfortable men would be with sharing their scores on how well they performed on a measure of masculinity (PDS; Dahl, Vescio, & Weaver, 2015). The PDS uses a 7-point Likert scale ranging from 1 (not at all) to 7 (a lot) and assess eight different emotions about scores being made public: anxiety, nervous, defensive, depressed, calm, joyful, happy, and confident. High numbers indicate greater public discomfort. The PDS was used to confirm the manipulation worked.

PANAS (state-based affect). The Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) is a brief 20-item self-report measure that assesses positive and negative affect. Each item is rated on a 5-point Likert scale ranging from 1 (very slightly or not at all) to 5 (extremely) indicating the extent to which the respondent has experienced different feelings and emotions since the last prompt. The PANAS was used to look at the relationship between negative affect and gender threat.

Word Completion Task. Vandello, Bosson et al. (2008) created a 24- item word completion task to measure the extent to which words related to anxiety and threat were cognitively accessible. Only 7 of these word completion sentences could be completed with either anxiety-related words or anxiety-unrelated words: THREA_ (threat), STRE_ _ (Stress), _ _ SET (upset), _ OTHER (bother), SHA_E (shame), _EAK (weak), and LO_ER (loser). This scale was used to capture anxiety levels after being exposed to a threatened or non-threatened feedback session.

SUDS. Subjective Units of Discomfort Scale (SUDS; Wolpe & Lazarus, 1966) is a measure that has been developed to assess anxiety to specific stimuli. The SUDS was used to help measure levels of distress after the gender threat task.

SASM. The Social Anxiety State Measure (SASM; Kashdan & Steger, 2006) is a 4 item self-report scale used to measure social anxiety on a 5-point Likert scale ranging from 1 (very slightly or not at all) to 5 (extremely). The SASM was used to help measure levels of anxiety after the gender threat task.

Cue-reactivity. Approach and Avoidance inclinations were measured using a cue reactivity paradigm. Following each cue, participants answered "How much do you want to consume the item right now?" to assess approach inclinations and "How much do you want to avoid consuming the item right now?" to assess avoidance inclinations. Responses range from 0 ("Not at all") to 8 ("Very much"). Each cue had a separate page for the rating scale. The order of approach and avoidance rating scales was randomized across slides. Similar methods have been used to assess approach and avoidance in young adult samples (Curtin et al., 2005; Stritzke et al., 2004). Approach ratings were used as the primary outcome when examining the impact of gender threat on alcohol motivation. See procedure section for more details on the cue-reactivity paradigm.

Free Associates. A Free Associates task was used to assess alcohol expectancies. Participants were provided with the prompt "Alcohol makes me _____" and were asked to write up to 5 responses to the prompt. Participants then rated each of their responses on valence (pleasantness) and arousal on a scale of 1-7. Higher values are indicative of more pleasantness and arousal while low values are indicative of unpleasantness and sedation. This method has been used to assess alcohol expectancies in numerous populations including college students (Reich & Goldman, 2005). Responses from the Free Associates task are posited to represent an individual's most readily activated expectancies in their memory network (Nelson, Mcevoy, &

Dennis, 2000). This measure was used as an additional motivational outcome for alcohol, as well as to examine if alcohol was indeed viewed as gender re-affirming (i.e., descriptors used).

Gender Threat Task. A gender threat task was used to manipulate conditions across the participants to create four groups (men who received threatening feedback, women who received threatening feedback, men who did not receive threatening feedback, and women who did not receive threatening feedback). The task included 32 multiple choice items that measured knowledge about stereotypically masculine and feminine topics (Vandello et al., 2008). After participants completed the gender threat task, feedback was provided about their scores. Half of the participants received nonthreatening feedback and the other half received threatening feedback.

Procedure

Initial assessment. Eligible participants were recruited for the study through SONA. Participants viewing studies listed on SONA saw a brief description of the study. Participants clicked on a link to a full description of the study, including estimated time, points (class credit) awarded, and eligibility requirements. Once participants signed up for the study, they were sent an online Microsoft Teams meeting link to meet with research staff.

Study Procedure. This study is a 2 (male versus female) x 2 (gender threat versus no gender threat) design. At the beginning of the study, participants were asked to reconfirm the inclusion criteria for participation and then were asked to fill out self-report measures about their demographics, drinking behaviors, and adherence to masculine norms. Participants were then randomly assigned to either receive threatening feedback about their performance on a gender identity questionnaire (that men answered in the average range of other females or women answered in the average range of other males) or non-threatening feedback (that men answered

in the average range of other males or women answered in the average range of other females). Following feedback, participants in all conditions were asked to complete assessments related to anxiety (PANAS, PDS, Word Completion, SUDS, SASM). Next, participants rated their approach and avoidance to 30 images of alcoholic (n = 18, 6 slides for beer, wine, and liquor [3 mixed and 3 straight liquor]) and nonalcoholic (n = 12) beverages. These slides were taken from the Normative Appetitive Picture System (SNAPS; Stritzke et al., 2004), which has been standardized in adolescent and young adult samples (Curtin et al., 2005; Stritzke et al., 2004). For each trial a preparatory screen was presented for 4 seconds, followed by the substance image for 6 seconds. Participants then provided both their approach and avoidance ratings. After providing ratings, participants received a 10 second break prior to the presentation of the next image.

Following the cue reactivity task, participants completed the free associates task. Specifically, all participants received the prompt "Fill in the blank with the first word that you think of. Alcohol makes me ____". Participants were then asked to write up to five free associates related to alcohol and rate each of the associates on their pleasantness, arousal, masculinity, and femineity. After the free associates task, participants were debriefed about the study and told that their gender identity scores were randomized and not a true reflection of how they answered the questionnaire, and were provided an opportunity to ask questions. Participants received class credit for their participation (30 minutes = 1 point), which was awarded to them through SONA.

Data Analysis

Preliminary Analyses. Prior to analyses, all variables were examined for outliers and violations of normality. Outliers with values outside of the median ± two interquartile ranges (IQRs) were reined in and replaced with the value of the median ± two IQRs.

Aim 1. To examine the tenants of precarious manhood, specifically reactivity to negative feedback. We predicted that men who were gender threatened would have higher anxiety scores when compared to women who were threatened and men and women who were not threatened (Hypothesis 1). To examine this aim, 2 (Male vs. Female) X 2 (Gender Threat vs. No Threat) Factorial ANOVAs were conducted to analyze group differences in anxiety scores after the gender threat task. Specifically, we examined differences on measures of negative affect, negative word completion, subjective units of distress, public discomfort, and social anxiety.

Aim 2. To investigate the effects of gender threat on drinking motivation. There were two main hypotheses to test this aim. First, it was predicted that men who were gender threatened would rate higher approach inclinations towards alcohol cues than men and women who were not threatened (Hypothesis 2). Secondly, it was predicted that men who were emasculated would show more positive expectancies towards drinking than women who were threatened and men/women who were not threatened (Hypothesis 2b). To examine this aim, 2 (Male vs. Female) X 2 (Gender Threat vs. No Threat) Factorial ANOVAs were conducted to analyze group differences in approach inclinations and free associate valence scores. For approach inclinations, total scores were computed across the 18 alcohol cues. The free associates were quantified by applying two scoring metrics in tandem. First, each associate was assigned a Smith's *S* index (Smith, 1993; Sutrop, 2001; Thompson & Juan, 2006), which created a salience score. The salience score allowed for statistical weight to be given to associates that were provided earlier in

the list of associates that were provided, as research has shown that the order of retrieval reflects the immediacy of the associate (Nelson, McEvoy, & Dennis, 2000). To obtain the salience score, the total number of associates were summed and then subtracted by the rank of the associate, adding one, and then dividing by the total number of associates that were given. Once the salience score was calculated, each associate was given a valence rating. These ratings were obtained from a 5 year longitudinal study of roughly 600 college students and young adults (see Reich et al., 2015). Because most of the associates given in this current study matched those given in the earlier study, we applied the previous mean valence ratings to the expectancy associates solicited in this study. Lastly, a composite score that represented both valence and saliency was generated by multiplying the two indices and dividing by 5 to get an average s_valence total score. Participants who gave less than 5 associates were dropped for these analyses. Previous studies have shown that higher s_valence scores have been associated with actual drinking behavior and can be used as a measure of motivation to use alcohol (Benitez & Goldman, 2019).

Aim 3. To investigate the different responses of gender threat between men and women. It was predicted that men who had their gender threatened would show more positive and restorative free associations towards drinking than women who were threatened and men/women who were not threatened (Hypothesis 3). To examine this aim, 2 (Male vs. Female) X 2 (Gender Threat vs. No Threat) Factorial ANOVA were conducted to analyze group differences in ratings of masculinity and femininity of free associations given towards alcohol. Specifically, these masculinity and femininity ratings were quantified by creating three total scores: feminine average scores, masculine average scores, and an identity average score. First, following similar methods to the free associate scores, each masculine and feminine rating was given a Smith's *S*

index salience score to weight the order in which the associate was given. Once the salience score was created it was multiplied by the femininity and masculinity ratings that was given for each associate. Once weighted, all feminine and masculine ratings were averaged creating the first two variables. To test within subject rating, an identity average variable was created by computing difference scores for each associate by subtracting feminine ratings by masculine rating. This was done to give either a negative score, which would indicate that the individual found their associate to be more feminine, or positive score, which would indicate that they found this associate more masculine. These difference scores were then summed across all five associates and then averaged. Participants who gave less than 5 associates, and subsequent masculine and feminine ratings, were dropped for these analyses as the structure of the data required all responses to be complete.

Secondary Aim. To investigate individual difference factors in adherence to masculine norms and those effects on approach inclinations towards alcohol cues. It was predicted that men and women who adhered to more normative masculine roles, would approach more alcohol cues, and have higher levels of anxiety than men and women who do not, when their gender was threatened (Hypothesis 4). To examine this aim, multiple linear regressions were conducted analyzing ratings of adherence to masculine norms and the total approach of alcohol cues and anxiety scores when their gender was threatened.

Table 1: Summary of Participant Demographics (n=119)

Variable	Frequency (Percent)
Sex/Gender	
Female	60 (50.4%)
Male	59 (49.6%)
Age, Mean (SD)	20.7 (4.55)
Race	
White	86 (72.3%)
Black/African American	4 (3.4%)
Asian or Asian/American	10 (8.4%)
Native Hawaiian or Pacific Islander	1 (.8%)
Multiracial	14 (11.8%)
Other or Unknown	4 (3.4%)
Ethnicity	
Non-Hispanic	89 (74.8%)
Hispanic	30 (25.2%)
College Standing	
Freshman	52 (43.7%)
Sophomore	22 (18.5%)
Junior	26 (21.8%)
Senior	19 (16.0%)
Member of Fraternity or Sorority	9 (7.6%)
Residence	
Campus Residence Hall/Dorm	51 (42.9%)
Fraternity/Sorority House	1 (0.8%)
Off-Campus, Student Housing	14 (11.8%)
Off-Campus, Apartment/House	52 (43.7%)
Other	1 (0.8%)
Income	
0 to $20,000	102 (85.7%)
$20,101 to $40,000	9 (7.6%)
$40,001 to $60,000	3 (2.5%)
$60,001 to $80,000	5 (4.2%)
Religious Affiliation	
Christian	46 (38.7%)
Catholic	21 (17.6%)
Jewish	5 (4.2%)
Hindu	3 (2.5%)
Buddhist	2 (1.7%)
Muslim/Islam	2 (1.7%)
Agnostic	16 (13.4%)
Atheist	6 (5.0%)
Non-Religious/Secular	17 (14.3%)
Other (Please Specify)	1 (0.8%)

Table 2: Summary of Drinking Behaviors (n=119)

Variable	Frequency (Percent)
Alcohol Type	
Beer	28 (23.5)
Wine	18 (15.1)
Mixed Drinks (Hard liquor/nonalch mix)	57 (47.9)
Straight Drinks (hard liquor alone)	9 (7.6)
Other	7 (5.9)
Frequency of Consumption	
Once a month	24 (20.2)
2/3 times a month	43 (36.1)
Once a week	28 (23.5)
Twice a week	18 (15.1)
3 or 4 times a week	5 (4.2)
5 or 6 times a week	1 (.8)
Average Drinks Per Occasion	
Less than one whole drink	3 (2.5)
One Drink	9 (7.6)
2 Drinks	35 (29.4)
3 Drinks	29 (24.2)
4 Drinks	14 (11.8)
5 Drinks	12 (10.1)
6 Drinks	11 (9.2)
7-9 Drinks	5 (4.2)
10-12 Drinks	1 (.8)
How Often Do You Get Drunk	
Less than once a month/never	49 (41.2)
Once a month	28 (23.5)
2x a month	9 (7.6)
3 x a month	10 (8.4)
1 x a week	15 (12.6)
2 x a week	8 (6.7)
Drinks Needed to Get Drunk	
Never been Drunk	10 (8.4)
2 drinks	12 (10.1)
3 drinks	16 (13.4)
4 drinks	35 (29.4)
5 drinks	20 (16.8)
6 drinks	11 (9.2)
7 – 9 drinks	9 (7.6)
10 – 12 drinks	6 (5)

Chapter 3: Results

Primary Aim - Aim 1 - Manipulation Check

It was hypothesized that men who had their gender threatened would have higher anxiety scores when compared to women who had their gender threatened and men and women who did not have their gender threatened. Results did not support our hypothesis, as there were no significant Gender X Gender Threat interactions across a variety of distress/anxiety measures. In contrast, significant main effects of gender threat were found, such that those who were gender threatened reported significantly more distress/anxiety when compared to those who were not threatened on all manipulation measures except for one – the Word-Completion Task. Men and women who had their gender threatened showed higher public distress ($F(1,115) = 26.08$, $p = <.001$), Negative Affect ($F(1,115) = 13.52$, $p = <.001$), Social Anxiety ($F(1,115) = 7.08$, $p = <.01$), and General Distress ($F(1,115) = 24.79$, $p = <.001$). This suggests that both men and women respond in similar ways when their gender identity is threatened (See Table 1 and Figure 1 for summary of results).

Primary Aim - Aim 2

2a. It was hypothesized that men who are gender threatened will show more approach inclinations towards alcohol cues than women who are threatened and men and women who are not threatened. In contrast to our hypothesis, results indicated that the Gender X Gender Threat interaction was non-significant [$F(1, 115) = 1.462$, $p = .229$] (see Table 2 and Figure 2 for summary of results). Further examination did reveal a significant main effect of gender ($F(1,115)$

= 4.254, p = .041), such that men (M = 68.19, SD = 27.56) reported significantly higher approach inclinations when compared to women (M = 57.40, SD = 29.25). There was no main effect of gender threat [F(1,115) = .336, p = .563].

2b. It was hypothesized that men who were threatened would show more positive expectancies towards drinking than women who were threatened and men and women who were not threatened. Results indicated there was a significant Gender X Gender Threat interaction on positive expectancies [F (1,106) = 4.69, p = .032] (see Table 2 and Figure 2 bottom panel for summary of results). To examine this interaction, pairwise comparisons were conducted. Results indicated no difference between men that were threatened (M = 2.80, SD = .83) when compared to men not threatened [M = 2.68, SD = .80; F (1,106) = .555, p = .458]. Furthermore, there were no differences between men who were threatened, and women were threatened [M = 2.53, SD = .80; F (1,106) = 3.25, p = .074], or women who were not threatened [M = 2.89, SD = .83; F (1,106) = 1.62, p =.206]. In contrast to our hypothesis, women who were threatened reported significantly lower positive expectancies (M = 2.53, SD = .80) when compared to women who were not threatened [M = 2.89, SD = .83; F (1,106) = 5.60, p = .02].

Primary Aim – Aim 3

It was hypothesized that men who had their gender threatened would rate their free associations of alcohol higher in masculinity than women who are threatened and men/women who are not threatened. In contrast to our hypothesis, results indicated that the Gender X Gender Threat interaction was non-significant [F(1, 108) = .019, p = .892] (see Table 3 and Figure 3 for summary of results). Further examination found that there was a significant main effect of gender [F(1, 108) = 18.10, p = <.001], such that men (M = 31.45, SD = 12.68) rated their free associates significantly higher in masculinity compared to women (M = 21.32, SD = 12.47) and

that women (M = 34.28, SD = 12.54) rated their free associates significantly higher in femininity compared to men (M 26.38, SD = 12.55). There was no main effect of gender threat [F (1, 108) = .873, p = .352].

To examine the within subject ratings of each associate that was given, results indicated that the Gender X Gender Threat interaction was non-significant [F(1, 108) = .93, p = .338] (see Table 4 and Figure 4 for summary of results). Further examination found that there was a significant main effect of gender [F(1, 108) = 28.47, p = <.001], such that men (M = 7.76, SD = 25.52) were more likely to rate their own associates as masculine than feminine and that women (M = -20.94, SD = 28.50) were more likely to rate their own associates as feminine than masculine. Although the interaction was non-significant, examination of the means found that women had very similar mean difference scores across the threat vs non-threat condition (M = -19.20, SD = 33.85, M = -20.93, SD = 21.98, respectively) whereas men showed greater variability in average difference scores across threat vs non-threat condition (M = 13.39, SD = 31.52, M = 1.69, SD 15.31). To test the mean differences within men, a non-parametric independent-samples significance test was performed and it was found to be non-significant (U = 385.00, p = .377).

Secondary Aim

It was hypothesized that men and women who adhere to more normative masculine roles will report higher levels of anxiety and approach desires to drink than men and women who do not adhere to those norms, when their gender is threatened. First, results from multiple hierarchical linear regressions found that the Masculine Norms X Gender X Gender Threat interactions were nonsignificant for all the anxiety/distress manipulation checks (see Table 5 for summary of results). After removing the three-way interaction term, inspection of the Gender X

Gender Threat interaction while controlling for adherence to masculine norms indicate similar non-significant interactions as the previous analyses, with main effects of Gender Threat on public distress (b = 5.81, p = <.001, β = .489), negative affect (b = 2.82, p = .004, β = .366), social anxiety (b = 1.82, p = .004, β = .367), and general distress (b = 16.51, p = <.001, β = .397) emerging and Masculine Norms on public distress (b = .135, p = <.001, β = .292) and general distress (b = .398, p = .008, β = .247).

Next, analyses were replicated for alcohol motivation with adherence to masculine norms entered as an optional moderator. Hierarchical linear regressions found that the Masculine Norms X Gender X Gender Threat interaction was nonsignificant (see Table 6 for summary of results). After removing the three-way interaction term, inspection of the Gender X Gender Threat interaction while controlling for adherence to masculine norms indicated similar non-significant interactions as the previous analyses. Inspection of the model after removing the two-way interaction term found similar results in which there was only a significant main effect of Gender (b = 13.12, *p* = <.025, β = .229) on alcohol motivation.

Lastly, analyses were replicated for alcohol expectancies with adherence to masculine norms entered as an optional moderator. Hierarchical linear regressions found that the Masculine Norms X Gender X Gender Threat interaction was nonsignificant (see Table 6 for summary of results). After removing the three-way interaction term, inspection of the Gender X Gender Threat interaction while controlling for adherence to masculine norms indicated a similar significant interaction (b = .478, *p* = <.034, β = .351) as the previous analyses.

Table 3: Summary of Distress/Anxiety Results (Aim 1): Gender X Gender Threat Factorial ANOVAS

	Word Completion Task			Public Distress			Negative Affect			Social Anxiety			General Distress		
	F	*p*	η^2	*F*	*p*	η^2	*F*	*p*	η^2	*F*	*p*	η^2	*F*	*p*	η^2
Intercept	624.27	<.001	.844	301.18	<.001	.72	1312.51	<.001	.92	485.32	<.001	.81	52.12	<.001	.312
Gender	.632	.43	.005	.465	.50	.004	1.03	.313	.01	3.90	.051	.03	.022	.882	.000
Gender Threat	.050	.82	.000	**26.09**	**<.001**	**.185**	**13.52**	**<.001**	**.11**	**7.08**	**.009**	**.06**	**24.79**	**<.001**	**.177**
Gender X Gender Threat	.632	.43	.005	1.27	.262	.011	.508	.477	.00	2.83	.095	.02	.002	.965	.000

Note: *F* = F-value (ANOVA); *p* = p-value; η^2 = partial eta squared (effect size)

Table 4: Summary of Alcohol Motivation Results (Aim 2): Gender X Gender Threat Factorial ANOVAS

	Approach Inclinations (n=119)			Positive Expectancies (n=109)		
	F	*p*	η^2	*F*	*p*	η^2
Intercept	2.03	<. 001	.834	2418.24	<. 001	.258
Gender	**579.37**	**.041**	**.036**	.112	.799	.001
Gender Threat	4.25	.563	.003	1.18	.311	.010
Gender X Gender Threat	.336	.229	.013	**4.70**	**.032**	**.042**

Note: *F* = F-value (ANOVA); *p* = p-value; η^2 = partial eta squared (effect size)

Table 5: Summary of Masculinity and Femininity Ratings (Aim 3): Gender X Gender Threat Factorial ANOVAS

	Masculinity Ratings (n=112)			Femininity Ratings (n=112)		
	F	*p*	η^2	*F*	*p*	η^2
Intercept	486.72	<.001	.818	650.45	<.001	.858
Gender	**18.10**	**<.001**	**.144**	**10.96**	**.001**	**.092**
Gender Threat	.873	.352	.008	.270	.604	.002
Gender X Gender Threat	.019	.892	.000	1.30	.256	.012

Note: *F* = F-value (ANOVA); *p* = p-value; η^2 = partial eta squared (effect size)

Table 6: Summary of Identity Average: Gender X Gender Threat Factorial ANOVAS

	Identity Average (n=109)		
	F	*p*	η^2
Intercept	5.85	.017	.052
Gender	**28.47**	**<.001**	**.212**
Gender Threat	1.68	.20	.016
Gender X Gender Threat	.93	.338	.009

Note: *F* = F-value (ANOVA); *p* = p-value; η^2 = partial eta squared (effect size)

Table 7: Summary of Distress/Anxiety Results (Secondary Aim): Gender X Gender Threat X Masculine Norms Regressions

	Word Completion Task			Public Distress			Negative Affect			Social Anxiety			General Distress		
	b	*p*	β	*b*	*p*	β	*b*	*p*	β	*b*	*p*	β	*b*	*p*	β
Intercept	31.31	<.001		7.30	<.001		11.66	<.001		4.84	<.001		6.22	.046	
Gender	.594	.830	.022	**-2.19**	**.041**	**-.184**	-1.24	.097	-.160	-1.17	.017	-.237	-3.84	.311	-.092
Gender Threat	-.783	.755	-.029	4.83	<.001	.406	**2.39**	**<.001**	**.311**	1.12	.013	.225	**16.75**	**<.001**	**.403**
Masculine Norms	.126	.244	.120	.137	.001	.296	.050	.085	.167	.028	.141	.145	**.398**	**.008**	**.246**
Intercept	30.36	<.001		6.80	<.001		11.44	<.001		4.84	<.001		6.35	.077	
Gender	2.51	.507	.093	-1.17	.419	-.098	-.792	.436	-.103	-.447	.499	-.090	-4.09	.431	-.098
Gender Threat	1.07	.762	.040	**5.81**	**<.001**	**.489**	**2.82**	**.004**	**.366**	**1.82**	**.004**	**.367**	**16.51**	**<.001**	**.397**
Masculine Norms	.122	.259	.117	**.135**	**<.001**	**.292**	.049	.091	.164	.027	.158	.138	**.398**	**.008**	**.247**
Gender X Gender Threat	-3.73	.457	-.120	-1.98	.303	-.144	.-.866	.520	-.098	-1.42	.106	-.248	.482	.944	.010
Intercept	30.21	<.001		5.91	<.001		11.05	<.001		4.02	<.001		4.22	.295	
Gender	2.63	.524	.098	.51	.738	.052	-.501	.963	-.007	.363	.598	.073	.666	.903	.016
Gender Threat	.455	.911	.017	**6.94**	**<.001**	**.584**	**3.22**	**.003**	**.417**	**2.60**	**<.001**	**.524**	**18.52**	**<.001**	**.445**
Masculine Norms	.099	.691	.095	.007	.942	.014	-.007	.920	-.022	-.041	.326	-.213	.091	.783	.057
Gender X Gender Threat	-3.92	.487	-.126	**-4.80**	**.022**	**-.350**	-2.12	.156	-.239	**-2.76**	**.004**	**-4.83**	-7.71	.302	-.161
Gender X Masc_Norms	.030	.928	.021	-.028	.818	-.044	-.014	.869	-.035	.000	.997	.001	-.213	.625	-.095
Gender Threat X Masc_Norms	-.171	.613	-.119	.191	.125	.302	.058	.519	.140	**.146**	**.011**	**.553**	.279	.533	.126
Gender X Gender Threat X Masc_Norms	.305	.493	.162	.114	.485	.137	.097	.409	.180	-.042	.566	-.123	.833	.157	.287

Note: *b* = unstandardized coefficient; *p* = p-value; β = standardized coefficient

Table 8: Summary of Alcohol Motivation Results (Secondary Aim): Gender X Gender Threat X Masculine Norms Regression

	Approach Inclinations (n=119)			Positive Expectancies (n=109)		
	b	*p*	β	*b*	*p*	β
Intercept	57.59	<.001		2.76	<.001	
Gender	**13.12**	**.025**	**.229**	.061	.628	.052
Gender Threat	-2.67	.611	-.047	-.130	.253	-.111
Masculine Norms	-.211	.351	-.095	-.001	.779	-.030
Intercept	60.69	<.001		2.88	<.001	
Gender	6.84	.388	.119	-.194	.259	-.165
Gender Threat	-8.75	.238	-.153	**-.358**	**.022**	**-.305**
Masculine Norms	-.199	.377	-.089	-.001	.881	-.016
Gender X Gender Threat	12.22	.245	.185	**.478**	**.034**	**.351**
Intercept	61.09	<.001		2.84	<.001	
Gender	4.17	.629	.073	-.218	.245	-.186
Gender Threat	-9.88	.245	-.172	-.332	.066	-.284
Masculine Norms	-.142	.786	-.064	-.006	.591	-.131
Gender X Gender Threat	17.13	.147	.259	**.541**	**.033**	**.398**
Gender X Masc_Norms	.392	.570	.127	.018	.224	.279
Gender Threat X Masc_Norms	-.240	.734	-.078	.002	.904	.028
Gender X Gender Threat X Masc_Norms	-.460	.619	-.115	-.019	.336	-.233

Note: *b* = unstandardized coefficient; *p* = p-value; β = standardized coefficient

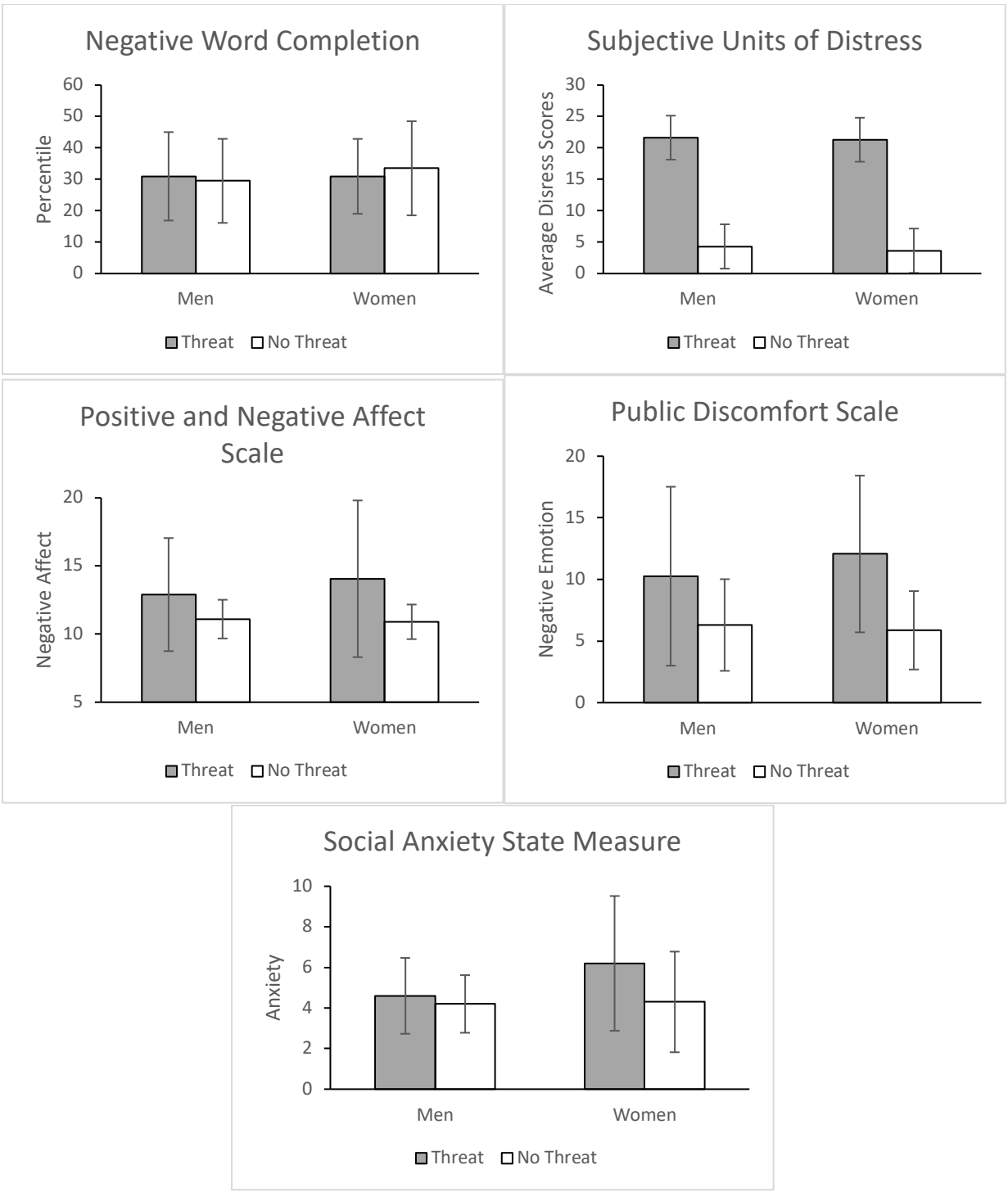
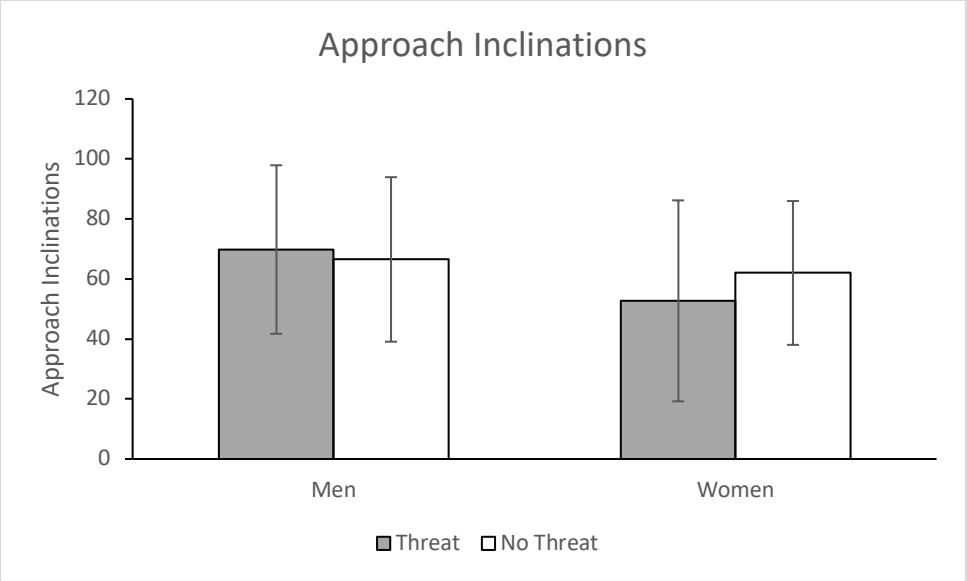


Figure 1: Summary of Gender X Gender Threat Interactions for Distress/Anxiety Measures (Aim 1)



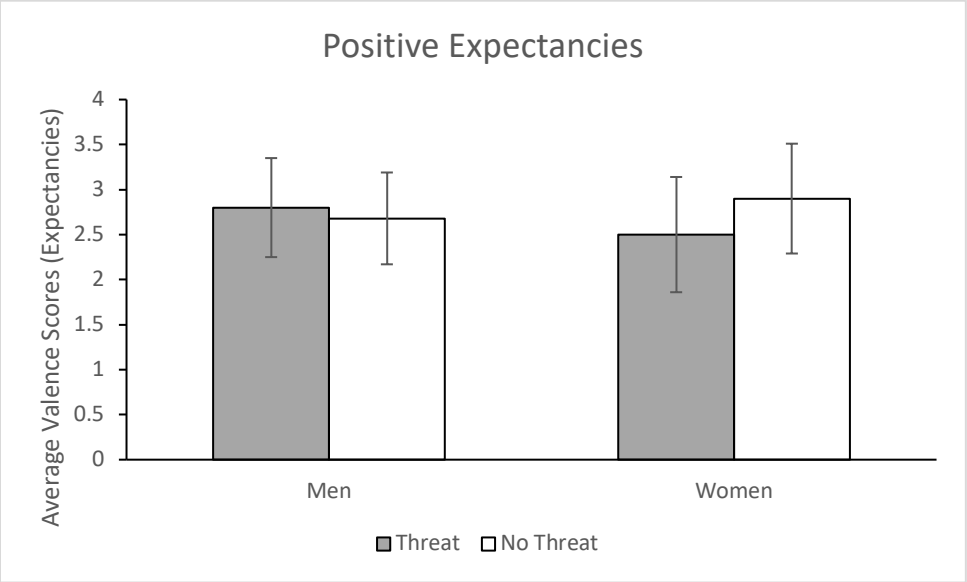


Figure 2: Alcohol Approach Inclinations (top panel) and Positive Expectances (bottom panel): Gender X Gender Threat Interaction

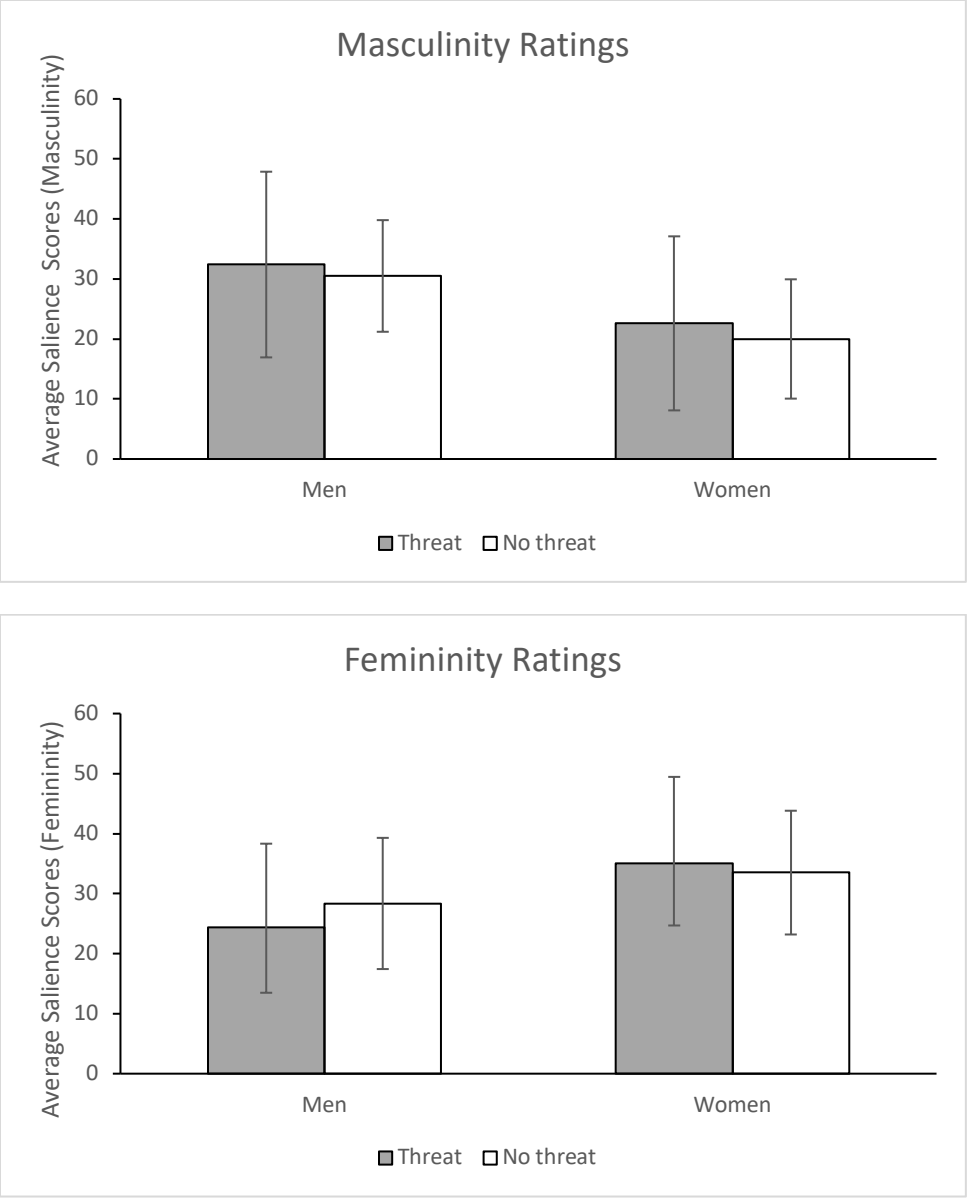


Figure 3: Masculinity ratings (top panel) and Femininity Ratings (bottom panel): Gender X Gender Threat Interaction

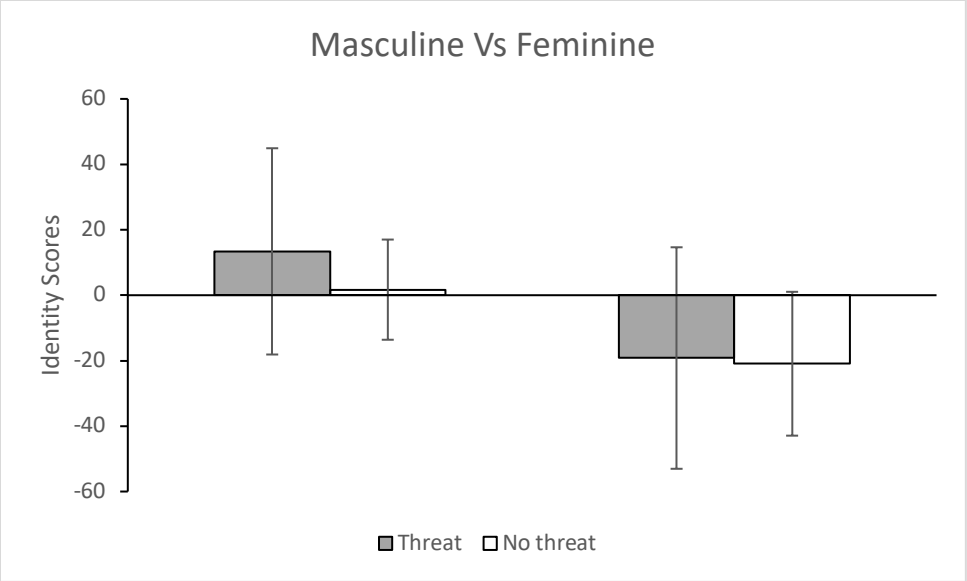


Figure 4: Identity Average Scores: Gender X Gender Threat Interaction

Chapter 4: Discussion

The current study investigated the interaction of gender threat and sex in the prediction of desires to drink in a drinking college sample. Gender identity and the social aspects of gender may represent a crucial point in why men are more likely to drink in riskier and destructive ways when compared to women. Traditionally, drunken behavior has been seen as a more masculine behavior and may influence how both men and women relate to alcohol (Frank et al., 2020). According to the Precarious Manhood Theory, manhood when compared to womanhood, is a social status that can be easily lost and requires continual validation (Bosson, Vandello & Buckner, 2018). Furthermore, SRT posits that adherence to gendered roles have been shown to be risk factors for drinking and drinking related consequences and that alcohol may be a way in which men and women engage in their gendered lives (Eagly, 1987; Borsari & Carey, 2001). Accordingly, it was predicted that men who had their gender identity threatened would be more likely to approach alcoholic cues, have higher distress/anxiety, and perceive alcohol as more positive when compared to women who had their gender identity threatened and from men and women who did not have their gender identity threatened. Interestingly, our hypotheses were not supported and there were a few surprising findings, such that women and men both responded in very similar ways to gender threat and that women who had been threatened found that alcohol was less positive than women who had not been threatened. Based on these data, it suggests that precarious manhood may not be unique to only men and that women may view alcohol as more negative when their gender identity is threatened.

Several potential explanations for the surprising findings exist. Although the cue-reactivity measure used in the current study was chosen to assess approach and avoidance towards a broad range of alcoholic and non-alcoholic beverages, the results may have been influenced by drink preference. In this current study, almost half (47.9%) of the participants endorsed drinking mixed drinks (hard alcohol with a non-alcoholic mixer) and only about a quarter of the participants (23.5%) endorsed beer as their drink of choice. To further examine this breakdown, men reported consuming liquor most frequently (44.1%), followed by beer (40.7%), and women reported consuming liquor most frequently (51.7%) and least likely to consume beer (6.7%). The current cue reactivity images had 30 slides that were presented to participants including only 3 mixed drink images out of 18. Given that the current cue reactivity slides did not have as many mixed drink beverage presentations, the disproportionate number of beer and wine images may have created more noise in the data. To explore this possibility, exploratory analyses based on alcohol cue type (beer, wine, mixed drink/liquor) found that men, when compared to women, were significantly more likely to approach beer cues. This is similar to other studies that have found that men are more likely to drink beer and that drinking beer is seen as asserting masculinity (Landrine, Bardwell, & Dean, 1988; Peralta, 2007). Although men were significantly more likely to approach alcohol cues when compared to women, there were no significant differences between men who had been threatened and men who had not been threatened. This finding was not expected based on previous findings of greater alcohol consumption following a gender threat in a lab (Fugitt & Ham, 2018). Even though the Fugitt and Ham in-lab ad-lib drinking study only looked at beer consumption within men, they found a significant difference in drinking behaviors between men who had their gender identity threatened and those who did not. Future in-lab drinking studies should continue to investigate

drink type differences between men and women and if similar results towards cue type is found when men are threatened.

To our knowledge, this is the first study to date that has specifically looked at the role of gender identity, gender norms, and inclination to approach alcohol within a male and female population. While excessive drinking and public displays of intoxication has usually been associated with masculine traits (Peralta, 2007), women's alcohol use has been seen as a threat to motherhood and feminine behavior (Eriksen, 1999; Hussman & Goldstein, 2019). This may help explain the surprising findings that women who had their gender threatened viewed alcohol less favorably. Furthermore, even though the findings were nonsignificant, the pattern of means suggested that women who have had their gender threatened were generally less likely to approach alcohol, which is consistent with the expectancy analysis. Concurrent with our findings, women who have been told that they have been preforming more prototypically masculine (the gender threat condition) may be less likely to view alcohol as positive or restorative to their sense of loss womanhood and may be less likely to drink as a result. Current social science literature has shown that women are expected to be active participants in public drinking environments, but have contradictory demands, such as being expected to be heterosexually attractive, free and empowered, but without becoming 'unrespectable' (Frank et al., 2020; Bailey et al., 2015; Griffin et al., 2013). These dual demands may modify how women drink and influence their behavior to maintain a desired gender identity of being self-sacrificing, respectable, and restrained (Hussman & Goldstein, 2019; Di Visser & Smith, 2009).

Furthermore, the results of this current study suggests that there may be a similarity in how men and women respond when their gender identity is threatened. Based on previous work within the precarious manhood theory, it was hypothesized that men would have a significant

response to the gender threat task that looks different from women who were threatened, and men and women who were not threatened (Vandello et al., 2008). In the current study, both men and women responded similarly on scales measuring general distress, public discomfort, negative affect, and social anxiety when learning about their scores on the gender identity task. This is surprising as much of the literature suggests that women would not respond anxiously to gender threat since their womanhood is based in biological factors and less in social factors (Vandello et al., 2008). These findings may suggest that there are more social influences than what is previously believed in the stability of womanhood when compared to manhood. Another explanation for these findings may also be due to how much one adheres to masculine norms. To explore this possibility, adherence to masculine norms were examined as a possible moderator. Results suggested that adherence had little impact on the gender by gender threat interaction with similar results continuing to emerge.

It is important to note that there were differential findings between the cue-reactivity and free associates tasks that were not expected. There was a significant difference in the valence of alcohol, or the positive expectancy of alcohol, between women who had been threatened and women who had not been threatened. Within the cue-reactivity, no significant difference between groups who were threatened or not were found. However, inspection of the means did indicate a similar pattern of results as the positive expectancies. Specifically, women who were gender threatened approached alcohol cues less than any of the other three groups. One explanation for these differential findings may be that the free associates task asks about alcohol broadly whereas the cue reactivity task has three different alcohol cue types that may have been less appealing (e.g., women less likely to approach beer). Furthermore, within the free associates

tasks, participants were asked to rate how pleasant each associate was which may allow for nuance that cannot be captured by the cue-reactivity task.

Lastly, the hypothesis that men who had their gender identity threatened would view alcohol as more restorative and masculine was not supported. This study found that both men and women rated their associates similarly across threat or not threat groups. It was found that men rated their associates as more masculine and women rated their associates as more feminine. Although non-significant, further exploration of this data found that when looking at the difference scores between masculine and femininity ratings for each associate, women who were threatened versus not threatened had very similar mean scores of rating their associates more feminine. Whereas within men who were threatened versus not threatened showed a larger spread in their average difference scores of masculinity. Though non-significant, it may suggest that men, who are not emasculated, may find their alcohol associations to be both equally masculine and feminine, as their average difference score were close to 0. In contrast, men who have had their gender identity threatened, may be more likely to rate their associates as less feminine. This suggests that men who have been threatened are not rating their associates as more masculine, but less feminine. One possible reason for why we are not seeing a significant difference in masculinity scores between men and threat condition is that the ratings of each associate was not public and thus could not be shown to others to establish their manliness. It is posited through the precarious manhood theory that men must engage in behaviors that are public and can weighted as being restorative or not (Vandello et. al, 2008). Further research should be conducted to see if this pattern is consistent within a lab setting.

The current findings add to a growing area of research examining the differences between gender and engagement with alcohol cues. Recent research has found that both men and women

will respond to drinking vignettes differently based on the sex and the perceived intoxication of the individual being shown (Levitt, Schlauch, Bartholow, & Sher, 2013). Levitt and colleagues (2013) found that men are more likely to use heavy intoxicated terms whereas women are more likely to use moderate terms. These differences in intoxication term by gender may be a reflection of adherence to social norms or roles that are expected of the individual. Similarly, within the current findings, men and women may be responding to both distal (e.g., what is being expected from society) and proximal (e.g., receiving negative feedback) forces that are influencing the responses towards alcohol motivation and expectancies. Men were shown to have more approach motivations towards alcohol cues broadly, and women were less likely to have positive expectancies when they were threatened. This may be a direct reflection of social influences that share the message that men are supposed to engage with drinking and the risky behavior that is associated with it (Peralta, 2007), whereas women may be perceived negatively if they do (George et. al, 1988). Continued investigation of the role of social norms and gender on drinking behavior should be conducted, specifically within an in-person setting to test these influences.

Implications

Traditionally, epidemiological research suggests that drinking frequency among young adult men and women on a college campus are nearly identical. However, men, when compared to women, are more likely to engage in risky drinking behaviors and are more likely to be binge and heavy drinkers (SAMHSA, 2018). However, newer research has begun to show that the rate in which men and women are drinking to intoxication or heavy drinking is beginning to narrow (Frank et al., 2020; Dawson et al., 2015). This study, to our knowledge, was one of the first studies looking at gender identity and gender threat to identify how individual engage with

alcohol cues and the expectancies of engaging with alcohol. Although mixed findings were found in ways that were not expected, it questions the stability of gender identity and the expectations of what alcohol will do for individuals who may feel anxious about their social status as a man or woman on a college campus. These findings also call into question the tenants of the precarious manhood hypothesis and suggests that threats to gender identity in a social context may not be unique to only men.

In the current study, women who had their gender threatened had lower positive expectancies of alcohol. These findings are the first of our knowledge to show that when women have their gender threatened, they are less likely to find that alcohol will be pleasurable. This is significantly different from women who have not been threatened, which highlights the dual role that alcohol may play in social setting and gender identity. Previous research has supported the idea that alcohol has been seen as a more masculine trait or behavior and that women may use alcohol to connect socially and eschew negative connotations of femininity (Peralta, 2007; Lemle & Mishkind, 1989; Iwamoto et al. 2011; Liu & Iwamoto, 2007; Locke & Mahalik, 2005). This suggests that if gender identity within women is threatened, then alcohol no longer becomes a mechanism to connect, but may further remove the individual from their ideal gender identity. This may help explain why when women are threatened, they are more likely to have lower positive expectancies of alcohol. Furthermore, the free associates task within this study allows for the investigation of implicit and emotional ecological data of individuals in real time (Joffe & Elsey, 2014). Tapping into these implicit ideas and expectancies of alcohol allow for the investigation into why people may approach or avoid alcohol cues. Thus, women who have had their gender threatened, may implicitly see alcohol as more threatening to their gender identity since drinking has been shown to be perceived as more masculine and aggressive (De Visser &

Smith, 2007; Lyons & Kersey, 2020). Further research should be done in-lab to see if these results replicate within a male and female population.

The findings that both men and women who had their gender threatened suggests that the precariousness of manhood and the stability of womanhood may not be what has been posited within the precarious manhood theory. Previous findings have found that men, when compared to women, will respond more negatively and anxiously towards gender threat (Vandello et al., 2008). However, our findings are not consistent with this literature and suggests that there may be a shift in the stability of womanhood. The men in the study responded as expected: men who were gender threatened responded significantly higher to measures of distress than men who were not threatened. However, women who were threatened, also responded similarly to men who were threatened, with very similar mean scores. This was a surprising finding and may suggest that the precarious manhood theory may not be unique to only men and suggests that women may also feel gender threat similar to men. This interesting finding may be explained by theories of stereotype threat and evolutionary psychology influencing gender threat responses (Eagly, Nater, Miller, Kaufmann, & Sczesny, 2020). Women, being told that they are responding more masculine, may respond more negatively to gender threat when they are comparing how feminine they to other women on a college campus. This may tap into an underlying fear that the individual is less feminine than their peers and thus less desirable to the opposite sex. Future research should implement a free associates task after gender threat to assess the implicit thoughts that may help qualitatively describe this surprising finding.

Limitations and Conclusions

The present study has several limitations to note. First, the study was originally proposed before the emergence of Covid-19. Due to restrictions of study recruitment and feasibility of

completion, the study was moved online. Since the study was online there was less control of survey methods than in-lab administration. For example, there was no control over where the participants were taking the surveys and could have become more distracted than if they were in lab. Additionally, participants may have taken the survey using different devices (e.g., smartphone, laptop, iPad, tablets) that may have influenced their viewing cues. However, online data collection methods and in-person paper-and-pencil methods have been demonstrated to be equivalent to online data collection methods (Stritzke et al., 2004; Weigold, Weigold, & Russell, 2013). Future studies should investigate the difference between in-person and online gender threat and see if there are significant differences on approach and avoidant indices to alcohol cues. Additionally, since this study was conducted online, the social pressures of gender threat may look different than in other studies that have used this methodology, all which have been in person. However, other studies that have used the same gender threat task, did so with the use of computers or tablets (Vandello et al., 2013; Fugit and Ham, 2018). Additionally, the wording, questions, and picture feedback on the gender threat task were the exact same across all studies, controlling this limitation. Similarly, within these data it was found that men and women who were threatened responded similarly and men and women who were not threatened responded similarly showing the manipulation was successful in an online format.

In spite of these limitations, this study offers an important contribution to the literature. It is one of the first studies to actively look at the effects of gender threat on alcohol expectancies and alcohol cue reactivity and a possibly explanation of gendered behavior. Although many of the findings in this paper were not expected, it adds to the literature of gender, gender threat and gendered behavior within an alcohol sample. Future research should be conducted using similar methodology but with an in-person ad-lib drinking task to investigate if similar results are found.

Currently, a large portion of studies have identified drinking as a masculine characteristic, however, very few have included both men and women in their recruitment. This study has been one of the first to investigate gender threat and alcohol motivations within a male and female sample and suggests that further studies should be conducted.

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Appendix A: IRB Approval Letter

March 12, 2021

Jared Davis
1910 E. Palm Ave Apt 11317 Tampa, FL 33605

Dear Jared Davis:
On 3/11/2021, the IRB reviewed and approved the following protocol:

APPROVAL

Application Type: Initial Study	
IRB ID: STUDY002204	
Review Type: Expedited 7	
Title:	Gender Differences in College Drinkers: The Role of Masculine Norms
Approved Protocol and Consent(s):	• Jared's Social-Behavioral Protocol 3.9.21.docx; • JD consent form 3.9.21.pdf; Approved study documents can be found under the 'Documents' tab in the main study workspace. Use the stamped consent found under the 'Last Finalized' column under the 'Documents' tab.

Within 30 days of the anniversary date of study approval, confirm your research is ongoing by clicking Confirm Ongoing Research in BullsIRB, or if your research is complete, submit a study closure request in BullsIRB by clicking Create Modification/CR.

Your study qualifies for a waiver of the requirements for the documentation of informed consent for online research activities as outlined in the federal regulations at 45 CFR 46.117(c).

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

Jennifer Walker
IRB Research Compliance Administrator

Institutional Review Boards / Research Integrity & Compliance

FWA No. 00001669
University of South Florida / 3702 Spectrum Blvd., Suite 165 / Tampa, FL 33612 /

813-974-5638

Appendix B: Informed Consent Form

Study ID: STUDY002204 Date Effective: 3/11/2021

Informed Consent to Participate in Research Involving Minimal Risk

Information to Consider Before Taking Part in this Research Study

Title: ***Gender Differences in College Drinkers: The Role of Masculine Norms***

Study # 002204

Overview: You are being asked to take part in a research study. The information in this document should help you to decide if you would like to participate. The sections in this Overview provide the basic information about the study. More detailed information is provided in the remainder of the document.

Study Staff: This study is being led by Jared Davis who is a doctoral student at/ the University of South Florida. This person is called the Principal Investigator. He is being guided in this research by Robert C. Schlauch, PhD. Other approved research staff may act on behalf of the Principal Investigator.

Study Details: This study is being conducted at the Department of Psychology at the University of South Florida. The purpose of the study is to gain a better understanding of drinking differences between males and females. Greater understanding of this topic has the potential to aid in future development of interventions targeting people with problematic alcohol use. Participation is a one-time, online, session that is estimated to last 60 - 120 minutes.

Participants: You are being asked to take part because you responded to our advertisement and met our inclusion criteria of being a USF student, have had experience drinking alcohol, and identify as heterosexual.

Voluntary Participation: Your participation is voluntary. You do not have to participate and may stop your participation at any time. There will be no penalties or loss of benefits or opportunities if you do not participate or decide to stop once you start.

Benefits, Compensation, and Risk: We do not know if you will receive any direct benefit from your participation. You will be compensatedwith class credit (estimated 2 – 4 SONA points). This research is considered to be minimal risk. That means that the risks associated with this study are the same as what you face every day. The biggest risk from this research is that you may experience some discomfort due to answering questions related to the study.

Confidentiality: All responses will be kept completely confidential. Even if we publish the

findings from this study, we will keep your study information private and confidential. Anyone with the authority to look at your records must keep them confidential.

Why are you being asked to take part?

You are being asked to take part because you responded to our advertisement and met criteria to be included. The purpose of the study is to gain a better understanding of drinking differences between males and females.

Study Procedures:

Participation in this study will consist of a single online session (approximately 60 - 120 minutes long – i.e., 2-3 hours). If you take part in this study, you will be asked to:

- Answer questions regarding basic demographic information, alcohol-related behaviors, and other characteristics.
- You will be asked to rate alcohol pictures and also your beliefs of alcohol.

Total Number of Subjects

About 120 individuals will take part in this study at USF.

Alternatives / Voluntary Participation / Withdrawal

You do not have to participate in this research study and can withdraw from the study at anytime.

Benefits

We are unsure if you will receive any direct benefits by taking part in this research study. However, participants may learn more about themselves while completing questionnaires.

Risks or Discomfort

This research is considered to be minimal risk. That means that the risks associated with this study are the same as what you face every day.

Compensation

SONA Participants:

You will be compensated 1 SONA point per 30 minutes for participating in the study. It is estimated that the study will take anywhere from 60 – 120 minutes for a total of 2 – 4 SONA points. If you withdraw for any reason from the study before completion you will be compensated based on the time you participated in the study.

Costs

There will be no additional costs to you as a result of being in this study.

Conflict of Interest Statement

The researchers do not have any conflicts of interest in this study.

Privacy and Confidentiality

We will do our best to keep your records private and confidential. We cannot guarantee absolute confidentiality. Your personal information may be disclosed if required by law. If completing the study online, it is possible, although unlikely, that unauthorized individuals could gain access to your responses. Confidentiality will be maintained to the degree permitted by the technology used. No guarantees can be made regarding the interception of information sent via the Internet. However, your participation in this study involves risks similar to a person's everyday use of the Internet. Certain people may need to see your study records. These individuals include:

- The research team, including the Principal Investigator, her advisor and all other research staff.
- Certain government and university people who need to know more about the study. For example, individuals who provide oversight on this study may need to look at your records. This is done to make sure that we are doing the study in the right way. They also need to make sure that we are protecting your rights and your safety.
- Any agency of the federal, state, or local government that regulates this research. This includes: the Department of Health and Human Services (DHHS) and the Office for Human Research Protection (OHRP).
- The USF Institutional Review Board (IRB) and its related staff who have oversight responsibilities for this study, and staff in USF Research Integrity and Compliance.

Responses you provide will not be linked with any identifying information. Your information collected as part of the research will NOT be used or distributed for future research studies.

We may publish what we learn from this study. If we do, we will not include your name. We will not publish anything that would let people know who you are.

What if new information becomes available about the study?

During the course of this study, we may find more information that could be important to you. This includes information that, once learned, might cause you to change your mind about being in this study. We will notify you as soon as possible if such information becomes available.

You can get the answers to your questions, concerns, or complaints.

If you have any questions, concerns or complaints about this study, call Jared Davis at (813) 974-0839. If you have questions about your rights, complaints, or issues as a person taking part in this

study, call the USF IRB at (813) 974-5638 or contact by email at RSCH-IRB@usf.edu.

Consent to Take Part in Research

I freely give my consent to take part in this study. I understand that By clicking the "I agree" button below I am agreeing to take part in the research study described in this document. If I want a copy of this consent form, I understand that I can email the study coordinator, Jared Davis, and he will provide me with one.